universität wien

DISSERTATION

Titel der Dissertation

Challenge-type inspections: continued relevance in multilateral arms control regimes in the early 21st century?

Verfasser

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angestrebter akademischer Grad

Doktor der Philosophie (Dr. phil.)

Wien, August 2014

Studienkennzahl lt. Studienblatt:	A 796/310/300
Dissertationsgebiet lt. Studienblatt:	Politikwissenschaft
Betreuer:	Univ.- Prof. Dr. Heinz Gärtner

Acknowledgement

When I enrolled in the PhD programme at the university of Vienna in 2011, I started my dissertational research project with a vague idea in mind. Now - three years later - I can say that this idea has turned into a complete dissertation. I would therefore like to express my gratitude to Prof. Dr. Heinz Gärtner for accepting me as his doctoral student and supporting me throughout the drafting process with his critical views and suggestions that sharpened my arguments and train of thoughts.

The decision to write a dissertation on challenge-type inspections came after almost fifteen years of first hand exposure to multilateral arms control, disarmament and non-proliferation. I would particularly like to thank Dr. Per Runn, Matjaz Prah and Gordon MacLeod - my direct supervisors in the Technical Secretariat/OPCW and the Provisional Technical Secretariat/CTBTO – for sharing their vast expertise, and for their able guidance and trust in me, which gave me the opportunity to learn and gain an insight into this challenging topic and allowed me to contribute to the noble goal of disarmament. In the same vein, I would like to express my deepest gratitude to my first commander at the NBC Defence School. Brig. (ret.) Norbert Fürstenhofer. His vision, persistency and relentless efforts for the NBC Defence Corps of the Austrian Armed Forces opened the door for me to the international world of arms control.

My sincere appreciation also goes to my colleagues Julius Kozma, Dr. Itshak Lederman, and Denisa Watzenig. for casting a critical eye over my draft chapters, providing valuable suggestions and giving me constructive feedback to improve my work. In this respect, I also would like to thank Axel Scala for helping me with the layout of the thesis as well as Dr. John Walker, Adolf Brückler and Erwin Richter for providing me with comprehensive literature on the topic. Moreover, I am very much indebted to all the experts that kindly accepted my interview requests and frankly shared their views on challenge-type inspections – their insight was invaluable for obtaining a comprehensive picture on this complex subject matter.

All my efforts would however not have materialized without the support, encouragement and love of my wife Assel. She created the conditions that allowed me to write this dissertation and showed unique understanding for spending uncounted evenings, weekends and vacations in the last three years on this issue at hand – thank you!

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1. Introduction

1.1 Research Issue at Stake

> *"The future of OSI appears promising, though complex. Future verification tasks are becoming more difficult both to negotiate and to carry out, and OSI will need to become more intrusive, more efficient, and better understood and accepted by more countries."* [1]

The above assessment is one of the central conclusions from a study of on-site inspections (OSIs) carried out by the International Group on Global Security between 2010 and 2012. As evidenced by various arms control-, disarmament- and non-proliferation-accords, OSIs have established themselves as one of the key elements in the verification toolbox. While 'routine-type' inspections are carried out on a frequent basis in various security regimes and represent the standard type of inspections, challenge-type inspections are considered the exception to this norm and serve as the ultimate verification tool to address compliance concerns. Both challenge inspections (CIs) under the Chemical Weapons Convention (CWC) and on-site inspections (OSIs) under the Comprehensive Nuclear-Test-Ban Treaty (CTBT) represent examples of the latter type of inspections in the area of Weapons of Mass Destruction (WMD)[2].

Though clearly not envisaged to be used on a frequent basis, it is nevertheless remarkable that not a single challenge inspection has been requested under the CWC. On the one hand, this can be interpreted as a positive sign and as supporting the high level of compliance by CWC Member States. On the other hand, this has to be critically questioned in light of the fact that compliance concerns have actually been raised publicly against several CWC States Parties.[3] Accordingly, this raises immediate questions regarding the actual relevance of the challenge-type inspection mechanism for multilateral verification.

Hence, and particularly in light of the highly charged political nature of this verification mechanism, should one draw the conclusion that challenge-type inspections may gradually

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1 Ifft/Asada/Aust/Davies/Kyriakopoulos/Mackby/Massinon/Sitt/Drobysz (2012), p. 17.

2 The term 'Weapons of Mass Destruction' (WMD) was defined in 1948 by the United Nations Commission for Conventional Armaments in an effort to set them apart from conventional weapons. Accordingly, this Commission defined them as "*Atomic explosive weapons, radioactive material weapons, lethal chemical weapons and biological weapons, and any weapons developed in the future which have characteristics comparable in destructive effect to those of the atomic bomb or other weapons mentioned above.*" See UN (1948): S/C.3/32/Rev.1, p. 2. It should be noted that the term WMD is considered problematic given the strategic differences between these types of weapons. However and whilst recognizing this shortcoming, the term is used hereinafter for simplicity purposes as a collective term for these three categories of weapons.

3 See Tucker (2010), pp. 9-12, and Rademaker (2003), pp. 2- 4.

become obsolete? Alternatively, and in contrast to this skeptical prognosis, is it still fair to argue that these highly intrusive types of inspection represent an adequate and valuable verification mechanism? Against this backdrop this paper analyzes regime members' views regarding the role, characteristics and importance of challenge-type inspections in arms control, disarmament and non-proliferation in the early 21st century.

1.2 Research Aim, Question and Hypotheses

The aim of this dissertation is to contribute to a better understanding and acceptance of challenge-type inspections for verification purposes. As part of this effort, this thesis examines the relevance that challenge-type inspections play in arms control and disarmament and non-proliferation. This is done by performing a case study of two challenge-type inspections, namely challenge inspections under the CWC and on-site inspections under the CTBT verification regimes. As such, the following central research question lies at the heart of this dissertation:

"How do regime members view the role, characteristics and importance of challenge-type inspections in verification regimes?"

Based on the theoretical framework analysis carried out (see Chapter 2), the following sub-questions help address the central research question:

1. "What are the characteristics of the CWC and CTBT verification regimes in light of their embedded challenge-type inspection mechanisms?"
2. "What are the key features of challenge-type inspections under the CTBT and the CWC verification regimes?"
3. "What are Member States' political demands and support regarding challenge type inspections?"
4. "What roles do the organs of the OPCW and CTBTO (incl. Preparatory Commission) have with respect to challenge-type inspections and what do the related decision making processes look like?"
5. "Which activities have been undertaken by the Organizations with respect to challenge-type inspections and how do they impinge on their role and importance?"

The following two alternative hypotheses have been derived for testing during the research:

1. Regime members continue to attach high importance to challenge-type inspections in view of their particular role within verification regimes, namely to detect and deter pos-

sible non-compliance and thus build confidence that the overall verification regime works as intended. Accordingly, their policy making aims at ensuring readiness of these tools in case the need should arise to make use of them.

2. Alternatively, regime members place comparably low importance to challenge-type inspections in view of skepticism raised regarding their actual capability to fulfill their originally intended treaty role. This, in turn is reflected in their policy making by attaching a subordinate role and low importance to readiness of this verification tool.

This central research question is addressed in the context of a case study approach based on two multilateral verification regimes, namely

- Challenge inspections conducted in accordance with Part X of the Verification Annex of the CWC);
- On-site inspections under the CTBT.

The rationale for selecting the above verification regimes is based on the fact that both regimes address the category of Weapons of Mass Destruction, which is an important common denominator and makes them comparable for the research. [4] Furthermore and notwithstanding the specifics of each verification regime, a number of general verification principles and provisions on CWC challenge inspections can also be found in the respective CTBT provisions on on-site inspections. Finally and while acknowledging that the CWC and CTBT verification regimes are at different development stages and legal statuses[5], this fact may provide the opportunity to identify relevant lessons. In this context, the focus of the research is put on the following timeframes:

- Challenge inspection related developments from entry into force of the Chemical Weapons Convention in 1997 to June 2014;
- On-site inspection related aspects from the establishment of the Preparatory Commission for the CTBT in 1996 to June 2014.

[4] It should be noted that inspections carried out in Iraq both under the United Nations Special Commission (UNSCOM) and the United Nations Monitoring, Verification and Inspection Commission (UNMOVIC), which have been widely researched, are not the focus of this dissertation.

[5] While the CWC entered into force more than 17 years ago, prospects for entry into force of the CTBT in the near future can be considered remote.

1.3 Current State of the Research

A bibliographic search shows that there is a huge number of publications on the CWC and CTBT verification regimes. However, the number of publications focusing exclusively on challenge-type inspections is comparably limited. As such, these inspections are analyzed mostly in the context of overarching assessments regarding these verification regimes, and publications focus mainly on current implementation aspects.[6] Notably, only a small number of documents has been found that look specifically at challenge-type inspections. These are, *inter alia*, a book published in 1990 by Lewis A. Dunn and Amy E. Gordon on *Arms Control and the new role of on-site inspections*[7], a 1999 based report[8] from the United Nations Institute for Disarmament Forum on on-site inspections, a 2002 based report[9] from late Jonathan B. Tucker on the proceedings of an expert workshop pertaining to challenge inspections under the CWC, two research reports from John Hart dating back to 2002[10] and 2004[11], a VERTIC brief from 2008 on OSIs under the CTBT by Coxhead[12] and a study by the International Group on Global Security on-on-site inspections[13] taking into account conclusions from a related research seminar hat was organized by the Geneva Centre for Security Policy in 2010. One can therefore conclude that challenge-type inspections represent a topic, where relatively limited research has been conducted. Moreover, the results of bibliographic searches indicate that no contemporary publication has been found which focuses on the role, characteristics and importance of this verification tool in a comparative case study approach.

1.4 Research Contribution

The research findings should contribute to the academic debate on the relevance of this tool for verification and particularly present regime members' views regarding their role, characteristics and importance. Taking into consideration first hand access to primary sources[14],

6 Monographs by Avenhaus et al. (2006); Gallagher (1998, 1999); Dahlman/Mackby/Mikkeltveit/Haak (2011); Ramaker et al. (2003); Hansen (2006); Dokos (1995); Rueckert (1998); Johnson (2009); Krutzsch/Trapp (1999); Thakur/Haru (2006); Kenyon/ Feakes (2007); Walker (2011) – just to name a few ones – provide valuable insight into the various regimes and also touch upon challenge-type inspection aspects.

7 See Dunn/Gordon (1990).

8 See United Nations Institute for Disarmament Research (1999).

9 See Tucker (2002).

10 See Hart (2002).

11 See Hart (2004).

12 See Coxhead (2008).

13 See Ifft/Aust/Asada/Davies/Kyriakopoulos/Mackby/ Massinon/Sitt/Drobysz (Contributor) (2012).

14 Information on the subject matter has been gained as a result of more than 15 years of professional experience with challenge-type inspections as a staff member of both the Technical Secretariat (TS)/OPCW as well as the

this thesis should generate new information for academia. Moreover and as already indicated, this dissertation should contribute to a better understanding and acceptance of this highly intrusive verification tool.

In addition, researching this aspect is also of interest to the respective international organizations, as regime dynamics caused by regime members' support or opposition has stabilizing or destabilizing effects, which may in turn lead to considerable changes in the respective verification regimes. Accordingly, it is hoped that the research conclusions can provide an impetus for critical review on current implementation practices within these international organizations and finally also be of practical value for the further development of this important verification regime pillar.

1.5 Limitations

As previously indicated, this dissertation examines the role, characteristics and importance of challenge-type inspections based on a case study approach of two selected multilateral verification regimes in the area of weapons of mass destruction. Clearly, there is also a third, very prominent verification regime that centers on the non-proliferation of nuclear weapons and which encompasses various types of on-site inspections. However, the conscious decision was taken not to look into this regime given its very much different regime characteristics (i.e. representing a discriminatory regime with different rights and obligations for its regime members).

Furthermore it should be clearly noted that this dissertation does not address the question as to why challenge inspections have not been used in spite of compliance concerns raised by CWC Member States. While it is undoubtedly of high interest to analyze this aspect and find out the underlying motives by these regime members, addressing this question clearly goes beyond the scope of this dissertation and qualifies for a separate thesis.

Third, it should be noted that my research related to CWC challenge inspections deals solely with those missions conducted in accordance with Part X of the Convention's Verification

Provisional Technical Secretariat (PTS)/CTBTO. However, the views expressed in this dissertation are the sole opinion of the author and do not reflect the official views of the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization nor those of the Organisation for the Prohibition of Chemical Weapons.

Annex. This decision was made in order to narrow down the research focus on CWC challenge inspections and separate it from the different scenario context, legal framework (Part XI of the CWC Verification Annex) and operational parameters of a CI carried out under an alleged use scenario.

1.6 Research Method

For the purpose of this dissertation, a deductive research strategy is applied. Therefore, and based on the theoretical framework built for this dissertation, information pertaining to challenge-type inspections under the CTBT and CWC verification regimes are analyzed with a view to deriving an assessment of their role, characteristics and importance for arms control, disarmament and non-proliferation in the early 21st century.

Document analysis

Document analysis represented a key research method in order to achieve an in-depth understanding of already existing information pertaining to the topic. As such, both primary[15] and secondary literature[16] were utilized for this dissertation. In accordance with the topic of the thesis, respective efforts center on three key thematic clusters, namely:

- Regime theory;
- Challenge-type on-site inspections under the CWC and CTBT;
- Verification policies and concepts.

Document analysis was conducted by the following means:

- Use of both publicly accessible and commercially available on-line search engines and digital libraries made available by the employer;
- Utilization of the CTBTO and IAEA library at the United Nations Office in Vienna as well as the OPCW library in Den Haag;
- Information obtained as a result of the direct engagement with subject matter experts, delegates and representatives of the organizations researched.

[15] Primary source information published by the respective organizations (e.g. treaty texts, policy decisions and documents, technical reports, information papers, meeting/workshop/conference reports, policy documents, etc.) has been used as an important analysis basis for this dissertation.

[16] Various secondary sources such as selected periodicals or (web-based) publications and reports from academic institutions, UN- or government affiliated institutes, Non-Governmental Organisations (NGOs) or Think Tanks have been utilized for the dissertation.

Secondary data collection and analysis

Additionally, use was made of secondary data collection and analysis to supplement the findings from the other research methods. In particular statistical data from Annual Reports, Annual Programmes and Budgets by the Preparatory Commission for the CTBTO and the OPCW were analyzed.

Conduct of expert interviews

Furthermore, 11 expert interviews were carried out between September 2013 and March 2014 to obtain different opinions regarding the role and importance of challenge-type inspections. The following selection criteria for the interviews were applied:

- National subject matter expert, employee of the Technical Secretariat/OPCW or Provisional Technical Secretariat/Preparatory Commission for the CTBTO or delegate to these international organizations;
- Broad geographical representation[17] of the interviewees in order to ensure that potentially different political views on the issue are captured.

Expert No.	Area(s) of expertise	Years of relevant experience	Origin of the expert	Date/duration of interview	Remarks
E1	CI/CWC	+30 years	Western Europe	11 September 2013 (51')	interview in-person
E2	CI/CWC & OSI/CTBT	+20 years	Western Europe	24 September 2013 (41')	interview in-person
E3	CI/CWC	+20 years	Middle East	22 October 2013 (42')	interview through skype
E4	CI/CWC & OSI/CTBT	+20 years	Asia	23 October 2013 (40')	interview in-person
E5	OSI/CTBT	+25 years	Middle East	3 and 5 November 2013 (50')	interview through skype
E6	OSI/CTBT	Less than 5 years	Eastern Europe	13 December 2013 (30')	interview in-person
E7	OSI/CTBT	+5 years	Middle East	16 December 2013 (70')	interview in-person without recording

[17] Two interviews were requested with representatives of the African and Latin American and Caribbean Region, but no responses to these requests have been received.

Expert No.	Area(s) of expertise	Years of relevant experience	Origin of the expert	Date/duration of interview	Remarks
E8	CI/CWC & OSI/CTBT	+15 years	Asia	17 December 2013 (35')	interview in-person
E9	OSI/CTBT	+23 years	Eastern Europe	18 February 2014 (46')	interview in-person
E10	OSI/CTBT	+23 years	South East Asia, Pacific and Far East	28 February 2014 (50')	interview in-person
E11	CI/CWC & OSI/CTBT	+35 years	North America	21 March 2014	written response to the questionnaire

Table 1: Expert interview
Source: author

The conduct of the interviews was facilitated by a semi-structured interview questionnaire with 15 open questions (see Pt. 11: Attachment) provided in advance to the experts. Taking into account the potential sensitivity of the individual opinions expressed, permission for these interviews was obtained from the experts on the basis that the interviews are to be anonymized and transcripts are not published as part of the dissertation, but remain with the author. To retrieve the information obtained from the interviews, a qualitative context analysis approach[18] was applied and the qualitative data analysis software tool MAXQDA was used.

1.7 Structure of the Dissertation

The dissertation consists of the following six main chapters, which are briefly outlined below:
Chapter I serves as the introduction. As such, it describes the central research issue at hand, defines the scope and limitations of the research as well as highlighting the research approach taken. This chapter also sets out the research contribution of this dissertation.

Chapter II sets out the theoretical framework. Analyzing the theoretical framework and clarifying the central concepts and working definitions of the dissertation is considered a prerequisite for tackling the central research question. Hence, regime theory is examined by looking

[18] Based on a transcription of the interviews, the information obtained was assessed with a view to identifying all relevant information and thus reducing the overall amount of information. In a second step, thematically related categories and sub-categories were generated based on the aspects raised in the interview questionnaire. In a third step, a thematic analysis of each category was performed in order to identify aspects such as common views, diverging positions and particular opinions raised by the experts. In a fourth step, this information was conceptualized by 'translating' the various statements into scientific language. Finally, by generating a higher level of abstraction, the results obtained were interpreted in the context of the theories.

into its central arguments. Given the criticism of regime theory raised by other theories of international relations, the assumptions are contrasted with the central arguments raised by neorealism and constructivism and reflected in the context of the two security regimes and international organizations researched in this dissertation. As a result of the examination of the theoretical framework, the research framework is developed.

Chapter III builds upon the theoretical framework and analyzes the CWC and CTBT verification regimes. Looking at the overarching verification regimes of these treaties is a prerequisite before analyzing the particular role and function challenge-type inspections play in these regimes. Hence, this chapter starts off by providing a brief introduction to the basics of verification and the emergence of verification in arms control and disarmament. Importantly, the different views towards verification regimes as per the three selected theories of international relations are also highlighted. In addition, this chapter operationalizes Stephen Krasner's regime definition[19] by analyzing the CWC's and the CTBT's regime principles, norms, rules and procedures. Document analysis and examination of both primary and secondary sources were used in order to address this research aspect.

Chapter IV focuses on the conceptual and operational characteristics of challenge-type inspections under the CWC and CTBT. Following a brief introduction on the role, emergence and function of on-site inspections, a comparative analysis pertaining to CWC challenge inspections and the CTBT on-site inspections is made. As a result, both commonalities and differences between them are highlighted. This chapter also operationalizes the regime rules pertaining to challenge-type inspections under both treaties. Document analysis and the results obtained through the interviews served as the main methods of dealing with this research aspect.

Chapter V analyzes the policy making with respect to challenge-type inspections. As such, it first examines Member States' demands and support for this type of inspection (i.e. the input dimension). Second, the dissertation analyzes the conversion dimension and in particular looks at the organs of both international organizations and their related decision making processes pertaining to challenge-type inspections. In a third step, the output dimension is looked at by assessing decisions made within the OPCW and the Preparatory Commission for

[19] International regimes are *"sets of implicit and explicit principles, norms, rules, and decision-making procedures around which actors' expectations converge in a given area of international relations*". Krasner (1983), p. 2.

the CTBTO with respect to challenge-type inspections, and by looking at related activities carried out. Interviews, secondary data analysis as well as document analysis were undertaken to address this research aspect.

Chapter VI presents the key findings of the dissertation and addresses the central research question of this thesis. Additionally, theoretical as well as policy implications obtained through the research are highlighted. As part of it, the central research results are discussed with respect to their applicability vis-à-vis the three selected theories of international relations. Finally, the dissertation provides recommendations for future research.

2. Theoretical Framework Analysis

Developing the overall theoretical framework is a prerequisite to addressing the central research question of this dissertation. As such, this chapter provides the basis for the subsequent empirical research by looking into three theories of international relations and in particular at regime theory as the main theoretical concept of this thesis. Given that regime theory represents the mainstream approach to analyzing international regimes, main emphasis is given to this theory. Based upon the theory related findings, the research framework was developed as outlined below.

In a first step, this chapter seeks clarity on essential regime theory related definitions that are important for the research. Subsequently, these findings are embedded in the context of the international organizations and associated regimes researched in this dissertation. Second, the dissertation looks into the development of regime theory in the context of the neoliberal school of thought and examines the politico-historical context that led to its formation. Moreover, the central characteristics of regime theory are presented. Third, and due to the criticism raised towards its assumptions, a comparative analysis is performed between regime theory and two other major schools of thought, namely neorealism and constructivism. Accordingly, and by looking at these three different theories in a comparative manner, one can carve out both commonalities and differences in the assumptions that these three schools of thought posit towards international regimes. Again, the respective findings are reflected in the context of the international organizations and associated regimes researched in this dissertation. Eventually, the insight gained through studying the theoretical framework of international institutions is used to develop the dissertation's research framework.

2.1 Central Concepts and Definitions

Before analyzing the theoretical framework, concepts and definitions that are central in the context of regime theory need to be addressed. Taking into account that the dissertation examines the relevance of particular verification regime elements and the efforts made by the respective international organizations, it is crucial to study closely three particular concepts that are all closely interrelated, but still need to be clearly distinguished from each other. These are:

1. International Regimes (IRs),
2. International Organizations (IOs),
3. International Institutions.

2.1.1 International Regimes

Research on regimes originated in the United States and initially centered on the area of international political economics. Theories of market failure[20] suggested that economic activities uncoordinated by hierarchical authority produce inefficient results. Scholars attributed this coordination deficiency however not to inadequacies of the actors themselves, but rather to the structure of the system and the institutions, or the lack thereof.[21] In this context, Robert O. Keohane draws the conclusion that "*like imperfect markets, world politics is characterized by institutional deficiencies that inhibit mutually advantageous coordination*".[22] As such, he highlights two important features of international relations as per regime theory, namely that "*world politics [lacks] authoritative governmental institutions, and is characterized by pervasive uncertainty*".[23]

John Ruggie made the first step by introducing the concept of international regimes to international relations theory in 1975.[24] Regime theory then emerged gradually as a school of thought in international relations in the late 1970s and early 1980s as a result of the critical discourse with the then prevailing neorealism.[25] Given that neither realist nor other theories could provide arguments that satisfactorily explained an increasingly complex, interdependent and dangerous world, academics were compelled to come up with new ways to intellectually organize and understand international activity.[26] Having considerably influenced the debates on the challenges of interdependency already together with Joseph Nye by *Power and Independence*, Robert O. Keohane decisively contributed to the development of the regime theory with his book *After Hegemony*. Keohane's contractualist (functional) theory of international regimes is the most elaborate theory of international regimes and has also been labeled as 'neoliberal institutionalism'.[27] In this context, Hasenclever, Mayer and Rittberger identify four regime theory strands, namely (1) the contractualist (or functional) theory of interna-

[20] Keohane characterizes market failures as *"situations in which the outcomes of market-mediated interaction are suboptimal (given the utility functions of actors and the resources at their disposal)"*. (1983), pp. 150-151.
[21] See Keohane (1983), p. 151.
[22] Keohane (1983), p. 151.
[23] Keohane (1983), p. 148.
[24] See Smith (1987), p. 256.
[25] See Zangl (2010), p. 131.
[26] See Puchala and Hopkins (1983), p. 61.
[27] See Hasenclever/Mayer/Rittberger (1997), pp. 28-29.

tional regimes[28], (2) the situation-structural approach[29], (3) the problem-structural approach[30], and (4) Oran Young's model of regime formation[31].

From a *Realpolitik* driven context, the increasing interest of scholars in the analysis of regimes in the late 1970s was triggered, *inter alia*, by the relative decline of power of the United States as the then sole hegemon in the 1970s. In particular, discussions arose among academics whether states would still be able to cooperate with each other and manage the respective interdependency risks in the absence of a hegemon, or whether realistic views would come out on top and lead to a demise of cooperation.[32] Doubts about this theory of hegemonial stability[33] encouraged scholars to search for alternative theories that could satisfactorily explain the phenomenon of international cooperation and stability among states despite the absence of a single, overwhelming power. Following the neo-realistic school of thought, existing international organizations like the General Agreement on Tariffs and Trade (GATT) and the International Monetary Fund (IMF) would largely lose their role, and effective cooperation in the international trade and monetary relationships could no longer be sustained. However, contrary to these assumptions and in spite of the fact that neither the USA nor the Soviet Union possessed hegemonial dominance, the economic interdependency among states further

28 This model is attributed to Robert O. Keohane and studies the effects of international regimes and actor relationships by making use of rational choice models like the Prisoner's Dilemma or theories of market failure. Moreover, it provides functional explanations for the emergence and persistence of regimes. A detailed analysis can be found in: Hasenclever/Mayer/Rittberger (1997), pp. 27-44.

29 This approach represents a game-theoretic extension of the functional regime theory and is attributed to scholars like Arthur Stein, Duncan Snidal, Kenneth Oye and Lisa Martin. They argue that the Prisoner's Dilemma does not reflect all types of strategic situations in which actors have to make choices about co-operations and institutions. Thus, they propose to distinguish between two types of situation structure that require either collaboration regimes or coordination regimes. See Hasenclever/Mayer/Rittberger (1997), pp. 44-59.

30 German students of regimes like Efinger, Rittberger, Zürn and Czempiel have exhibited a particular affinity to problem-structuralism. This approach mainly works from the premise that the nature of the issue-areas (i.e. the conflictual background) defines the likelihood of regime-formation in given conflict situations. This special strand of the regime theory (Tübinger Schule) developed in Germany at the end of the 1980s and focused on international regimes in the area of security politics in view of the immanent East West conflict. See Hasenclever/Mayer/Rittberger (1997), pp. 59-68.

31 Oran Young has considerably contributed to the regime analysis by, inter alia, developing a model of regime formation that is referred to as 'institutional bargaining'. This model centers on the actors' bargaining process preceding the regime formation, which has to settle the interplay between the potential gains to be obtained from permanent coordination and specific set of norms and rules to be established for that purpose. See Hasenclever/Mayer/Rittberger (1997), pp. 68-82.

32 See Krell (2009), p. 237.

33 Representatives of the theory of hegemonial stability such as Charles Kindleberger and Robert Gilpin expressed the view that international cooperation can only be ensured in case of the existence of a dominating actor, who has both an interest to establish and maintain cooperation and also the means to convince others to cooperate. See: Müller (1983), p. 13.

increased. Moreover, a number of international institutions and arms control regimes[34] emerged in the 1970s and 1980s that actually fostered cooperation among states.[35]

Furthermore, the development of regime theory can also be seen against the backdrop of disputes between liberal and conservative policy makers regarding US foreign policy of in the second half of the 1970s. Hence, regime theory represented an effort of liberal oriented scholars to provide a feasible theoretical framework aimed at countering conservative attempts to restore by all means the previously hegemonial position.[36]

Following Stephen D. Krasner's widely accepted definition, international regimes can be characterized as follows:

> *"[S]ets of implicit and explicit principles, norms, rules, and decision-making procedures around which actors' expectations converge in a given area of international relations."*[37]

In the context of the above definition, principles and norms represent the strategic pillars and define the overall characteristics of a regime. Conversely, rules and decision making procedures can be considered of a more operational nature with the purpose to further specify the regime characteristics including its implementation. Stephen Krasner's definition also defines the individual four regime elements (principles, norms, roles and decision-making procedures) as follows:

> *"Principles are beliefs of facts, causation and rectitude. Norms are standards of behavior defined in terms of rights and obligations. Rules are specific prescriptions or proscriptions for action. Decision-making procedures are prevailing practices for making and implementing collective choice."*[38]

As per their nature, regimes facilitate the creation of substantive agreements, as they provide the necessary negotiation framework consisting of principles, norms, rules, and procedures.[39] However, regimes are not necessarily to be equated with treaties. They may include treaties,

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34 The following international institutions and arms control regimes were, *inter alia*, established/entered into force: Conference for the Security and Cooperation in Europe (CSCE); Entry into Force of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) on 5 March 1970; Conduct of the Strategic Arms Limitations Talks between the United States of America and the Union of the Soviet Socialist Republics with the entry into force of the Anti-Ballistic Missile Treaty on 3 October 1972; Entry into Force of the Treaty between the United States of America and the Union of the Soviet Socialist Republics on the Elimination of their Intermediate-Range and Shorter-Range Missiles (INF Treaty) on 1 June 1988.

35 Zangl (2010), p. 132.

36 See Müller (1993), p. 19.

37 Krasner (1983), p. 2. Chapter 3 provides a detailed operationalization of these four regime characteristic elements in the context of the CWC and CTBT

38 Krasner (1983), p. 2.

39 See Keohane (1983), p. 153.

however, do not have to be limited to these. While the four regime components often have legal character in international regimes, they may also contain only recommendations of a non-binding legal nature. Additionally, it is important to distinguish between regimes, which are to be understood as longer lasting and more stable, compared with *ad hoc*, temporary arrangements that may be prone to change with every shift in power of interests.[40] In this context, Krasner notes that "*[i]t is the infusion of behavior with principles and norms that distinguishes regime-governed activity in the international system from more conventional activity, guided exclusively by narrow calculations of interest."* [41]

Furthermore, another important criteria to characterize international regimes is their single issue-specific nature and the fact that regimes do not possess the capacity to act.

2.1.2 International Organizations

International organizations emerged as a phenomenon in the politics of international relations already during the last third of the nineteenth century, however became more prominent later in the twentieth century.[42] It is believed that the Scottish legal scholar James Lorimer introduced the term 'international organizations' in the late 1860s to the scientific discourse. However, only after the Second World War was a comprehensive concept pertaining to international organization eventually accepted with the establishment of the United Nations.[43] Rittberger, Zangl and Kruck offer the following definition of international organizations:

> *"International organizations are international social institutions that are collective or cooperative actors and can cover several issue areas of international relations."*[44]

As indicative from the above, international organizations have the capability to act and to respond to events. Moreover, they need not be restricted to a particular issue-area of international relations, but can cover several of them.[45] Furthermore, another defining feature of international organizations is the fact that they often have their own physical structures and buildings, own staff and may possess specific legal status.

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40 See Krasner (1983), pp. 2-3.
41 Krasner (1983), p. 3.
42 See Rittberger/Zangl/Kruck (2012), p. 1.
43 See Rittberger/Zangl/Kruck (2012), p. 4.
44 Rittberger/Zangl/Kruck (2012), p. 6.
45 See Hasenclever/Mayer/Rittberger (1997), p. 11.

With respect to their nature, international organizations can be, *inter alia*, categorized as per their (1) main actors/membership, (2) main function, (3) decision making authority and (4) geographical scope:[46]

1. Regarding the main actors, a distinction between state actors or non-state actors can be made, hence the organizations can be either international governmental organizations (IGOs) or international non-governmental organizations (INGOs). With respect to the latter, a further distinction between profit versus non-profit oriented transnational organizations is feasible.
2. Taking their central function as the defining criteria, one can differentiate between programme organizations and operational organizations. Programme organizations mainly set behavioral and distributive norms as part of their programme formulation function. On the other hand, operational organizations focus on implementation aspects, monitor the compliance of States Parties or engage in capacity building activities in support of implementing these rules and norms. International organizations in the field of arms control, disarmament and non-proliferation encompass both characteristics of programme and operational organizations, as their underlying treaties often have both norm-setting character and the organizations also deal with operational aspects in support of implementing these norms.
3. A third distinction criterion relates to the way decision-making is performed in international organizations, particularly with respect to either pooling or delegating it. Intergovernmental organizations such as the North Atlantic Treaty Organization (NATO) require consensus decisions by their members and hence favor national autonomy, sovereignty and a decentralized approach, whilst supranational organizations like the European Union (EU) delegate certain authorities to central bodies (e.g. Council of the EU), where consensus is not always required.
4. Finally, another defining criterion pertains to the geographical scope of the IGO, which can be either of regional character or of universal, global nature. The Organization for Security and Cooperation in Europe (OSCE) is an example of a regional organization that is geographically defined and has limited membership, whereas both the OPCW and CTBTO open up globally to membership by all states.

[46] See Rittberger/Zangl/Kruck (2012), p. 7.

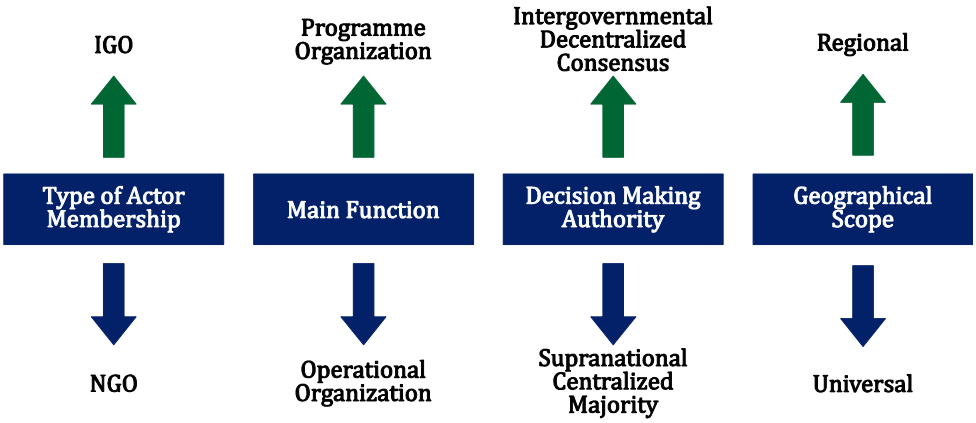

Figure 1: Classification Criteria of an International Organization

Source: Rittberger/Zangl/Kruck (2012), p. 7

From an ontological standpoint, international organizations (IOs) can be accorded different and possibly competing roles given the diverse political goals of states:[47]

1. IOs can be seen as independent legal entities in world politics that are separate from the states that make them up; as such, "*inter-state organizations are legally independent from their founders*".[48] In some instances, this independence is also explicitly reflected in the treaty that establishes the IO.
2. IOs are fora and act as meeting places for states, where issues of mutual concern and interest are discussed; as part of this perceived role, IOs can serve as a forum for consultation and cooperation among all States Parties. States formally meet in different fora (e.g. Conference of the States Parties, Executive Council) that are charged with different functions (i.e. principal and executive role).
3. IOs can also be viewed as political resources used by states in the pursuit of their domestic and international goals. Dependent on the political convictions they have towards a particular issue, states may either display a favorable attitude towards IOs or try to marginalize their role.

In spite of these very different roles IOs may have, they do not necessarily exclude each other. In fact, this categorization reflects to some extent the respective assumptions of different schools of thought in international relations and thus the different degrees of political weight and importance given by states to IOs. Accordingly, international organizations can be "*influential when circumstances are favorable, but they can also be thoroughly marginalized when*

[47] See Hurd (2012), pp. 16-24.
[48] Hurd (2011), p. 17.

powerful actors seek to keep them out, or when no one sees an advantage in bringing them into action."[49]

One can note a close link between international (governmental) organizations and international regimes. Regimes often trigger the creation of international organizations or make use of existing organizations to facilitate their implementation. In this respect, Oran B. Young argues that *"[p]erhaps the most obvious and compelling reason to endow regimes with explicit organizational arrangements is to resolve problems of interpretation and dispute settlement."*[50] Putting this aspect into the context of security regimes, verifying compliance plays a crucial role and has in some cases led to the establishment of respective organizations charged with monitoring regime implementation. Depending on the perspective displayed towards regimes, the relationship between the latter and international organizations can take shape in three different forms:[51]

1. As per a first premise, an IO can be considered as more comprehensive than an IR; hence, the principles, norms, rules and decision-making procedures of several international regimes can be embedded in one international organization;
2. In contrary to the above, an IR can be more comprehensive than IOs; as such, the norms, principles, rules and decision making procedures of an international regimes can be reflected in the goals of several international organizations;
3. Finally, international organizations can support international regimes. As such and as per their main feature of generating norms, they can actually be instrumental in creating new regimes; additionally, IOs often provide the means to monitor the implementation of regime norms and rules and hence contribute to their effectiveness.

In close context with the above, Müller argues that IOs offer the following advantages for regimes:[52]

- International organizations provide stable communication channels that remain open and are of special value in case bilateral forms of information exchange are not feasible;
- International organizations provide platforms that facilitate and enable the acquisition and exchange of information;
- International organizations considerably facilitate decision making procedures;

[49] Hurd (2011), p. 21.
[50] Young (1980), p. 345.
[51] See Rittberger/Zangl/Kruck (2012), pp. 5-6.
[52] See Müller (1993), p. 30.

- In case (independent) international staff is charged with the regime verification measures, trust in the regime is enhanced, which in turns contributes to more stability;
- International organizations facilitate the conduct of verification measures, as they may be able to draw on dedicated resources charged with this function;

2.1.3 International Institutions

One can note that there is no widely agreed definition of international institutions and the terms 'regimes' and 'institutions' are often used interchangeably. Robert O. Keohane characterizes international institutions as "*persistent and connected sets of rules (formal and informal) that prescribe behavioral roles, constrain activity, and shape expectations.*"[53] However, Rittberger, Zangl and Kruck argue that both international regimes and international organizations actually represent two subsets of international institutions.[54]

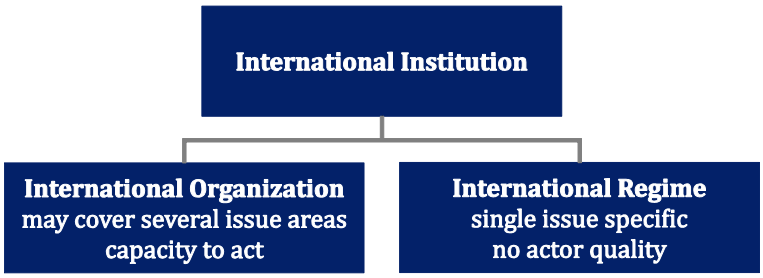

Figure 2: Distinction IO from IR

Source: author

John Mearsheimer, a prominent neorealist scholar and on principle critical of regimes, defines institutions in a similar manner to Keohane, as he also stresses the rule character of institutions and the related acceptable and unacceptable ways of states' behavior. Hence, in his view, institutions are a "*set of rules that stipulate the ways in which states should cooperate and compete with each other*".[55] Finally, Oran Young considers international regimes to be social institutions and develops the following definition for them:

> *"Social institutions are recognized practices consisting of easily identifiable roles, coupled with collections of rules or conventions governing relations among the occupants of these roles. […] The rules or conventions that grow up around these roles and that constitute the superstructure of social institutions ordinarily encompass sets of rights or entitlements […] as well as sets of behavioral prescriptions […]."*[56]

[53] Keohane (1989), pp. 3, 167.
[54] See Rittberger/Zangl, Kruck (2012), p. 6.
[55] Mearsheimer (1994), p. 8.
[56] Young (1986), p. 107.

While he uses the terms institutions and regimes interchangeably, he rather focuses on pointing out the importance of distinguishing between social institutions and organizations, which he sees as "*physical entities possessing offices, personnel, equipment, budgets, and so forth*".[57] As such, he comes to the conclusion that *"there is no simple relationship between institutions or regimes and organizations"* and thus *"the relationships that can and do arise between regimes and organizations should therefore constitute subject of considerable interests to students of international relations."*[58] Therefore, this thesis makes an effort to contribute to this debate by analyzing two particular security regimes and their related international organizations.

2.1.4 Introduction of the Researched Regimes and Organizations

Based on the generic reflections on international institutions, international regimes and organizations, the following part briefly informs about the two multilateral treaties and created international organizations that represent the main focus of this dissertation. Hence, this introduction highlights in all brevity key aspects pertaining to the CWC and CTBT and presents in a nutshell the organizations established in support of their implementation. A more detailed analysis of these organisations, respective treaty articles and their *modi operandi* can be found in subsequent chapters of this dissertation.

<u>The CWC and the OPCW</u>

The Chemical Weapons Convention represents the first multilaterally negotiated treaty that bans an entire category of Weapons of Mass Destruction, with strict international control. As such the Convention places a comprehensive prohibition on the development, production, stockpiling and use of chemical weapons and requires the destruction of existing stockpiles including production facilities within defined timelines under a stringent verification regime. Though efforts to address a prohibition of chemical weapons date back to the end of 1960s, it took until 1984 when the Conference on Disarmament gave the mandate for negotiations to an *Ad hoc* Committee, which had the specific task to start the *"full and complete process of negotiations, developing and working out the convention, except for its final drafting taking into account all existing proposals and drafts as well as future initiatives with a view to giving the Conference a possibility to achieve agreement as soon as possible"*.[59] The use of chemical weap-

[57] Young (1986), p. 108.
[58] Young (1986), p. 108.
[59] See UN (1984): A/39/27, p. 46.

ons on a large scale during the first Iran-Iraq war in the 1980s as well as the fundamental change in East-West relations also served as important catalysts leading eventually to the successful conclusion of the negotiations on the Chemical Weapons Convention on 3 September 1992.[60]

Upon the United Nations General Assembly's adoption of the treaty text in its Resolution 47/39 on 30 November 1992, the Convention was finally opened for signature on 13 January 1993 in Paris. At the same date, States adopted the 'Resolution establishing the Preparatory Commission for the Organisation for the Prohibition of Chemical Weapons' in order to prepare the ground for the future implementation of the Convention.[61] Finally, the CWC entered into force on 29 April 1997, 180 days after Hungary deposited its instruments of ratification as the 65th Member State to the Convention. As of 31 December 2013, 190 states have joined the Convention, thus making it one of the most successful and almost universally adhered to treaties in arms control and disarmament history.[62] Looking at the Convention from a systematic point of view, Myjer distinguishes four thematic clusters that are presented in table 2 below:

Thematic cluster	Articles and Annexes to the CWC
States Parties' obligations	Articles I (general obligations), III (declarations), IV (chemical weapons), V (chemical weapons production facilities), and VI (activities not prohibited under the Convention) Annex on Chemicals, Verification Annex
States Parties' rights (including protection and benefits)	Articles X (assistance and protection against chemical weapons), XI (economic and technological development) VI (activities not prohibited)
Supervision or compliance control (including the establishment of the OPCW)	Articles VIII (the Organization), IX (consultations, cooperation and fact-finding) and XII (measures to redress a situation and to ensure compliance, incl. sanctions) Verification Annex, Annex on Confidentiality
Final clauses and treaty-related technicalities	Articles II (Definitions and Criteria), Articles XIII (relation of the CWC to other agreements), XIV (settlement of disputes), XV (amendments), XVI (duration and withdrawal), XVII (status of the annexes), XVIII (signature), XIX (ratification), XX (accession), XXI (entry into force), XXII (reservations), XXIII (depositary) and XXIV (authentic texts)

Table 2: Main systematic areas of the CWC
Source: Myjer (2001), pp. 75-76

60 The Conference on Disarmament adopted on 3 September the ad hoc committee's 'Report of the Conference on Disarmament to the General Assembly of the United Nations'. See Conference on Disarmament (1992): CD/1173.
61 PC/OPCW (1994): PC-OPCW 1.
62 Four states have neither signed nor acceded to the Convention: Angola, DPRK, Egypt, Somalia, South Sudan; two Signatory States have not ratified the CWC: Israel and Myanmar. See OPCW (2013): S/1131/2013, pp. 7-8.

In order to ensure the implementation of the Convention's provisions and most prominently, international verification of compliance with the Convention's provision, Member States decided to establish an independent, autonomous international organization, the Organisation for the Prohibition of Chemical Weapons and have given it wide powers to achieve the purpose and objective of the Convention.[63] The institutional framework of the organization is outlined under Article VIII of the Convention and was implemented upon entry into force of the CWC. Accordingly, the Organization for the Prohibition of Chemical Weapons consists of the three organs: the Conference of the States Parties (CSP) represents the OPCW's principal organ[64] and is composed by all members of the Organization. The Executive Council (EC) servers as the executive organ of the Organization and is responsible to the Conference of the States Parties. [65] Finally, the Technical Secretariat (TS) is the technical body entrusted with carrying out, *inter alia*, the verification measures provided for in the CWC.[66] A more detailed assessment of the role and functions of the three OPCW organs can be found under subchapter 5.2.

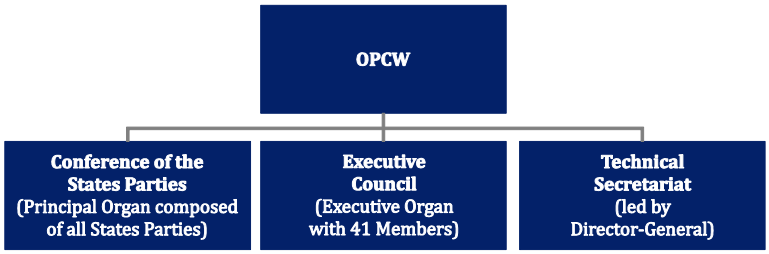

Figure 3: Organs of the OPCW as per Article VIII/CWC

Source: CWC, Art. VIII

As argued by Myjer, the OPCW as an organization is more than a simple verification organization, but must be considered as a compliance control organization that encompasses in its institutional structure a supervisory function with respect to the behaviour of Member States.[67] This supervisory function, which stands in sharp contrast to states exercising supervision over each other, is put into practice by the following four tightly interwoven subfunctions outlined below:

Supervisory sub-function	Reflection of the sub-function in the CWC
Collection function	• Information collection through system of declarations

[63] See CWC, Article VIII, paragraph 1.
[64] See CWC, Article VIII, paragraph 19.
[65] See CWC, Article VIII, paragraph 30.
[66] See CWC, Article VIII, paragraph 37.
[67] See Myjer (2001), pp. 104-126.

Supervisory sub-function	Reflection of the sub-function in the CWC
	• Information collection through routine and non-routine inspections • Clarification mechanism under Article IX of the CWC
Review function	• Judgement whether States Parties fulfil their CWC obligations • Judgement made through the results of inspections • Review function performed by all three organs of the OPCW
Correction function	• Measures to redress a situation and to ensure compliance including sanctions as per Article XII/CWC
Creation function	• Function to assist any of the other sub-functions particularly with respect to clarification of rules of law, shaping of law and settlement of disputes as per Article XIV/CWC

Table 3: Supervisory function of the OPCW
Source: Myjer (2001), pp. 104-125

In order to implement the various functions outlined above, Member States provided a programme and budget for the Organisation of EUR 69.8 million [68] for 2013 with 491[69] budgeted posts at the Technical Secretariat for 2013.

The CTBT and the CTBTO

Bill Clinton referred to the CTBT as "*the longest-sought, hardest fought prize in arms control history*",[70] not least given the repeated efforts since the late 1950s to agree on a comprehensive ban on all nuclear (weapon) test explosions. Though the 1963 Partial Test Ban Treaty (PTBT), the 1974 Threshold Test Ban Treaty and the 1976 Peaceful Nuclear Explosion Treaty represented important accomplishments at that time, it was the CTBT that realized the ultimate goal of prohibiting any nuclear explosions on earth. By banning all nuclear explosions, the treaty constrains both the horizontal and vertical proliferation of nuclear weapons and hence makes an important contribution to nuclear disarmament and the nuclear non-proliferation regime. The CTBT was adopted on 10 September 1996 in New York at the 51st General Assembly[71] after arduous and controversial negotiations at the Conference on Disarmament in Geneva and opened for signature on 24 September 1996. Since then 183 states have signed the CTBT and 162 states have ratified it.[72] However, the treaty has not entered

[68] See OPCW: C-17/DEC.4 (2012), p. 13.
[69] Note: Associated budget requirements of 10.5 of the 491 fixed-term positions listed are not provided, as these posts are not planned to be filled in 2013. In addition, 15 P-3 inspector posts are budgeted for only two months (November and December) in 2013. See OPCW (2012): C-17/DEC.4, p. 20.
[70] See Kimball (2009).
[71] See UN (1996): UNGA 50/245.
[72] See CTBTO (2014): Current Treaty Status.

into force, as eight of the 44 Annex 2 States have yet to ratify it.[73] Article II, paragraph 4 of the CTBT defines the three organs of the CTBTO. These are the Conference of the States Parties, the Executive Council and the Technical Secretariat. Evidently, they are both by name but also by functions identical to those of the OPCW and will be established upon entry into force of the Treaty:

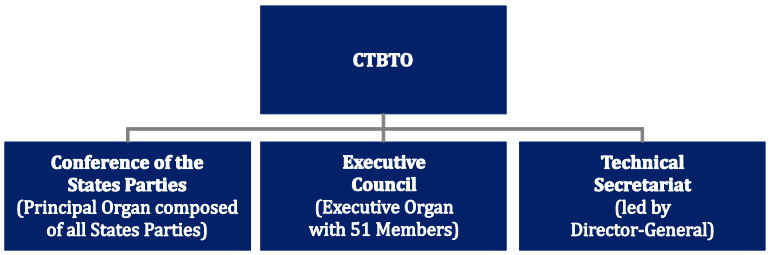

Figure 4: Organs of the CTBTO as per Article II/CTBT

Source: CWC, Art. II, paragraph 4

States Signatories to the CTBT decided on 19 November 1996 to establish a Preparatory Commission in order to make the necessary preparations for the effective implementation of the CTBT, and to prepare for the first session of the Conference of the States Parties.[74] As such, the Preparatory Commission is charged, *inter alia*, with the build-up of a verification regime that is to be operational when the Treaty enters into force.[75] It consists of the following organs outlined in the following chart:

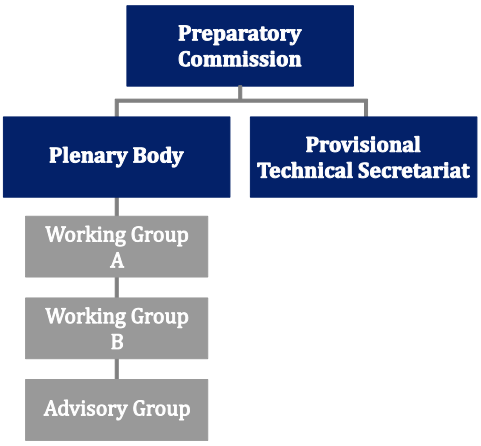

Figure 5: Organs of the Preparatory Commission

Source: http://www.ctbto.org/the-organization/ctbto-preparatory-commission/composition-and-structure , checked on 17 December 2013

[73] Annex 2 of the CTBT lists those 44 States, which formally participated in the 1996 Session of the Conference on Disarmament and possessed at that time nuclear power reactors or nuclear research reactors. The following eight states still have to ratify the CTBT: United States, China, Iran, Israel, Egypt (these five states have signed the CTBT); Democratic People's Republic of Korea, India, Pakistan (these three states have neither signed nor ratified the CTBT).

[74] See PC/CTBTO (1996): CTBT/MSS/RES/1, Annex, paragraph 1.

[75] See PC/CTBTO (1996): CTBT/MSS/RES/1, Annex, paragraph 13.

The plenary body is made up of all States Signatories and represents the principal organ of the Preparatory Commission. It is assisted by two Working Groups (i.e. Working Group A and B), which deal with budget and administrative issues and verification related issues, respectively. Additionally, it is assisted by an Advisory Group, which provides advice on financial, budgetary and associated administrative aspects. The second main organ of the Commission is the Provisional Technical Secretariat with the key task of assisting the Commission in setting up the Treaty's verification regime. The Provisional Technical Secretariat was established with its Headquarters in Vienna, Austria on 17 March 1997.[76] As of 31 December 2013, the Provisional Technical Secretariat employed 261 staff members from 80 Member States with its staff distributed in five divisions.[77] In order to build up the verification regime, States Signatories have provided roughly 121.9 million US Dollars[78] for the 2014 Programme and Budget of the Commission.

Applying Myjer's conceptual supervisory model[79] to the CTBTO, one can identify the same four related sub-functions reflected in the CTBT's provisions and note a high degree of similarity:

Supervisory sub-function	Reflection of the sub-function in the CTBT
Collection function	• Information collection through data provided by the International Monitoring System • Information collection through on-site inspections • Consultation and clarification mechanism under Article IV. C/CTBT • Confidence Building measures under Article IV.E/CTBT
Review function	• Judgement whether States Parties fulfil their CTBT obligations through the analysis of IMS data and on-site inspection results • Review function performed by Member States and the organs of the CTBTO
Correction function	• Measures to redress a situation and to ensure compliance including sanctions as per Article V/CTBT
Creation function	• Function to assist any of the other sub-functions particularly with respect to clarification of rules of law, shaping of law and settlement of disputes as per Article VI/CTBT

Table 4: Supervisory function of the CTBTO
Source: author

[76] See PC/CTBTO (2012): Working at the Provisional Technical Secretariat.
[77] See PC/CTBTO (2014): CTBT/PTS/INF.1275, p. 1.
[78] See PC/CTBTO (2013): CTBT/PTS/INF.1225/Rev.1, p. 11.
[79] Myjer (2001), pp. 104-126.

2.2 Theories of International Relations

Upon clarifying the central terms and concepts used in this dissertation, three theories of international relations (i.e. the regime theory, neorealism and constructivism) are examined in this sub-chapter in order to identify their central assumptions vis-à-vis international regimes and subsequently to operationalize them for the purpose of my thesis. These steps are done with the understanding *that "[…] theories help to structure and simplify ever more complex social realities, selected relevant information, explain causal or constitutive relationships and – in some cases – even predict outcomes."*[80]

The three selected schools of thought use power-based, interest-based and knowledge-based approaches for the study of international regimes.[81] Regime theory represents a key theory to study international regimes and international organizations, and it is used accordingly as the prime reference theory for this dissertation. However, taking into account that one theory is not equipped to explain all phenomena of international relations, the two other schools of thought are used as alternatives for providing differing assumptions and explanatory models.

2.2.1 Central Assumptions of Regime Theory

2.2.1.1 Introduction

Regime theory is bound to the paradigm of liberal institutionalism, which views international politics with 'skeptical optimism'.[82] Though it neither denies the egoistic interests of states nor the potential for violence in international relations, regime theory assumes that conflicts between states can be curbed by institutionalizing cooperation between states and thus attributes international institutions a significant role in international politics.[83]

Looking at regime theory from a meta-theoretical tenet, it can be said that it commits itself to rationalism by considering states to be self-interested and goal seeking actors that want to maximize their individual utility. "*Accordingly, [f]oreign policies as well as international institutions are to be reconstructed as outcomes of calculations of advantage made by states*."[84] In

[80] Rittberger/Zangl/Kruck (2012), p. 13.
[81] See Hasenclever/Mayer/Rittberger (1997), pp. 1-2.
[82] See Müller (1993), p. 1.
[83] See Hasenclever/Mayer/Rittberger (1997), p. 28.
[84] Hasenclever/Mayer/Rittberger (1997), p. 23.

this context, regime theory shares with neorealism three central assumptions pertaining to the role of states:[85]

1. States are considered the most important actors in world politics;
2. States have to be perceived as rational, self-interested actors;
3. States are shaped by the international anarchy, which is considered the most important source of uncertainty.

However, and in spite of these commonalities indicated above, regime theory comes to rather different and more positive conclusions about the prospects for international cooperation than neorealism. While not denying the challenge of international cooperation, regime theory scholars contend that the increasing interdependence among states triggers mutual interests and thus serves as a catalyst for cooperation. Hence, international regimes are seen as means to overcome cooperation obstacles by providing mutually beneficial agreements for states and facilitating continued cooperation in a given issue area, which would not be possible otherwise.[86]

In this context Hurd posits that "*[t]he demand for international organizations arises due to the unavoidable interdependences between states, and their utility is measured by their contribution to managing them.*"[87] In addition and whilst acknowledging the central role of states in international politics, regime theory as opposed to neorealism also recognizes other actors such as international organizations. Another difference between neorealist and regime theory related assumptions pertains to the issue of gains to be obtained from international cooperation. Whereas neorealists are concerned with relative gains, regime theory supporters maintain the view that states are concerned with maximizing their absolute gains.[88] As such, states are content if they can maximize their own gains regardless of what other states accrue and thus regime theory scholars maintain the position that international cooperation need not be a zero-sum game.

[85] See Reus-Smit (2009), p. 214.
[86] In accordance with Keohane's conceptual framework of contractualism, international cooperation materializes in mutually beneficial agreements, not (or not only) in regimes. Regimes help to bring about such agreements. See Hasenclever/Mayer/Rittberger (1997), p. 33.
[87] Hurd (2012), p. 8.
[88] See Burchill (2009), p. 67.

2.2.1.2 Regime Formation: Regime Prospects and Benefits

Regimes have the central purpose of reducing uncertainty and of stabilizing expectations regarding the mutual behavior of participants.[89] As uncertainty is considered a major obstacle to international cooperation, international regimes have the key value to further cooperation among states and thus provide mutual benefits to all parties. In this context, Keohane argues that "[*b*]*y reducing uncertainty and the costs of making and enforcing agreements, international institutions help states achieve collective gains.*"[90] Hence, regimes serve as cooperation catalysts and help states to better realize their interests collectively through international cooperation.

However, common interests do not automatically lead to the creation of regimes. As indicated above, the prospects for the formation of a regime depend on a variety of factors that are briefly outlined below:

- Cost-benefit ratio: the lower the costs of establishing and maintaining it and the larger the benefits connected with its creation and maintenance are, the more likely regimes are to emerge.[91]
- Issue density within a given policy space: Keohane argues that increased issue density (i.e. high interdependence) will also lead to an increased demand for international regimes and is also likely to trigger more extensive regimes.[92] On the other hand, where the issue density is low, *ad hoc* agreements may suffice and are thus more likely.
- Number of states affected in the given policy space:[93] The more states participate in a regime, the more difficult it is to enforce de-central cooperation. Accordingly and to ensure compliance of many states in a given policy space, a need for effective control and sanctioning mechanisms may emerge.
- Strength of the enforcement process: As argued by Burchill, *"cooperation between states is likely to be tenuous and limited, where enforcement processes are weak and cheating brings gains."*[94]

[89] See Müller (1993), p. 37.
[90] Keohane (1998), p. 98.
[91] See Zangl (2010), p. 142.
[92] See Keohane (1983), p. 157.
[93] See Zangl (2010), pp. 142-143.
[94] Burchill (2009), p. 67.

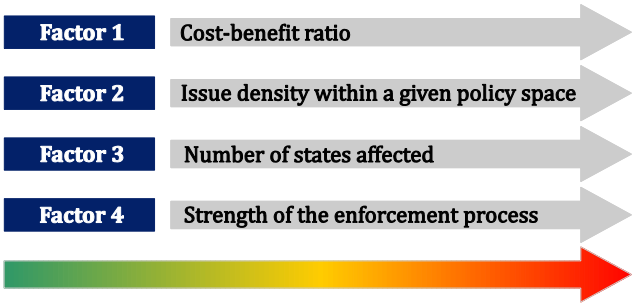

Figure 6: Factors affecting the Prospects of Regime Formation

Source: author

Oran B. Young expresses skeptical views both towards the explanatory power of mainstream utilitarian approaches as well as hegemonial and power based assumptions as regards regime formation.[95] Accordingly, his model of 'institutional bargaining' takes into account the features of international society and contains six hypotheses governing the likelihood of regime formation:[96]

1. Institutional bargaining can succeed only when the issues at stake lend themselves to contractarian interactions;
2. The availability of arrangements that all participants can accept as equitable (rather than efficient) is necessary for institutional bargaining to succeed;
3. The existence of salient solutions (or focal points describable in simple terms) increases the probability of success in institutional bargaining;
4. The probability of success in institutional bargaining rises when clear-cut and effective compliance mechanisms are available;
5. For the most part, exogenous shocks or crises increase the probability of success in efforts to negotiate the terms of international regimes;
6. Institutional bargaining is likely to succeed when effective leadership emerges; it will fail in the absence of such leadership.

Puchala and Hopkins attribute to regimes that *"[they] constrain and regularize the behavior of participants, affect which issues among protagonists move on and off agendas, determine which activities are legitimized or condemned, and influence whether, when, and how conflicts are*

[95] See Young (1989), pp. 350-359.
[96] See Young (1989), pp. 366-374.

resolved."[97] At least one of the following conditions must apply in case regimes are to be of value in facilitating agreements among governments:[98]

1. Lack of clear legal framework establishing liability for action;
2. Information imperfections (information is costly);
3. Positive transaction costs.

Keohane argues that "*all of these conditions are met all of the time [in world politics]: world government does not exist; information is extremely costly and often impossible to obtain; transaction costs including costs of organization and side-payments, are often very high*".[99] Regimes can provide solutions to overcome these problems and enhance the ability to reach mutually beneficial agreements in the following manner:[100]

1. International regimes reduce transaction costs as they offer an established negotiation framework including clear procedures, clarity about the negotiating parties and the overall strategic goals to be accomplished. Thus, reaching agreement should be facilitated by these favorable framework conditions, as it allows focusing on the single issue area under negotiation and at the same time avoids consuming and lengthy pre-negotiations to establishing the negotiation framework. By lowering transaction costs, regimes increase the chances that international agreements can be successfully concluded and that they are indeed adhered to by all parties.
2. Regimes alleviate potential concerns regarding the commitment and compliance of all states and help to coordinate all actors' expectations by improving the quality and quantity of information available to them. In this context Keohane argues that "*the success of the institutions associated with a regime in providing such [high-quality] information will itself be a source of regime persistence*".[101]
3. Regimes often encompass distinct control mechanisms (e.g. specific verification procedures) in order to detect and deter potential non-compliance and thus also contribute to stabilizing all parties expectations;
4. Regimes often create linkages among substantive issues within a given policy area; by providing incentives in one area, the prospects for reaching agreement in another area should be enhanced; furthermore, linking different aspects together within a single issue

97 Puchala/Hopkins (1983), p. 62.
98 See Keohane (1983), p. 154.
99 Keohane (1983), p. 154.
100 See Keohane (1984), pp. 89-109; and See Zangl (2010), pp. 139-141.
101 Keohane (1983), p. 165.

leads to larger consequences and a higher potential impact for each party. This, in turn, reduces concerns about non-compliance and raises trust that the agreements are actually adhered to;

5. Regimes also reduce transaction costs by exactly defining the scope and extent of cooperation. Accordingly, states cannot use lack of clarity on the expected cooperation as an argument for non-compliance. As such, their reputation as reliable partners is at stake and states are often willing to respect unwelcome responsibilities. Once having been in violation of an agreement and non-compliance has been detected, it is much more difficult for a state to re-establish trust again and special control mechanisms may be put in place to ensure compliance. This, again, has a stabilizing effect and leads enhanced prospects for international cooperation.

Overall, regime theory supporters argue that cooperation between states can take place in an anarchical system even without the presence of a hegemon. As such, one can come to the conclusion that *"[...] anarchy is mitigated by regimes and institutional cooperation which brings higher levels of regularity and predictability to international relations."*[102] Thus, while accepting largely neorealist assumptions, regime theory scholars employ rational choice and game theory to anticipate state behavior and therefore come to more positive conclusions pertaining to the role of regimes in international relations.

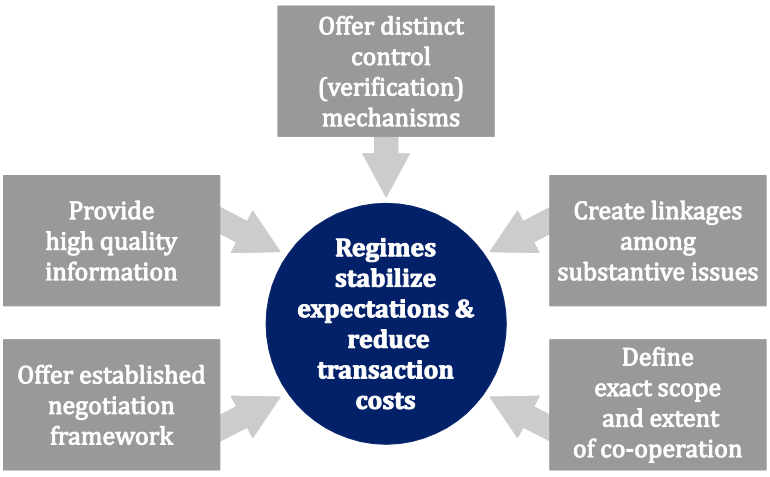

Figure 7: Advantages Offered by Regimes

Source: Keohane (1983), pp. 89-109

[102] Burchill (2009), p. 66.

As evident from the above figure, regimes principally offer a number of advantages. Depending on the actual changes caused through regimes, one can distinguish between a regime's *effectiveness* and its *robustness* (resilience).

1. **Regime effectiveness** characterizes the extent to which a regime achieves certain objectives or fulfils its purposes, particularly the extent to which states' ability to cooperate in the given issue area is enhanced.[103] Second, regime effectiveness also refers to the degree of compliance with the given rules by regime members (also considered as 'regime strength').[104] The effectiveness of a regime can also be regarded in terms of states' internalization of the regime's principles and norms, which *inter alia*, encompasses the translation of the principles and norms into national law and its enforcement.[105]
2. **Regime robustness (resilience)** relates to the 'staying in power' of regimes in view of external challenges and to the extent to which institutional history matters. [106] Regimes are considered as lacking resilience when they change with every power shift among their members and whenever key states perceive that their interests are not sufficiently taken into account.

2.2.1.3 Regime dynamics

Evidently regimes should not be considered as static institutions, as they change over time or vary across cases both in coherence and degree of adherence. [107] Haggard and Simmons define four dimensions of variance and change: [108]

1. strength (i.e. degree of compliance with regime injunctions),
2. organizational form,
3. scope (i.e. range of issues covered by the regime), and
4. allocational mode.

Looking at the underlying reasons for continuous transformations of regimes, one can identify both different exogenous or endogenous factors:[109]

- Changes of interests and priorities among the states as well as within the states that may considerably impact on regimes;

[103] See Hasenclever/Mayer/Rittberger (1997), p. 2.
[104] See Hasenclever/Mayer/Rittberger (1997), p. 18.
[105] See Müller (1993), p. 45.
[106] See Hasenclever/Mayer/Rittberger (1997), p. 2.
[107] See Nye (1981), p. 16.
[108] See Haggard/Simmons (1987), pp. 496-498.
[109] See Müller (1993), p. 48.

- Changed power and resource constellations among states (i.e. different political constellations);
- Technological changes and developments, which may make existing rules and procedures obsolete and require the formulation of new rules;

At the same time Young points out "*that (1) there are no necessary conditions for change in international regimes, and (2) that any of a variety of factors may be sufficient to precipitate major changes in prevailing social institutions in real-world situations.*"[110] Accordingly, these regime dynamics may either have a stabilizing or destabilizing effect:

1. A stabilizing regime dynamic can be described as an adaptive learning process in reaction to events.[111] The adaptation process can take place on both sides (i.e. within and outside the regimes) and has the objective of meeting new requirements.[112]
2. A destabilizing regime dynamic is often caused by conflicting positions on the priorities within the regimes among its members, lack of political support or even opposition towards regimes expressed by key members.

As a result of regime dynamics, one can identify two kinds of regime changes. A change of regime principles or norms leads to a change of the regime itself. On the other hand, changes of rules and decision-making procedures are considered only a change within regimes if principles and norms are not being altered.[113]

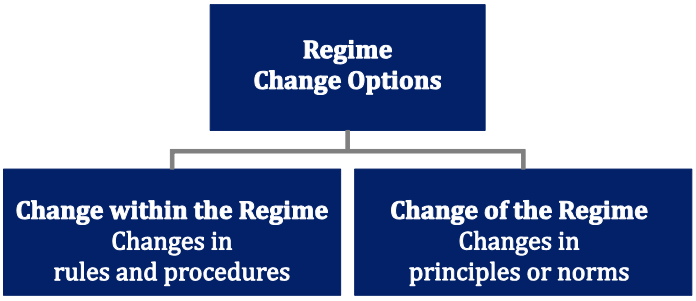

Figure 8: Types of Regime Changes
Source: Krasner (1983), pp. 3-4

110 Young (1986), pp. 114-115.
111 See Becker/Müller/Seidler-Diekmann (2008), p. 68.
112 The reform of the NPT verification approach (from facility driven to a state-driven verification approach and the introduction of the Additional Protocol can be considered as internal adaptation processes in response to external events in the early 1990s like the DPRK and long undiscovered Iraqi nuclear program. Examples of external adaptations represent are the creation of new institutions like the Nuclear Suppliers Group or the Australia-Group in order to react to concrete proliferation concerns.
113 See Krasner (1983), pp.3-4; See Hasenclever/Mayer/Rittberger (1997), p. 13.

Additionally, Krasner notes the option that a regime may weaken, which occurs *"[i]f the principles, norms, rules, and decision-making procedures of a regime become less coherent, or if actual practice is increasingly inconsistent with principles, norms, rules, and procedures."*[114]

Acknowledging that regimes operate in a highly dynamic environment as highlighted above, they are prone to potential conflicts among the actors. These conflicts can be categorized along the four defining regime elements:[115]

1. **Conflicts over principles:** such types of conflicts may arise as a result of multiple strategic goals within a single issue area that should be reached simultaneously, which may however stand in conflict to each other. States may have different, competing priorities and aligning them may prove to be rather difficult. Furthermore, some actors may change their views about causal connections and possible solutions in the given policy field over time in light of new insights, which can lead to controversial positions and conflicts among them.
2. **Conflicts over norms:** unless they result directly from conflicts over principles, they often emerge due to different perceptions of the relative importance of individual norms. Additionally, conflicts over norms occur if no clear implementing procedures have (yet) been established. Thus, taking into account the general formulation of norms and different interests among actors, states may come up with diverging interpretations that can lead to conflicts.
3. **Conflicts over rules:** such types of conflicts mostly occur in the context of compliance questions and related behaviors or actions of a state. Moreover, controversies may result from opposing views regarding the degree of juridification and regulation required.
4. **Conflicts over decision making procedures:** the majority of procedural conflicts relates to power and influence related issues. As such, they often revolve around the distribution of voting rights, decision making procedures, cost-sharing and distribution aspects and changes thereof in light of altered power relations.

States can play the following main roles in the aforementioned conflicts:

1. Loyal members that abide by the regime;
2. Free riders, which only make use of the benefits offered by the regime, however refuse to operate in (full) conformity with the regime;

[114] Krasner (1983), p. 5.
[115] See Müller (1993), pp. 46-47.

3. Rebels that want to change the regime from inside;
4. Parties standing outside the regime or belong to rival systems and want to abolish the regime or to prevent/limit its further emergence.

Acknowledging the issue of regime dynamics, Joseph Nye notes the following:

> *"Realistically, an international regime does not need perfect adherence to have a significant constraining effect, any more than deviant behavior means the irrelevance of domestic legal regimes. Nevertheless, there is a tipping point beyond which violations lead to a breakdown of normative constraints."*[116]

2.2.1.4 Assumptions as regards Security Regimes

While regime theory initially focused on the area of international political economics, the security political situation during the Cold War drew scholars' attention to regime theory to research security policy related issues. The demand for security regimes has been analyzed in the context of the security dilemma[117], which results from the uncertainties connected with the system of self-help and the dual nature of defense measures. Minimizing uncertainty among all actors and stabilizing expectations with a view to enhancing trust in non-aggressive measures by other competitors can therefore be seen as the central regime functions in security politics.[118] Accordingly and in view of the fact that all actors face potentially suboptimal outcomes in the field of security policy, this underlines the principle need for co-operation. In the view of Jervis, security regimes are therefore especially valuable, however difficult to achieve. In particular, he argues:

> *"The primacy of security, its competitive nature, the unforgiving nature of the arena, and the uncertainty of how much security the state needs and has, all compound the prisoners' dilemma and make it sharper than the problems that arise in most other areas. […] [Thus], [t]he security dilemma creates the main impediment to effective security regimes."* [119]

[116] See Nye (1981), pp. 36-37.
[117] Offensive and defensive means are often difficult to distinguish and even without aggressive intentions, the accumulation of weapons systems for defence purposes may lead to elevated threat perceptions by the other side. This, in turn, may trigger respective reactions from the other side and pose a threat to the own security. In a system of self-help mutual insecurity leads to a permanent arms race to counter perceived threats by the other side.
[118] See Müller (1993), pp. 125-126.
[119] Jervis (1983), pp. 174-175.

In the context of the above, Jervis formulates five principal conditions that eventually favor or impede the formation of a security regime:[120]

1. Major actors support the establishment of the regime and see concrete benefits in the formation of a more regulated environment to one in which all states behave individualistically;
2. Actors need to believe that also other states act in good faith and have a common perception of the value of mutual security and cooperation;
3. Security regimes can only form if actors do not believe that security is best provided for by expansion;
4. Actors must consider war and the individualistic pursuit of security as more costly than cooperative action;
5. States must see sufficient incentives to seek security through cooperative means, while at the same time threat perceptions and distrust of the effectiveness of the regime is not so great as to discourage them from participation;

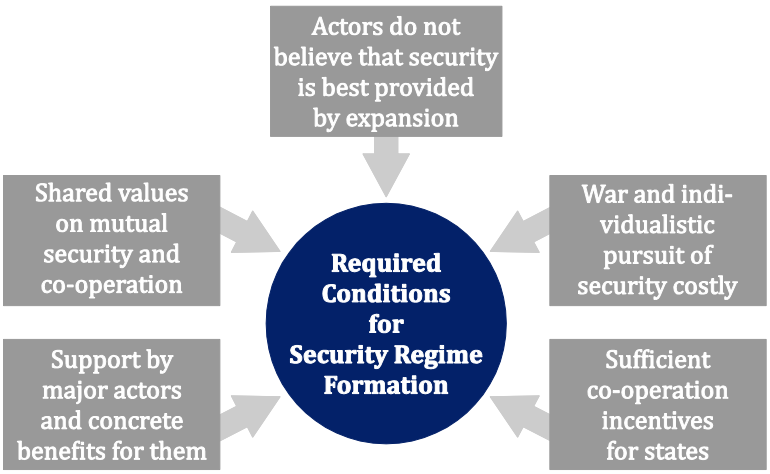

Figure 9: Conditions for forming a Security Regime

Source: Jervis (1991), pp. 176-178

In support of their assumptions regarding regime theory, scholars like Keohane utilize different models of game theory such as the prisoners' dilemma and the stag hunt to analyze actors' behavior in a wide range of situations in world politics. The prisoners' dilemma parable draws attention to both the challenge of cooperation among self-interested, rational actors and the benefits of such cooperation. If both actors behave in an individually rational manner, they obtain a sub-optimal outcome. However, in case of mutual cooperation, they can achieve a comparably better result. Hence, effective arms control regimes can leave both sides with

[120] See Jervis (1983), pp. 176-178.

better results and states can save resources. As such, states do benefit from stable conditions with regulated equal capabilities compared to a more costly and dangerous arms race.

Similarly, the parable of the stag hunt highlights the benefit of mutual cooperation while stressing at the same time that all players involved need to act rationally in order to obtain these benefits. This lesson, which can be applied accordingly to international politics, highlights the cooperation dilemma under which states have to operate.

As such, states have to make a choice between either consistent, beneficial but precarious cooperation, or unilateral choice that promises less overall, but has definitive benefits in the short term. The following concerns, made explicit in the stag hunt, actually stand against cooperation:[121]

- Doubts about the commitment of the other partner(s);
- Concerns about the cost benefit ratio as a result of the cooperation; and
- Fears about the potential advantages a defector could gain by not abiding by the rules;

Overall, regime theory clearly emphasizes the benefits that international institutions can provide for states in international politics. As regime theory drew criticism from, *inter alia*, two very different schools of thought, namely neorealism as well as social constructivism, it is important to address their central assumptions pertaining to regimes. Hence, in the next part the dissertation looks at both these schools of thought in order to point out key differences as well as any commonalities between these theoretical approaches.

2.2.2 Neorealist Views Of Regimes

2.2.2.1 Main Characteristics

Neorealism, which has emerged from the realist school of thought, paints a *"rather grim picture of world politics*".[122] This international relations theory is characterized by the anarchy of the international system, a constant struggle for power among states and the dominating role of security interests in international relations. Given these uncertainties, states can only ensure their survival in the international system by relying on a system of self-help. Hence, *"[...]*

[121] See Krell (2009), pp. 239-240.
[122] Mearsheimer (1994), p. 9.

the key to state security lies in possessing the capabilities to cope with such threats."[123] Taking some degree of permanent external security threats for granted, states are highly skeptical of the possibility of cooperation between states and consequently attribute only a limited role to international (security) regimes. Nevertheless, also Mearsheimer, a convinced realist, maintains that cooperation between states does occur. As such, he argues that "*[cooperation] is sometimes difficult to achieve, however, and always difficult to sustain*."[124] Furthermore, he defines two main reasons that inhibit and speak against cooperation, namely concerns about cheating and relative-gains considerations.

The development of this theory has been considerably impacted by the then prevailing East West conflict. Neorealism tries to provide an explanation regarding the relative stability of the bipolar world during the East West conflict and also for the decline of the US as the dominating power in the 1970s. In 1979 Kenneth Waltz, one the most influential proponents of neorealism, published *Theory of International Politics*, in which he searches for a general, systemic theory that can explain both war and phases of peace in international relations.

As per neorealist assumptions, states are considered the central actors in international politics, whereas other societal actors are left out.[125] Accordingly, the central analysis category of neorealism is the structure of the international system, which is composed of the units of the system (i.e. states) and the structure of the system itself.[126] The structure of the international system is determined by three defining elements: [127]

1. **The "ordering principle":** neorealism postulates that the structure of the international system is characterized by the absence of a central, hierarchic world government. Accordingly, states operate in an anarchic and decentralized international system and the natural state among states is war.[128] Given the condition of anarchy, the principle of self-help is vital for states to achieve and maintain their security and thus ensure their survival.[129] Waltz posits the view that *"[in] international politics force serves, not only as the ultima ratio, but indeed as the first and constant one"*.[130]

[123] Miller (2010), p. 142.
[124] Mearsheimer (1994), p. 12.

[125] See Rittberger/Zangl/Kruck (2012), p. 15.
[126] See Schörnig (2010), p. 71.
[127] See Waltz (1979), pp. 88-101.
[128] See Waltz (1979), p. 102.
[129] See Waltz (1979), p. 111.
[130] Waltz (1979), p. 113.

2. **The "character of the units":** Waltz comes to the conclusion that states are considered 'like units' that do not formally differ by the functions they perform.[131] Importantly, and often raised as one of the key criticism of neorealism is the assumption that the nature of the domestic political systems is irrelevant for analysis purposes. In this context Waltz argues that "*[each] state arrives at policies and decides on actions according to its own internal processes, but its decisions are shaped by the very presence of other states as well as by interactions with them*".[132]
3. **The "distribution of capabilities":** Waltz argues that while the units of an anarchic system are functionally undifferentiated, they vastly differ in their capabilities to perform similar tasks. This factor has far reaching impacts, as "*the structure of a system changes with changes in the distribution of capabilities across the system's units*".[133] Waltz is of the view that a bipolar system is the most stable one, as uncertainty lessens, power calculations are easier to make and both powers can righten any imbalances by internal instead of external means (i.e. by relying on their own capabilities than on the capabilities of allies).[134] A multipolar system is more prone to instability and problematic, as estimates of the present and future relations of forces are difficult to predict. On the other hand, a unipolar system represents a threat for all states except the hegemon, thus coalitions are formed to counter the overwhelming threat. This, in turn, is not in the interest of the hegemon and increases the potential number of conflicts and likelihood of wars.[135]

Overall, neorealist scholars clearly point out their differing positions towards neoliberal assumptions. Burchill highlights the following, often presented argument by neorealists:

> *"Economic interdependency will never take precedence over strategic security because states must be primarily concerned with their survival. Their capacity to explore avenues of economic cooperation will be limited by how secure they feel, and the extent of which they are required to engage in military competition with others."*[136]

131 See Waltz (1979), p .93.
132 Waltz (1979), p. 65.
133 Waltz (1979), p. 97.
134 See Waltz (1979), p. 168.
135 See Schörnig (2010), p. 77.
136 Burchill (2009), p. 68.

2.2.2.2 Assumptions as regards International Regimes

As is clear from the above, international politics is characterized by the realm of power, of struggle, and of accommodation.[137] States are principally exposed to uncertainty and insecurity, which in fact limits their quest for cooperation. Hence, states are hesitant to open themselves up to increased dependency, but rather strive towards a position in which they can take care of themselves (i.e. system of self-help) and enhance their security by maximizing their power. This, in turn, has adverse prospects for the establishment of (international) regimes. In the view of neo-realists, regimes are considered largely ineffective, as the goals of regimes stand in clear contrast to the realities of the international system that compels states to pursue a policy of power maximization. Hence, regimes do not have the capacity to channel this perpetual power struggle, as they can neither change the nature of human beings as striving for power nor can they change the anarchical structure of the international system.[138]

In a neorealist system of self-help relative gains are considered more important than absolute ones, which is a major problem for long term cooperation.[139] Given the fact that the effects of absolute gains from international cooperation may still result overall in a relative loss of own power if other states comparably receive superior gains from it, states have to ensure that others do not benefit more from international cooperation than they do themselves. In line with realist theories, international regimes serve the most powerful states for pursuing issues of self-interest and for implementing power politics more effectively.[140] Accordingly, the design and decision making procedures in international organizations reflect the interests of the most powerful states and systematically privilege them (e.g. disproportionate share of voting rights or special voting rights). Moreover, these procedures institutionally preserve existing power imbalances. Additionally, neorealists argue that powerful states will do their utmost to avoid or back out of inconvenient decisions infringing on their sovereignty and thus will neither be willing to pool nor delegate authority.[141] As a result, international organizations rather tend to be organized as intergovernmental rather than supranational organizations.[142]

[137] See Waltz (1979), p. 113.
[138] See Rittberger/Zangl/Kruck (2012), p. 16.
[139] See Rittberger/Zangl/Kruck (2012), p. 17.
[140] See Rittberger/Zangl/Kruck (2012), p. 16.
[141] See Rittberger/Zangl/Kruck (2012), p. 17.
[142] See Rittberger/Zangl/Kruck (2012), p. 17.

While neorealists argue that states are not the only international actors, they posit the view that states are the central actors and their interactions form the structure of international-political systems.[143] Accordingly, they do not ascribe a prominent role to non-governmental actors in international relations. Nevertheless, they consider it possible that international organizations may open up towards non-governmental organizations (NGOs) in case such non-state allies could serve their interests and preserve their power.[144]

Among the different (neo)realist explanations of international regimes, the theory of hegemonic stability is considered "*the most parsimonious, common and explicitly realist explanation of regime creation*".[145] As per neorealists' assumptions, prospects for the development and continued existence of effective international institutions heavily depend on a unipolar power configuration in the given issue-area. As such, the benevolence of a hegemonial power that is willing to share power and shoulder transaction costs in the policy field in question is considered a prerequisite (i.e. hegemonial induced cooperation).[146] The theory of hegemonic stability[147], which acknowledges a strong link between strong international regimes and the existence of a dominant power, seeks to develop answers as to why and when regimes emerge and are effective. As such, international regimes can only be successful and lead to international cooperation, if one hegemon is willing to shoulder most of the cooperation costs and is able to bind other states to the regime through the judicious use of carrots and sticks.[148] Nevertheless, proponents of this theory express skepticism as regards the robustness of international regimes. The disproportional sharing of these costs by the hegemon in the long run weakens its unchallenged position in international politics and may lead to the loss of its hegemonial position. This in turn also has an adverse effect on the regime itself, as it may collapse or turn into an ineffective cluster of norms and rules prone to violation whenever states perceive this to be in their best interest.[149]

In sum, neorealists look at international organizations from a contractualist perspective and do not attribute regimes important actor qualities in international relations. As such, interna-

143 See Waltz (1979), pp. 93-95.
144 See Rittberger/Zangl/Kruck (2012), p. 18.
145 Crawford (1996), p. 57.
146 See Schörnig (2010), p. 77.
147 The theory of hegemonic stability was originally developed by Charles Kindleberger and emerged in an economic context. Having analyzed the reasons for the Great Depression of the late 1920s and 1930s, he argued that there is a need for an outstanding economic and political power that can stabilize world economy.
148 See Rittberger/Zangl/Kruck (2012), p. 17.
149 See Hasenclever/Mayer/Rittberger (1997), pp. 86-87.

tional organizations are "*nothing more than contracts made between* states *[and they] exist only by virtue of powers and status given to them by their Member States*."[150] Therefore, neorealists tend to apply a 'principal – agent' understanding to international organizations, in which states are the principals and international organizations are the agents (i.e. dependants) that do not have the capacity to act independently, but solely implement the policies of their members states. In the same vein, international rules established by these organizations "*exist only to the extent that sovereign states have created them, and states' compliance with those rules depends on their perception of their interests in each case.*"[151]

2.2.3 Constructivist Views Of Regimes

2.2.3.1 Main Characteristics

Social constructivism is used in this dissertation as the third main school of thought to analyze international regimes. Constructivism has received increased attention as an international relations theory since the early 1990s as a result of debates between neorealists and neoinstitutionalists, who then dominated theoretical discussions related to international relations. However, as both of these theories failed to anticipate the end of the East-West conflict and also could not adequately explain it, scholars were searching for alternative theories and looked into other disciplines like sociology to answer these dramatic changes and the increasing complexity of international politics.

Constructivism takes an opposite stance to both regime theory and neorealist assumptions with regard to its meta-theoretical orientation. Both regime theory and neorealism work on rationalistic assumptions, and thus ignore the effect of domestic variables in explaining states' foreign policies and claim that interests and identities are exogenous to state interaction. Moreover, rationalist theories follow the 'logic of consequentialism' with pre-given interests and identities of states. Constructivism, on the other hand also takes into account sociological arguments and puts emphasis on the impact of ideas.[152] Hence, constructivists follow the 'logic of appropriateness' and argue that states' identities, interests and foreign policies are not exogenously determined and fixed variables, but the identity (self-perception) of a state is a major source of interest formation of that state. As such, normative and causal

[150] Hurd (2012), pp. 25-26.
[151] Hurd (2012), p. 26.
[152] See Walt (1998), p. 41.

beliefs of decision makers determine international behavior and as a result of this, changes in belief systems can lead to changes in policy.

Finnemore and Sikkink refer to a norm 'life cycle' that explains the evolution and influence of norms.[153] As such, they define a three stage process consisting of a 'norm emergence' stage, followed by a 'norm acceptance' or 'norm cascade' stage and finally an 'internalization' stage. Both norm entrepreneurs and organizational platforms from which they act upon are considered essential for the creation of new norms.[154] Furthermore, securing the support of state actors to endorse emerging norms is vital so that it can reach a critical mass of support and become institutionalized in international law. However, and in the context of my dissertation, international organizations or networks of norm entrepreneurs also play an essential role in socializing standards of appropriate behavior of states. Finally, internalization of norms occurs once norms are so widely accepted by actors that they automatically conform to and take these standards of behavior for granted.

	Stage 1 Norm emergence	Stage 2 Norm cascade	Stage 3 Internalization
Actors	Norm entrepreneurs with organizational platforms	States, international organizations, networks	Law, professions, bureaucracy
Motives	Altruism, empathy, ideational, commitment	Legitimacy, reputation, esteem	Conformity
Dominant mechanisms	Persuasion	Socialization, institutionalization, demonstration	Habit, institutionalization

Table 5: Stages of norms
Source: Finnemore and Sikkink (1998), p. 898

Constructivists claim that it is important to look into the processes which produce the self-understandings of states (i.e. their identities) and which determine the objectives they pursue in their foreign policy. [155] Reus-Smit argues that "*constructivism is characterized by the emphasis on the importance of normative as well as material structures, on the role of identity in shaping political action and on the mutually constitutive relationship between agents and structures*."[156] As per the constructivist school, actors try to pursue their interests, but they are

[153] See Finnemore/Sikkink (1998), p. 895.
[154] See Finnemore/Sikkink (1998), pp. 896-901.
[155] See Hasenclever/Mayer/Rittberger (1997), p. 136.
[156] Reus-Smit (2009), p. 212.

also willing to abide by norms and rules.[157] Accordingly, it is constructivists' understanding that norms, knowledge, identities, ideas, values and social practices considerably impact on individuals' day to day actions and eventually on their interests, motives and preferences. Moreover, and from a constructivist perspective it is crucial to understand how actors develop their interests, as it enables us to explain various international political phenomena that rationalists ignore or misunderstand.[158] By the same argument, they suggest that this important finding can also be applied to states and their political decision making processes.

Additionally, constructivists argue that the international system is socially structured through cultures, roles and norms. In the same vein, international politics is constructed through values, norms, identities and other ideational constructs embodied by the actors in international politics.[159]

Constructivism can be divided into three major branches that have evolved in the 1990s:

1. **Systemic constructivism:** this strand has been considerably influenced by Alexander Wendt and his *Social Theory of International Politics*. Systemic constructivism focuses solely on interactions between unitary state actors and the normative and ideational structure of the international environment, but consciously disregards domestic aspects, which is similar to neorealist assumptions. Wendt believes that "*the identity of a state informs its interests and, in turn, its actions.*"[160] While neglecting the relationship between domestic norms and states' identities and interests, Wendt nevertheless draws a distinction between social and corporate identities of a state.[161] In his understanding, social identity is the identity that affects states' foreign policy behavior during social interactions between unitary actors.
2. **Unit-level constructivism:** this form of constructivism, which is represented by, *inter alia*, Peter Katzenstein, takes diametrically opposite assumptions compared with systemic constructivism. As such, it solely focuses on internal, domestic determinants of national policies and consequently neglects international norms for shaping states' interests and identities.

[157] See Rittberger/Zangl/Kruck (2012), p. 25.
[158] See Reus-Smit (2009), p. 221.
[159] See Schimmelfennig (2010), p. 160.
[160] Reus-Smit (2009), p. 223.
[161] Social identities refer to the status, role, or personality that international society ascribes to a state, whereas corporate identities encompass internal human, material, ideological, or cultural factors that make a state what it is. See Reus-Smit (2009), p. 223.

3. **Holistic constructivism:** John G. Ruggie and Friedrich Kratochwil can be considered representatives of this particular form of constructivism, which tries to bridge the differences between the systemic and unit-level branches. In order to develop a fully encompassing approach, holistic constructivism integrates both the corporate and the social identity "*[…] into a unified analytical perspective that treats the domestic and the international as two faces of a single social and political order.*"[162]

2.2.3.2 Assumptions as regards International Regimes

As indicated above, constructivists argue that the international system is socially constructed and that these normative and ideational structures and relationships impact states' interests and identities. Thus, constructivists argue that state interests are not exogenously driven, whereas rationalist scholars believe that actually the opposite is true.[163] Though constructivism also acknowledges the anarchy of the international system, different social structures and arrangements of both conflictual and cooperative nature may emerge based on the states' identities and interests. Accordingly, Wendt argues that '*anarchy is what states make of it*' and as such, states by themselves determine the nature of anarchy.[164]

In this respect, the structure of the international system determines the degree to which states cooperate and also impacts states' role perception within it and particularly their readiness to resort to force. Accordingly, they can perceive each other as enemies, rivals or friends according to the Hobbesian, Lockean or Kantian role perception that is inherent to the international system:[165]

1. As per Hobbesian assumptions, states consider each other as enemies and thus do not feel bound to any limitations in the use of force against each other. Moreover, norms are only followed by states in case they are forced to do so.
2. Whilst considering each other as rivals, states do recognize each others' legitimacy and renounce to eliminate each other as per Lockean assumptions. As such, they tend to argue that norms are followed due to actors' interests.

[162] Reus-Smit (2009), p. 225.
[163] See Bearce/Bondanella (2007), pp. 703-704.
[164] See Wendt (1992), pp. 391-425.
[165] See Gärtner (2008), pp. 126-127; See Ulbert (2010), pp. 438-441.

3. As per Kantian assumptions, states develop friendly relationships among each other and jointly come up with strategies to ensure and maintain peace. Hence, they also posit that norms are internalized as they are considered legitimate.

Constructivism expresses favorable views of international institutions. Thus, constructivists argue that *"[…] international organizations do not only facilitate cooperation but also contribute to socialize states into common values and norms which are constitutive for a collective identity."*[166] Hence, international organizations play an important role as norm entrepreneurs in order to reach a critical mass of states that support the adoption of new norms and enable its institutionalization in international law. As regards the question as to what constitutes such a threshold or tipping point, Finnemore and Sikkink suggest that *"[…] norm tipping rarely occurs before one-third of the total states in the system adopt the norm."*[167] In the context of this dissertation, the tipping point for establishing an international norm against chemical weapons and nuclear testing can be seen once the necessary number of states ratify the CWC and CTBT so that it can enter into force.[168]

Therefore and as indicated above, the prospects for the creation of international institutions are much higher in case values and norms are widely shared.[169] Constructivists also emphasize the importance of cognitive agreement among all societies with regard to the establishment of international institutions. Therefore, all societies need to share the same perception of the problem at hand, as otherwise the prospects for setting up international regimes are lower and much more difficult to accomplish.

With respect to regime formation, constructivism attributes high importance to the role of social groups including individuals, which may fulfill functions as norms entrepreneurs and persuade states to agree on and adhere to norms. This fact stands in stark contrast to the assumptions of the neorealist and neoliberal schools of thought. In particular constructivism argues that non-state norm entrepreneurs, transnational social movements, epistemic communities and advocacy networks play a key role in the international and transnational diffu-

166 Rittberger/Zangl/Kruck (2012), p. 27.
167 Finnemore/Sikkink (1998), p. 901.
168 The CWC specifies the ratification of 65 States as the threshold criteria for its entry into force (see CWC, Art. XXI, paragraph 1), whereas the CTBT follows a different approach, namely the ratification of 44 specific states (see CTBT, Art. XXIV, paragraph 1).
169 See Rittberger/Zangl/Kruck (2012), p. 27.

sion of norms.[170] In the context of norms, Rittberger, Zangl and Kruck highlight the twofold role of international organizations as per social constructivism:

> *"Social constructivism underlines both the dual role of international organizations, of both reflecting the values and norms on which they are founded, while at the same time influencing the values and norms of the participating societies."*[171]

2.3 Research Framework Development

2.3.1 Basic Research Model at hand

Following the clarification of central terms and concepts utilized in this dissertation and analysis of different international relation theories pertaining to international institutions, a research framework can be developed and the respective research criteria/aspects defined to address the central research question: "How do Member States view the role, characteristics and importance of challenge-type inspections in verification regimes?" Accordingly, the research framework chosen for this dissertation is based upon a theoretical model proposed by Rittberger, Zangl and Kruck[172]. As per this model, international organizations are to be considered as political systems and policy making therein can be analyzed by looking particularly at three specific dimensions:

1. Input: actors' demands and support;
2. Conversion: decision making processes;
3. Output: activities undertaken as a result of decisions made.

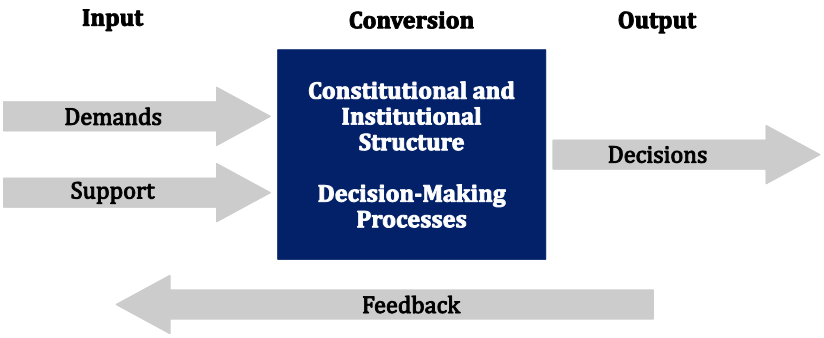

Figure 10: The political system of international organizations

Source: Rittberger/Zangl/Kruck (2012), p. 72

[170] See Rittberger/Zangl/Kruck (2012), p. 28.
[171] Rittberger/Zangl/Kruck (2012), p. 29.
[172] See Rittberger/Zangl/Kruck (2012), pp. 71-137.

This approach looks in a comprehensive manner at the polities, politics and policies pursued within international organisations.[173] In this respect, the constitutional structure (i.e. founding treaty) and the institutional structure (i.e. organs) are essential factors that shape the overall policy-making in international organizations. As regards the input dimension, Rittberger, Zangl and Kruck distinguish five potential groups of actors that both provide support and specify their demands based on the resources provided: (1) Member States' governments, (2) administrative staff of international organizations, (3) parliamentary assemblies of international organizations, (4) interest groups, and (5) communities of experts.[174]

With respect to the conversion process, decision-making in international organizations can take place in five different forms: (1) intergovernmental negotiations, (2) majority voting, (3) centralized rational choice, (4) standard operating procedures, and (5) bureaucratic politics.[175] Accordingly, these models can be linked to two main types of decisions in international organizations, namely (1) programme decisions and (2) operational decisions. Whereas the former relate to *"[…] set[ting] normative standards for the behavior of their Member States […]"*, the latter *"[…] relate to the implementation of the norms and rules of the existing programmes."* [176]

Looking at the output dimension, one can identify the policies pursued by international organizations. According to the type of output produced, one can distinguish three different forms: (1) policy programmes, (2) operational activities, and (3) information activities.[177] Policy programmes are of the highest order among the three outputs produced and represent the results of the programme decisions taken in international organizations. On the other hand, operational activities define how the actual implementation of the policy programmes is carried out. Finally, information activities represent another important output of international organizations, which impact on both policy programmes and operational activities and moreover aim to generate information also to the wider public.

[173] Rittberger, Zangl and Kruck operationalize the following three terms in the context of their model as follows: 1) Polities are the constitutional and institutional structure within which policy making in international organizations take place; 2)Politics refers to the interaction of political actors in the decision making processes within these international organizations. 3) Policies represent the main outputs and resulting activities that are pursued in international organizations. See Rittberger/Zangl/Kruck (2012), p. 72.
[174] See Rittberger/Zangl/Kruck (2012), pp. 90-100.
[175] See Rittberger/Zangl/Kruck (2012), pp. 101-118.
[176] Rittberger/Zangl/Kruck (2012), p. 107.
[177] See Rittberger/Zangl/Kruck (2012), pp. 119-137.

2.3.2 Research Framework Adopted

In order to operationalize the above outlined principal model for this dissertation's research, one needs to analyse the respective dimensions in the context of the two international organizations relevant for this thesis, namely the Preparatory Commission for the CTBTO and OPCW. Three key research aspects pertaining to the challenge-type inspection mechanism can be defined which constitute the overall research framework of this dissertation and make it possible to address the central research question:

1. Analysis of the CWC and the CTBT Verification Regime

   Analysis of the underlying constitutional structures helps to understand the interrelationships between the various CWC and CTBT verification regime pillars and allows the particular role of challenge-type inspections therein to be assessed. In a first step, in order to obtain a basic understanding about essential terminology used, the basics of verification are briefly addressed as well as the emergence of verification in arms control and disarmament. Moreover, the different views on verification regimes as per the three selected theories of international relations are highlighted.

   Furthermore, the individual verification regime pillars under the CWC and CTBT are examined, as they set the overall framework for the conduct of challenge-type inspections. As part of this process, the four characteristic regime elements (i.e. principles, norms, rules and decision making procedures) are analyzed in the context of the CTBT and the CWC regimes in a comparative manner. Overall, by looking into these aspects, the aim is to answer the following sub-question in this chapter: "What are the characteristics of the CWC and CTBT verification regimes in light of their embedded challenge-type inspection mechanisms?"

2. Analysis of Regime Rules Pertaining to Challenge-Type Inspections

   The second research step is closely connected to the above aspect and focuses on an in-depth analysis of the challenge-type inspection verification regime pillar. Upon a generic introduction of inspections and their emergence in arms control and disarmament, the particular characteristics of challenge-type inspections under the CTBT and the CWC verification regime are analyzed in a comparative manner. This is done by assessing the re-

spective regime rules established under both treaties.[178] Overall, this research aspect should address the following sub-question: "What are the key features of challenge-type inspections under the CTBT and the CWC verification regimes?"

3. Policy Making Analysis of Challenge-Type Inspections

In order to analyse the policy making with respect to challenge-type inspections in the OPCW and the Preparatory Commission for the CTBTO, the input-, conversion- and output dimensions are looked at:

3a. Input Dimension: Demands and Support

In a first step, an analysis of the input dimension is conducted by looking at the demands made and support for the challenge-type inspection mechanism as expressed by Member States. Hence, political views by States Parties or groups of Member States (e.g. European Union, Non-Aligned Movement) are assessed and common positions as well as diverging views pertaining to these type of inspections are carved out. Accordingly, principle deductions can be drawn, which should make it possible to address the following sub-question: "What are Member States' political demands and support regarding challenge type inspections?"

3b. Conversion Process: Decision-Making Processes

Second, an analysis of the institutional structure (i.e. organs) within these two international organizations is carried out as well as of the related decision-making processes on challenge-type inspection issues, which helps to address the following research sub-question: "What roles do the organs of the OPCW and CTBTO (incl. Preparatory Commission) have with respect to challenge-type inspections and what do the related decision making processes look like?"

3c. Output Dimension: Decisions made with respect to challenge-type inspections

In a third and final research step, the output dimension is analyzed and activities are looked at that have been undertaken in both organizations with respect to challenge-type inspections. The following sub-question guides the research: "Which activities have been undertaken by the Organizations with respect to challenge-type inspections and how do they impinge on their role and importance?"

[178] CWC: Article IX and Verification Annex Part II and X; CTBT: Article IV and Protocol Part II.

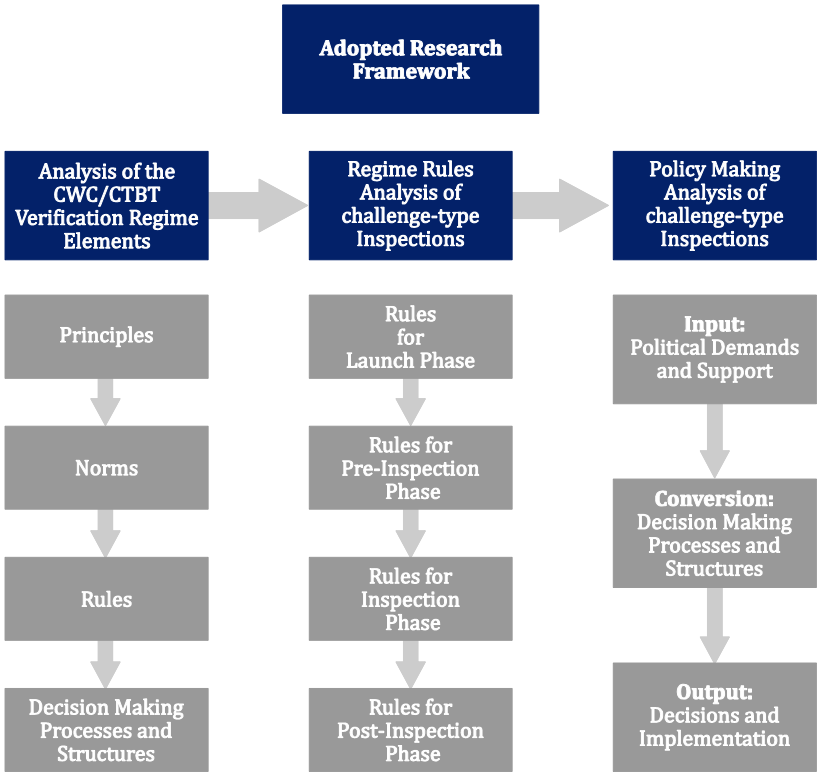

Figure 11: Adopted Research Framework
Source: author

2.4 Findings

This chapter had the purpose of defining the theoretical framework of this dissertation. In the first step essential terms for this dissertation were examined, such as international regimes, organizations and institutions. Second, arguments of regime theory were looked at, which represents the macro-theoretical embedding of this thesis. Furthermore, the assumptions of regime theory were contrasted with central arguments raised by neorealism, constructivism towards international regimes, and were reflected in the context of the two security regimes and international organizations researched in this dissertation. As a result of the examination of the theoretical framework, the research framework was developed including related research criteria for this thesis. The key findings obtained as a result of this analysis in this chapter are summarized below.

Emergence of regime theory

Regime theory appeared in the late 1970s and early 1980s as a result of the critical discourse with the then prevailing neo-realism and against the background of the relative decline of

power of the United States as the sole hegemon in the 1970s.[179] In view of the fact that neither realist nor other theories could satisfactorily explain the phenomenon of international cooperation and stability among states despite the absence of a single overwhelming power, scholars were in search for alternative theories that could explain an increasingly complex, interdependent and dangerous world.

Definition of international regimes

Stephen D. Krasner developed a widely accepted definition of international regimes, which is operationalized in the next chapter of this thesis. As per this definition, international regimes are *"sets of implicit and explicit principles, norms, rules, and decision-making procedures around which actors' expectations converge in a given area of international relations."*[180] Whereas principles and norms specify the overall characteristics of a regime and are more of strategic nature, rules and decision making procedures can be considered as the more operational elements with the purpose of further specifying the regime characteristics, including its implementation.

Regimes reduce transaction costs and serve as cooperation catalysts

Though regime theory initially focused on the area of international political economics, the security political situation during the Cold War drew scholars' attention to apply regime theory also to security policy related issues. Regimes are often formed as a result of sub-optimal situations faced by various states in a given issue area and in the hope of bridging complex, controversial positions among them and eventually of achieving better outcomes. Therefore, regimes have the central purpose of reducing uncertainty and stabilizing expectations regarding the mutual behavior of participants. Moreover, international regimes provide access to valuable information and reduce transaction costs for states, as they provide established negotiation frameworks including clear procedures, clarity about the negotiating parties and the overall strategic goals to be accomplished. Hence, regimes serve as cooperation catalysts and help states to better realize their interests collectively through international cooperation.

Regimes are single issue specific in nature and do not the possess the capability to act

Regimes are not necessarily to be equated with treaties. While they may include treaties, they do not have to be limited to these. As such, regimes are to be understood as longer lasting and

[179] See Zangl (2010), p. 131.
[180] Krasner (1983), p. 2.

more stable in nature compared to *ad hoc*, temporary arrangements that may be prone to change with every shift in power of interests.[181] Furthermore, regimes are characterized by their single issue specific nature and by the fact that they do not possess the capacity to act.

International Organizations are social institutions with the capability to act

In contrast to regimes, international organizations emerged as a phenomenon in the politics of international relations already during the last third of the nineteenth century. However, they became widely accepted only after the Second World War with the establishment of the United Nations. Rittberger, Zangl and Kruck define international organizations as *"international social institutions that are collective or cooperative actors and can cover several issue areas of international relations."*[182] Hence, this definition points to two important differences, namely the fact that organizations have the capability to act, to respond to events and that they can cover several issue areas. Furthermore, international organizations are often characterized by their own physical structures and buildings, own staff and specific legal status. Rittberger, Zangl and Kruck see a close interrelationship between the terms 'regimes', 'organizations' and 'institutions' and argue that the two former actually represent two subsets of the latter term.[183] John Mearsheimer considers an institutions as a *"set of rules that stipulate the ways in which states should cooperate and compete with each other"*.[184]

Regime theory, neorealism and constructivism differ in their degree of institutionalism

In common with neorealism, regime theory builds upon rational assumptions as its meta-theoretical basis. Furthermore and like neorealists, neoliberal intuitionalists maintain the view that states are the central actors in international politics. However, and in contrast to neo-realism, regime theory comes to more positive conclusions about the prospects for international cooperation. While not denying the challenge of international cooperation, regime theory scholars contend that the increasing interdependence among states triggers mutual interests and thus serves as a catalyst for cooperation. Hence, international regimes are seen as means of overcoming cooperation obstacles by providing mutually beneficial agreements for states and facilitating continued cooperation in a given issue area, which would not be possible otherwise.

181 See Krasner (1983), pp. 2-3.
182 Rittberger/Zangl/Kruck (2012), p.6.
183 See Rittberger/Zangl/Kruck (2012), p. 6.
184 Mearsheimer (1994). p. 8.

Neorealism, on the other hand posits a much more skeptical perspective towards the prospects of regimes and considers the prospects of cooperation among states at best *"as precarious, at worst non-existent"*.[185] Resting on the belief that the international system lacks a world government or central, hierarchical institution, this theory foresees a constant struggle for power among states. Accordingly, neorealists have highly skeptical views of the possibility of cooperation between states. Given the anarchy of the international system, states can only ensure their survival in the international system by relying on a system of self-help and maximizing their relative (military) power vis-à-vis other states. As per neorealist assumptions, regimes can form only under one condition, namely in case a hegemon is willing to share power and shoulder transaction costs in the policy field in question.

Constructivism looks at international regimes from a sociological perspective that takes into account normative and causal beliefs of actors, which in turn shapes their behavior and interests. As such, constructivism looks at the processes and practices of interaction that link together states and international rules and organizations.[186] Constructivism attributes prospects to regimes, however only in the case where consensus exists among the participating societies over the underlying values and norms and a common perception of the issue under consideration.[187]

In sum, regime theory, neorealism and constructivism differ in their degree of 'institutionalism' (i.e. the extent to which international institutions matter). Neorealists derive the most skeptical conclusions and do not ascribe considerable impact to international organizations. Regime theory supporters on the other hand do believe that international institutions can in fact facilitate international cooperation to reap joint gains and thus have an important role in international politics. Constructivists argue that international institutions have a dual role as they do change political actors' identities, interests and policies and also reproduce at the same time dominant norms and ideas.

Different central explanatory variables by IR theories: interests, power, knowledge

Regime theory, neorealism and constructivism focus on different explanatory variables vis-à-vis the prospects of regimes. Whilst neoliberal institutionalists maintain that (self-) interest serves as the central motive for the formation of international regimes and cooperation

185 Reus-Smit (2009), p. 214.
186 See Hurd (2012), pp. 30-33.
187 See Rittberger/Zangl/Kruck (2012), p. 28.

among states, neorealists refer to power based explanations. Finally, constructivists highlight the importance of analyzing actors' causal and social knowledge, which in turn determines the prospects of regimes. Rittberger, Zangl and Kruck argue that *"[r]esearch has meanwhile brought about a downgrading of neo-realism and an upgrading of neo-institutionalism and social constructivism."*[188] However, they highlight the need for caution as regards this judgment and the need to contextualize each theory in order to evaluate its validity adequately.[189] The table below summarizes commonalities and differences among these theories and gives information on their assumptions towards regimes.

Issue	Neorealism	Regime Theory	Constructivism
Central variable	Power	Interests	Knowledge
Meta-theoretical orientation	Rationalistic	Rationalistic	Sociological
Structure and assumptions about international relations	material: anarchy	material: anarchy and interdependence	Immaterial: distribution of ideas, values and norms
Behavioral Model	Concerned with relative gains	Absolute gains maximizer	Role-player
Main actors	States	States, IGOs	States, IGOs, INGOs, individuals (disagreement on actors' scope for deliberate action)
Causes of IOs	Hegemonic condition: hegemon willing and able to bear disproportionate cooperation costs	Problematic condition: problematic constellations of interest; mixed-motive-games	Cognitive condition: cognitive agreement; shared perception of problems
Effects of IOs	No independent impact	Facilitating international cooperation to reap joint gains	Change of political actors' identities, interests and policies; reproduction of dominant norms and ideas
Design of IOs	• Procedures biased in favour of the most powerful • No substantial delegation of political authority	• 'Rational design' of IOs depends on cooperation problems • States delegate authority, but ultimate control over IOs remain with states	• Shaped by global norms and bureaucratic cultures • High degree of independence from states and genuinely bureaucratic authority

Table 6: Role of international regimes in international politics
Sources (adapted by the author): Rittberger/Zangl/Kruck (2012), p. 33; Hasenclever/Mayer/Rittberger (1997), p. 6.

[188] Rittberger/Zangl/Kruck (2012), p. 32.
[189] See Rittberger/Zangl/Kruck (2012), p. 33.

OPCW and CTBTO qualify as international intergovernmental organizations

Both the OPCW and the CTBTO, which represent the focus of my dissertation, qualify as international intergovernmental organizations. Taking into account their constitutional and institutional structures, states are considered the central actors in these organizations and retain ultimate control over the policy making therein. Nevertheless, it can be considered remarkable that States Parties did make considerable concessions with respect to the authority given to these international organizations by accepting monitoring stations, on-site routine and even challenge-type inspections on their territories in support of compliance control measures.

OPCW and CTBTO have both norm setting and norm implementing character

Looking at the purpose of these organizations from a functional perspective, both the OPCW and CTBTO have norm-setting and norm-implementing character. Therefore, they show characteristics of programme and at the same time operational organizations. Moreover, both the OPCW and CTBTO are open in their membership to all states, thus, they are organizations of global nature. Different perspectives can be taken on the position that the treaties occupy with respect to international regimes. From a narrower angle, the treaties can be equated as the normative backbones of two international regimes that aim at the global eradication of chemical weapons and at the worldwide cessation of nuclear (weapon) test explosions, respectively. From a wider perspective, both treaties also contribute along with other legal instruments to the non-proliferation regime in the field of chemical and nuclear weapons, respectively. In particular, the CTBT is considered as providing an important contribution to the nuclear non-proliferation regime by curbing both the horizontal and vertical proliferation of nuclear weapons. Overall, they both belong to the category of arms control, disarmament and non-proliferation related regimes – and as such security regimes – in the field of Weapons of Mass Destruction.

OPCW and CTBTO serve in an actor-, forum- and resource role for states

From an ontological perspective, both the OPCW and the CTBTO have by design already inbuilt features that characterize them as actors, meeting fora and resources for states. The table below gives information on the roles that both organizations serve.

Role of IO	OPCW	CTBTO
Actor role (independent body)	Yes • Independent legal entity	Yes • Independent legal entity (see also CTBT, Article II, para 8: "independent body")

Role of IO	OPCW	CTBTO
Forum role for states	Yes • Serve as a forum for Consultations, Cooperation and Fact-Finding as per Article IX/CWC • States formally meet in different fora (Conference of the States Parties, Executive Council) that are charged with different functions (principal and executive role)	Yes • Serve as a forum for Consultation and Clarification as per Article IV, C/CTBT • States formally meet in different fora (Conference of the States Parties, Executive Council) that are charged with different functions (principal and executive role)
Resource role for states	Yes • Information provider on verification related aspects (i.a. declarations and inspection reports) • Assurance role (i.e. serves as a watchdog to ensure that treaty provisions are adhered to) • Implementing role (i.e. to execute the decisions of the policy making organs)	Yes • Information provider on verification related aspects (i.a. data products) and for civil applications (e.g. tsunami warning) • Assurance role (i.e. serve as a watchdog to ensure that treaty provisions are adhered to)

Table 7: Potential Roles of an IO: OPCW and CTBTO
Source (adapted by the author): Hurd (2012), pp. 16-24

Establishment of OPCW and CTBTO correlates with regime theory and constructivist explanations

In the context of the meta-theoretical assumptions of the three selected International Relations theories it can be noted that both security regimes emerged only upon long and arduous negotiations among states, which were triggered by the devastating effects and threats posed by chemical and nuclear weapons. Moreover, their establishment can also be seen to a considerable degree as being the result of a social process and the establishment of an international norm against chemical weapons and nuclear tests. Additionally, from a neorealist perspective, one may argue that the CWC could be successfully negotiated because the most powerful states abolished chemical weapons from their military doctrines and relied on nuclear weapons as deterrents instead. As such, and in support of this argument, P-5 states like France and China carried out nuclear tests until the mid-nineties in order to ensure that their stockpiles could be maintained without future nuclear tests. While not diminishing the role of NGOs and other interest groups that argued for the establishment of these regimes, key state actors' support on eradication of chemical weapons and the abolition of nuclear tests was decisive for the establishment of these regimes and the related international organizations. As such, arguments for the emergence of these regimes are manifold and can be attributed in part to regime theory, constructivist and neorealist explanations.

Neither the CWC nor the CTBT attribute to major actors certain privileges or exemptions from verification related responsibilities, which can be considered as an argument against neorealist assumptions regarding the preservation of power by dominant actors. However, at the same time one needs to acknowledge that key powers did as a matter of fact retain considerable influence through maintaining permanent seats in the executive policy making organ of the organisations (i.e. Executive Council) and by controlling the finances of the organisations. Moreover, the direct exertion of influence by one Member State (i.e. the US) on the policy making in the OPCW was powerfully demonstrated in 2002, when the first OPCW Director-General was ousted from office[190].

Looking at both regimes from an overall perspective, they offer a stable negotiations and information exchange framework through the established international organizations and thus in turn reduce transaction costs. Additionally, given their information provider role, they also stabilize actors' expectations in this field of security. Hence, by their functions these regimes conform to regime theory related assumptions.

Adoption of dissertational research framework

The examination of the macro theoretical concept of international regimes led to the development of the dissertational research framework, which consists of three central steps. Accordingly, in a first step, the CWC and CTBT verification regimes are looked at with a view to assessing the relationships between the various verification regime pillars in order to carve out the particular role of challenge-type inspections. As part of this effort, the four defining regime elements (i.e. principles, norms, rules and decision-making procedures) in the CWC and CTBT context are operationalized and assessed in a comparative manner.

In a second main research step, the regime rules pertaining to challenge-type inspections under the CWC and CTBT are examined with a special focus on the launch-, pre-inspection, inspection- and post inspection phase. This research step should help to assess the key features of these non-routine type of inspections under the CWC and CTBT verification regimes.

In the third main research step, the policy making for challenge-type inspections by Member States is looked at. For this purpose, a theoretical model[191] proposed by the German scholars Rittberger, Zangl and Kruck was adopted. This concept suggests analyzing the policy-making

[190] See Simons (2013).
[191] See Rittberger/Zangl/Kruck (2012), pp. 71-137.

of international organizations by looking at political demands and support (i.e. the input dimension), constitutional and institutional aspects (conversion dimension) and activities carried out as a result of decisions made (output dimension).

Adoption of this multi-layered research approach makes it possible to address the central research question of this dissertation, namely making an assessment of regime members' views regarding the role, characteristics and importance of challenge-type inspections in arms control, disarmament and non-proliferation in the early 21st century.

3. Analysis of the CWC and the CTBT Verification Regimes

This chapter builds upon the theoretical framework developed for this dissertation and carves out verification related specifics under the CWC and the CTBT. As such, the constitutional structure of the regimes are analyzed by looking into the overall verification regimes established under both treaties. Hence, and in order to ensure a common understanding on central concepts and terms pertaining to verification, the basics of verification and the emergence of verification in arms control and disarmament are introduced first. Importantly, the different views of verification regimes as per the three selected theories of international relations are also highlighted.

In a second step the verification regimes under the CWC and CTBT are examined, as they set the framework under which this particular type of inspections operates. Furthermore, differences as well as commonalities between the two verification regimes are pointed out as far they are relevant for challenge-type inspections. Overall, by looking into these aspects, this chapter attempts to answer to following sub-question: "What are the characteristics of the CWC and CTBT verification regimes in light of their embedded challenge-type inspection mechanisms?"

3.1 Verification in Arms Control and Disarmament

3.1.1 The Basics of Verification

As Robert O. Keohane points out, one of the key functions of regimes is to help coordinate actors' expectations by improving the quality and quantity of information available to states.[192] Looking at security regimes, verification mechanisms embedded in security regimes can make an important contribution to stabilizing expectations by offering valuable information. As such, verification "*provide[s] assurance that States execute and respect agreed commitments, thereby building confidence between them […]*".[193]

The 'Handbook on Verification and Compliance' issued jointly by the United Nations Institute for Disarmament Research (UNIDIR) and the UK based Verification Research, Training and Information Centre (VERTIC) offers the following definition of verification:

[192] See Keohane (1983), p. 155.
[193] Poucet (2006), p. 46.

> *"Process of gathering, interpreting and using information to make a judgement about parties' **compliance** or non-compliance with an agreement. The aim of verification is to establish or increase confidence that all parties are implementing a treaty fairly and effectively."*[194]

In August 2007 A UN Panel of Government Experts presented a similar definition in its *"Report of the Panel of Government Experts on verification in all its aspects, including the role of the United Nations in the field of verification"*:

> *"Verification is a tool to strengthen international security. It involves the collection, collation and analysis of information in order to make a judgement as to whether a party is complying with its obligations. Such obligations may derive from treaties, agreements or arrangements or from decisions of competent multilateral organs such as the Security Council."*[195]

In spite of different nuances in the above two definitions, they are both consistent in encompassing the political nature of verification. As such, verification has a strategic, political goal, namely to increase confidence among parties and to strengthen international security. Additionally, verification is to be seen as a political process that ultimately has to come up with an authoritative judgment about compliance. Given conflicting interests and different beliefs about international politics, verification is inherently political.[196] At the same time, the verification process also encompasses technical elements that deal with the entire monitoring, information gathering and analysis process.

The practice of verification also allows for a distinction between 'positive' and 'negative' verification. Positive verification has the objective to verify declared activities and hence should provide first hand evidence that a party to an agreement is indeed fulfilling all its commitments. On the other hand, negative verification aims to assess the absence of undeclared, illicit activities and is much more difficult to accomplish compared to positive verification. Furthermore and dependent on the political context and concrete attitude posed towards verification, verification can be carried out in a 'cooperative' vs. 'coercive' manner.

Sur looks at verification from a process perspective that comprises three aspects, namely (1) establishment of the facts, (2) their legal assessment and (3) consequences to be drawn in the

194 UNIDIR/VERTIC (2003), p. 130.
195 UN (2007): A/61/1028, p. 11.
196 See Gallagher (1998), p. 139.

event of an established violation.[197] In this context, Sur also puts these aspects in a wider conceptual context by deriving the following three concepts:

- the 'minimalist concept': it limits itself to establishing facts regarding compliance;
- the 'intermediate concept:' "*it includes a legal assessment, which means that the conduct of a state is evaluated by comparing it with an abstract norm*"[198];
- the 'extensive concept'; it includes reactions and consequences in the event of a violation.

Sur comes to the conclusion that the intermediate one is the dominant. In contrast to Sur's wider framed definition of verification, Lang maintains that *"[a]pproaching the issue of verification from its literal meaning, verification should be restricted to the first and second aforementioned variations"* [199] and emphasizes the following:

> *"Confusion should be avoided between the concept of verification (a process of technical fact-finding, followed by legal assessment) and the broader concept of compliance control, which includes the follow-up to the outcome of* verification namely sanctions or other measures"[200].

Along the differentiations pointed out by Lang regarding the concepts of verifications versus compliance control, UNIDIR, came up with two definitions for the terms 'verification regimes' and 'verification systems'. As per the UNIDIR *Handbook on Verification and Compliance*, these two terms differ in their meaning regarding the inclusion of a compliance mechanism (i.e. procedure for dealing with questions about, allegations of, or actual non-compliance). Whereas verification regimes encompass this element and hence reflect a broader, all-encompassing definition, verification systems focus rather on the different means available in the verification toolbox. Accordingly, UNIDIR provides the following definitions for 'verification regime' and 'verification system':

> *"[Verification regime is] [t]he sum total of the arrangements for ensuring verification of compliance with a treaty, consisting of legal commitments, data exchange and notification arrangements, monitoring methods, communication, consultation and clarification mechanisms and an agreed method for making verification judgements. Sometimes to also include the compliance mechanism(s)."* [201]

197 See Sur (1988), p. 8.
198 Lang (1995), p. 80.
199 Lang (1995), p. 81.
200 Lang (1995), p. 87.
201 UNIDIR/VERTIC (2003), p. 151.

> *"[Verification system is] [t]he sum total of the elements which provide information for making a verification judgement, but not including the compliance mechanism for making the judgement."*[202]

Verification systems may encompass a number of different techniques and approaches, which do not exclude each other but are rather of mutually reinforcing character. Strong and effective verification is vital in establishing trust among the parties. Hence, the better the overall verification system, the greater will be its deterrent effect. Elements of verification systems include:[203]

- Declarations of data-baseline, periodic and final;
- Compilation, analysis and cross-checking of declared data and/or other information;
- Verification of declared information by comparing it with actual data collected through remote and/or on-site through continuous monitoring and/or on-site inspection;
- Cooperation measures to make verification easier;
- Clarification mechanisms in case of technical difficulties or ambiguities;
- Fact-finding missions or challenge on-site inspections.

The elements of a particular verification system reflect policy goals between the negotiating parties and are the result of trade-offs made between them. As such, a number of factors may play a role in the final selection of the verification measures agreed upon:

Figure 12: Selection of Verification Measures

Source: Zucca (1994), p. 6-1

In this context, various technologies and means may be utilized for verification purposes:

Verification Technologies			
Principle types	**Ground-based**	**Aerial-based**	**Space-based**
Means	• Remote monitoring (from a distance)	• Helicopter • Plane/High altitude	• Satellite

[202] UNIDIR/VERTIC (2003), p. 131.
[203] See UNIDIR/VERTIC (2003), p. 17.

Verification Technologies			

	• On-site monitoring (at the site of the treaty-relevant activity):
	  • hand-held
	  • vehicle mounted
	  • stationary devices
		aircraft
		• UAV/drones	

Characteristics	• Wide variety of technologies available • (Miniaturized) devices with low detection threshold/high resolution available • Continuous use for monitoring purposes possible	• Use of multiple sensors possible • High resolution coverage by sensors • Option to quickly cover large areas • Relative costly	• Flexible and targeted use • Can be mounted with different sensors • Increasing availability of high resolution images also by commercial services • Satellites available only to a relatively limited number of states or commercial companies
Remarks	• Use of specific technologies may be limited and/or underlie certain restrictions (dependent on specific treaty) • Application of equipment/technologies and data interpretation requires expertise and training		

Table 8: Overview of Verification Technologies
Source: (adapted by the author): UNIDIR/VERTIC (2003), pp. 26-32

Nevertheless, while it is possible to describe the technical capabilities of a verification system, the judgment about the adequacy of verification lies in the eye of the beholder. Verification has the purpose to establish facts on whether or not states comply with the provisions of an agreement they have committed themselves to abide by. It aims to achieve this objective by three means, namely by "*detecting non-compliance, deterring would-be non compliers and building confidence among parties to an agreement*", which are briefly summarized in the table below.[204]

Verification			
Purpose	Detect non-compliance	Deter would-be non compliers	Build confidence among parties
Characteristics	• Effectiveness determined by the • monitoring capabilities	• The more comprehensive and effective, the more likely to serve as a deterrent	• Serve as opportunity for parties to demonstrate their compliance with the agree-

[204] Dahlman (2010), p. 3.

Verification			
	• degree of intrusiveness permitted • expertise and speed of processing and analyzing data • Total verifiability vs. capability to detect significant non-compliance • Trade-off between • expected benefits and costs • intrusiveness and legitimate national security interests	• Deterrence dependent on likelihood and severity of potential consequences in case non-compliance • Challenge-type inspections designed to serve as key deterrent	ment and enhance confidence and trust among all actors • Seek to reduce misperceptions and misunderstandings and replace suspicion with confidence

Table 9: Objectives of verification
Source: author

Detecting non-compliance is a crucial goal of a verification regime and its capability to do this is the result of a number of factors, most notably technical as well as political ones. With regard to technical aspects, a verification regime's effectiveness is determined by the respective monitoring capabilities (i.e. the means by which information is obtained for verification purposes) as well as the expertise and the speed of processing and analyzing these data.[205] Moreover, the regime's effectiveness is also determined by the overall verification approach that states agree upon and is thus the result of political considerations made. This in turn determines the level of intrusiveness of the detection methods that States Parties' to the treaty are willing to accept. In this respect, Ambassador Paul Nitze during US Senate ratification hearings of the INF Treaty characterized effective verification as follows: "*if the other side moves beyond the limits of the treaty in any military significant way, we would be able to detect such violations in time to respond effectively and thereby deny the other side the benefit of the violation*".[206] Additionally, verification capabilities are also to some extent the result of what states are willing to invest in the verification regime.

Different positions exist regarding the required degree of detection capability. One extreme view relates to the need for total verifiability of a treaty, which is *de facto* impossible to achieve. This legalistic approach is based on the principle 'pacta sunt servanda' and argues

[205] See UNIDIR/VERTIC (2003), p. 2.
[206] Dahlman (2010), p. 3.

that any non-compliance, irrespective of the level of military significance, needs to be detected.[207] On the other hand, a more pragmatic position stresses the significance of non-compliance as the key factor determining the required detection threshold. In other words, the acceptable uncertainty level of verification is in essence a question about the acceptable risk.[208] Taking into account that foolproof verification is not achievable, Goldblat argues the following in favor of such an approach:

> *"[…] what matters most is not the fact of non-compliance but the effect of non-compliance; and that, to make a significant difference altering the military balance between States, cheating would have to be practised on such a scale as to render detection inescapable."*[209]

A verification system must ensure that the detection threshold is low enough and also needs to have the capability to timely detect actual non-compliance or signs thereof. As a violation of a treaty may represent a severe and immediate threat to national security, rapid detection and early warning of non-compliance is essential. Accordingly, a verification regime also has to be capable of allowing for a quick reaction to such a situation including the availability of means to redress it. Of course, each verification system always represents a trade-off between the incurred costs and expected benefits of verification. Moreover, it has to strike a balance between the required level of intrusiveness to detect potential non-compliance, while at the same taking into account legitimate national security interests.

Closely connected to the key purpose of verifying parties' compliance with the provisions of a treaty, a verification regime also has to be credible in deterring parties from violating their obligations. Hence, the more comprehensive and effective a verification regime, the more likely the chances are that it serves as a credible deterrent. As such, a multi-layered verification regime that makes use of different information sources and relies on various data collection approaches and monitoring methods enhances its credibility and thus better serves its deterrence function. Given their potentially high level of intrusiveness, challenge-type inspections are considered the ultimate verification tools that also serve this deterrent function.

Furthermore, and when assessing the deterrence effect of a verification regime, one should also look at the likelihood and severity of potential consequences a party may face in case of non-compliance, as these factors may have considerable impact on it. In contrast to the deter-

[207] See Goldblat (2007), pp. 55-56.
[208] See Balci (2011), p. 5.
[209] Goldblat (2007), p. 55.

rence function, confidence building measures should serve as opportunities for parties to demonstrate their compliance with the treaty in a transparent manner. Moreover, these measures should also send out positive signals to all parties about the viability of the treaty and they should enhance confidence and trust among all actors. In this respect, the 1995 UN study on verification in all its aspects, including the role of the United Nations in the field of verification, attempts to define the purpose of confidence-building measures as follows:

> *"18. […] Confidence-building measures seek to reduce misperceptions and misunderstandings, as a first step towards replacing suspicion with confidence, by enabling the parties to be more transparent about their intentions in specific circumstances. […]."*[210]

Verification is not a simple undertaking that relies on a single technology or activity for monitoring and verification, but rather contains several pillars and layers in order to detect, deter and build confidence. Moreover, verification has to be seen from a conceptual perspective as a holistic approach consisting of different verification activities, approaches and methodologies.

Woolf defines five components of a verification regime, namely treaty language, monitoring, analysis, evaluation and resolution, which are presented in Figure 13 below:[211]

Figure 13: The Components of a Verification Regime

Source: Woolf (2011), pp. 3-6

- Treaty language forms the backbone of the verification regime and sets the foundation for all verification related actions. It spells out the rights and obligations of the parties and defines the critical issues at which verification is to be targeted.
- Monitoring serves the purpose of gathering data about the parties' activities for verification purposes and in relation to their rights and responsibilities. This can be accomplished by a variety of technical means and/or by human inspectors. Moreover, verification related data acquisition methods can be categorized as cooperative or unilateral ones.[212] Cooperative methods may be either implemented directly by the parties themselves or entrusted to a specially designated international organization. On the other

[210] UN (1995): A/50/377, p. 16,
[211] See Woolf (2011), pp. 3-6.
[212] See UN (1995): A/50/377, p. 16.

hand, unilateral methods are carried out by the parties themselves with the own national capabilities and comprise mainly the use of national technical means (NTM).[213]

- Upon gathering the data, an analysis is to be performed, which translates the raw data into concrete, verification related information. As such, this process helps to establish a picture regarding the parties' compliance with the agreement.
- As a result of the analysis, an evaluation or compliance judgement is to be made by the parties (i.e. states). This process step is of a political nature and is based on the analysis results obtained. Making such a judgement is not always a clear cut case, but open to interpretation and individual, subjective evaluation. As Moodie and Sands point out, *"[c]ompliance is ultimately a political decision, based on states' perceived security needs and objectives"*.[214] The final compliance judgement should address, *inter alia*, the following aspects:[215]
  - Distinction between genuine allegations and unfounded allegations (e.g. in the form of frivolous/abusive requests for on-site inspections);
  - Determination whether non-compliance has in fact occurred;
  - Distinction between minor non-compliance (also referred to as 'technical' non-compliance) and substantial non-compliance;
  - Distinction between unintentional (e.g. due to a lack of knowledge, insufficient resources to fulfill respective treaty obligations, different treaty interpretation, etc.) and deliberate non-compliance;
- The final component of a verification regime relates to the resolution phase. This element has to tackle the fundamental question of how to respond to possible evidence of non-compliance including potential consequences and measures to be taken after its detection. Fred Iklé highlighted the importance of addressing this question already in 1961 in an article titled "After Detection-What?"[216] in *Foreign Affairs*. Different measures to redress a situation have been established in multilateral verification regimes and include, *inter alia*, restriction or suspension of treaty rights, taking collective measures in conformity with international law or referral of the issue to the United Nations.

[213] See UNIDIR/VERTIC (2003), p. 6.
[214] Moodie/Sands (2001), p. 3.
[215] See UNIDIR/VERTIC (2003), p. 33.
[216] Ikle (1961), pp. 208-220.

The formulation of these five elements of a verification regime is consistent with Oran Young's general conceptualization of regimes, which encompasses at least three distinct components:[217]

1. A substantive component, which consists of a collection of rights and rules;
2. A procedural component that encompasses arrangements for resolving situations requiring social or collective choices.
3. An implementation component, which is particularly relevant in the context of verifying compliance with the regime rights and rules.

The entire aspect of verification in security regimes is, of course, closely intertwined with arms control and disarmament. Whereas arms control places *"political or legal constraints on the deployment and/or disposition of national military means",* disarmament *"seek[s] to reduce the level of national military capability or to ban altogether certain categories of weapons already deployed."*[218] Thomas C. Schelling and Morton H. Halperin prefer to use the term 'arms control' rather than 'disarmament' with the intention of broadening the meaning of the term. In their book *Strategy and Arms Control*, they emphasize three key functions of arms control:

> *"[Arms control] rests essentially on the recognition that that our military relation with potential enemies is not one of pure conflict and opposition, ˝but involves strong elements of mutual interest in the avoidance of a war that neither side wants, in minimizing the costs and risks of the arms competition, and in curtailing the scope and violence of war in the event it occurs."*[219]

Given the wide usage of the two terms 'arms control' and 'disarmament' in literature, the following table aims to point out distinct differences between them:

Issue	Arms Control	Disarmament
Purpose	Place political or legal constraints on the deployment and/or disposition of national military means	Seek to reduce the level of national military capabilities or to ban altogether certain categories of weapons already deployed
Aim	Reduce the risk of inadvertent war by improving the capacity of adversaries to formulate more accurate assessments of each other's intentions, and by restricting their range of available military options	Preclude or at least reduce the likelihood of military conflict by depriving parties, in full or in part, of their military capabilities

[217] See Young (1980). p. 333.
[218] Tulliu/Schmalberger (2001), pp. 7-8
[219] Schelling/Halperin (1961), p. 1.

Issue	Arms Control	Disarmament
Measures	• Qualitative and quantitative restrictions on fielding equipment • Non-proliferation agreements and export controls to regulate or prohibit the development or transfer of particular weapons and their components • Confidence and security building provisions • Rules of war to restrict or prohibit certain methods of warfare or regulate conditions under which arms may be used	Measures that eliminate national military capabilities either completely or partially

Table 10: Distinction Arms Control vs. Disarmament Measures
Source: Tulliu/Schmalberger (2001), pp. 7-8

3.1.2 The Emergence of Verification in Arms Control and Disarmament

Once arms control and disarmament accords enter into force, ratifying parties need to comply with them and implement them at the national level. The Hague Conventions of 1899 and 1907 as well as the 1925 Geneva Protocol represent some of the first wide ranging modern-day efforts to restrict armaments and regulate the code of war. During the inter-war period of the 20th century a significant milestone was reached when the League of Nations made disarmament one of its principle objectives and respective provisions were laid out in Article 8 of the Covenant of the League of Nations.[220] Paired with it, suggestions on arms control and disarmament went even further by proposing an international control mechanism (e.g. the setup of a Permanent Disarmament Commission at the seat of the League of Nations with the duty of following the execution of the Convention). Not least due to the collapse of the Conference for the Reduction and Limitation of Armaments ('World Disarmament Conference') in 1937, respective efforts came to a halt and were unsuccessful. The Second World War marked a turning point as regards respective implementation practices. Whereas implementation of arms limitation agreements was mostly premised on the basis of trust before the war, this changed afterwards and became increasingly subject to verification.[221]

[220] Article 8 of the Covenant of the League of Nations directed the League's Council to formulate plans for the reduction of national armaments for the consideration and action of the several Governments. Furthermore, the Members of the League were directed to interchange "full and frank information as to the scale of their armaments, their military, naval and air programmes and the condition of such of their industries as are adaptable to war-like purposes" See: Covenant of the League of Nations (1924); and Williams/Viotti (2012), p. 41.
[221] See Tulliu/Schmalberger (2001), p. 10.

During the Cold War, arms control evolved as an important measure in the reaction to the confrontation between the two blocs and *"[…] served as a pillar to prop up strategic stability and a balance of forces between the opposing sides*".[222] As such, the two superpowers focused on nuclear weapons and related carrier systems (i.e. missiles), not least because of the destructive power and the strategic role and importance these weapon systems possessed. Verification measures pertaining to agreements like the 1972 ABM Treaty or the 1972 SALT I and 1979 SALT II Treaties relied on each side's National Technical Means (NTM). Similarly, states made efforts to curb the conduct of nuclear tests, which resulted in the 1963 Partial Test Ban Treaty (PTBT), the 1974 Threshold Test Ban Treaty (TTBT) and the 1976 Peaceful Nuclear Explosion Treaty (PNET). The aspect of verification proved to be a contentious issue and both sides eventually agreed on additional verification provisions reflected in new protocols only in June 1990, which entered into force in December 1990. In this context Trapp points out that the concepts underlying verification of arms control agreements were developed during the Cold War[223] and makes reference to their basic approach described by Calogero, Goldberger and Kapitza:

> *"Because arms control treaties are agreements between adversaries, a central feature of them are provisions for verification of compliance. Each side may believe that the other side has some incentive to cheat and all modern arms control agreements contained detailed descriptions of what is or is not permitted along with procedures of various kinds that attempt to make evasion difficult and unattractive.... Generally speaking, however minimum requirements for a verifiable treaty would include the following:*
>
> 1. *No significant risk to the national security of either party that might be caused by a treaty violation shall go undetected and unidentified.*
> 2. *No violation that would undermine in a basic way the purpose of the treaty should go undetected and unidentified."* [224]

Though verification measures were predominantly carried out bilaterally between the two superpowers, also multilateral efforts took place under e.g. the UN framework during the Cold War. In this context, UNGA Resolution A/RES/14/1378 of 20 November 1959 played an important role, as it set the "*goal of general and complete disarmament under effective international control*" and hence ultimately facilitated multilateral verification in arms control and disarmament.[225] Furthermore, the respective UN measure included, *inter alia*, the adoption of UN General Assembly Resolution S-10/2 at its Tenth Special Session in 1978, which led to the

[222] Lachowski (2010), p. 42.
[223] See Trapp (2006), p. 34.
[224] Calogero/Goldberger/Kapitsa (1991), p. 1.
[225] UN (1959): A/RES/14/1378.

establishment of a successor Disarmament Commission as a subsidiary organ of the Assembly and which also came up with a Programme of Action on disarmament. Additionally, the General Assembly adopted at this Special Session three general principles of verification:

> *"31. Disarmament and arms limitation agreements should provide for adequate measures of verification satisfactory to all parties concerned in order to create the necessary confidence and ensure that they are being observed by all parties. The form and modalities of the verification to be provided for in any specific agreement depend upon and should be determined by the purposes, scope and nature of the agreement. Agreements should provide for the participation of parties directly or through the United Nations system in the verification process. Where appropriate, a combination of several methods of verification as well as other compliance procedures should be employed.*
>
> *91. In order to facilitate the conclusion and effective implementation of disarmament agreements and to create confidence, States should accept appropriate provisions of verification in such agreements.*
>
> *92. In the context of international disarmament negotiations, the problem of verification should be further examined and adequate methods and procedures in this field be considered. Every effort should be made to develop appropriate methods and procedures which are non-discriminatory and which do not unduly interfere with the internal affairs of other States or jeopardize their economic and social development."* [226]

Ten years later, the UN Disarmament Commission affirmed the continued relevance of these verification principles and in 1988 agreed on 16 general principles of verification, out of which two make particular reference to on-site inspections:

> *"(4) Adequate and effective verification requires employment of different techniques, such as national technical means, international technical means and international technical procedures, including on-site inspections.*
>
> *(14) Requests for inspections or information in accordance with the provisions of an arms limitation and disarmament agreement should be considered as a normal component of the verification process. Such requests should be used only for the purposes of the determination of compliance, care being taken to avoid abuses."* [227]

Though arms control and disarmament efforts during the Cold War focused on nuclear weapons as the highest priority, they also covered, *inter alia*, biological weapons and chemical weapons. However, despite the fact that a regime on biological weapons was established in 1972 with the conclusion of the Biological and Toxin Weapons Convention, its impact and effectiveness must be regarded as rather limited given the lack of a verification protocol. On

[226] UN (1978): A/RES/S-10/2, pp. 6 and 10.
[227] See UN (1988): A/S-15/3*, pp. 50 and 52.

the other hand, the long lasting negotiations in the field of chemical weapons were eventually successful, when states agreed upon the conclusion of the Chemical Weapons Convention in 1993, which includes a stringent verification regime under international control. It was, in fact, the period from 1986 to 1995/96, which represented a decade of disarmament and in which a number of agreements (e.g. the INF Treaty, the CFE Treaty, START I and II, CWC, indefinite extension of the NPT) were successfully concluded.[228]

With the end of the Cold War, the mostly bilateral dominated verification efforts changed to multilateral ones. Moreover, the number of arms control and disarmament treaties saw a rapid growth in the first decade after the end of the Cold War and the number of participants in respective arms control and disarmament agreements increased steadily and led to a *"plethora of verification and implementation issues"*[229]. In light of these new political conditions and the resulting impact on multilateral verification, the United Nations in 1995 came up with a study on *Verification in all its aspects, including the role of the United Nations in the field of verification*[230] that should highlight potential options for the UN role in this field. The group of qualified governmental experts, which was charged with this assignment, came up with three sets of recommendations on possible roles for the UN in the field of verification, namely a facilitating and coordinating role between existing verification procedures and implementing bodies, a common services role and finally an operational role, where third party assistance might help in the implementation of global, regional, sub regional and local agreements.[231]

However, upon the very successful period of multilateral verification until the mid-1990s, skepticism about its effectiveness to meet the emerging new challenges and threats in a different political environment grew during the latter half of the decade. This lack of support for multilateral verification saw its peak with the policy shift towards unilateralism by the US administration under President George W. Bush.

Recognizing the considerable changes in the international security environment since the mid-nineties, the General Assembly in its resolution 59/60 of 3 December 2004 requested the UN Secretary-General to assemble a panel of experts with the task to prepare a report on ver-

[228] See Lachowski (2010), pp. 45-47.
[229] Moodie/Sands (2001), p. 5.
[230] See UN (1995): A/50/377.
[231] See UN (1995): A/50/377, p. 9.

ification in all its aspects, including the role of the UN in the field of verification. In its report,[232] the Panel of Government Experts made 21 generic recommendations on the purpose of verification, its evolution since 1995, verification methods, procedures and technologies and verification compliance mechanisms. The Panel notes, *inter alia*, with respect to the changes in the international security environment:

> *"[…] [T]here is a growing emphasis on full compliance by all States with their obligations under existing treaties, agreements and commitments, as well as growing realization of the importance to respond to non-compliance and building national capacities to implement those treaties, agreements and commitments more fully and effectively. This has stimulated renewed discussions on the purpose, effectiveness and relevance of verification in its capacity to promote compliance and to deter, detect and help to address non-compliance."*[233]

The issue of the operation and future direction of multilateral verification was the main focus of the 2011 Wilton Park conference. One of the conclusions drawn by participants is as follows:

> *"High tolerance of multilateral verification seems to occur in historical 'windows of opportunity'. That is, rare moments where interests, ideas and relationships are aligned at both the domestic and international level. These windows of opportunity may be few and far between. However, it remains important to prepare for them by continuously exploring and examining potential solutions."* [234]

In light of the fact that traditional arms control and disarmament regimes have faced a number of setbacks in recent years, other policy options focusing on the concept of human security have emerged on the agenda of arms control.[235] As such, this approach emphasizes that traditional efforts can no longer meet today's major security challenges and therefore stress the need to adjust their focus. Particularly, this approach looks at the entire arms control and disarmament process from broader humanitarian considerations.

Along with it, also new actors like NGOs (including the civil society), industry, (social) media and scientific communities hold an increasing and more influential role in this endeavour. In this context, Jean Pascal Zanders argues that "*[d]isarmament is entering a new phase*"[236]. Accordingly, the task of verification is no longer anymore an exclusive intergovernmental issue between states, but future verification needs to take these developments into account and

[232] See UN (2007): A/61/1028.
[233] UN (2007): A/61/1028, p, 10.
[234] Balci (2011), p. 4.
[235] See Moodie/Moodie (2010), pp. 309-314, 317-318.
[236] Zanders (2010), p. 4.

build upon them in a cooperative manner. In this respect, it believed that 'Online Societal Verification'[237] has the potential to play an increasingly important role in future arms control and non-proliferation related verification efforts.

3.1.3 Theorizing Verification in Arms Control and Disarmament

Regime Theory Assumptions as regards Verification

Neoliberals clearly see the importance of verification as an important pillar in security regimes. Given the need to stabilize expectations and enhance trust, verification serves such an important function. As such, and looking at the main functions of verification, they posit that verification should provide domestic reassurance, deter violations, detect potential non-compliance in a timely fashion in order to avoid exploitation and focus on military significant issues.[238] Hence, these expectations as regards verification stand in clear opposition to neorealist demands that seek a verification regime capable of detecting any violation (independent of its significance) in order to confront and punish the violator.

Neoliberal institutionalists believe that "*arms control need no longer be confined to measures that could be monitored by national technical means (NTMs), because countries had recognized the value of "cooperative monitoring*".[239] This understanding has an important implication with respect to the type of verification, as this recognizes the importance of on-site inspections, including intrusive inspection activities and techniques as acceptable means of verifying compliance. In the same vein, verification arrangements need to be capable of timely detecting significant non-compliance in order to take action and allow for means to redress the situation.

Though followers of regime theory are naturally in favor of regimes and thus support the creation of multilateral bodies charged with verification under an international mandate, they nevertheless acknowledge the central role of states in international relations. Hence, they support a design of international organizations that leaves states with ultimate control over compliance judgements and responses. Furthermore, neoliberal institutionalists recognize the role of regimes as valuable information providers to all parties with the aim of en-

[237] See Lee/Zolotova (2013), p. 83. The authors use the term 'Online Societal Verification' to summarize the broad idea of using new media for addressing various interrelated security issues – from arms control verification, to global transparency and confidence building, to preventing the spread of WMD.
[238] See Gallagher (1999), p. 13.
[239] Gallagher (1999), p. 8.

hancing mutual security, stabilizing expectations and providing concrete benefits to all its members. Regime theory supporters also clearly see value in the forum role of international institutions, which provide a consultation and clarification forum for states to address verification related compliance concerns.

Though generally acknowledging the crucial value of verification in security agreements, neoliberal institutionalists see the prospects for agreement on verification actually as moderate and dependent on context.[240] As such, issues like support by major actors, concrete benefits that could not be achieved otherwise, mutual trust that others also act in good faith and verification provisions that enable detection of significant non-compliance play an important role as regards to regime prospects.

Neorealist Assumptions as regards Verification

Prospects and support for security regimes including verification are considered as rather low as per neorealist assumptions unless a hegemon is willing to shoulder costs and initiates cooperation in this field. The great skepticism towards the possibility of mutually beneficial cooperation naturally also adversely impacts the willingness to actively engage in arms control and disarmament.

Taking into account the anarchical structure of the international political system and the constant power struggle among states, the need to cooperate stands in contradiction to own power maximization. Arms control and disarmament implies giving in to accords that rather limit own capabilities or have an adverse effect on them, which is not an option in neorealist assumptions. Thus, states will be rarely inclined to sign and ratify any agreements unless these give them a relative edge over other competitors and unless significant constraints are placed over their own military means. In this context, neorealists operate from the basic premise that "*a favourable balance of power is the most reliable deterrent, so arms control is attractive only if it serves this end.*"[241]

As per neorealist views states are considered the central actors in international politics, only at best very limited support can be expected towards the establishment of multilateral inter-

[240] See Gallagher (1999), pp. 5, 13. It should be noted that Gallagher explicitly refers to 'Grotians' or 'Cautious Cooperators' rather than 'neoliberal institutionalists' when analyzing the central assumptions of different schools of thought towards verification.

[241] Gallagher (1998), p. 7.

national institutions. International bodies with a mandate to implement arms control and disarmament agreements could take away national control and sovereign decision, which could lead to a loss of influence over own essential security matters and is therefore not acceptable. Moreover, multilateral verification regimes rather constrain national power and flexibility, however they are at the same time not considered to be capable of combating threats effectively and of contributing to an increase in security. As such, the role of verification and the reliance on international institutions should be minimized in favor of exercising national sovereignty rights and responsibilities.

However, and in case agreements on arms control and disarmament measures are indeed agreed upon, states favor national technical means and will seek a verification regime that "*maximizes their own monitoring and information gathering capabilities, denies the other side access to sensitive information, and preserves their autonomy to act and judge others in ways that suit their competitive goals*."[242]. At the same time, neorealists raise suspicion towards verification approaches such as challenge-type inspections that may take place on sensitive national sites and make use of intrusive verification techniques and inspection activities. Neorealist skeptical assumptions regarding arms control and disarmament regimes even go so far as to exclude the possibility that these accords may be deliberately misused for gathering intelligence about the other side, collecting information outside the scope of the treaty or even disrupting military preparations not banned under the regime.[243] In addition, neorealists' distrust regarding verification is so deep that they are wary of potential manipulation of verification agreements through the provision of false information or biased judgments in case it would be in the adversaries' favor.

Neorealists also hold the view that even small violations may have extreme consequences, thus making it very difficult to satisfy verification concerns. Hence, given the uncertainty and insecurity in which states operate, verification regimes need to be designed in such a manner that they have the ability to detect all non-compliance cases and punish every violation in a way that restores relative advantage.[244] As such, verification is rather seen as a means of providing evidence of cheating required for effective response. However, as verification regimes do have their limitations in providing sufficient deterrence against potential violators and are inherently imperfect, they do not see verification as a viable means to create long

[242] Gallagher (1999), p. 6.
[243] See Gallagher (1999), p. 6.
[244] See Gallagher (1999), p. 6.

lasting cooperation. Agreements on verification measures may therefore most likely be reached when interstate relations are friendly and such agreements least needed.

Furthermore, opposition towards verification may decrease should domestic aspects put limits on certain weapons or activities, and it would be therefore advantageous that other countries face similar constraints. However, taking into account the potential limitations of verification, neorealists do not consider it as viable means of creating long lasting cooperation.

Constructivist Assumptions as regards Verification

Constructivists regard prospects for verification in security regimes as principally high and they see the main function of verification in "*reassurance that cooperation is occurring, rather than detection or deterrence of violations."*[245] This view represents a shift from an adversarial model of verification to a managerial verification approach. Furthermore, taking into account constructivists' positive perception of international relations among states, they assume a high level of compliance by the parties to an agreement. As per constructivist views, actors pursue their interests but are also willing to abide by norms and rules. Hence chances for the formation of arms control and disarmament regimes including verification are much higher in case values and norms are widely shared. In this context, constructivists look at verification as a means of promoting transparency and international authority. Verification plays an important role and is not only left to states, however it also involves other actors such as NGOs, civil society, epistemic communities. In particular they attach major importance to the role of social groups including individuals, which may fulfill functions as norm entrepreneurs and persuade states to agree on and adhere by norms. Constructivists argue that all these actors have a role in verification and shape the approach through which verification is pursued.

In contrast to neorealists, constructivists do not see the need for a foolproof detection system that can also indicate minor cases of non-compliance. Nevertheless, and given their positive views about international relations and the quest for openness and transparency, they show less hesitation towards intrusive verification measures. The table below briefly summarizes the main views and key differences towards verification from the three schools of International Relations utilized in this dissertation.

[245] Gallagher (1999), p. 11.

Issue	Neorealism	Regime Theory	Constructivism
Main functions of verification	Detect violations Provide evidence of cheating needed for effective response • Lower public support for bad treaties • Collect collateral information	Enable reciprocity Deter violations Timely detection to avoid exploitation Domestic reassurance Focus on military significant issues	Reassure participants that everyone is cooperating Manage compliance disputes Promote openness, democracy, and international authority
Preferred type of verification	Purely adversarial Entire process must be self-help Any violation must be confronted and punished	Mainly adversarial Cooperative measures and transparency Consultation and clarification Judgment and response are national responsibilities	Managerial Monitoring, assessment, and response best done jointly Few violations show aggressive motives or have military significance
Prospects for agreement on verification	Extremely low unless leaders give in to popular pressure for bad accords Politics of verification mainly for public relations	Moderate and context dependent Easier for low-risk accords that can be monitored with National Technical Means (NTMs)	High Cooperation very beneficial Need not detect minor violations Advances in win-win monitoring Less resistance to intrusive measures

Table 11: Views on Verification as per different theories
Source (adapted by the author): Gallagher (1999), p. 13

3.2 The CWC's and CTBT's Verification Regimes

Sub-chapter 3.1 provided an introduction to the basics of verification. Additionally, the previous chapter highlighted the different assumptions towards verification posed by selected theories of international relations. This sub-chapter builds upon these general findings and puts verification in a concrete context by introducing the CWC's and CTBT's verification regimes. This is done by first operationalizing the four defining elements (i.e. principles, norms, rules and decision making procedures) of regimes in the context of the CWC and the CTBT. Thereafter it analyses the various regime pillars established under both regimes with a view to highlighting the operating mechanisms and interdependencies among them.

Obtaining a good conceptual understanding of the various verification regime pillars is considered essential in order to analyze the particular role of challenge type inspections. However, an in-depth analysis of the *status quo* and implementation challenges faced by the CWC and CTBT verification regimes is not aimed at, as it should also be noted this is not consid-

ered essential in the context of the dissertational topic. In this context it should also be noted that the 'non-routine' verification tools envisaged under both treaties, which are of core interest for this dissertation, are only briefly described in this sub-chapter, given the subsequent, detailed comparative analysis in chapter 4 of this thesis.

3.2.1 Operationalization of Regime Theory

As highlighted in the previous chapter, Krasner developed a widely accepted definition of regimes, which he described as *"sets of implicit or explicit principles norms, rules, and decision-making procedures around which actors' expectations converge in a given area of international relations"*.[246] In the following research step, these four regime components in the context of the CWC's and the CTBT's verification regimes are operationalized. As a result it is possible to identify both commonalities and distinct differences between these two verification regimes, which in turn provide important insights into the *modi operandi* of these regimes.

Principles

As per Krasner's definition, "*principles are beliefs of facts, causation and rectitude*".[247] Principles are a precondition for institution-building, as all parties need to reach agreement whether there is sufficient common ground to tackle the given issue area in the framework of institutionalized cooperation or whether states treat them individually.[248] Moreover, principles serve the important purpose of formulating a common view of the problem. As such, they interpret the *status quo* in a strategic manner and also define the desired target state that should be reached by the regime.

Agreement on principles is a prerequisite for defining the more detailed norms of behavior. The following table summarizes key principles stipulated in the preambles of the verification regimes established under the CWC and the CTBT:

246 Krasner (1983), p. 2.
247 Krasner (1983), p. 2.
248 See Müller (1993), p. 40.

Key Principles established under the CWC	Key Principles established under the CTBT
Disarmament • Achieve effective progress towards general and complete disarmament under strict and effective international control, including the prohibition and elimination of all types of weapons of mass destruction	**Disarmament and Non-Proliferation** • Need to reduce nuclear weapon arsenals globally and prevent the proliferation of nuclear weapons • Ultimate goal to eliminate nuclear weapons and to disarm generally and completely under strict and effective international control • CTBT contributes effectively to the prevention of the proliferation of nuclear weapons, to the process of nuclear disarmament and to the enhancement of international peace and security
Prohibition of chemical weapons • Complete and effective prohibition of the development, production, acquisition, stockpiling, retention, transfer and use of chemical weapons, and their destruction, represent a necessary step towards the achievement of these common objectives • Exclude completely the possibility of the use of chemical weapons • Prohibit the use of herbicides as a method of warfare	**Prohibition of nuclear (weapon test) explosions** • Cessation of all nuclear (weapon test) explosions constrains the development and improvement of nuclear weapons and constitutes an effective measure of nuclear disarmament and non-proliferation • CTBT is the most effective way of achieving an end to nuclear testing
Peaceful use of chemistry incl. technological and economic development • Use achievements in the field of chemistry exclusively for the benefit of mankind • Enhance the economic and technological development of all States Parties	**Protection of the environment** • CTBT could contribute to the protection of the environment

Table 12: Regime Principles
Source: Preambles of the CWC and CTBT

Overall it is noteworthy to point out that general and complete disarmament under strict and effective international control is expressed as a long term vision under both treaty preambles and the conclusion of the respective treaties can be seen as a step in this direction. Moreover, the support for a multilateral disarmament approach is clearly underlined by the fact that both preambles stress the need for effective and strict international control. Naturally, both treaties differ considerably in their disarmament scope. While the CWC eradicates an entire category of weapons of mass destruction, the CTBT forbids only the conduct of nuclear (weapon test) explosions. Notwithstanding this major difference, one needs to recognize that disarmament related regime principles can be found in both treaty preambles. Interestingly, the respective CWC principle specifically refers to 'making progress' towards the vision of general and complete disarmament under strict and effective international control. In sup-

port of reaching the ultimate disarmament goal, the CWC preamble takes an all-encompassing approach and explicitly highlights the need to prohibit and eliminate all weapons of mass destruction (i.e. nuclear, biological and chemical weapons) as part of the disarmament effort. Conversely, the respective passage in the preamble to the CTBT stresses the need for continued and progressive efforts to reduce nuclear weapons globally, with the ultimate goal of eliminating them and preventing their proliferation. Furthermore, it is recognized in the preamble that the cessation of all nuclear (weapon test) explosions constitutes an effective measure of nuclear disarmament and non-proliferation.

Looking at the prohibition principle, one can identify different approaches taken under the CWC and CTBT preamble, respectively. The CWC related prohibition principle concisely spells out the various norms established with respect to chemical weapons, which imply the complete eradication of this category of weapons of mass destruction. Moreover, and taking into account the past use of herbicides as a chemical weapon, the preamble also explicitly stipulates the prohibition of using herbicides as a method of warfare. The prohibition principle reflected in the CTBT preamble is, however, comparably limited as it only prohibits nuclear (weapon test) explosions, but does not prohibit their possession or use. In spite of that major difference, the respective CTBT prohibition principle emphasizes the impact that the cessation of nuclear tests has on the further development and improvement of nuclear weapons. While this is in fact true for a state that is at an early stage of its nuclear weapon development programme, this is not necessarily the case for a country that has already carried out many tests and has an advanced nuclear weapon programme.

In addition to the disarmament and prohibition principle emphasized under both regimes, the CWC's preamble contains one principle pertaining to the economic and technological development of all States Parties. Given the potential benefits achieved through chemistry, this principle promotes free trade in chemicals as well as international cooperation in the field of chemistry. As such, this principle also underlines the distinction that needs to be made between legitimate use of chemicals for the benefit of mankind versus illicit activities.

Finally, the CTBT preamble acknowledges the ecological damage that has been caused by the more than 2.000 nuclear tests. Accordingly, and while definitely not considered a key principle of the CTBT, a comprehensive nuclear test ban would nevertheless also have a positive effect on the protection of the environment.

Norms

Norms are closely associated with the overarching regime principles and represent the second element that constitute a regime. By their nature, "*[n]orms are standards of behavior defined in terms of rights and obligations*".[249] When defining norms for a particular regime, states can draw upon a broad set of general procedures that are contained in customary rules, best practices, and conventions and are as such applicable to a large number of policy areas.[250] Norms are considered a decisive element in regime building, as they should guide the behavior of states in such a manner that it is compatible with the overarching regime principles. Norms not only provide guidance with respect to the formalized set of rules explicitly specified in the regime, but also keep the non-formalized part of the issue area in conformity with the principles. The table below summarizes key norms established under the verification regimes of the CWC and CTBT, respectively, and categorizes them into various thematic clusters.

Key norms established under the CWC	Key norms established under the CTBT
Disarmament Norm • Obligation to destroy all existing chemical weapons (including old and abandoned stockpiles) and any chemical weapons production facilities in accordance with the Convention provisions (Art. I, 2-4); • Declarations (Art III); • Chemical Weapons (Art IV); • Chemical Weapons Production Facilities (Art. V); **Prohibition Norm** • Prohibition to develop, produce, otherwise acquire, stockpile or retain chemical weapons, or transfer chemical weapons to anyone (Art I, 1.a); • Prohibition to use chemical weapons and riot control agents as a method of warfare (Art I, 1.b, 5); • Prohibition to assist, encourage or induce in any way, anyone to engage in any prohibited activities, including military preparations to use CWs (Art. I, 1.c-d); **Verification Norm** • Obligation to ensure that toxic chemicals and their precursors are only developed, produced, otherwise acquired, retained, transferred, or used for purposes not prohibited under the CWC	**Prohibition Norm** • Obligation not to carry out any nuclear (weapon test) explosion and to prohibit and prevent any such nuclear explosion (Art. I, 1); • Refrain from causing, encouraging, or in any way participating in the carrying out of any nuclear (weapon test) explosion (Art I, 2); **Verification Norm** • General Provisions (Art. IV.A); • International Monitoring System (Art. IV. B); • Consultation and Clarification (Art. IV.C); • On-Site Inspections (Art. IV.D);

[249] Krasner (1983), p. 2.
[250] See Müller (1993), p. 40.

Key norms established under the CWC	Key norms established under the CTBT
(Art. VI, 2); • Obligation to subject Schedule 1-3 chemicals and related facilities (incl. other chemical production facilities) to data monitoring and verification measures (Art. VI, 3-6); **Economic and Technological Development Norm** • Right to develop, produce, otherwise acquire, retain, transfer and use toxic chemicals and their precursors for purposes not prohibited under the CWC (Art. VI, 1); • Avoid hampering the economic and technological development and intl. cooperation in the field of chemical activities for purposes not prohibited (Art. VI, 11); • Obligation to avoid undue intrusion into the State Party's chemical activities (Art. VI, 10); • Economic and technological development (Art. I); **Assistance and Protection Norm** • Right to receive assistance and protection against the use or threat of use of chemical weapons (Art. X);	

Table 13: Regime Norms
Source: CWC and CTBT

Looking at the norms of both regimes, one can note both the comparably bigger number and types of norms stipulated in the CWC verification regime as well as their much wider scope. This assessment is underlined by the fact that only the CWC encompasses in its provisions a comprehensive disarmament norm. As such, the CWC aims to eliminate an entire category of weapons of mass destruction by destroying all existing stockpiles of chemical weapons (including old and abandoned chemical weapons), as well as related production facilities under tight verification provisions. In contrast to that, and as already addressed before, the CTBT's provisions do not require the elimination of nuclear weapons.

While noting this major difference, both regimes encompass a prohibition norm. The CWC related norm prohibits the use of chemical weapons (including riot control agents as method of warfare). Moreover, the prohibition norm established under the CWC also covers the development, production, acquisition, stockpiling, retaining, transfer of chemical weapons as well as any form of engagement in any prohibited activities including military preparations for the use of chemical weapons. In contrast to that, the CTBT has the comparably much more limited goal of prohibiting the conduct of nuclear (weapons test) explosions, which covers both nuclear weapon tests, including hydronuclear testing, and peaceful nuclear explo-

sions (PNEs). This more limited goal set under the CTBT can be explained by the fact that *"[t]he core interest shared by all nuclear powers was to preserve their nuclear weapon programmes while curbing the options of others."*[251] Moreover, the more narrowly defined prohibition related norm under the CTBT can also be explained by the existence of another very important treaty in the nuclear area, namely the NPT, which stipulates comprehensive prohibitions such as the transfer, manufacture, acquisition and control for non-nuclear weapons states.

Furthermore, both regimes encompass a verification norm, which is based on completely different approaches. While the CWC makes use of a declarations based inspection approach for routine verification measures, the CTBT relies on a sensor based international monitoring system that provides data products to all its Member States for their independent technical judgement. Both regimes share the same principle approach as regards addressing compliance concerns by encompassing a challenge-type inspection mechanism. Given the wide and legitimate use of chemistry for the sake of mankind, the CWC provides the right to develop, produce, otherwise acquire, retain, transfer and use toxic chemicals and their precursors for purposes not prohibited under the Convention. However, and in order to prevent the re-emergence of chemical weapons, the verification norm addresses this problem by specifying certain toxic chemicals[252] and facilities that need to be declared and are subject to data monitoring and verification measures.

As already reflected in one of the CWC regime principles, the CWC contains a norm pertaining to the economic and technological development of its regime members. As such, this norm stresses the obligation to avoid undue intrusion into the State Party's chemical activities and avoid hampering the economic or technical development of States Parties and international cooperation in the field of chemical activities. Moreover, this norm should also be seen as an incentive for all those regime members without chemical weapons to obtain benefits through the peaceful use of chemistry, including participating in the exchange of chemicals, equipment and scientific and technical information.

The CWC also provides for an assistance related norm that can be seen as an incentive for regime members to join the CWC. Given the threat posed by chemical weapons, this norm

[251] See Johnson (2009), p. 193.

[252] These are toxic chemicals and their precursors listed in Schedules 1, 2 and 3 of the Annex of Chemicals, facilities related to such chemicals, and other facilities as specified in the Verification Annex.

provides positive security guarantees to CWC Member States by having the right to receive assistance and protection against the use or threat of use of chemical weapons. Accordingly, this norm has the objective of enhancing national protection capabilities against the threat or use of chemical weapons. Though originally intended against the threat posed by state actors, this norm has gained increased importance due to the potential threats of CW use by non-state actors. In sum, it can be noted that the norms established under both regimes operationalize the regime principles by further defining each party's rights and obligations. As indicated above, the CWC related regime norms have a comparably wider scope than those under the CTBT. This can be explained to some extent by the existence of another very important treaty in the nuclear field, namely the NPT, which provides comprehensive prohibition norms to non-nuclear weapons states.

Rules

Regime rules represent the third element that defines a regime. As per Stephen Krasner's definition, *"[r]ules are specific prescriptions or proscriptions for action".*[253] Accordingly, they constitute the most formalized part of a regime by further defining the regime norms. Regime members strive to define these rules as precisely as possible and make them legally binding. Given the specifying character of the rules, states' compliance versus non-compliance with the regime becomes apparent. The defining operative nature of rules often makes them highly controversial issues in negotiations, as possibly diverging interests of regime members are at stake, which need to be agreed upon and formalized. The table below summarizes key areas for which rules have been established under the CWC and CTBT verification regimes, respectively. In this context it should be noted that some of the respective Treaty Articles are referenced both under regime norms and regime rules, given their closely intertwined character and their varying level of detail, which in some instances qualify them also as regime rules. Overall, one can say that principle responsibilities and obligations of the Organization versus those of the Member States are addressed in the Articles of these Treaties, while detailed procedural aspects including related prescriptions and proscriptions for action are outlined in the respective Treaty Annexes and Protocols.

Rules established under the CWC	Rules established under the CTBT
Disarmament and Verification-related Rules • Rules with respect to destruction of chemical	**Verification-related Rules** • Rules with respect to verification (incl.

[253] Krasner (1983), p. 2.

Rules established under the CWC	Rules established under the CTBT
weapons (Article, IV, Verification Annex Part IV) as well as chemical weapon production facilities (Article, V, Verification Annex Part V) and its verification; • General rules pertaining to verification (Verification Annex Part II, III); • Rules with respect to activities not prohibited under the CWC (Verification Annex Parts VI-IX); • Rules with respect to consultation, cooperation and fact-finding as well as on challenge inspections (Article, IX, Verification Annex Part X); • Rules with respect to investigations of alleged use of chemical weapons (Verification Annex Part XI); **Assistance and Protection-related Rules** • Rules with respect to assistance and protection against chemical weapons (Article X);	International Monitoring System, Consultation and Clarification, On-Site Inspections and Confidence Building Measures (Article IV, Protocol Part I-III, Annexes to the Protocol)

Table 14: Regime Rules
Source: CWC and CTBT

Given the specific nature of regime rules and the central object of these security regimes, it can be noted that the regime rules center on further defining verification and disarmament related norms. Taking into account the various types of inspections under the CWC verification regime, one can find a set of regime rules that address general issues with respect to verification that are applicable to all inspection activities. These specify, *inter alia*, the designation of inspectors and inspection assistants, privileges and immunities, standing arrangements, pre-inspection activities, conduct activities and also address departure and reporting aspects upon the conclusion of an inspection.[254] Furthermore, they also specify particular rules pertaining to initial inspections, facility agreements, standing arrangements and pre-inspection for chemical weapons related facilities and Schedule 1 facilities, given the particular verification requirements for these facilities.[255] Based upon these overarching rules, the CWC defines specific and detailed rules governing the destruction and verification of chemical weapons (including old and abandoned chemical weapons) and chemical weapon production facilities.[256] Moreover, and given the need to prevent the re-emergence of chemical

[254] See CWC, Verification Annex Part II.
[255] See CWC, Verification Annex Part III.
[256] See CWC, Verification Annex Parts IV and V.

weapons, regime rules also address declaration and verification requirements for Schedule 1-3 facilities and other chemical production facilities.[257]

Besides these verification rules established for routine verification activities, the CWC also provides for non-routine type of verification activities. Accordingly, the CWC foresees specific rules for challenge inspections and investigations of alleged use of chemical weapons.[258] Notably, and while further defining norms and rules established under Article IX and X of the CWC, challenge inspections are carried out either as per Part X or in the case of an alleged use scenario under Part XI of the Verification Annex. In both instances however, general verification related regime rules under Verification Annex Part II apply unless specifically referenced to in Part X or XI.

In contrast to that and as already noted in the regime norms, CTBT related regime rules do not address any disarmament related aspects. Accordingly, they solely focus on verification related aspects and further detail the rules applicable under the four pillars (i.e. International Monitoring System, consultations and clarifications, on-site inspections, and confidence-building measures) making up the CTBT's verification regime. As such, the vast majority of the rules relate to the on-site inspection pillar. Interestingly, one can note a number of similarities between the OSI related rules established under Protocol Part II and those pertaining to general on-site verification activities under Verification Annex Part II of the CWC and specifically to challenge inspections under Part X of the Verification Annex. Taking into account the (basically) same purpose of OSIs and challenge inspections and the relatively close timeframe when the respective negotiations took place at the Conference on Disarmament in Geneva, it is not surprising that negotiators used CWC challenge inspection related regime rules as a basis for CTBT regime rules pertaining to on-site inspections. A detailed analysis of these regime rules pertaining to challenge-type inspections in both the CWC and the CTBT is carried out in sub-chapter 4.2.

Decision-making procedures

Finally, decision-making procedures represent the fourth defining element of a regime. Accordingly, and based on Krasner's definition, *"[d]ecision-making procedures are prevailing practices for making and implementing collective choice"*.[259] Regimes formalize common con-

[257] See CWC, Verification Annex Parts VI-IX.
[258] See CWC, Verification Annex Parts X and XI.
[259] Krasner (1983), p. 2.

victions and perceptions at a given moment and also set out an overall approach regarding its implementation. However, as regimes can only to some extent cover potential developments within the given issue area, they also encompass a mechanism that creates the flexibility to react to such dynamics and allow for adaptation to new realities and changed conditions as a result of technological, political and social developments. A too formalized approach would not only prove impossible from an operative perspective, but also have a highly adverse effect during regime negotiations and thus likely prevent the regime creation in the first hand. Moreover, procedures, *inter alia*, also define decision-making mechanisms and sanctioning mechanisms in case of non-compliance. The table below summarizes references to decision-making procedures with regard to the CWC and CTBT verification regimes.

Decision-Making Procedures established under the CWC	Decision-Making Procedures established under the CTBT
• Decision-Making Procedures with respect to the organs of the Organization (Article VIII); • Measures to redress a situation and ensure compliance, including sanctions (Article XII); • Settlement of disputes (Article XIII); • Amendments to the CWC (Article XV); • Review of the Treaty (Article VIII, 22);	• Decision-Making Procedures with respect to the organs of the Organization (Article II, Annex I to the Treaty); • Measures to redress a situation and ensure compliance, including sanctions (Article V); • Settlement of disputes (Article VI); • Amendments (Article VII); • Review of the Treaty (Article IX),

Table 15: Regime Decision-Making Procedures
Source: CWC and CTBT

As indicated in the above table, decision-making procedures both under the CWC and the CTBT verification regimes share a high degree of commonality. As already briefly outlined under 2.1.4, both treaties stipulate three organs for implementation purposes, which are the Technical Secretariat, the Executive Council and the Conference of the States Parties. Given the pre-entry into force state of the CTBT, these functions are carried out by the Provisional Technical Secretariat, Working Groups A and B (WGA and WGB) and the Preparatory Commission, respectively. An analysis of the specific roles, functions and decision-making procedures of these organs is given in sub-chapter 5.2

Both regimes essentially also encompass the same mechanisms to redress a situation and to ensure compliance, including sanctions.[260] The measures to be taken depend on the urgency of the situation and the gravity of the problem. One option of the Conference of the States Parties is to restrict or suspend the respective State Party's rights and privileges under the

[260] See CWC, Article XII; CTBT, Article V.

treaty until it take actions to conform to its obligations.[261] In case of serious damage to the objective and purpose of the treaty, particularly with respect to non-compliance with the basic obligations, States Parties may also take collective measures in conformity with international law.[262] Finally, and in case of particular urgency, the Conference may bring the issue to the attention of the United Nations.[263]

Both regimes also foresee mechanisms to settle disputes between States Parties, or between States Parties and the Organization, relating to the application or the interpretation of the respective treaties underlying these regimes. [264] These disputes are to be settled in accordance with the relevant Treaty provisions and in conformity with the provisions of the Charter of the United Nations and may include referral to the International Court of Justice, from which also an advisory opinion may be requested.[265]

Moreover, States Parties have the option to propose amendments and changes to the treaties.[266] With respect to the Treaty Articles, amendments can be made by Member States. Such amendments require an Amendment Conference, which can be convened in case one third or more of all States Parties support the further consideration of a proposal made by a Member State.[267] Additionally, amendments only enter into force when they are adopted by the Amendment Conference by a majority of all States Parties, with no State Party casting a negative vote, and subsequently ratified or accepted by all those States Parties having casted a positive vote at the Amendment Conference.[268] In addition, and in order to ensure the viability and effectiveness of both treaties, provisions in the Annexes to the CWC as well as Parts I and III of the CTBT Protocol and Annexes 1 and 2 to the CTBT's Protocol can be subject to changes as long as they relate only to matters of an administrative and technical nature.[269] Proposed changes are to be recommended for adoption by the Executive Council and approved if no State Party objects to it within 90 days.[270]

261 See CWC, Article XII, paragraph 2; CTBT, Article V, paragraph 2.
262 See CWC, Article XII, paragraph 3; CTBT, Article V, paragraph 3.
263 See CWC, Article XII, paragraph 4; CTBT, Article V, paragraph 4.
264 See CWC, Article VI; CTBT, Article XIV.
265 See CWC, Article XIV, paragraphs 2 and 5; CTBT, Article VI, paragraphs 2 and 5.
266 See CWC, Article XV; CTBT, Article VII.
267 See CWC, Article XV, paragraph 2; CTBT, Article VII, paragraph 3.
268 See CWC, Article XV, paragraph 3; CTBT, Article VII, paragraphs 5-6.
269 See CWC, Article XV, paragraph 4; CTBT, Article VII, paragraph 7.
270 See CWC, Article XV, paragraph 5; CTBT, Article VII, paragraph 8.

Finally, both regimes also encompass specific mechanisms for reviewing the operation and effectiveness of the treaties.[271] As such, specific 'Review Conferences' should ensure that the objectives and purposes of the Treaties are realized and new scientific and technological developments are taken into account. Since the entry into force of the Chemical Weapons Convention in 1997, three Review Conferences took place in 2003, 2008 and 2013, respectively. By and large, it can be said that both treaties essentially encompass the same decision making procedures, in which consensual decisions have played an important role. This is indicated by the fact that the Conference of States Parties shall make its decisions on matters of substance as far as possible by consensus. Though decisions in the Executive Council on matters of substance are to be made by a two-thirds majority of all its members, consensual decisions have in fact been the decision principle of choice in the OPCW. A detailed analysis of the decisions made by Member States with respect to challenge-type inspections is made in sub-chapter 5.3 of this dissertation.

Upon this operationalization of the four regime defining components, the following part analyses the different elements constituting the verification regimes established under the CWC and the CTBT. A brief analysis of the principle functions and purposes of the various regime pillars is considered important to understand the particular role that challenge-type inspections play in these regimes. At the same time, the following sub-chapter intentionally refrains from providing an in-depth implementation related account with respect to the individual verification regime elements.

3.2.2 The Elements of the CWC Verification Regime

Looking at the verification regime established under the CWC from a process perspective, declarations made by Member States in the field of chemical industry and/or chemical weapons represent the basic starting point for 'routine' verification activities. On the other hand, Member States may also trigger the verification process by the submission of inspection/investigation requests for non-routine type of inspections (i.e. challenge inspections and investigations of alleged use of chemical weapons), which are tools to address particular non-compliance concerns.

[271] See CWC, Article VIII, B., paragraph 22; CTBT, Article VIII.

Upon the receipt of declarations and inspection/investigation requests at the Technical Secretariat, a validation process is carried out in order to analyze the content and formal correctness of the declaration or inspection/investigation request itself. Depending on the issue that triggered the verification process, different activities follow. In the case of a submitted declaration, on-site verification measures at inspectable industrial or CW related facilities are carried out. Alternatively, data monitoring[272] may be carried out at the Technical Secretariat for declarable facilities, or a clarification process[273] between the respective Member State and the Technical Secretariat may be initiated. Furthermore, and in case of an inspection/investigation request, challenge-type inspections may be carried out which can be requested both at declared and non-declared locations and facilities. As a result of this process, new types of data may become available, which are to be analyzed and reported. In case of on-site inspections, the inspection team prepares an inspection report that provides the basis for future follow-up activities. Respective findings from this analysis and/or States Parties' reporting may trigger (new) declarations and instigate (renewed) verification activities.

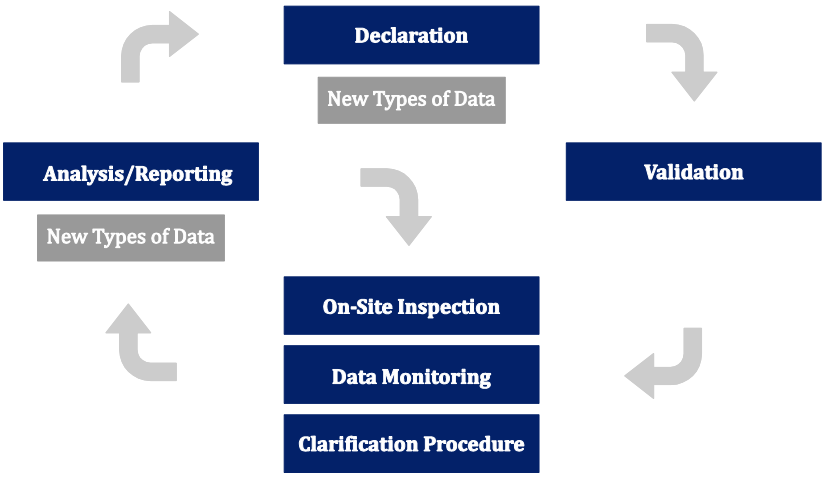

Figure 14: The CWC Verification Process

Source: Runn (2013), Presentation given at OPCW Temporary Working Group on Verification

Upon this general description of the verification process, this paper's research encompasses a brief analysis of the four verification regime pillars established under the CWC.

[272] Data monitoring is, *inter alia*, carried out for Other Chemical Production Facilities that are declarable however not inspectable in accordance with the provisions of Part IX of the CWC.

[273] This clarification process does however not refer to the process of consultations, clarifications and fact-finding under Article IX of the CWC.

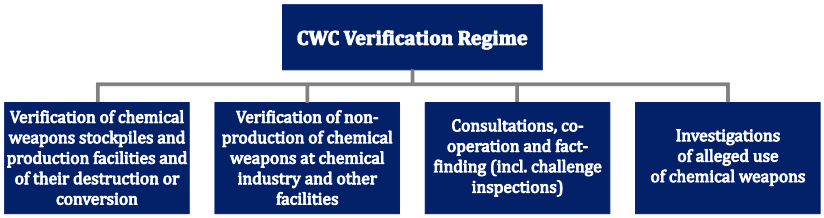

Figure 15: Pillars of the CWC Verification Regime

Source: author (based on CWC)

Verification of chemical weapons stockpiles and production facilities and of their destruction or conversion

Article I of the CWC, *inter alia*, prohibits the development, production, acquisition, stockpiling, retention, transfer and use of chemical weapons[274] and requires the destruction of all chemical weapons and related chemical weapons production facilities within defined timelines and under international verification by OPCW inspectors. In the first decade since entry into force of the CWC, the vast majority – around three quarters – of the OPCW's verification resources have been devoted to the verification of declared CW stockpiles and production facilities and of their destruction.[275]

Verification of chemical weapons stockpiles including their destruction is carried out through systematic verification on-site. Based on comprehensive declarations submitted under Article III of the CWC, initial inspections of declared CW stockpiles are conducted at their place of storage (so called 'chemical weapons storage facilities' (CWSFs) with the aim of confirming the accuracy of the declaration, obtaining additional information for future, subsequent verification activities and working on facility agreements.[276] During an initial CWSF inspection, OPCW inspectors conduct a physical inventory of the CWs (i.e. counting of items) and cross-check this information with the declaration and information provided by the facility. Subsequently, and upon having established a baseline, a systematic verification approach towards these storage facilities is conducted through short notice on-site inspections at random intervals with the objective of ensuring that no undeclared removal of chemical weapons takes place and that chemical weapons are being removed solely for their subsequent destruction. As part of the inspection activities, tags are applied on a limited number of CW munitions for

[274] The CWC distinguishes three categories of CWs for the purpose of destruction: Category 1 CW are CWs on the basis of Schedule 1 chemicals and their parts and components, Category 2 CWs are CWs on the basis of all other chemicals and their parts and components and Category 3 CWs are unfilled munitions and devices, and equipment specifically designed for use directly in connection with employment of chemical weapons. See CWC, Verification Annex, Part IV (A), paragraph 16.

[275] See Trapp (2012), p. 41.

[276] See CWC, Verification Annex, Part III, paragraph 1.

stockpile control purposes. Eventually, samples are taken, *inter alia*, from such tagged munitions at chemical weapons destruction facilities (CWDFs) during their destruction to confirm the declared agent. Systematic verification at CWSFs continues until all chemical weapons have been removed from the storage facility for destruction.

A systematic verification approach has also been taken for chemical weapons destruction facilities (CWDFs), which have been established in the immediate vicinity[277] of the CWSFs in order to minimize the hazards involved in the transport of chemical weapons. Throughout destruction operations, inspectors are permanently present in the respective State Party and perform their verification activities through a combination of *in-situ* monitoring at the facility and through the use of installed monitoring and recording devices in the facility. Moreover, inspectors apply a set of different techniques like sampling and analysis, visual observation, making use of containment and surveillance measures by applying seals and other access control measures at critical points in the facility, or though using installed monitoring and recording devices. Moreover, they review data generated by the facility process control system. As such, inspectors verify both the quantity and identity of chemical weapons to be destroyed and that the chemical weapons have indeed been indeed destroyed (i.e. destroyed to the agreed end-point of destruction).[278] Considerable optimization efforts to enhance the effectiveness of verification activities at CWDFs have been made since entry into force of the CWC, which has led to significantly smaller inspection team sizes.[279]

The CWC establishes clear timelines as regards to the destruction of the stockpiles.[280] In case a State Party cannot destroy all Category 1 chemical weapons within 10 years after entry into force, an additional five years extension of the deadline can be granted by the highest policy making organ of the Organisation (i.e. the Conference of the States Parties).[281]

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277 This approach has been adopted in all CW destruction operations except for Syria.

278 See CWC, Verification Annex, Part IV (A), paragraph 50.

279 See OPCW (2012): WGRC-3/S/1, p. 32.

280 CWC Possessor states have to destroy their stockpiles within the following timelines: not less than 1% of the Category 1 CWs not later than three years after entry into force of the CWC; not less than 20% of the Category 1 CWs not later than five years after entry into force of the CWC; not less than 45% of the Category 1 CWs not later than seven years after entry into force of the CWC; all Category 1 CWs not later than 10 years after entry into force of the CWC; all Category 2 and 3 CWs not later than five years after entry into force of the CWC; See CWC, Verification Annex Part IV (A), paragraph 17.

281 CWC, Verification Annex, Part IV (A), paragraph 26. Destruction operations of declared chemical weapons have been successfully concluded in three Member States under international verification by the OPCW (Albania in July 2007, A State Party in July 2008 and India in March 2009). However, as Libya, the Russian Federation and the United States of America could not meet the final extended deadline of 29 April 2012 (i.e. 15 years after entry into force of the CWC), the Conference of the States Parties at its Sixteenth Session adopted a decision that enables them to fulfil their obligations in due course while providing additional transparency measures and

Furthermore, verification activities also cover chemical weapons production facilities (CWPFs). As per the CWC, such facilities need to be destroyed or can be converted for purposes not prohibited under the Convention. Upon the conduct of an initial inspection with the main purpose "*to confirm that the production of chemical weapons has ceased and that the facility has been inactivated […]"*[282], subsequent systematic verification measures are applied "to *ensure that any resumption of production of chemical weapons or removal of declared items will be detected*"[283]. Inspections at CWPFs take place at short notice (48 hours advance notice) and include inspection techniques like visual observation, sampling and analysis, placing of seals and other inventory control measures at declared devices.[284] All respective verification activities for CWSFs, CWDFs and CWPFs are governed by 'Facility' Agreements', which are to be concluded between the State Party and the Organisation. Additionally and importantly for verification purposes, inspection teams prepare reports about their inspection activities, which are analyzed at the OPCW Headquarters in The Hague and may trigger follow-up activities with the respective States Parties.

Finally, the CWC also provides for verification activities as regards Old Chemical Weapons[285] (OCWs) and Abandoned Chemical Weapons[286] (ACWs).[287] OCW inspections have the main purpose of verifying that these declared weapons meet the definitions of OCWs. On the other hand, ACW inspections aim to verify all the submitted information and determine whether systematic verification in accordance with the provisions of the Verification Annex Article IV (A) paragraphs 41 – 43 is required. Respective ACW Verification activities have been carried out in three States Parties (China, Italy, Panama), albeit most verification efforts have focused on the vast ACW stockpiles abandoned by Japan on Chinese territory.[288] While it can be expected that States Parties will also in the foreseeable future declare OCWs on a relatively lim-

enhanced reporting requirements (see OPCW (2012): WGRC-3/S/1, p. 27). No destruction deadline has been yet established for Iraq, which acceded to the CWC in 2009.

282 CWC, Verification Annex Part V, paragraph 44 (a).

283 CWC; Verification Annex Part V, paragraph 48.

284 14 States Parties have declared 96 CWPFs: Bosnia and Herzegovina, China, France, India, the Islamic Republic of Iran, Iraq, Japan, Libya, the Russian Federation, Serbia, the Syrian Arab Republic, the United Kingdom of Great Britain and Northern Ireland, the United States of America, and another State Party. See OPCW (2014): The Chemical Weapons Ban. Facts and Figures.

285 Old Chemical Weapons refer to CWs produced before 1925 or between 1925 and 1946 that have deteriorated to such extent that they can no longer be used as CWs. See CWC, Article II, paragraph 5.

286 Abandoned Chemical Weapons (ACWs) means CWs, including OCWs, abandoned by a State after 1 January 1925 on the territory of another State without the consent of the latter. See CWC, Article II, paragraph 6.

287 16 States Parties have declared OCWs. See OPCW (2014): The Chemical Weapons Ban. Facts and Figures.

288 Almost 36,000 ACWs have been destroyed as at 31 December 2012 and approximately 13,600 ACWs were being kept at storage sites in China awaiting final destruction. See OPCW (2013): S/1124/2013, p. 17.

ited scale, the discovery and destruction of remaining ACWs in China will, in comparison, require much greater efforts.

Overall it can be said that verification of CW stockpiles and CWPFs and of their destruction has been the top priority of the Organisation and the vast majority of its verification resources have been devoted to it. As such, more than eighty percent of the declared CW stockpile has been destroyed under international verification, which can be regarded as a major success of the CW disarmament regime. At the same time, it should however not be forgotten that six states have yet to ratify the CWC. Among these states are some suspected of having or having had offensive chemical weapons programmes.[289] Moreover, Libya, Russia and the United States were not able to comply with the provisions of the CWC to destroy their stockpiles within the timelines prescribed by the Convention. At the same time, the Organisation is making major efforts to carry out destruction activities of the Syrian CW stockpile.

Overall, the destruction of the declared CW stockpiles has taken considerably longer than initially estimated by the drafters of the CWC. Nevertheless, the intensity of CW destruction operations will eventually significantly decrease. Consequently, the overall focus of the organization will shift towards verification of non-production of chemical weapons at chemical plants. Verification activities to be performed in this field and respective challenges to be tackled are briefly addressed below.

Verification of non-production of chemical weapons at chemical industry and other facilities

Verification activities directed at chemical industry aim to ensure the non-production of CWs. As already noted above, this second pillar of the Convention will receive higher priority in the future and require the adoption of new verification approaches to keep pace with the changing environment in order to fulfil the objectives of the Convention. In this context, an advisory panel of independent experts established in 2010 and tasked to make recommendations for future OPCW priorities notes the following: [290]

> *"To ensure the continued viability of the routine verification system under Article VI, the OPCW should now take a forward-looking approach. Verification is more than merely the conduct of inspections and the confirmation of decla-*

[289] Four states have neither signed nor acceded to the CWC: Angola, DPRK, Egypt and South Sudan. Two states have signed but not ratified the CWC: Israel, Myanmar. See OPCW (2013): S/1131/2013, pp-7-8. There are speculations that the DPRK, Egypt and Israel have or had offensive CW programmes. See Arms Control Association (2012): Chemical and Biological Weapons Status at a Glance.

[290] OPCW (2011): S/951/2011, p. 12.

> *ration data. It is a process of gathering, validating and evaluating information that allows the independent assessment of how each State Party is implementing the treaty."*

Article VI of the CWC relates to activities not prohibited under the CWC and stipulates that *"[e]ach State Party has the right, subject to the provisions of this Convention, to develop, produce, otherwise acquire, retain, transfer and use toxic chemicals and their precursors for purposes not prohibited under this Convention."*[291] Given the fact that many toxic chemicals including precursors have a dual use nature (i.e. legitimate applications in chemical industry but also possibly to be misused for CW production purposes), CWC verification activities also cover the chemical industry. Thus, OPCW Member States need to declare facilities and activities related to chemicals that are listed in the CWC's Annex on Chemicals[292] as well as Other Chemical Production Facilities (OCPFs) that produce Discrete Organic Chemicals (DOCs). As per the Convention, verification activities under Article VI and the related Verification Annexes Part VI-IX of the Convention fall under four different categories:

- Schedule 1 inspections,[293]
- Schedule 2 inspections,[294]
- Schedule 3 inspections,[295]
- OCPF inspections.[296]

The above mentioned verification activities are based on the risk these chemicals pose to the object and purpose of the Convention and range from systematic, highly quantitatively oriented and stringent verification in Schedule 1 facilities, risk assessment based verification in

[291] CWC, Article VI, paragraph 1.

[292] The CWC's Annex on Chemicals specifies the type of toxic chemicals and their precursors that are subject to its verification provisions. As such, chemicals are divided into three 'schedules of chemicals' according to the risk they pose to the objective and purpose of the Convention and taking into account their previous use as chemical weapons and their legitimate use for commercial purposes.

[293] Schedule 1 chemicals have been developed, produced, stockpiled or used as chemical weapons or precursors for chemical weapons; they have pose a high risk to the object and purpose of the CWC and have little or no use for purposes not prohibited under the CWC. See CWC, Annex on Chemicals, Guidelines for Schedule 1.

[294] Schedule 2 chemicals pose a significant risk to the object and purpose of the CWC and are divided into toxic chemicals and precursors. Whereas the former could be used as chemical weapons due to their properties and toxicity and they are not produced in large commercial quantities for purposes not prohibited, the latter are potential CW precursors. See CWC, Annex on Chemicals, Guidelines for Schedule 2.

[295] Schedule 3 chemicals pose a risk to the object and purpose of the CWC due to their toxicity and properties. They can and have been used for the production of chemical weapons, but they do also have a wide and legitimate use for commercial purposes not prohibited under the CWC. See CWC, Annex on Chemicals, Guidelines for Schedule 3.

[296] OCPF inspections cover plant sites that produced by synthesis during the previous calendar year more than 200 tons of unscheduled discrete organic chemicals or plant sites that comprise one or more plants that have produced during the previous calendar year more than 200 tons of unscheduled discrete organic chemicals containing phosphorus, sulfur or fluorine. See CWC, Verification Annex, Part IX, paragraph 9.

Schedule 2 facilities, to qualified, random, spot-check based approaches in Schedule 3 facilities and OCPFs.[297] Taking into account inspection experiences made, considerable efforts have been undertaken by the OPCW to optimize inspections under Article VI with the aim of increasing cost-effectiveness while maintaining a stringent verification regime. Hence, measures such as sequential inspections (two inspections in one trip), reduction of the team sizes for Schedule 3 and OCPFs from three to two inspectors, quality reviews of inspections or streamlining reporting formats have been introduced by the Technical Secretariat, and further suggestions are being explored in close coordination with Member States and the chemical industry.[298]

22 States Parties have declared 26 Schedule 1 facilities[299] (Single Small-Scale Facilities or Other Facilities). Based on initial and subsequent annual declarations of past and anticipated activities, OPCW inspectors carry out systematic verification activities at Single Small Scale Facilities with the aim to "*verify that the quantities of Schedule 1 chemicals produced are correctly declared and, in particular, that their aggregate amount does not exceed 1 tonne.*"[300] As regards to Other Facilities, inspectors have to verify three aims:[301]

a. The facility is not used to produce any Schedule 1 chemical, except for declared chemicals;
b. The quantities of Schedule 1 chemicals produced, processed, or consumed are correctly declared and consistent with needs for the declared purpose; and
c. The Schedule 1 chemical is not diverted or used for other purposes.

Facility specific verification activities of inspectors are guided by mandatory facility agreements for these facilities[302], which have been concluded for all of them. As such, OPCW inspectors conduct, *inter alia*, physical inspection activities within the facility, cross-checks of records including mass balance accountancies, and inventory of relevant items.

While most of the Schedule 1 facilities are government owned and operated, Schedule 2, 3 and OCPFs are more relevant to the chemical industry.[303] Hence, continued support by chem-

297 Daoudi/Trapp (2006), p. 90.
298 See OPCW (2012): WGRC-3/S/1, pp. 32-35.
299 The Convention distinguishes between three different types of inspectable Schedule 1 facilities, namely Single Small Scale Facilities (SSSFs), 'other Schedule 1 facilities producing for protective purposes' (OFPPs) and 'other Schedule 1 facilities for research, medical, or pharmaceutical purposes'. See CWC, Verification Annex, Part VI, paragraphs 8-12. See also OPCW (2014): EC.76, C-19/CRP.1, p. 11.
300 CWC, Verification Annex, Part VI, paragraph 21.
301 CWC, Verification Annex Part Vi, paragraph 28.
302 See CWC, Verification Annex, Part VI, paragraphs 31-32.
303 See Feakes (2007), p. 188.

ical industry regarding the implementation of the CWC is considered essential and support has remained high since the negotiations of the Convention.[304] As in the case of Schedule 1 facilities, declarations serve as the basis, and both initial and annual declarations on past and anticipated activities are to be submitted by States Parties to the Technical Secretariat.[305] Taking into account the different types of chemicals subsumed under Schedule 2, the Convention sets three different declaration thresholds with ten times higher corresponding verification thresholds. Inspections in Schedule 2 facilities[306] generally aim to *"verify that the activities are in accordance with the obligations under this Convention and consistent with the information to be provided in declarations"*.[307] Accordingly, OPCW inspectors apply both quantitatively (e.g. material balance accountancy, facility records and documentation check) and qualitatively oriented measures (e.g. visual observation and sampling and analysis)[308] during the 96 hour period of the inspection.

A different selection mechanism for the inspection of Schedule 3 plant sites is taken, compared with the risk based mechanism in Schedule 2 facilities. As such, a random selection approach is applied that takes into account two weighting factors, namely equitable geographical distribution of the inspections and information on the declared plant sites available to the Technical Secretariat.[309] Inspections carried out in this facility category generally aim to verify that "*activities are consistent with the information to be provided in declarations*"[310]. Moreover, the Convention also provides for a particular inspection aim targeted at verifying the absence of any Schedule 1 chemical, especially its production, except in accordance with the provisions of Part VI of the Verification Annex.[311] Hence, this represents a more qualitatively oriented inspection approach compared to Schedule 2 facilities.[312] Schedule 3 inspec-

304 See International Council of Chemical Associations (2008), p. 2.
305 Declaration requirements are stipulated in the CWC, Verification Annex Part VI, A. Declarations.
306 192 Schedule 2 facilities in 22 States Parties are subject to inspection as of 31 December 2013. See OPCW (2014): EC-76/5, C-19/CRP.1, p. 11.
307 CWC, Verification Annex Part VII, paragraph 15. It should be noted that this paragraph also lists three particular inspection aims, namely verification of 1.) the absence of any Schedule 1 chemical, 2.) the consistency with declaration levels and 3.) the non-diversion of Schedule 2 chemicals.
308 On-site sampling and analysis was introduced in Schedule 2 facilities in 2006. As of 31 December 2013, inspectors have successfully made use of this verification tool in 63 inspections in 22 State Parties – See OPCW (2014): EC.76/5 C-19/CRP.1, p. 12.
309 See CWC, Verification Annex Part VIII, paragraph 14.
310 CWC, Verification Annex Part VIII, paragraph 17.
311 See CWC, Verification Annex Part VIII, paragraph 17. It should be noted that verifying the absence of any schedule 1 chemical applies for all Schedule 2 inspections, Schedule 3 inspections and OCPF inspections.
312 Daoudi/Trapp (2006), p. 95.

tions[313] are to be concluded within a very limited inspection period of 24 hours and consist of physical observation activities of relevant areas within the declared plant site and records review.

Finally, verification activities under Article VI of the Convention also cover 'Other Chemical Production Facilities'.[314] As for Schedule 3 facilities, the Convention foresees a random selection approach, which is based on three weighting factors, namely equitable geographical distribution, information available to the Technical Secretariat and proposals by States Parties. OCPFs considerably vary in their design and features, with some posing a much higher risk among the OCPFs to the object and purpose of the CWC and hence are of greater concern.[315] After lengthy discussions, a revised site selection methodology was introduced by the Technical Secretariat in January 2012, with the aim of selecting more OCPFs of high relevance for the object and purpose of the Convention. OCPF inspections generally aim to verify "*that activities are consistent with the information to be provided in the declarations*" and particularly "*verification of the absence of any Schedule 1 chemical, especially its production, except of in accordance with Part VI of [the Verification] Annex*".[316] In order to fulfil the inspection aims, OPCW inspectors conduct physical inspections of the plant site and review records within the 24 hours period of the inspection.

While most resources of the available verification activities have been channelled into CW related verification activities thus far, the Organisation has at the same time also successfully implemented verification activities in the chemical industry. Since entry into force of the Convention, considerable efforts have been made to optimise also the Article VI verification activities, particularly with a view to minimize inspection related costs while at the same time maintaining a stringent verification regime. As such, the conduct of sampling and analysis during Schedule 2 inspections since 2006 can be seen as an important measure that contributes to a qualitatively oriented, credible verification approach. Given the considerable experi-

313 As of 31 December 2013, 399 Schedule 3 facilities in 34 States Parties are subject to inspection. See OPCW (2014): EC-76/5, C-19/CRP.1, p. 11.

314 As of 31 December 2013, 4,284 OCPFs in 79 States Parties are subject to inspection –see OPCW (2014): EC-76/5, C-19/CRP.1, p.11 Whilst the distribution of Schedule 2 and 3 facilities has remained relatively stable within the various geographical regions over the years and also the number of OCPFs remained relatively stable in the African, Eastern European and the Western European and Others regional groups, the number of declared OCPFs in Asia and the Latin American and Caribbean regional groups tripled between 2001 and 2009 – See OPCW (2011): S/951/2011, p. 6.

315 Multipurpose batch plants producing phosphorus, sulphur, fluorine in excess of 200 tons annually pose the highest risk among OCPFs to the object and purpose of the CWC. See National Paper Switzerland OPCW (2008): RC-2/NAT.11, p.15.

316 CWC, Verification Annex, Part IX, paragraph 14.

ence gained, the Technical Secretariat is planning to expand the use of this verification tool also to Schedule 3 and OCPF inspections.[317] Nevertheless, further efforts are necessary to continue improving the Article VI verification regime in order to keep abreast of scientific and technical advances in chemical industry. This will also require the continued future close engagement with the chemical industry in view of its ever growing and technologically advancing state.[318]

Consultations, cooperation and fact-finding

Article IX of the Convention provides for consultations, cooperation and fact finding in order to resolve concerns about possible non-compliance among States Parties. The respective procedures under Article IX consist of three progressively stronger, however not interdependent steps:

- A cooperative mechanism to settle compliance concerns among the parties concerned (reflected in paragraphs 1-2);
- A procedure for requesting clarification between the parties that stipulates the active engagement of the Executive Council (reflected under paragraphs 3-7);
- A challenge inspection procedure (reflected under paragraphs 8-25);

Importantly, and as later elaborated in more detail under sub-chapter 5.1, Member States have different understandings of the interrelationship between these steps. As stressed by one of the interviewed experts, there is a 'philosophical divide' between Member States: One group of States Parties sees all the verification tools as independent and unrelated mechanisms that can be used at any time and a state party may directly invoke the challenge inspection mechanism without resorting first to a request for clarification. Conversely, other states in fact see a link and a 'logical and linear progression' between these verification mechanisms.[319] However, many experts including Krutzsch and Trapp, who wrote a commentary on the CWC provisions, discount this interpretation and state:

> *"The procedures under this Article represent progressively stronger steps. States Parties are called upon by paragraph 2 to try to settle a problem first by direct consultation and cooperation or by requesting clarification through the Executive Council before resorting to a challenge inspection. However, the same paragraph makes it clear that the right to request a challenge inspec-*

317 See OPCW (2012): WGRC-3/S/1, p. 37.
318 See Crowley (2011), p. 2.
319 See Expert Interview 4, paragraph 8.

tion is not dependent on such previous attempts to solve the matter by exchange of information etc."[320]

Settling a compliance concern through bilateral consultations requires the readiness by both States Parties to reach mutual consent. Paragraph 2 of Article IX stipulates a maximum timeline of 10 days, in which the State Party requested to clarify the concern shall respond. The Convention leaves both the modalities and type of arrangements for resolving the compliance concerns entirely up to both Member States. States Parties have made use of bilateral consultations and information exchanges among themselves since entry into force of the Convention.[321] Additionally, the Convention provides for the option of involving the Executive Council, through the Director-General, in the procedure for requesting clarification. Outlined under paragraphs 3 – 7 of the Convention's Article IX, this mechanism offers the option of involving a neutral and official organ of the Organisation with the purpose to act as a mediator and arbiter in the clarification process. Table 16 below outlines the three options of the involvement of the Executive Council.

Contributing Option of the Executive Council	Timeline	Remarks
State Party requests Executive Council to assist in clarification – Executive Council to provide appropriate information in its possession	Not specified	Paragraph 3/Article IX/CWC
State Party requests Executive Council (EC) to obtain clarification from another State Party: • EC to forward request for clarification to the State Party concerned through the Director-General • Requested State Party to provide clarification to the EC as soon as possible after receipt of the request • EC to take note of the clarification and forward it to the requesting State Party	within 24 hours within 10 days within 24 hours	Paragraph 4/ (a) – (c) Article IX/CWC Procedure can be repeated for several times
State Party requests EC to obtain further information in case clarification provided is deemed to be inadequate. • EC to call the Director-General to establish group of experts (either from TS or external) • Group of experts to submit a factual report to the EC on its findings • If clarification deemed to be unsatisfactory, State Party has right to request a special session of the EC	Not specified	Paragraph 4/ (d) – (f) Article IX/CWC

Table 16: Procedure for requesting clarification
Source: CWC, Art. IX

320 Krutzsch/Trapp (1994), pp. 174-175.
321 See OPCW (2012): WGRC-3/S/1, p. 60.

Furthermore, the request for the active involvement of the Executive Council can not only be triggered by a State Party that has compliance concerns about another Member State, but also by a State Party that wants do demonstrate and clarify its own compliance.[322] Finally, the procedure for requesting clarification also envisages the right of a State Party to request a special session of the Conference of States Parties, the highest policy making organ of the Organisation. A State Party can resort to this option in case a request for clarification submitted to the Executive Council has not been resolved within 60 days after its submission or in case *"[…] it believes its doubts warrant urgent consideration […]"*[323]. Since entry into force of the Convention, no State Party has made use of the clarification mechanism including the involvement of the Executive Council.[324]

Besides the above mechanisms, Article IX also contains procedures for challenge inspections, which also have not been invoked since entry into force of the CWC.[325] Challenge inspections, which are regarded as "*the ultimate guardian of the effective implementation of, and strict compliance with the Convention*"[326] serve both a deterrent and confidence building role. Importantly, and in contrast to routine inspections under the Convention, challenge inspections can be conducted not only at any declared facility, but at "*any facility or location on the territory or in any other place under the jurisdiction or control of any other State Party […]*"[327]. In order to trigger the challenge inspection mechanism, a State Party needs to submit an inspection request both to the Director-General and the Executive Council at the same time.[328] Unless a three-quarter majority of the Council decides against the request within 12 hours upon its receipt, preparations proceed for the mission to go ahead.[329] While the Convention does not provide a specific time span in which the inspection team has to arrive at the point of entry, it notes that the team "*shall arrive […] in the minimum time possible*"[330]. Furthermore, the CWC does not specify the team size, however notes that the size "*shall be kept to a minimum necessary for the proper fulfilment of the inspection mandate*" and leaves it up to the Director-General to determine its composition and size.[331]

322 See CWC, Article IX, paragraph 5.
323 CWC, Article IX, paragraph 7.
324 See OPCW (2012): WGRC-3/S/1, p. 60.
325 See OPCW (2012): WGRC-3/S/1, p. 61.
326 Asada (2006), p. 76.
327 CWC, Article IX, paragraph 8.
328 See CWC, Article IX, paragraph 13.
329 CWC, Article IX, paragraph 17.
330 CWC, Verification Annex Part X, paragraph 13.
331 CWC, Article IX, paragraph 2.

Many of the implementation aspects of the challenge inspection are covered in Part X of the Verification Annex. As such, the Convention stipulates pre-inspection activities, during which the inspected State Party provides the pre-inspection briefing, the inspection team presents its inspection plan and the equipment brought by the team can be inspected by the inspected State Party to ascertain that it meets the specifications of approved inspection equipment. Additionally, negotiations on the perimeter are to be carried out during this phase and exit monitoring is to be initiated by the inspected State Party. During the following inspection period, the inspection team has 84 hours to conduct its fact finding mission and to apply different inspection techniques, such as physical observation, records review, exit monitoring, conducting interviews, and on-site sampling and analysis. Finally, the inspection team goes through the post-inspection activities, during which various reports are to be prepared. The final report is to be provided to the Director-General within 30 days after completion of the inspection. Subsequently, the Executive Council reviews the final report and has to come up with a judgement regarding non-compliance.[332]

Investigations of alleged use (IAUs) of chemical weapons

Investigations of alleged use of chemical weapons represent another non-routine verification element under the Convention. IAUs are triggered by a request for assistance and protection under Article X, paragraph 8 of the Convention. However, the Convention also provides for the conduct of a challenge inspection in case of alleged use of chemical weapons, in which the provisions of Part XI of the Verification Annex apply.[333]

The CWC gives each State Party the right to receive assistance and protection against the use or threat of use of chemical weapons under the following three conditions:

1. *"Chemical weapons have been used against it;*
2. *Riot control agents have been used against it as a method of warfare; or*
3. *It is threatened by actions or activities of any State that are prohibited for States Parties by Article I."*[334]

One can note that an investigation can be triggered by a State Party both under threat and an actual use scenario. However, one can assume that the investigation will look rather different in case of an actual use scenario compared to a threat situation. Moreover, and applying a

[332] See CWC, Verification Annex, Part X, paragraph 61.
[333] See CWC, Article IX, paragraph 19.
[334] CWC, Article X, paragraph 8.

strict interpretation of the respective Convention paragraph, a State Party has the right to request assistance and protection independently of the status of the aggressor in case of a use scenario, while it is not entitled to do so in case of a threat by a non-state actor.

The OPCW may, moreover, also become involved in case of an alleged use of chemical weapons involving a State not Party to the CWC, or in territory not controlled by a State Party. The Convention stipulates that the Organisation shall put its resources to the disposal of the UN Secretary-General upon receipt of such a request.[335] In this context, the OPCW and the United Nations have in 2012 concluded a supplementary arrangement to the existing relationship agreement, which establishes the necessary modalities for dealing with such a contingency.[336] The OPCW, as a matter of fact, made use of this agreement in 2013 for the purpose of the investigation of alleged use carried out in Syria.

The Director-General is required to initiate an investigation within 24 hours upon receipt of a request for assistance and protection *"in order to provide foundation for further action"*[337]*.* The purpose of this investigation is to determine whether chemical weapons or riot control agents were used as a method of warfare, to clarify the circumstances surrounding such use and to identify what assistance the requesting State Party needs. The investigation is to be carried out within 72 hours, but can be extended by similar periods, if so required. To conduct the investigation, the inspection team is to be assembled from inspectors and inspection assistants designated for challenge inspections and from the list of qualified experts, if inspectors designated for such investigations lack the necessary expertise.[338] The inspection team has at its disposal different inspection techniques such as conducting interviews and examining affected persons or eyewitnesses, physical inspection activities or sample collection and analysis (incl. biomedical samples). The Director-General is required to report after each 72-hour period to the Council on the progress of the investigation.[339] The Council must meet within 24 hours of having received an investigation report and must decide by a simple majority within 24 hours following the meeting whether to instruct the Secretariat to provide supplementary assistance.[340]

[335] See CWC, Verification Annex, Part XI, paragraph 27.
[336] See OPCW (2012): Statement of the Director-General OPCW at the Sixty-Seventh Session of the United Nations General Assembly, 19 November 2012.
[337] CWC, Article X, paragraph 9.
[338] See CWC, Part XI, paragraphs 7-9.
[339] See CWC, Article X, paragraph 9.
[340] CWC, Article X, paragraph 10.

The OPCW successfully carried out an investigation of alleged use of chemical weapons in Syria 2013 under UN flag and pursuant to General Assembly resolution 42/37 C and Security Council 620 (1988).[341] Whilst a comprehensive analysis of this mission is still being carried out by the Organisation, a wealth of lessons has already been identified and its results will definitely have a bearing on the planning, preparation and conduct of non-routine inspections under the CWC.

3.2.3 The Elements of the CTBT Verification Regime

In contrast to the declarations and inspections based verification approach under the CWC verification regime, a sensor based international monitoring system provides the backbone of the CTBT's verification regime.[342] Furthermore, and like the CWC, the verification regime makes use of a consultation and clarification mechanism. Confidence building measures, which are closely related to the calibration of the IMS and the interpretation of verification data, supplement the verification regime. Finally, on-site inspections represent the fourth pillar that serve to address concrete compliance concerns. The following figure below outlines the four pillars of the CTBT's verification regime[343], which are further analyzed below.

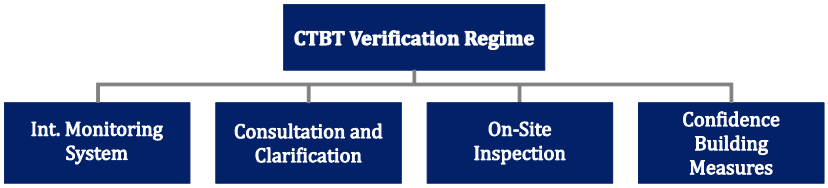

Figure 16: Pillars of the CTBT Verification Regime

Source: CTBT, Art. IV

The International Monitoring System

The IMS comprises a global network of 321 monitoring stations and 16 radionuclide laboratories designed to detect evidence of possible nuclear events carried out underground, under water and in the atmosphere. The network covers the entire globe and stations are distributed over 89 countries. The IMS makes use of four different technologies:[344]

- A seismic network consisting of 170 stations (50 primary stations that record data on a 24/7 basis and transmit them in near real time to the IDC; additionally and to supplement the primary network, a network of 120 auxiliary stations provide data upon re-

[341] See UN (2013): A/67/997-S/2013/553.
[342] More than one billion US dollars have been invested into the IMS since the establishment of the Provisional Technical Secretariat in March 1997. See Tóth (2012), p. 14.
[343] See CTBT, Article IV, paragraph 1.
[344] See CTBT, Protocol Part I, B-E.

quest); all these seismic stations primarily serve the purpose of detecting any underground nuclear explosions;

- An hydroacoustic network consisting of 11 stations worldwide (6 hydrophone and 5 T-phase stations) with the prime purpose of detecting underwater explosions;
- An infrasound network consisting of 60 stations with the main purpose of detecting atmospheric explosions;
- A network of 80 radionuclide stations with the capability to monitor for relevant particulate matter in the atmosphere (40 of them also have the additional capability to detect radioactive noble gases), this network aims to detect both radioactive particles and noble gases possibly released during a test in any environment;

As of 31 December 2013, 88 % of the IMS network has been installed and 83% of all stations have been certified.[345]

IMS Station Type	Installations Completed		Under Construction	Contract under negotiation	Not Started
	Certified	Not certified			
Primary seismic (50)	42	1	1	1	3
Aux. seismic (120)	105	9	3	0	3
Hydroacoustic (11)	10	0	0	1	0
Infrasound (60)	47	0	3	1	9
Radionuclide (80)	63	3	5	5	4
Total (321)	**267**	**15**	**12**	**8**	**19**

Table 17: Status of IMS Station Installations and Certifications
Source: PC/CTBTO (2014): CTBT/PTS/INF.142/Rev.34, p. 3

Total number of Noble Gas Systems: 40	Installed: 31	Certified: 18

Table 18: Status of Noble Gas System Installations and Certifications
Source: PC/CTBTO (2014): CTBT/PTS/INF.142/Rev.34, p. 3

Total number of laboratories: 16	Certified: 11

Table 19: Status of Radionuclide Laboratory Certifications
Source: PC/CTBTO (2014): CTBT/PTS/INF.142/Rev.34, p. 3

[345] See PC/CTBTO (2014): CTBT/PTS/INF.142/Rev.34, p. 3.

The IMS detection goal is to identify a nuclear explosion with a yield of 1 kT TNT equivalent with at least 95% probability.[346] The 2012 US National Academy of Sciences Report on the *CTBT* assesses detection thresholds[347] for the four IMS technologies as follows:

- The threshold levels for IMS seismic *are considered to* be well below 1 kt worldwide for fully coupled explosions.*[348]*

Probability of Detection Primary IMS Stations	Magnitude (mb)	Yield Hard Rock, regions of Better Propagation	Yield Hard Rock, regions of Poorer Propagation
90 %, entire world	3.8	0.22 kT	0.56 kT
90 %, Asia, Europe, N. Africa	3.4	0.09 kT	0.22kT

Table 20: Event Detection Capabilities Using IMS Primary Stations in 2007
Source: 2012 NAS Report (2012), p. 51

- IMS radionuclide detection capabilities are assessed at a level that *"[…] there is very little chance that an atmospheric detonation of even a modest size would go undetected by the IMS"*.[349] In this respect, the global average detection probability by the IMS within 14 days for radioactive particulates released as a result of a 1kT atmospheric event is approximately 97 percent.[350] Regarding the IMS coverage for noble gas detection, the global average detection probability by the IMS within 14 days for a 1 kT underground nuclear detonation ranges at approximately 88 percent.[351]
- The IMS hydroacoustic detection thresholds for in-water explosions is 10 tons (0.01 kT) or below worldwide and below 1 ton (<0.001 kT) throughout the majority for the world's oceans.[352]
- The performance of the IMS infrasound monitoring capability allows for the detection of 1 kT explosions and greater across 80 percent of the Earth's surface.[353]

346 See Kalinowski (2006), p. 140.
347 The 2012 NAS report defines the term 'detection threshold' as a detection at 90 percent confidence and at enough stations to provide a location estimate. See NAS (2012), p. 48.
348 See NAS (2012), p. 6.
349 NAS (2012), p. 57.
350 See NAS, 2012, p. 57. The assessment is based on the operational status of 79 (out of 80) IMS particulate detection network.
351 See NAS (2012), p. 58. The assessment is based on the operational status of 39 (out of 40) IMS noble gas detection network of assumes 10% of the radioactive xenon inventory is promptly vented from the detonation.
352 See NAS (2012), p. 62.
353 See NAS (2012), p. 63. The assessment is based on an operational status of 42 out of 60 IMS infrasound stations.

Seismic, hydroacoustic and infrasound data (i.e. waveform data) from the IMS stations are transmitted in 'near real time' through a dedicated satellite-based global communications infrastructure (GCI)[354] to the International Data Centre in Vienna for collection, processing, analysis, reporting and archiving purposes. Radionuclide stations submit the data once per day to the IDC. Whereas the waveform data can provide a high level of accuracy on the time and location of the event, radionuclide data can provide an indication of the nature of the event. In order to make an assessment regarding the possible source region of detected radionuclide particles or noble gases at the monitoring station, atmospheric transport modelling is applied. Meteorological data for the simulation are obtained from the World Meteorological Organization as well as from the European Centre for Medium-Range Weather Forecasts (ECMWF) based on cooperation agreements concluded in May and June 2003, respectively.[355]

As indicated above, the task of the IDC is to receive, collect, process, analyse, report on and archive data from IMS facilities, including the results of analysis conducted at certified laboratories.[356] In performing its function, the IDC uses, on a routine basis, both automatic processing methods and interactive human analysis for the production and archiving of standard IDC products on behalf of all Member States.[357] IDC data products include both waveform based and radionuclide based data products, such as integrated lists of all signals detected by the IMS, standard screened event bulletins, executive summaries, extracts or subsets of the Standard IDC products, as well as special studies upon request.[358] Importantly, all these IDC products are not prejudiced with regard to the nature of any event, the final judgement of which remain the responsibility of States Parties.[359] As such, the event identification, characterization and attribution of a nuclear explosion to a particular country are the sole responsibility of the Member States.[360]

The following chart provides a simplified overview of the IMS, IDC and GCI function as part of the CTBT verification regime.

354 See The GCI relies for data transmission on Very Small Aperture Terminal (VSAT) technology, which connects to six communication satellites located at a height of 36,000 kilometres above the equator. Transmissions are routed from the satellites to three hubs on the ground which forward transmissions through terrestrial links to the CTBTO in Vienna.
355 See Chen (2009).
356 See CTBT, Protocol Part I, F, paragraph 16.
357 See CTBT, Protocol Part I, F. paragraph 18.
358 See CTBT, Protocol Part I, F, paragraphs 18-19.
359 See CTBT, Protocol Part I, F paragraph 18.
360 See NAS (2012), p. 39

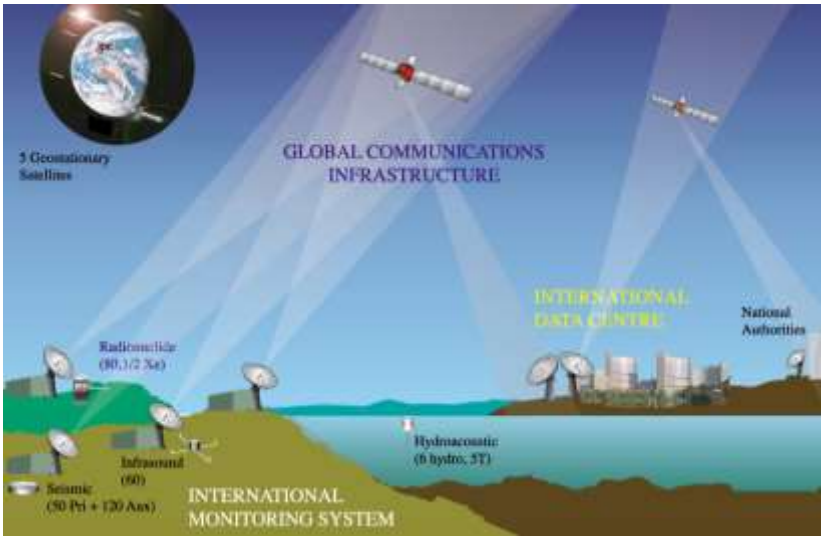

Figure 17: CTBT Verification Regime (IMS and IDC role)

Source: Provisional Technical Secretariat/PrepCom/CTBTO

The Consultation and Clarification Mechanism

The consultation and clarification mechanism provides Member States with the option to clarify and resolve, either among themselves, or with or through the Organization, any matters, which may cause concern about possible non-compliance with the treaty obligations.[361] As noted by Ramaker in his account of the history of the CTBT negotiations, this mechanism "*is not to be considered part of the on-site inspection regime and is a voluntary process that States Parties may choose to use."*[362] However, national positions on the relationship between consultations and clarifications and OSIs differed considerably during the negotiations in Geneva. Ambassador Frank Moher of Canada, who served as Friend of the Chair on on-site inspections characterized the different positions as follows:

> *"Most delegations accepted the validity of a mandatory consultation and clarification process during the triggering phase, provided it did not unduly delay EC considerations on the launching of the OSI itself; several delegations considered that provision for a parallel 'C and C' throughout the OSI process should be included; and a few delegations insisted that 'C and C' was an essential pre-requisite for any OSI decision by the EC".*[363]

Eventually, the Treaty text on the consultation and clarification mechanism stipulates three principle options:

[361] Though the CTBT stipulates that States Parties, should whenever possible resort first to this mechanism for clarifying compliance concerns, they can also immediately request an on-site inspection without having made use of this mechanism. See CTBT, Article IV, C. paragraph 29.

[362] Ramaker et al. (2003), p. 130.

[363] Ramaker et al. (2003), p. 132.

- First, clarification can be carried out directly between two States Parties (Article IV/ paragraph 30) and encompasses the option for both of them to keep the Director-General and the Executive Council information about the request and the response,
- Second, a State Party, which may not have the resources to resolve the matter of concern by itself, can request assistance from the Director-General (DG) and information in the possession of the Technical Secretariat (TS) (Article IV, paragraph 31). Again, if so requested, the requested State Party may decide to inform the Executive Council through the Director-General in the issue;
- Third, a State Party may request clarification from another State Party through the Executive Council (Article IV/paragraphs 32 and 33);

As shown in the table below, the timelines for the consultation and clarification process are kept relatively short. In case the consultation and clarification process cannot resolve the compliance concern, a State Party is still entitled to request an OSI with intact chances that time dependent signatures of a nuclear test could still be detected.[364]

Consultation and Clarification option		
Clarification between two States Parties CTBT Article IV, para 30	**Assistance from the DG CTBT Article IV, para 31**	**Clarification through the EC CTBT, Article IV, para 32, 33**
• Request received by one state from another state • Clarification as soon as possible, but in no case later than 48 hrs. after the request Engaged parties: • Requesting State Party • Requested State Party • Optional to inform the DG and EC about the request and response	• State requests DG to assist in clarification • DG to provide information in the possession of the TS • No timeline for response by DG Engaged parties: • Requesting State Party • DG/TS • EC to be informed by the DG if so requested by the Requesting State Party	• State Party requests EC to obtain clarification from another State Party • EC forwards request to the requested State Party through the DG (within 24 hrs.) • Requested State Party to clarify as soon as possible, but no later than 48 hrs. • EC to take note of clarification and forward request to requesting State Party within 24 hrs. • If Requesting State Party deems clarification inadequate, right to request the EC for obtaining further clarification from the requested State Party

[364] See Ramaker et al. (2003), pp. 134-135.

Consultation and Clarification option		
Clarification between two States Parties CTBT Article IV, para 30	**Assistance from the DG CTBT Article IV, para 31**	**Clarification through the EC CTBT, Article IV, para 32, 33**
		• Requesting State Party has right to request EC meeting (including participation of involved States Parties that are not EC members) in case further response deemed unsatisfactory • EC to consider the matter and may recommend any measure i.a.w. Article V/CTBT Engaged parties: • Requesting State Party • Requested State Party • DG • EC • EC to inform without delay all other States Parties about request and response

Table 21: CTBT Consultation and Clarification Mechanism
Source: CTBT, Art. IV.C

On-Site Inspections

An on-site inspection is considered the ultimate and most intrusive verification tool under the CTBT and serves both the purpose of addressing compliance concerns as well of to acting as a credible deterrent against potential treaty violators. On-site inspections have the sole purpose to "*to clarify whether a nuclear weapon test explosion or any other nuclear explosion has been carried out in violation of Article I and, to the extent possible, to gather any facts which might assist in identifying any possible violator*"[365]. OSIs can be requested by any Member State upon entry into force of the treaty. The CTBT foresees a stringent approval mechanism in order to allow an on-site inspection to proceed. As such, an OSI request has to be supported by a majority of at least 30 affirmative votes among the 51 members of the Executive Council, which is also known as the 'green light' mechanism, contrary to the 'red light' approach adopted under the CWC .[366] The requesting State Party may choose to base its request

[365] CTBT, Article IV, paragraph 35.
[366] See CTBT, Article IV, paragraph 46.

either on information collected by the IMS network or by national technical means as well as a combination thereof.[367]

OSIs under the CTBT may take up to 130 days[368] from the approval of the OSI request and are to be conducted with a team of maximum 40 inspectors[369] (except during drilling) and in an inspection area of up to 1,000 km^2.[370] Both Article IV and Protocol Part II of the CTBT provide clear guidance on the conduct of these technologically complex inspections. Additionally, procedures for the implementation of an OSI are detailed in an Operations Manual[371], which is currently being negotiated among Member States and is to be approved at the first Conference of States Parties upon entry into force of the Treaty.

The technical findings gathered from an OSI are to be reflected in an inspection report, which is to be reviewed by the Executive Council. In accordance with its powers and functions, the Executive Council has to address concerns whether any non-compliance with the Treaty has occurred or whether the right to request an OSI has been abused.

Confidence Building Measures

Confidence building measures represent the fourth and final pillar of the CTBT verification regime and have two key purposes:

1. *"Contribute to the timely resolution of any compliance concerns arising from possible misinterpretations of verification data relating to chemical explosions; and*
2. *Assist in the calibration of the stations that are part of the component networks of the International Monitoring* System"; [372]

Hence, and in support of the above purposes, CTBT Member States can voluntarily notify the Technical Secretariat of any (planned) chemical explosions with 300 tonnes or greater TNT-equivalent blasting material in a single explosion.[373] Additionally, Member States are requested to voluntarily provide information related to their national use of all other chemical explo-

[367] See CTBT, Article IV, paragraph 37. Paragraph 41 of Protocol Part II, CTBT specifies the information to be contained in the request.
[368] See CTBT, Article IV, paragraph 49.
[369] See CTBT, Protocol Part II, paragraph 9. The inspection team may be composed both of designated experts from Member States as well as from staff members of the Technical Secretariat (see also Protocol Part II, paragraph 15). No national of the requesting or inspected State Party shall be a member of the Inspection Team.
[370] See CTBT, Protocol Part II, paragraph 3.
[371] At this stage an updated Model Text for the OSI Operations Manual is available that reflects the results of discussions to date from the third round of elaborations. See PC (2012): CTBT/WGB/TL-18/47.
[372] See CTBT, Article IV, paragraph 68.
[373] See CTBT, Protocol Part III, paragraph 1.

sions greater than 300 tonnes TNT-equivalent as soon as possible after entry into force of the CTBT and at annual intervals thereafter.[374] Moreover, States Parties can invite representatives of the Technical Secretariat or of other States Parties to visit national sites where such explosions are conducted.[375] Finally, and with respect to facilitating the calibration of the IMS, the treaty provides Member States with the option of carrying out chemical calibration explosions or providing information to the Technical Secretariat on explosions planned for other purposes.[376]

3.3 Findings

Chapter 3 built upon the theoretical framework developed in the previous chapter and analyzed the characteristics of the CWC and CTBT verification regimes. Upon a brief examination of key verification related terminology and the emergence of verification in arms control and disarmament, the different views towards verification regimes as per the three selected theories of international relations were expounded. In a second step, Stephen Krasner's regime definition was operationalized by analyzing the CWC's and the CTBT's regime principles, norms, rules and procedures. Additionally, the verification regimes under the CWC and CTBT were examined and differences and commonalities between them pointed out, as far as they are relevant for challenge-type inspections. Overall, the analysis had the goal of addressing the following research sub-question: "What are the characteristics of the CWC and CTBT verification regimes in light of their embedded challenge-type inspection mechanisms?" As in the previous chapter, key findings made as a result of the research are presented below.

Verification is political in nature and aims at increasing confidence among parties

Verification can be described as a *"[p]rocess of gathering, interpreting and using information to make a judgement about parties' compliance or non-compliance with an agreement. The aim of verification is to establish or increase confidence that all parties are implementing a treaty fairly and effectively."* [377] As evident from the above, verification has the political goal of strengthening international security by increasing confidence among parties.

[374] See CTBT, Protocol Part III, paragraph 2.
[375] See CTBT, Protocol Part III, paragraph 3.
[376] See CTBT, Protocol Part III, paragraph 4.
[377] Poucet (2006), p. 46.

Verification is determined by the policy goals of the parties involved

Verification has the objective of detecting non-compliance, deterring would-be non-compliers and building confidence among parties. In support of these objectives, it makes use of several different verification activities and techniques, which mutually reinforce each other and are of a technical and political nature. The elements of a particular verification regime reflect the policy goals of the negotiating parties and the trade-offs made between them. Factors that influence the selected verification measures are, *inter alia*, cost/benefit trade-offs in relation to the establishment of the verification regime, the desired verification capability and impact on its members, as well as the likelihood of violations.

Shift from bilateral to multilateral verification in arms control

Arms control agreements became increasingly subject to verification after the Second World War and primarily focused on nuclear weapons, though also covered biological and chemical weapons. Verification related measures were predominantly carried out bilaterally between the two superpowers, however multilateral efforts also took place under the United Nations framework during the Cold War. As such, important steps were reached, *inter alia*, by the adoption of UNGA Resolution A/RES/14/1378[378] in 1959 and UNGA Resolution A/RES/S-10/2[379] in 1978, which set the goal of general and complete disarmament under effective international control. Moreover, in 1988 the UN Disarmament Commission also agreed on 16 general principles of verification[380], which since then have been re-endorsed by consensus every two years by the UNGA based on a resolution sponsored by Canada.

Changing concepts of verification and emergence of new actors

Not least due to its contentious nature, for a long time verification relied on National Technical Means before on-site verification measures became acceptable as the measure of choice. The period from 1986 to 1995/96 saw a decade of disarmament and with the end of the Cold War the mostly bilaterally dominated verification efforts changed to multilateral ones. Scepticism about its effectiveness grew from the mid-1990s and led to a policy shift towards unilateralism, most notably by the US administration under President George W. Bush. Not least in light of the number of setbacks faced by traditional arms control and disarmament regimes in recent years, other and new policy initiations such as the concept of human security have

[378] See UN (1959): A/RES/14/1378.
[379] See UN (1978): A/RES/S-10/2.
[380] See UN (1988): A/S-15/3*, pp. 50 and 52.

emerged. Not least due to the general public's ever increasing access to information and new technologies, 'online societal verification' has the potential of playing an increasingly important role in future arms control and non-proliferation related verification efforts. Accordingly, also new actors like NGOs (including the civil society), industry, (social) media and scientific communities play a more influential role in verification.

Views on Verification as per the three selected schools of International Relations

Regime theory supporters attribute an important function to verification. Additionally, they also favor multilateral regimes and international organizations, albeit they still acknowledge the central role of states in international relations, which is reflected accordingly in their views of the design of international organisations. Moreover, regime theory assumes that prospects for verification and regimes are moderate and context dependent, and take into consideration*, inter alia*, concrete benefits that could not be achieved otherwise as well as the support received by major players.

In contrast to that, neorealists consider the prospects for security regimes including verification as rather low unless a hegemon is willing to shoulder costs and initiates cooperation in this field. Given the skeptical perceptions of other states, neorealists seek a verification regime capable of detecting any violation (independent of its significance) in order to confront and punish the violator. However, at the same time, they are highly suspicious of intrusive verification approaches and express doubts about the capability of verification to enhance security. Accordingly, they also provide only very limited support towards the establishment of multilateral international institutions.

Constructivists see prospects for verification in security regimes as principally high and view verification from a reassurance rather than a detection or deterrence perspective. Hence, they see chances for the formation of arms control and disarmament regimes including verification as much higher in case values and norms are widely shared. In their view, social groups including individuals play an important role and may fulfill functions as norms entrepreneurs. Moreover, they see verification not exclusively from a state centric perspective, but attach a major role also to other actors such as NGOs, civil society and epistemic communities. Given their positive views of international relations and the quest for openness and transparency, constructivists show less hesitance vis-à-vis intrusive verification measures.

Much broader scope of CWC regime principles than those under the CTBT

An analysis of the CWC and CTBT reveals both commonalities and differences with respect to the four defining regime elements (i.e. principles, norms, rules and decision-making procedures). Looking at the respective treaty preambles, one can note therein the long term vision of general and complete disarmament under strict and effective international control. While the CWC directly contributes to this goal by eliminating an entire category of weapons of mass destruction, the CTBT's goal are much more limited by contributing to the non- proliferation and further development of nuclear weapons. Additionally, one can also find a prohibition principle reflected in both the preambles to the CWC and CTBT, respectively. However, both treaties differ considerably in their prohibition related scopes. The CWC related prohibition principle is comprehensive in nature and includes the development, production, acquisition, stockpiling, retention, transfer and use of chemical weapons. In contrast to that, the one under the CTBT only prohibits nuclear (weapon test) explosions, but does not prohibit their possession, nor use. In addition to the disarmament and prohibition principle stipulated in both regimes, the CWC's preamble also contains one principle pertaining to the economic and technological development of all States Parties and underlines the distinction that needs to be made between the legitimate use of chemicals for the benefit of mankind versus illicit activities in contravention of the CWC.

Wider scope of CWC regime norms compared to those under the CTBT

Looking at the norms of both regimes, one can note the wider scope of norms stipulated under the CWC verification regime compared to those under the CTBT. This stems from the fact that the norms established under both regimes further operationalize the regime principles by clearly defining each party's rights and obligations. The CWC disarmament norm requires the elimination of an entire category of weapons of mass destruction by destroying all existing stockpiles of chemical weapons (including old and abandoned chemical weapons) as well as related production facilities under tight verification provisions. Moreover, the CWC related norm prohibits the use of chemical weapons (including riot control agents as method of warfare) including the development, production, acquisition, stockpiling, retaining, transfer of chemical weapons, as well as any form of engagement in any prohibited activities including military preparations for the use of chemical weapons. In contrast to that, the CTBT related norms are much more limited by prohibiting 'only' nuclear (weapon test) explosions. This more narrowly defined prohibition related norm under the CTBT can be explained by the existence of another very important treaty in the nuclear arena, namely the NPT, which stipu-

lates comprehensive prohibitions for non-nuclear weapons states such as the transfer, manufacture, acquisition and control.

As already reflected in one of the CWC regime principles, the CWC also contains a norm pertaining to the economic and technological development of its regime members. This norm serves as an incentive for all those regime members without chemical weapons to obtain benefits through the peaceful use of chemistry, including participating in the exchange of chemicals, equipment and scientific and technical information. Furthermore, and not least due to the different scope of both treaties, the CWC also encompasses an assistance related norm, which provides positive security guarantees to CWC Member States by having the right to receive assistance and protection against the use or threat of use of chemical weapons.

CWC and CTBT regime rules focus on verification aspects

Regime rules under both treaties primarily focus on further specifying verification-related norms. In this context, a similar approach can be noted with respect to the way these rules are reflected in the respective treaty texts. While principle responsibilities and obligations of the Organization versus those of the Member States are addressed in the Articles of these Treaties, detailed procedural aspects including related prescriptions and proscriptions for action are mostly outlined at a later stage in the related CWC Verification Annex and CTBT Protocol. CTBT related regime rules stipulate rights and obligations of the regime members pertaining to verification related aspects (i.e. implementation of the four verification regime elements - International Monitoring System, Consultations and Clarifications, On-Site Inspections and Confidence-Building Measures), whereas those under the CWC cover verification issues with respect to declarations and routine/non-routine inspections, as well as disarmament related rules regarding chemical weapons and related production facilities.

High degree of commonality between CWC and CTBT decision-making procedures

The analysis of the decision making procedures under both treaties indicates a high degree of commonality among them. Both Organizations establish the same organs for regime implementation purposes (i.e. the Technical Secretariat, the Executive Council and the Conference of the States Parties). Moreover, both regimes essentially encompass the same mechanisms to redress a situation and to ensure compliance, including sanctions. Additionally, both regimes also foresee the same mechanisms to settle disputes between States Parties, or between States Parties and the Organization, relating to the application or the interpretation of the respective treaties underlying these regimes. Likewise, the same mechanisms exist to make

amendments and changes to the treaties. Finally, both regimes encompass the same instruments for reviewing the operation and effectiveness of the treaties.

The characteristics of the CWC and CTBT verification regimes

The CWC verification regime aims both at the destruction of all existing chemical weapons and at preventing their recurrence in the future by, *inter alia*, monitoring the production of certain dual use chemicals. For this purpose, routine on-site inspections are carried out both in chemical weapons related facilities and chemical industry plants based on declarations made by Member States. In case of compliance concerns, States Parties may optionally resort to a consultation and clarification mechanism, or directly request challenge inspections. These most intrusive tools under the CWC are request triggered and should act as deterrents, detect non-compliance and build confidence among Member States in the effective implementation of the treaty. Finally, the CWC also envisages investigations of alleged use of chemical weapons as another non-routine verification measure.

In contrast to the declarations based routine inspections, for routine verification purposes the CTBT verification system relies on a worldwide network of 321 monitoring stations that transmits data to the International Data Centre in Vienna for processing and then to the Member States for their final judgement. As a result of the different data gathering approach for (routine) verification purposes, the CTBT does not make use of routine on-site inspections and hence does not envisage setting up a standing inspectorate. However, and like the CWC verification regime, the CTBT also encompass a mechanism for the cooperative settlement of compliance concerns, as well as a challenge-type inspection pillar (i.e. on-site inspection) to clarify non-compliance concerns.

Looking at the verification regimes from a more abstract perspective, one can note that both of them have three elements in common, namely a routine element (i.e. IMS under the CTBT vis-à-vis declarations based routine inspections under the CWC), a consultation and clarification mechanism, and a non-routine challenge-type inspections pillar to address compliance concerns. The table below summarizes commonalities and differences between the two verification regimes.

Regime Characteristics	CWC	CTBT
Data Exchange	Yes (declarations, inspection reports)	Yes (data products)

Regime Characteristics	CWC	CTBT
Inspection Activities and Techniques	Not defined:[381] • Position finding; • Physical (visual) inspection of equipment, buildings, bunkers, and areas; • Non-Destructive evaluation of munitions, containers and tanks; • Survey of the area by detection instruments or air monitoring; • Conduct of interviews; • Review of records and other documents for internal consistency and corroboratory evidence; • Collection and analysis of samples both on-site and off-site at designated laboratories; • Medical examinations of victims of CW use; • Use of monitoring and recording equipment incl. video and still photography; • Application of tags and seals; • Request clarifications in connection with ambiguities arising during the inspection; • Conduct of exit monitoring and perimeter activities; • Collection of evidence;	Defined as per Protocol Part II/ paragraph 69/CTBT:[382] • Position finding; • Visual observation, video and still photography and multi-spectral imaging, including infrared measurements; • Radioactivity measurements of levels using gamma radiation monitoring and energy resolution analysis; • Environmental sampling and analysis; • Passive seismological monitoring; • Resonance seismometry and active seismic surveys; • Magnetic and gravitational field mapping, ground penetrating radar and electrical conductivity measurements; • Drilling to obtain radioactive samples;
Confidence Building Measures	No	Yes
Consultations & Clarification Mechanism	Yes	Yes
On-site Inspection Mechanism	• 'Routine' Inspections • Challenge Inspections • Investigations of Alleged Use of CW	• On-Site Inspection
Compliance judgement	Executive Council	Executive Council
Final action on violation	UNGA/UNSC	United Nations

Table 22: Comparison CWC and CTBT Verification Regime

Sources: CWC; CTBT; OPCW (2012): QDOC/INS/IM/01, pp. 18-20 (amended by the author)

[381] Illustrative examples of inspection activities and techniques are provided in OPCW (2012): QDOC/INS/IM/01, pp. 18-20 and have been amended by the author in this table.

[382] While most of the inspection activities and techniques are ground based, the IT may conduct visual observation activities, multi-spectral (including infrared) imagery, gamma spectroscopy and magnetic field mapping also from the air. See Protocol to the CTBT, Part II, paragraphs 71-85.

Different development paths of the CWC and CTBT verification regimes

Both regimes have faced different development paths forward since the underlying treaties were opened for signature in 1993 and 1996, respectively. While the CWC entered into force in 1997 (i.e. four years after its opening for signature), almost 18 years have passed in the case of the CTBT without signs of entry into force of the treaty in the near future. This difference in treaty status can to some extent be explained as a result of the different entry into force formulas chosen by the Members of the Conference on Disarmament during negotiations of the treaties.

Notwithstanding this obvious difference in status, both organisations charged with the implementation of the respective treaties have nevertheless reached major accomplishments by setting norms in their respective fields. In the more than one and a half decades since its existence, the CWC verification regime has reached a steady state of operations with near universal adherence of the Convention by Member States. Destruction of existing chemical weapons stockpiles has been the top priority since entry into force and major progress has been achieved with 82,78% of the declared CW stockpiles destroyed and 5,545 inspections accomplished worldwide as of 30 June 2014.[383] In 2013, the Organisation successfully mastered a major challenge by both conducting an Investigation of Alleged Use of Chemical Weapons in Syria under the UN Secretary-General Mechanism, as well as kicking off destruction operations pertaining to the Syrian chemical weapons stockpile. Notwithstanding the fact that the destruction of chemical weapons has represented the focus of verification activities thus far, the OPCW overall is undergoing a period of transition with a shift towards preventing the recurrence of chemical weapons.

The CTBT enjoyed 162 ratifications by the end of June 2014 and its Member States have focussed their efforts on the set up and provisional operation of the International Monitoring System and its associated International Data Centre. As such, more than 88% of the 321 monitoring stations have been installed by the end of 2013 and the system has demonstrated on numerous occasions its operational capability. Not least due to the fact that the establishment of the OSI pillar has been more closely linked to the prospects for entry into force of the CTBT, its development has lagged behind in comparison. However, the years since 2008 have seen a change and major efforts have been devoted to bringing the OSI pillar up to the same level of readiness as the IMS and IDC.

[383] OPCW (2014): The Chemical Weapons Ban. Facts and Figures.

Overall it can be said that Member States have invested major efforts to establish credible verification regimes under both treaties. The routine verification regime under the Chemical Weapons Convention, which covers both chemical weapons related facilities and selected chemical industry sites, has worked well and accomplished major achievements by verifying CW destruction activities and non-production of chemical weapons over the last one and a half decades. Conversely, more than a billion US Dollars have been invested in the CTBT verification regime as a result of which an operational International Monitoring System is available. In spite of some compliance concerns raised by CWC Member States in the past, no challenge inspections have been requested since the Convention entered into force.

4. Analysis of Regime Rules Pertaining to Challenge-Type Inspections

The previous chapter analyzed the CWC and CTBT verification regimes and pointed out some commonalities as well as differences between them. Having reached clarity on the overall verification framework, this chapter focuses on the conceptual and operational characteristics of challenge-type inspections under the CWC and CTBT.

In a first step, this chapter looks at the role, function and emergence of inspections in arms control and disarmament history. As such, a simplified overview of the on-site inspection process is given and selected bi- und multilateral accords containing inspection provisions are highlighted. However, it should be noted that the brief historical review of inspection regimes is not meant to be exhaustive and therefore does not address all verification regimes encompassing inspections.

Second, a comparative analysis pertaining to CWC challenge inspections[384] and the CTBT on-site inspections is made in order to highlight commonalities and differences between these challenge-type inspections.[385] In this context, this chapter operationalizes the regime rules pertaining to challenge-type inspections under both treaties. Hence by doing so, this chapter aims to address the following sub-question:"What are the key features of challenge-type inspections under the CTBT and CWC verification regimes?"

4.1 The Role and Emergence of Inspections

4.1.1 The Basic Concept Underlying Inspections

Though no universally applicable and all-encompassing definition of the term 'on-site inspection' exists, the 2001 UNIDIR Lexicon for Arms Control, Disarmament and Confidence Building characterizes them as follows:

[384] As indicated in the introductory chapter, this dissertation addresses Challenge Inspections carried out in accordance with Article IX and Part X of the Verification Annex to the Chemical Weapons Convention, but does not specifically analyze challenge inspections in case of alleged use of chemical weapons that are conducted in accordance with Part XI of the Verification Annex to the Chemical Weapons Convention.

[385] CTBT: Article IV and Protocol Part II; CWC: Article IX and Verification Annex Part X and XI.

> *"Inspections carried out by designated inspectors to verify that particular activities prohibited by an arms limitation agreement are not performed, to check that particular activities prescribed by an arms limitation agreement are implemented, or to examine the nature a suspicious event. […]"*[386]

Inspections serve three roles in arms control and disarmament verification:[387]

- Deter non-compliance;
- Help to establish proof of non-compliance (i.e. detect); and
- Enhance confidence that an agreement is being properly implemented.

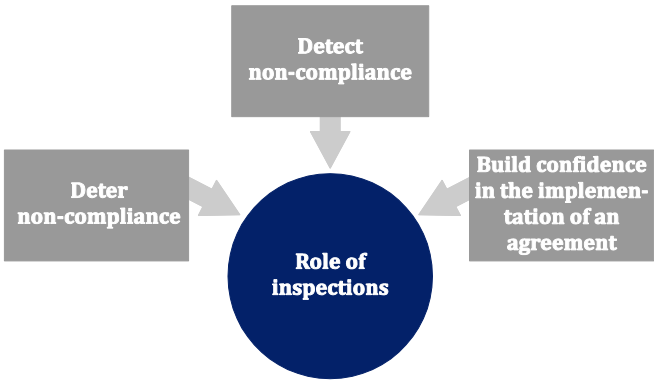

Figure 18: Prime roles of inspections

Source: Hart (2002), p. 19

Inspections have established themselves as a key verification tool due to their capacity to provide information, which would be difficult or even impossible to gather by other verification methods, including national technical means. Depending on the overall nature and purpose of the agreement and on the particular type of inspection, inspections can be either highly intrusive, or have a more confidence building role. Accordingly, they also vary considerably in their duration and frequency. Inspections can be principally divided into at least two broad categories:[388]

1. 'Routine inspections' and
2. Challenge-type inspections.

386 Tulliu/Schmalberger (2001), p. 225.
387 See Hart (2002), p. 19.
388 It should be noted that various classifications for OSis exist. Rueckert (2001) defines four types of OSIs: 'routine data and compliance inspections', 'elimination or conversion inspections', 'suspect site regimes' and 'on-site monitoring regimes'. Tulliu/Schmalberger (2001), distinguish between 'ad hoc', 'non-challenge' and 'challenge inspections'. Hart, 2001, develops five categories: 'baseline or initial inspections', 'confirmation of destruction or reduction', 'closeout' inspections, 'systematic or routine' inspections and 'inspections designed to address specific compliance concerns (such as challenge inspections, 'special' inspections or 'investigations'). The 2002 UNIDIR/VERTIC Handbook on Verification and Compliance lists four types of inspections, namely 'routine', 'short-notice', 'random' and 'challenge' inspections. Finally, Ifft (2012), distinguishes between 'routine', elimination or conversion', 'challenge' and 'other categories' of inspections.

The above based classification focuses on the issue of 'concrete compliance concern' as the key distinction criteria. Hence in case of no concrete compliance concern, different types of 'routine' inspections are carried out. The term 'routine' is used to characterize the systematic nature of these inspections. Given the lack of concrete compliance concerns, routine inspections are normally less confrontational and often serve a more confirmatory and confidence building role. On the other hand, and recognizing the differences between the CWC and CTBT verification regimes, both CIs and OSIs have virtually the same purpose, namely to address concrete compliance concerns. Compared to routine types of inspections, challenge-type inspections often provide additional rights and obligations to the inspection team, as well as the inspected State Party, encompass short notice timelines, and require specific approval and compliance judgment mechanisms of the Organisation's policy making organs (e.g. Executive Council).

Notwithstanding the key purpose of these types of inspections as indicated above, challenge-type inspections serve additional roles. Most notably, almost all of the experts interviewed acknowledged the deterrence function as a crucial, if not the central role of the challenge-type inspection mechanism.[389] In this respect, one of the interviewed experts describes the CWC CI mechanism as follows:

> *"You have a routine component but you'd also have a back-stop which is basically to deter people from cheating. [...]. States have to calculate, 'well, we might not get away with this we may have inspectors at our front door at very short notice, demanding to be let in, and we have to let them in, we can't say no, and if we say no, that's breaching the Convention and puts us in a very difficult political place."*[390]

While the deterrence feature of challenge-type inspections is a persistent view held by many scholars and also most of the interviewed experts, one of them, however, argues against it and notes that *"[t]his is a difficult hypothesis to confirm, and would require such an admission by an appropriately placed decision-maker which is unlikely"*.[391]

Ramaker points out a number of other potential benefits and risks associated to this type of inspection and notes that "*the estimation of the risk/benefit ratio of on-site inspections was an*

[389] See Expert Interviews 1, paragraphs 13, 15, 17, 37; Expert Interview 2, paragraphs 10 and 12; Expert Interview 3, paragraphs 5 and 9; Expert Interview 4, paragraph 26; Expert Interview 5, paragraph 23; Expert Interview 7, paragraph 33; Expert Interview 8, paragraphs 19 and 20; Expert Interview 9, paragraph 16; Expert Interview 10, paragraph 11.

[390] Expert Interview 1, paragraphs 13 and 15.

[391] Expert Interview 11, paragraph 103.

underlying issue in all of the test ban negotiations."[392] Among the identified benefits are also the deterrence function, which increases the potential cost and complexity of attempted violations, and in turn leads to an increasing confidence in compliance. Additionally, the perceived verifiability of the Treaty through OSIs may also increase support for the Treaty. On the other hand, he enumerates some risks such as a possible false sense of security, the possible loss of sensitive information, the possibility that an OSI will fail to find evidence of an actual violation and the possibility that the costs and the complexity of the OSI may be so great as to inhibit its use though it is provided for in the Treaty.[393]

Given their non-routine character, challenge-type inspections encompass both a political and technical dimension, which cannot be separated from each other. Hence, one can regard a challenge-type inspection clearly as a political process, which uses technical verification activities to verify compliance.[394] One of the interviewed experts characterized these two dimensions as follows:

> *"The technical dimension is characterized by documented forensic style procedures conducted by an impartial entity collecting facts related to the object and purpose and prohibitions of the Treaty as reflected in the inspection mandate. The political dimension is characterized by the speed with which the CI can be effectively mounted and operational; the access provided by the inspected State Party to the inspection team; and the corresponding and necessary cooperation of the inspected State Party. Ultimately, the facts in these regards will be reflected in the positions taken by States Parties in the relevant councils dealing with the alleged Treaty violation and, ultimately, will play out on the stage of public opinion, not only behind closed doors."*[395]

As indicated above, inspections are governed by clearly defined and documented procedures. Mostly outlined in separate Treaty Annexes, Protocols or even separate Inspection Manuals, they normally regulate various aspects such as:

- Nomination and designation of inspectors;
- Privileges and immunities of the inspection team members;
- Rights, responsibilities and obligations of both the inspected State Party and the inspection team;
- Pre- and post-inspection related issues;
- Inspection timelines, durations and notification aspects;

[392] Ramaker et al. *(*2003), p. 136.
[393] See Ramaker et al. (2003), p. 136.
[394] See Expert Interview 3, paragraph 9.
[395] Expert Interview 11, paragraph 49.

- Inspection aims, mandate and request related issues;
- Inspection conduct related issues (including inspection activities and techniques);
- Inspection equipment related issues;
- Issues related to the protection and handling of information (confidentiality);
- Reporting aspects.

An inspection can be looked at from a process perspective. While the actual, on-site phase undoubtedly represents a key element in the inspection, one also needs to account for the period before and after in the overall on-site inspection process. Accordingly, one can divide an inspection into four principal phases as outlined in figure 19 below:[396]

Figure 19: Four principal phases of an inspection

Source: author

Table 23 below informs about essential elements of these four phases:

	Launch	Pre-Inspection	Inspection	Post-Inspection
Description of Timeframe	• From kick-off of preparation activities (triggered either internally or through receipt of inspection request) until arrival of the IT at the POE of the inspected State Party	• From handover of inspection mandate by the IT to start of inspection activities	• From start to end of on-site inspection activities	• From handover of preliminary findings document to the conclusion of all follow-up activities as a result of the inspection incl. preparation of the final inspection report
Activities	• Inspection team selection and assembly • Equipment selection, assembly and shipment • Initial Inspection Plan preparation	• Confirmation of the IT credentials • Handover of inspection mandate • Equipment check by inspected State Party • Pre-inspection briefing by the ISP • Negotiation of	• Confirmation of correctness of inspection location • Conduct of inspection activities as per mandate incl. analysis of information obtained • Regular meetings with inspected State	• Handover preliminary findings document • Conduct point of exit procedures • IT Return travel • Follow-up activities (hand in of equipment, debriefings, etc.) • Preparation of

[396] This simplified and generic process description is based on the conduct of an OSI under the CTBT, however applies with slight differences also to inspections under the CWC.

	Launch	Pre-Inspection	Inspection	Post-Inspection
		Initial Inspection Plan • Travel to the inspection area/site	Party • Document inspection findings	final inspection report
Key outputs expected	• Inspection mandate • IT equipment list • Inspection notification	• Checked IT equipment • Agreed inspection plan	• Accomplished inspection activities Documented inspection findings	• Inspection report Follow-up on the inspection results

Table 23: Key Activities in the course of an inspection
Source: author

Upon this brief description of the central features and phases of an inspection from a generic perspective, the next sub-chapter informs about the emergence of inspections in arms control and disarmament.

4.1.2 The Emergence of Inspections in Arms Control and Disarmament

The rise of challenge-type inspections is inherently linked to the overall introduction of inspections in arms control and disarmament. First attempts to introduce on-site inspections after the Second World War date back to the Baruch Plan[397] from June 1946, in which the United States of America proposed unlimited on-site inspections as international verification means of all atomic energy related facilities.[398] The Soviet Union rejected the proposal for various reasons, such as the need to give up their veto right on any related sanctions in the UN Security Council and the potential intrusiveness of international inspections at Soviet nuclear facilities.[399]

Inspections were at that time viewed by the United States as a means of increasing the transparency of Soviet and Eastern bloc military activities and of obtaining information from sites, where information from National Technical Means was insufficient. However, at the same time and notwithstanding the technical fact finding relevance of OSIs, they also served the United States for more political purposes. Being aware of Soviet opposition to this verification

[397] The Baruch Plan, which built upon the Acheson-Lilienthal report, proposed to the United Nations Atomic Energy Commission the creation of an international atomic development authorized to "oversee the development and use of atomic energy, manage any nuclear installation with the ability to produce nuclear weapons, and inspect any nuclear facility conducting research for peaceful purposes." See US Department of State (2012).
[398] See Pounds (1990), p. 71.
[399] See US Department of State (2012).

tool, the United States used proposals for intrusive on-site inspections especially in the early post-war years also as a means *"to put the Soviet Union on the political defence and to garner domestic and international support"*.[400]

Given the principal political disagreements between the US and the Soviet Union, which also reflected on arms control and disarmament issues, no real progress on the acceptance of inspections was reached bilaterally for quite some time. It took until 1976, when inspections were successfully included in the provisions of the US-Soviet bilateral Peaceful Nuclear Explosions Treaty, which however entered into force only in December 1990.[401]

The focus to push for inspections as key verification means temporarily diminished as a result of the breakthrough in sensor-technology and satellites in the early 1960s.[402] Accordingly, these technological advances marked a shift towards enhanced reliance on NTMs and were most evident in the conclusion of the 1963 Partial Test Ban Treaty that exclusively relied on NTMs for verification purposes. In spite of that, important progress on inspections was achieved at multilateral level with the conclusion of the Antarctic Treaty in 1958. This treaty, which entered into force in 1961 and prohibited the militarization of Antarctica including the conduct of any weapons tests there, 'pioneered' on-site inspection concepts, including 'anytime, anywhere' inspections and aerial overflights by introducing them as means of verifying compliance with the treaty provisions.[403]

Additionally, with the establishment of the International Atomic Energy Agency and the approval of its statute on 23 October 1956, inspections became essential means for the implementation of its safeguards mandate and related provisions outlined under Article XII.[404] The IAEA statute[405], which entered into force on 29 July 1957, contains a dual mandate, namely to facilitate and foster the peaceful use of atomic energy and to establish safeguards against misuse of fissionable or other material, services, information, equipment and facilities for any military purposes. Upon approval of the first safeguards document in 1961 (i.e. INFCIRC/26)[406], a revised safeguards system was approved in 1965 (INFCIRC/66) and fur-

[400] Pounds (1990), p. 69.
[401] See Arms Control Association (2012): *Peaceful Nuclear Explosions Treaty*.
[402] See Ifft et al. *(*2012), p. 12.
[403] See Rueckert (1998), pp. 12-14.
[404] See IAEA (2012).
[405] See IAEA (1956): Statute.
[406] See IAEA (1961): INFCIRC/26.

ther extended in 1966 (INFCIRC/66/Rev.1) and 1968 (INFCIRC/66/Rev.2).[407] Interestingly, INFCIRC/66/Rev.2 foresees under Article 53 also the conduct of special inspections in addition to routine and initial inspections. The Agency's safeguards role, and with it the role of on-site inspections, gained further importance with the entry into force of the Treaty on the Non-Proliferation of Nuclear Weapons[408] (NPT) in 1970. In order to define the Agency's widened responsibilities as a result of its mandate to enforce the NPT, INFCIRC/153[409] was approved, which, under Part II paragraphs 70-89, lists detailed provisions for inspections (including special inspections as per paragraph 73). However, in total only two special inspections were invoked to date, both of them in the early 1990s.[410] Moreover, the Agency's Board of Governors concluded in 1992 that special inspections should only occur on a 'rare' basis.[411]

In response to the discovery of the Iraqi nuclear weapons programmes in the wake of the Second Golf War, in 1997 the Agency's Board of Governors adopted a model Additional Protocol (INFCIRC/540)[412] with the aim of strengthening the Agency's safeguards system. The Additional Protocol should strengthen the effectiveness and improve the efficiency of the safeguards system by, *inter alia*, providing additional information and complementary access rights to the inspection team. Overall, this represents a shift from verifying declared material at a facility towards evaluating both the correctness and the completeness of declarations at state level.

In 1974 and 1976, Soviets and Americans agreed to sign the bilateral Threshold Test Ban Treaty (TTBT)[413] and the Peaceful Nuclear Explosions Treaty (PNET), [414] respectively. Both treaties include provisions for inspections of all tests above a yield of 35kt. Both treaties were not ratified until 1990 and entered into force on 11 December 1990. As regards the TTBT, experts from each side participated in two Joint Verification Experiments (JVEs) at the Nevada tests Site and the Semipalatinsk Test Site in 1998 in order to test certain verification as-

[407] See IAEA (1968): INFCIRC/66/Rev.2.
[408] See United Nations (1968).
[409] See IAEA (1972): INFCIRC/153 (Corrected).
[410] One inspection was invoked by Romania in 1992, in which it invited the IAEA to undertake a special inspection to resolve matters that had occurred under the Ceausescu regime. The second special inspection was invoked against the DPRK in 1993. However, the DPRK did not agree to the requested Inspections. See Carlson/Leslie (2005), p.1.
[411] See Carlson/Leslie (2005).
[412] See IAEA (1997): INFCIRC/540 (1997).
[413] Detailed provisions as regards to on-site inspections are captured in the Protocol Section VII. See U.S. Department of State (1974).
[414] Section VII of the Protocol lays out quite detailed provisions for on-site inspections. See: U.S. Department of State (1976).

pects. The successful conduct of the JVEs enhanced the confidence on both sides in the verifiability of the TTBT. Additionally, experts from the Soviet Union observed two U.S. tests in 1990 under the TTBT provisions before respective nuclear test stop moratoria were introduced by both sides.[415]

With the advent of the Reagan administration in 1980, arms control and disarmament politics saw a shift towards more stringent and intrusive verification regimes. As such, Reagan and his advisors insisted on the need for 'effective' verification instead of the then prevailing standard of 'adequate verification'.[416] With it, inspections regained importance as fundamental elements of verification and became part of a tougher, new approach towards verification and relations with the Soviet Union. Not least due to the major economic challenges and hence the need to limit the massive costs going into the arms race, from the mid-1980s the Soviet Union under Mikhail Gorbachev signalled positive signs towards arms control and disarmament. As part of this policy shift, inspections also became an acceptable instrument of verification and were reflected in subsequent arms control and disarmament accords. The adoption of the 1986 Stockholm Accord on 22 September 1986 at the Conference on Confidence and Security-Building Measures and Disarmament in Europe (CDE) represented a major breakthrough and provided for the conduct of short-notice on-site inspections with no right of refusal during major military activities in Europe.[417]

The entry into force of the 'Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Elimination of Their Intermediate-Range and Shorter-Range Missiles'[418] (i.e. Intermediate-Range Nuclear Forces Treaty', INF Treaty) on 1 June 1988 "*marked the true watershed in the acceptance of on-site inspection as a fundamental element, along with NTM, of modern arms control verification regimes*".[419] The INF Treaty including its Protocol on Inspections provides for five different types of on-site inspections (baseline, closeout, quota, elimination, and portal monitoring) and contains comprehensive provisions about the inspection procedures (e.g. notifications, point of entry procedures, pre-inspection

415 See Ifft (2009): The Threshold Test Ban Treaty.
416 See Rueckert (1998), p. 23.
417 Appendix 2A: Compliance and Verification (paragraphs 63-104) contain detailed provisions on the notification, conduct, escorting and reporting procedures of these 48 hour long inspections. See: U.S. Department of State (1986): *Document of The Stockholm Conference on Confidence- and Security-Building Measures and Disarmament in Europe Convened in Accordance With the Relevant Provisions of the Concluding Document of the Madrid Meeting of the Conference on Security and Cooperation in Europe (CSBMs)*.
418 U.S. Department of State (1986): *Intermediate-Range Nuclear Forces Treaty.*
419 See Rueckert (1998), p. 25.

procedures, rules of conduct and reporting). As Ifft *et al.* point out, *"[the INF treaty] became the model for OSI […] [and] led to the establishment of large national organisations to handle inspections and notifications"*.[420] Moreover, the INF. Treaty contributed to the clarification of the legal status of inspectors by drawing on the 1961 Vienna Convention on Diplomatic Relations.[421]

Another important milestone for the development of the inspection regime was the Strategic Arms Reduction Treaty (START[422]) that was signed in 1991 and entered into force in 1994. START reduced the number of US and Soviet strategic delivery vehicles (i.e. bombers, strategic missiles and submarines) for nuclear weapons to 1,600 each and also limited the maximum number of deployed warheads to 6,000 for each side.[423] START contained 12 different types of inspections, which partially built on the experience from INF. However, on-site inspections under START were more difficult and intrusive compared to INF, as they not only dealt with weapon systems to be eliminated but also encompassed inspections of active deployed and non-deployed strategic systems remaining under each side's inventory.[424] Additionally, START also included visits with right of special access (SAVs). These visits constituted the first agreed version of a challenge inspection regime in a nuclear arms control agreement.[425] SAVs, which could be refused, offered means to access any facility and location, whether or not declared as an inspectable site in the treaty for the purpose of resolving compliance concerns. No SAVs were requested throughout the treaty implementation until START's expiration on 5 December 2009. Inspections continue to represent an integral part of the New START Treaty, which entered into force in February 2011. Verification under the New START encompasses a reduced number of inspections and simplified procedures taking into account, *inter alia*, the experience gained in the START implementation and changes in the geopolitical climate since then.

The Treaty on Conventional Armed Forces in Europe (CFE)[426,] which entered into force on 9 November 1992 and was adapted in 1999, represents another important multilateral arms control and disarmament agreement encompassing inspections in the area of conventional

[420] Ifft et al. *(*2012), p. 14.
[421] See Ifft et al. (2012), p. 34.
[422] U.S. Department of State (1991).
[423] See Harahan (1999), p. 29.
[424] See Ifft et al. (2012), p. 37.
[425] See Rueckert (1998), p. 28.
[426] OSCE (1990).

armaments and equipment. Besides comprehensive formats on, *inter alia*, exchange of information and protocols on existing types of conventional armaments and equipment, a detailed Protocol on Inspection forms an integral part of the treaty. The CFE Treaty also stipulates the option of 'challenge inspections within specified areas' under Section VIII of the Protocol on Inspection, which, however, can be refused.[427] The CFE, by its original design still a product of the Cold War, can now be considered obsolete and outdated.[428] In 2007 Russia suspended its participation in the CFE regime and in response, the US decided in 2011 to cease its treaty obligations vis-à-vis to Russia.[429]

The concept of challenge inspections – the most intrusive type of inspections to address compliance concerns - was an important issue from the very beginning of the negotiations of the CWC in 1984 and became critical when the United States tabled its draft Chemical Weapons Convention (CD/500)[430] and, later the same year, presented it to the Conference on Disarmament. While the final provisions pertaining to challenge inspections differed to some extent from those originally proposed by the US, the principles of 'anytime, anywhere, without right of refusal' were eventually manifested in the CWC as the key features of the challenge inspection mechanism.[431]

As many other delegations, the United Kingdom also had strong views on verification and was one of the countries that spearheaded efforts to develop and test the effectiveness of the challenge inspection concept, while at the same time paying due attention that legitimate national security interests would be respected. A UK working paper on a Draft CWC, which was submitted to the Conference of the Committee on Disarmament in 1976, represents a very early effort also outlining CI provisions in a rudimentary form.[432] Furthermore, the UK submitted a number of Working Papers to the Conference on Disarmament from the mid-1980s and, from the end of the 1908ies onwards, initiated a comprehensive practice challenge inspection programme.[433] Given the politically sensitive concept of this type of inspection, negotiations at

[427] CFE, Protocol on Inspection, Section VIII, paragraph 4.
[428] See Zwilling (2006) p. 169
[429] See Collina (2012).
[430] See Conference on Disarmament (1984).
[431] See Trapp (2007), p. 224.
[432] See Walker (2007), p. 2. Conference of the Committee on Disarmament CCD/512, dated 6 August 1976: The United Kingdom of Great Britain and Northern Ireland, Draft convention on prohibition of the development, production and stockpiling of chemical weapons and in their destruction, Article X, p. 7.
[433] See Expert Interview, para 3-9. The United Kingdom submitted the following Working Papers to the Conference on Disarmament on challenge inspection issues between 1984 and 1992: CD/431, dated 10 February 1984: Chemical Weapons Convention: Verification and Compliance – the Challenge Element; CD/715, dated 15

the Conference on Disarmament in Geneva on the subject matter were arduous and eventually led to the most detailed procedure under the Treaty encompassing 17 paragraphs in Article IX and 61 paragraphs in Part X of the Verification Annex to the CWC. In this respect, Krutzsch and Trapp define the overall purpose of CWC challenge inspections as follows:

> *"During the last phase of the negotiations when the scope of the routine verification system for industry was being hammered out, the exact role of the challenge inspection procedure within the entire verification system became clear: to discover clandestine activities in undeclared objects, to serve as a safety net in case of failure of the routine system and to reach facilities of the industry to which the routine system cannot be extended."*[434]

Notwithstanding the formidable difficulties during the negotiations, one of the interviewed experts, who also participated in the CWC negotiations, expresses his strong conviction about the integral role of the CIs under the CWC and believes that *"[t]he CWC would have never been concluded without the provision for challenge inspections."*[435] As later evidenced in this chapter through the comparative analysis of the regime rules for CIs and OSIs and as pointed out by Ramaker, the CWC challenge inspection provisions served as an important reference source for the respective OSI negotiations:

> *"[...] The Australian [OSI] text drew heavily on the text of the recently negotiated CWC. The CWC text was highly favoured by many delegations for two main reasons. First, delegates had just finished drafting it in the CD in August 1992 and therefore were quite familiar with its terms and procedures. Second, they knew that the basic principles and the degree of intrusiveness were broadly acceptable among the many countries that has signed the CWC. The CWC model was followed for many provisions of the CTBT, though on-site inspections conducted under the two regimes were likely to be quite different."*[436]

Investigations of alleged use of chemical and biological weapons (IAUs) triggered both under UNGA and UNSC resolutions represent another particular form of inspections to investigate concrete compliance concerns. A total of 12 investigations were carried out between late 1981 and 1992.[437] These types of inspection, which can be considered to some extent and due

July 1986: Chemical Weapons Convention: Verification and Compliance – the Challenge Element; CD/921, dated 14 June 1989: Verification of the Chemical Weapons Convention: Practice challenge inspections of military facilities; CD/1012, dated 11 July 1990: Verification of the Chemical Weapons Convention: Practice challenge inspections of government facilities: analysis of results; CD/1056, dated 8 February 1991: Report on two joint chemical weapons practice challenge inspections (joint paper with FRG); CD/1080, dated 5 June 1991: Verification of the Chemical Weapons Convention: Practice challenge inspections at civil chemical plants.

434 Krutzsch/Trapp (1994), p. 177.

435 Expert Interview 11, paragraph 43.

436 Ramaker et al. (2003), pp. 136-137.

437 See Littlewood (2006), p. 6.

to their nature a forerunner of the CWC investigations of alleged use, had its origin in allegations of chemical and toxin weapons use in Indochina and Afghanistan in the late 1970ies in violation of the 1925 Geneva Protocol. After the conduct of *ad hoc* investigations between 1981 and 1982, the UNGA adopted Resolution A/RES/37/98[438] of 13 December 1982, which led to a standing authority of the UN Secretary-General to investigate allegations of chemical and toxin weapons. In 2007, the UN Secretary-General convened a review of the 1989 Guidelines and Procedures. Taking into account the entry into force of the CWC, the establishment of the OPCW and the lack of verification provisions on biological weapons, the review carried out by a Group of Experts and representatives of relevant international organizations focussed on updates of the Appendices particularly relevant for IAUs of biological weapons.[439] The UNSG mechanism was used again in August and September 2013, when a team of experts from the OPCW, UN and WHO carried out investigations into the alleged use of chemical weapons in Syria.[440]

Vast inspection experience was also gathered through the several hundred inspections carried out both by UNSCOM and UNMOVIC[441] after the Second Gulf War in Iraq between 1991 and 2003. While these inspections were unprecedented in their scope and intrusiveness compared to contemporary verification regimes, nevertheless a wealth of important lessons was learned for other verification regimes. Additionally, these inspections produced hundreds of inspectors that have been trained and have gained field experience to the subsequent benefit of the IAEA and OPCW.[442]

Finally, inspections are also carried out under the Vienna Document 2011. As per this politically binding document, OSCE Member States are required to share information on their military forces, equipment and defence planning for confidence and security building measures. These short notice type of inspections require an advance notice of 36 hours to five days, encompass a maximum team size of four inspectors and may last up to 48 hours.[443]

438 UN (1982): A/RES/37/98.
439 See UN (2012): Secretary General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons.
440 See UN (2013).
441 UNMOVIC carried out a total of 731 inspections. See Findley (2005).
442 See Findley (2006), p. 155.
443 See OSCE (2011): Vienna Document 2011, Chapter IX Compliance and Verification, Inspection, pp. 32-38.

Overall, Ifft *et al.* identify approximately 15 different regimes encompassing some form of inspections, which are summarised in table 24 below.[444]

Treaty or Agreement	Verification organisation	Verifying declared objects and activities	Searching for undeclared objects and activities	Verifying elimination/ conversion, etc.	Demonstrating an object or capability
Antarctic Treaty		x	x		
NPT/IAEA	x	x	x	x	
Euratom	x	x		x	
ABACC	x	x		x	
CWC	x	x	x	x	
BWC	No OSI regime				
CTBT	x		x		
CTR	N*	x		x	
Ottawa Treaty	Meeting of SPs	x			
INF	N*	x		x	x
START	N*	x	x	x	x
PTBT/NET	N*	x			x
Vienna Document	x	x			x
CFE	x	x	x	x	x
Open Skies	x		x		
New START	N*	x	x	x	x
Iraq	x**	x	x	x	

Table 24: Purposes of OSI Regimes under different Agreements

Source: Ifft et al. (2012), p. 30.

* National verification organization of the States Parties

** Created temporarily by the UN Security Council

The above mentioned arms control and disarmament accords influenced, though at various levels, the evolution of inspections. Moreover, and notwithstanding the specifics of the CWC

444 See Ifft et al. (2012), p. 30. It should be noted that Ifft's table does not incorporate investigations of alleged use of chemical and biological weapons carried out under the United Nations Secretary-General Mechanism.

and CTBT negotiations, they have provided valuable input to the formulation of these on-site inspection verification provisions including their further development.

4.2 Comparative Analysis of Challenge-Type Inspection Regime Rules under the CWC and CTBT Verification Regimes

4.2.1 Introduction

Chapter 3.2 provided a brief analysis of the four regime elements in the context of the CWC and the CTBT verification regimes. As such, it made reference to the respective treaty provisions. In this sub-chapter, a comparative analysis of the challenge-type inspection regimes rules under the CWC and CTBT verification regimes is made. These rules establish the legal framework pertaining to challenge-type inspections and thus define the specific prescriptions and proscriptions for action by Member States. Building upon the introduction of the CWC and CTBT verification regimes in sub-chapter 3.2, this part is dedicated to a comparative examination of the provisions of two selected challenge-type inspection mechanisms. Hence, it assesses both commonalities and differences between the regime rules pertaining to challenge inspections under the CWC and on-site inspections under the CTBT. In this context it should be noted that implementation aspects and respective decisions taken by the policy making organs are dealt with in sub-chapter 5.3 of this dissertation. As indicated in figure 20 below, the analysis first looks at the general rules related to challenge-type inspections and subsequently examines the respective rules for each inspection phase (i.e. launch-, pre-inspection-, inspection- and post-inspection phase).

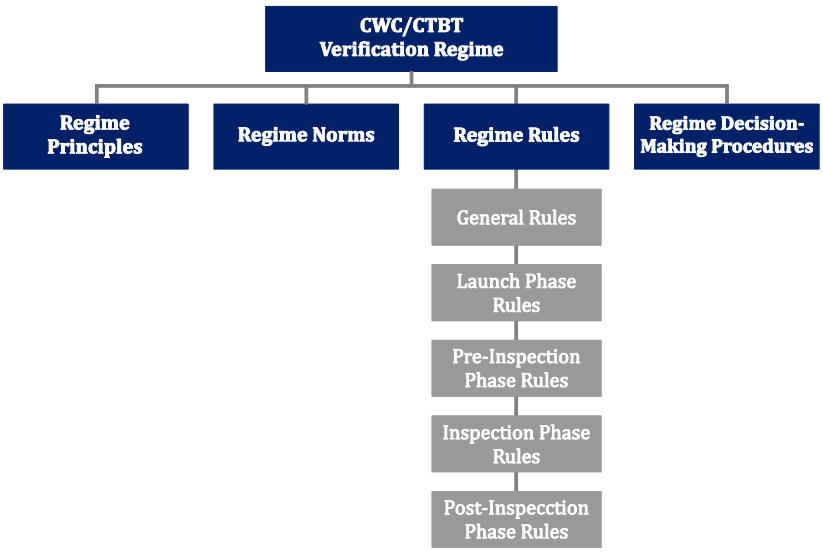

Figure 20: Regime Rules for Challenge-type inspections

Source: author

4.2.2 General Rules Related to the Challenge-Type Inspection Mechanism

Both under the CWC and CTBT a number of similar general rules can be identified that govern the inspection conduct. Figure 21 below informs about the key issues that are addressed under these rules of overarching character[445]:

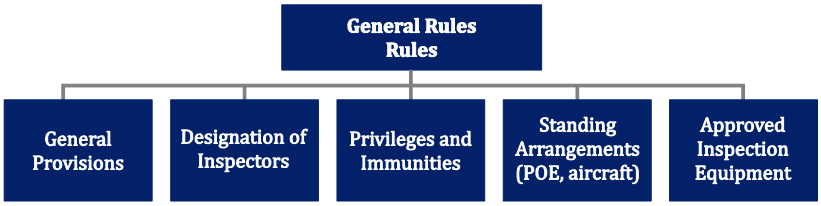

Figure 21: General Rules for Challenge-type inspections

Source: author

General Provisions

Both the CWC and the CTBT encompass a number of general provisions that guide and facilitate the overall conduct of challenge-type inspections. Importantly, aspects such as the standing arrangements, the designation of inspectors and inspection assistants and privileges and immunities are to be implemented by States Parties upon entry into force and applicable independent of a request for a CI or OSI, respectively.

Both the respective CWC and CTBT provisions oblige the inspected State Party to provide logistic and administrative support to the inspection team and arrange for amenities, such as communications means, interpretations services, transportation services, work spaces, lodging, meals and medical care.[446] Accordingly, inspection teams carrying out a CI or OSI do not have to operate fully self-sufficiently, but require basic support to fulfil their missions.

Undoubtedly, and given that different types of inspections are carried out under the CWC verification regime on a routine basis, the implementation of most of these provisions has become long standing practice for those CWC Member States that receive routine inspections. As such, and while noting the difference between routine and challenge inspections under the CWC, it can be assumed that many National Authorities of CWC Member States are conver-

[445] It should be noted that though both treaties essentially cover the same general and overarching aspects, different categorization schemes have been applied under Protocol Pt. II/CTBT and Verification Annex Pt. II/CWC.

[446] See CWC, Verification Annex, Part II, paragraph 26; CTBT, Protocol Part II, A. General Provisions, paragraph 11.

sant with the logistic and administrative preparatory and implementation aspects of an inspection from an ISP perspective.[447]

In this respect it is, however, worthwhile to note that that the scope of the ISP support for an OSI will be several magnitudes larger. This can be attributed to the very different inspection parameters, such as inspection duration, amount and type of inspection equipment, and team size. Logistic and administrative support particularly for an OSI can be considered as major endeavour from an ISP perspective and requires major advance planning and adequate resources.

Furthermore, the designated National Authorities within a Member State for CWC and CTBT issues may differ, which requires information sharing and coordination at the national level. On the other hand, and acknowledging that an OSI may be considered a rare event, the implementation of general provisions that are to be implemented independently of an OSI request (e.g. nomination of inspectors and inspection assistants, designation of points of entry (POEs), arrangements for the use of non-scheduled aircraft and privileges and immunities for IT members) should not represent a major challenge in view of the similarity of these tasks both under the CWC and CTBT.

The administrative and logistic support of an OSI and CI from an ISP perspective would naturally entail considerable costs both applicable to the preparation phase and conduct phases. Negotiators of both treaties agreed that the inspected State Party is to be reimbursed by the organisation for costs incurred by the inspection team.[448] However, both treaties stipulate that the requesting State Party may bear financial implications in case abuse of the challenge-type inspection request, and oblige the Executive Council to examine this issue.[449]

Both a CI and an OSI have a strong political and technical dimension. Recognizing the particular sensitivity of such an inspection and to ensure impartiality and competence, both treaties require documented, traceable facts for later examination by the appropriate treaty organs to reach their conclusions in regard to the compliance-related concern and request. This then leads to a requirement at the institutional level for documented operational procedures in

[447] Several discussion papers and non-papers on the issue of implications for national authorities facing a challenge inspection and related national preparations have been presented at the EU Seminar on Challenge Inspections that took place in Vienna from 24-25 June 2005.
[448] See CWC, Verification Annex Part II, paragraph 26, CTBT, Protocol Part II, A. General Provisions, paragraph 12.
[449] See CWC, Article IX, paragraph 23; CTBT, Article IV/paragraph 67.

order to be able to ensure that activities are kept within the boundaries of the Treaty.[450] In this respect, one can identify one fundamental difference with respect to the preparation and approval of detailed procedures for the conduct of such inspections.

The CTBT explicitly requires States Parties to approve Operational Manuals at its first Conference. [451] Accordingly, Protocol Part II requires that *"[p]rocedures for the implementation of on-site inspections shall be detailed in the Operational Manual for On-Site Inspections"*[452] Negotiators at the Conference on Disarmament in Geneva called for an OSI Operational Manual for two main purposes. One of them was to have the many operational aspects of an OSI regulated in a separate document, as their negotiation in Geneva would have delayed the completion of the CTBT. Second, any necessary changes as a result of the developments in technology can be much easier accommodated in an Operational Manual as opposed to an amendment of the Treaty or its Protocol.[453] As such, one of the tasks of the Preparatory Commission is to elaborate an OSI Operational Manual. Work on the preparation of the OSI Operational Manual has been carried out for more than 17 years in Working Group B. Though major efforts have been made by States Signatories in the course of this highly political endeavour and considerable progress towards an agreed text has been made under the guidance of OSI Operational Manual Task Leaders, there are nevertheless still some unresolved issues.[454]

This fact stands in stark contrast to the CWC provisions, which do not require the approval of such a manual by Member States. In this respect, paragraph 42 of Article VIII of the CWC stipulates that *"[d]etailed procedures for the conduct of the inspections shall be developed for inclusion in the inspection manual by the Technical Secretariat, taking into account guidelines to be considered and approved by the Conference […]."*[455] Hence, the Technical Secretariat of the OPCW could internally develop a technical oriented guidance document for inspections, including CIs. While taking into account guidelines in the form of respective decisions by the Member States, the document itself does not need to be approved by States Parties, which has considerably simplified its drafting and revision process.[456]

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450 See Expert Interview 11, paragraph 59.
451 See CTBT, Article II, B. paragraph 26 (h).
452 CTBT, Protocol Part II, paragraph 13.
453 See Ramaker et al. *(*2003), p. 140.
454 See sub-chapter 5.3 for a more detailed analysis about the OSI Operational Manual progress as well as Coxhead (2008).
455 CWC, Verification Annex Part II, paragraph 42.
456 The current version of the OPCW Inspection Manual dates back to 2012 (see OPCW (2012): QDOC/INS/IM/01. The document, has been approved by the Acting Director of Inspectorate and has been prepared by the Inspec-

Standing arrangements

Both treaties stipulate the conclusion of standing arrangements between the Organization and Member States, which serve the purpose of facilitating the preparation and conduct of such an inspection in order to provide procedural clarity on principal issues related to the inspection.[457] Accordingly, both treaties regulate important aspects pertaining to the designation of points of entry and arrangements for the use of non-scheduled aircraft.

Points of entry are designated locations through which the inspection team enters and exits the inspected State Party. As a regular practice, states designate international airports (often in the capital and other selected cities) as well as border crossing stations (in case of land transport) as POEs. States Parties have to designate POEs within 30 days after entry into force under both treaties, and may change them, whereby changes become effective 30 days after the notification.[458] Additionally, states may designate more than one POE. In case the Technical Secretariat considers the number of designated POEs in a country as insufficient, or changes with respect to the designation would hamper the timely conduct of an inspection, the TS may enter into consultations to resolve the problem.[459] While all of the above provisions are identical both under the CWC and CTBT, there is one notable difference regarding the permissible time limit, in which any inspection site needs to be reached from at least one POE. The CWC has a comparably more stringent time limit of 12 hours, whereas the CTBT allows for a 24 hours time-window to reach the inspection site from the POE.[460]

Both the CTBT and CWC provisions provide for the use of a non-scheduled aircraft for challenge-type inspections in case timely travel to the POE is not feasible using scheduled commercial flights.[461] As such, States Parties are obliged to inform the Technical Secretariat within 30 days after entry into force of the standing diplomatic clearance number (SCDN) accordingly. Additionally, respective CWC provisions go comparably into more detail than those of the CTBT by stipulating notification timelines regarding to the planned departure and arrival of the aircraft as well as obligations of the inspected State Party pertaining to operational and

tion Manual Task Force. It is considerable shorter in volume (totally 66 pages, 26 of them dedicated to CIs) than the current Draft OSI Operational Manual (PC/CTBTO (2013): CTBT/WGB/TL-18/50 with a total of 255 pages (incl. Annexes)).

457 See CWC, Verification Annex, Part II, paragraphs 16-30; CTBT, Protocol Part II, B. Standing arrangements.

458 See CWC, Verification Annex Part II, paragraphs 16-17; CTBT, Protocol Part II, paragraphs 32-33.

459 See CWC, Verification Annex Part II, paragraph 18; CTBT, Protocol Part II, paragraph 34.

460 See CWC, Verification Annex Part II, paragraph 16; CTBT, Protocol Part II, paragraph 32.

461 See CWC, Verification Annex Part II, paragraphs 22-25; CTBT, Protocol Part II, paragraph 35.

logistic support for the aircraft at the POE. Implementation experience under the CWC has shown that, unfortunately, a considerable number of States Parties have not lived up to their obligation and did not provide information on the POE as well as the standing diplomatic clearance numbers for non-scheduled aircrafts. This issue is discussed in more detail under sub-chapter 5.3 of this dissertation.

Approved Inspection Equipment

Both the CWC and CTBT provisions regulate the use of inspection equipment. As such, both treaties are identical in their procedural processes, as they require the consideration and approval of an equipment list at the first Conference of the States Parties.[462] The equipment list is based on technical specifications prepared by the Technical Secretariat, which provide operational performance parameters and equipment characteristics. Under both treaties, the Technical Secretariat as the custodian of any permanently held equipment is charged with related logistic requirements such as designation, calibration and maintenance of the equipment.[463] Additionally, and in order to facilitate equipment checking activities at the POE, the Technical Secretariat has to attach supportive documentation (e.g. packing lists, certificates) and attach seals to prevent the equipment being tempered with during its transport.

Given the wide range, high costs, and the uniqueness of some of the inspection equipment stipulated for an OSI, the CTBT also provides for the option that the Technical Secretariat may also make use of States Parties' equipment for inspection purposes.[464] Under such circumstances, the Technical Secretariat is requested to make respective arrangements with Member States, whereas maintenance and calibration obligations rest with the offering States Parties.

Designation of inspectors and inspection assistants

Both the CWC and CTBT also provide clarity on the designation of inspectors and inspection assistants. Respective CWC provisions stipulate that only inspectors and inspection assistants specifically designated for challenge inspections may participate in a CI.[465] However, the *de facto* implementation practice at the Technical Secretariat has been that all inspectors and

462 See CWC, Verification Annex, Part II, paragraph 27; CTBT, Protocol Part II, paragraph 36.
463 See CWC, Verification Annex Part II, paragraph 28; CTBT, Protocol Part II, paragraphs 38-39.
464 See CTBT, Protocol Part II, paragraph 40.
465 See CWC, Verification Annex Part X, paragraph 1.

inspection assistants designated for routine inspections are also designated for challenge inspections in order not to be limit in case of a CI request.

The same Treaty Article further specifies that these inspectors and inspection assistants need to have the necessary qualification, experience, skill and training. [466] Additionally, due consideration in the selection process needs to be given to a wide geographical representation of the experts. The fact that all team members, may it be either full-time inspectors or Secretariat HQ-staff designated as inspectors and inspection assistants, are as a matter of fact employees of the OPCW and under the direct authority of the Director-General, naturally facilitates preparations and allows for rapid deployment of an inspection team.[467]

On the other hand, and in case of the CTBT, experts are nominated by both the Member States and the Director-General.[468] As such, no standing inspectorate is available to the Director-General when assembling an inspection team. Therefore, he has to rely on both Technical Secretariat staff members designated as inspectors and inspection assistants as well experts from member parties, which can be both an advantage and a problem.[469] Obviously, one of the reasons for not having a permanent inspectorate is the fact that no routine inspections are carried out under the CTBT verification regime. In addition, one of the interviewed experts raises another argument as to why this approach has been chosen during the CTBT negotiations in Geneva:

> *"Perhaps it would be difficult to collect all the expertise required for OSI within the permanent inspectorate staff. In some cases, States Parties could reveal [sic] experts for a certain period of time, which might be unique scientists, unique specialists, and might help in the course of an OSI in a much more efficient way than permanent inspectors who should stay for a significant period of time within the organization, and will be detached from the actual knowledge in the area of related to this sensitive issue of nuclear explosions".*[470]

As further elaborated at a later stage in this dissertation, this large reliance on external experts (in addition to Secretariat staff) produces a number of challenges such as preparations, short notice-availability and deployment. Also the aspect of training requires particular con-

[466] See CWC, Verification Annex Part X paragraph 1.
[467] Immediate availability naturally depends on a number of aspects, such as current deployment of the individual for another mission, leave, etc. The pool of designated inspectors consists both of full-time inspectors as well as HQ staff. Further information on implementation aspects is provided in sub-chapter 5.3.
[468] See CTBT, Protocol Part II, B. Standing arrangements, paragraph 15.
[469] See Expert Interview 9, paragraph 20.
[470] See Expert Interview 9, paragraph 22.

sideration and the CTBT provisions stipulate the conduct of mandatory training for all designated inspectors and inspection assistants by the Technical Secretariat. In this respect, further details on the training procedures, principles and scope are to be laid out in the OSI Operational Manual.[471]

In spite of this major difference with respect to the non-availability of a standing inspectorate under the CTBT, one can nevertheless note a high level of conformity between both treaties pertaining to the designation mechanism. Among the commonalities are the same extent of information that is to be provided about the designated experts, the same acknowledgement procedure (i.e. silence procedure) and the right under each treaty to make additions and changes to the list as well as to object to certain designated inspectors. However, such an objection cannot be made by an ISP upon notification of an OSI or CI, respectively. In order to ensure, however, a sufficient number of designated inspectors for an inspection, both treaties also provide the Director-General with the obligation to refer cases to the Executive Council, in which non-acceptance of designated experts by a State Party may have a detrimental effect on the mission. The following chart summarizes the respective designation process under both treaties.

Issue	Designation of inspectors and inspection assistants under the CWC	Designation of inspectors and inspection assistants under the

Nomination	• Director-General to establish list of experts specifically designated for CIs, which is based on the list of inspectors and inspection assistants designated for routine inspections (designation process see below):
	• Technical Secretariat to communicate list of experts NLT 30 days after entry into force to all States Parties:
	  • Name
	  • Nationality
	  • Rank
	  • Qualification
	  • Professional experience
		• Nomination both by Member States and the Director-General
		  • Name
		  • Date of birth
		  • Sex
		  • Rank
		  • Qualification
		  • Professional experience
		• Notification of the Director-General NLT 30 days after entry into force of the CTBT

Acknowledgement	• Each State Party to immediately acknowledge proposed list • Each State Party to inform its acceptance of the list within 30 days • Every experts regarded as designated unless non-acceptance de-	• TS to communicate an initial list of proposed experts to all States Parties • Each State Party to acknowledge immediately proposed list

[471] See PC/CTBTO (2013): CTBT/WGB/TL-18/50, pp. 28-29.

Issue	Designation of inspectors and inspection assistants under the CWC	Designation of inspectors and inspection assistants under the
	clared in writing within 30 days after acknowledgement of receipt of list	• Proposed experts considered as designated unless State Party declares non-acceptance in writing within 30 days after acknowledgement • TS to confirm receipt of notification of objection
Addition or changes to the list	• Proposal for addition or changes to the list follows procedures for the initial list of inspectors and inspection assistants	• Proposal for addition or changes to the list follows procedures for the initial list of inspectors and inspection assistants
Objections to designated inspectors	• Each State Party has right to object an accepted inspector and inspection assistant by notifying the TS • Objection to come into effect 30 days after receipt of notification • TS to immediately inform the concerned State Party of the withdrawal of the expert from the list • Upon notification of an inspection, the inspected State Party cannot seek removal of inspectors and inspection assistants named in the inspection team list	• Each State Party has right to object an accepted inspector and inspection assistant by notifying the TS • Objection to come into effect 30 days after receipt of notification • TS to confirm receipt and inform the designating and objecting State Party of the date on which the individual shall cease to be designated for that State Party • Upon receipt of a request for an OSI inspected State Party cannot seek removal of inspectors and inspection assistants named in the mandate,
Number of experts designated and accepted	• Number of experts accepted by a State Party must be sufficient • Director-General shall refer issue to the Executive Council in case non-acceptance of designated experts by a State Party may have detrimental effect to the inspection	• Number of experts accepted by a State Party must be sufficient • Director-General shall refer issue to the Executive Council in case non-acceptance of designated experts by a State Party may have detrimental effect to an OSI

Table 25: Designation of inspectors and inspection assistants
Source: CWC, Verification Annex Part X, paragraphs 1-2 and Verification Annex Part II, paragraphs 1-9; CTBT, Protocol Part II, paragraphs 14-25

Privileges and Immunities

Both the CWC and the CTBT essentially encompass identical provisions regarding the privileges and immunities of the inspection team during a mission.[472] Many of them are based on the Vienna Convention on Diplomatic Relations of 18 April 1961 and include, *inter alia*, inviolability and immunity rights enjoyed by diplomatic agents, the inviolability and protection of

[472] See CWC, Verification Annex Part II, paragraphs 10-15; CTBT, Protocol Part II, paragraphs 26-31.

living quarters and office premises occupied by the inspection team, the inviolability of papers and correspondence of the inspection team and the inviolability of samples and inspection equipment, exemption from dues and taxes for inspectors in the execution of their inspection.[473] As such, these privileges and immunities, which apply throughout their entire stay in the inspected State Party, should enable them to exercise their functions effectively and independently. Due care needs to be given by all IT members that these privileges and immunities are not abused for personal or national benefit as they are granted for the sake of the inspection. In addition, both the CWC and the CTBT accord the same privileges and immunities to observers except for those pursuant to the inviolability of samples and equipment.[474]

Overall, the general provisions for CIs and OSIs show a high degree of similarity with respect to standing arrangements (including POE designation, non-scheduled aircraft), privileges and immunities, approval of inspection equipment, as well as the obligation of the inspected State Party to provide administrative and logistic support to the inspection team. On the other hand, one can also note some distinct differences, such as the nomination of experts by CTBT Member States for designation as inspectors and inspection assistants, as well as the different approval mechanism of the Inspection/OSI Operational Manuals that guide these challenge-type inspections. The similarity of many of the OSI and CI provisions has also had a direct impact on the development of concrete implementation solutions. Though the OSI mechanism of the CTBT is still in the build-up process and a considerable number of aspects remain to be addressed both by the Provisional Technical Secretariat and the policy making organs, CWC best practices have often served as reference models for practical implementation considerations.

4.2.3 Rules pertaining to the Launch Phase

The launch phase of a challenge-type inspection is triggered by the receipt of the inspection request at the Organisation and lasts till the arrival of the inspection team at the point of entry at the inspected State Party. Preparatory activities have to focus on several issues of both technical and political nature such as:

- Review of the inspection request,

[473] See CWC, Verification Annex Part II, paragraph 11; CTBT, Protocol Part II, paragraph 27.
[474] See CWC, Verification Annex Part II, paragraph 15; CTBT, Protocol Part II, paragraph 31.

- Selection, assembly and preparation of the inspection team,
- Selection and preparation of the inspection equipment including related logistic preparations,
- Preparation of the inspection mandate and drafting of the initial inspection plan,
- Preparation and conduct of the Executive Council Session pertaining to the inspection request,
- Arrangement of the equipment and personnel transport to the point of entry,
- Notification and arrangements with the inspected State Party;

The overall duration of the launch activities differs between a CI and an OSI. In the case of the former, the CWC does not provide for a maximum duration, although it states that *"[t]he Director-General shall [...] dispatch an inspection team as soon as possible after an inspection request has been received. [...]"*[475] In the latter case, the CTBT foresees a maximum time period of six days, within which the team must arrive at the point of entry of the inspected State Party. These differences in the launch timelines are also the result of the different signatures and observables in relation to both inspections. A challenge inspection needs to be launched as soon as possible, as some of the evidence may quickly disappear naturally or may be quickly removed by the inspected State Party. In contrast to that, some of the signatures and observables in relation to a nuclear test may be of longer lasting nature and cannot be removed that quickly. Notwithstanding these relative time differences, rapidness of launch is a requirement for both a CI and OSI, which in turn implies readiness and preparedness by the Organization for such a mission.[476] Figure 22 below shows the key activities that characterize the launch phase of such an inspection:

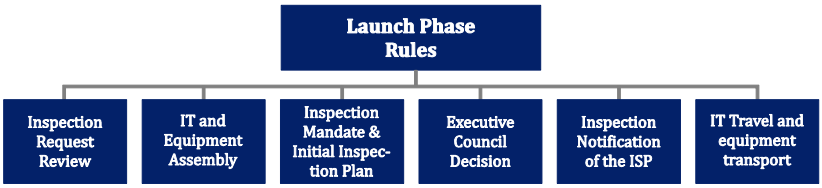

Figure 22: Regime Rules related to the launch phase

Source: author

Review of the Inspection Request

Both the CWC and CTBT provisions are consistent by giving only States Parties the right to request such an inspection and exclude the option that the Director-General may trigger a

[475] See Verification Annex Part X, paragraph 13. Nevertheless, internal OPCW planning guidelines aim at a dispatch time of 24 hours upon a request for a CI.

[476] Expert Interview 5, paragraph 33.

request for a challenge-type inspection on his or her own. One can interpret this fact insofar that Member States want to retain maximum control over this politically sensitive process and do not want to delegate this right to the Head of the organisation.

CIs and OSIs serve the same purpose, namely to clarify and resolve questions regarding possible non-compliance of another State Party with respective treaty obligations. At the same time, the scope of both inspections varies: the sole purpose of an OSI under the CTBT is to "*clarify whether a nuclear weapon test explosion or any other nuclear explosion has been carried out in violation of Article I and, to the extent possible, to gather any facts which might assist in identifying any possible violator*"[477] On the other hand, CIs under the CWC can be triggered a broader range of potential non-compliance scenarios including activities of civilian industry, or of research and development activities if the concern is that they violate certain CWC provisions.[478] Article IX of the CWC refrains from defining any particular case and solely states that challenge inspections have "*[…] the sole purpose of clarifying and resolving any questions concerning possible non-compliance with the provisions of this Convention […]".*[479] However, at the same time, the CWC does make a basic distinction between 'alleged use of chemical weapons scenarios' and 'other non-compliance scenarios' by applying different procedures to these two basic cases.[480]

At the same time, both treaties also provide assurances that the requesting State Party has to keep the inspection request within the scope of the respective treaty and refrain from frivolous, unfounded and abusive requests.[481] In this context, the Executive Council has an important role in ensuring that these obligations are indeed met by both having the authority to approve or deny the request and by drawing the related conclusion at the end of the inspection.

Furthermore, both treaties follow the same procedural approach insofar that the requesting State Party has to present the inspection request to the Executive Council and at the same

477 CTBT, Article IV, paragraph 35.
478 See Expert Interview 11, paragraph 64.
479 CWC, Article IX, paragraph 8.
480 A challenge inspection shall be conducted in accordance with Part X of the CWC's Verification Annex, however an alleged use case shall be conducted in accordance with Part XI of the CWC. See CWC, Article IX, paragraph 19. A challenge inspection shall be conducted in accordance with Part X of the CWC's Verification Annex, however an alleged use case shall be conducted in accordance with Part XI of the CWC.
481 See CWC, Article IX, paragraphs 9 and 17; CTBT, Article IV, D. paragraph 36.

time to the Director-General for immediate processing.[482] Hence, this should enable the Director-General to launch the technical processes at the Technical Secretariat and the Executive Council to exercise its political and decision-making role.

Interestingly, before submitting a CI request the CWC gives a State Party the possibility to seek confirmation from the Director-General that the Technical Secretariat is in a position to take immediate action on the request.[483] Furthermore, this provision also puts an obligation on the Director-General by requesting him to notify the Executive Council in case the organisation is not in a position to take timely action upon receipt of a request. Hence, the rationale for this CWC provision can be explained by potentially limited inspector resources at a given time and as the result of various CW and industry related inspection activities that can be carried out in parallel. Moreover, this provision should also avoid overcharging the OPCW Technical Secretariat in case of receiving multiple challenge inspection requests within a few days.[484]

As the immediate and first action, the Director-General has to acknowledge receipt of the inspection request.[485] The CTBT provides a time span of 2 hours to accomplish this task, whereas the CWC is more restrictive and obligates the Director-General to do so within 1 hour. Both treaties attribute an important control function to the Director-General in the immediate aftermath of the receipt of a request for an on-site inspection. Though primarily of a technical nature, it requires the Director-General to ascertain that the request meets the respective treaty requirements and, if required, to assist the requesting State Party in filing the inspection request.[486] In practice, ascertaining the request validity necessitates an analysis of the request and cross-checking it against the requirements set out in the treaty provisions. For this purpose, the Director-General would most likely call for an immediate meeting of senior management and selected technical experts to jointly review the validity of the re-

[482] See CWC, Article IX, paragraph 13; CTBT, Article IV, paragraph 38. Considering the political dimension of requesting an on-site inspection, one may assume that the request is handed over in person by the Ambassador of the requesting State Party to the Director-General.
[483] See CWC, Verification Annex Part X, paragraph 3.
[484] See Krutzsch/Trapp (1994), p. 475.
[485] Existing standard operating procedures foresee that the Director-General signs an acknowledgement form, which is either handed over directly or sent to the requesting State Party.
[486] See CWC, Article IX; paragraph 14; CTBT, Article IV, D. paragraph 40.

quest.[487] Table 26 below provides an overview of the information that is to be contained in the respective inspection request:

Request for a Challenge Inspection under Part X. Para 4/Verification Annex/CWC	Request for an on-site inspection under Protocol Part II. Para 41/CTBT
a) State Party to the inspected and, if applicable, the Host State; b) Point of entry to be used; c) Size and type of the inspection site; d) Concern regarding possible non-compliance with this Convention including a specification of the relevant provisions of this Convention about with the concern has arisen, and of the nature and circumstances of possible non-compliance as well as all appropriate information on the basis of which the concern has arisen; and e) Name of the observer of the requesting State Party; Note: The requesting State Party is not obliged to inform immediately about the location of the inspection site. Article 5 Part X, Verification Annex stipulates that the requesting State Party shall notify the Director-General of the location of the inspection site in due time, so that this information can be provided to the inspected State Party not less than 12 hours before the planned arrival of the inspection team at the point of entry.	a) Estimated geographical and vertical coordinates of the location of the event that triggered the request with an indication of the possible margin of error; b) Proposed boundaries of the area to be inspected, specified on a map and in accordance with paragraphs 2 and 3; c) State Party or State Parties to be inspected or an indication that the area to be inspected or part thereof is beyond the jurisdiction or control of any State; d) Probable environment of the event that triggered the request; e) Estimated time of the event that triggered the request, with an indication of the possible margin of error; f) All data upon which the request is based; g) Personal details of the proposed observer, if any; and h) Results of the consultation and clarification process in accordance with Article IV, or an explanation, of relevant, of the reasons why such a consultation and clarification process has not been carried out;

Table 26: Information to be contained in a Request for a challenge inspection/CWC versus on-site inspection/CTBT

Source: CWC, VA Pt. X, para 4; CTBT, Protocol Pt. II, para 41.

As indicated above, both commonalities and differences can be identified. With regard to the former, in both cases the request requires identification of the State Party[488] to be inspected and the details of the observer proposed. Nevertheless, one can also note differences with respect to the degree of detail and content of the request, which can be attributed to some extent to the specifics of each verification regime and the related treaty obligations.

As already noted before, a CI can be triggered due to a broader range of non-compliance concerns. Therefore, the Convention requires the requesting State Party to specify the treaty provisions about which the concern has arisen, the nature and circumstances of the suspect-

[487] Such an approach is envisaged in the existing standard operating procedures of the TS/OPCW and the PTS/PrepCom/CTBTO and has been practiced in various exercise.

[488] In case of a request for an OSI, the CTBT also provides for the option to identify an area that is beyond the jurisdiction or control of any state (particularly relevant for an OSI on high seas).

ed non-compliance concern, as well as all appropriate information on the basis of which the concern has arisen. Most likely such information relies on national technical means or intelligence information gathered, which could be difficult to assess independently by other States Parties and hence makes the CI request immediately acutely political.[489] In addition, the request also needs to specify the size and type of the inspection site including the point of entry to be used. Information about all these aspects is crucial for planning the inspection and has an impact on issues like team composition as well as the equipment to be used.

On the other hand, basic obligations under the CTBT are more narrowly defined. As such, any non-compliance concerns under the CTBT relate to the conduct of a nuclear (weapon) test explosion. Hence, required information focuses accordingly on issues such as the exact location, the time and environment of the event, as well as on the data that support the compliance concern. An OSI request may be based on either NTMs or data products from certified IMS stations.[490] This fact represents a major difference compared with the CI mechanism, as all Member States have access to the IMS data products and can make an independent technical judgement thereupon.[491] One of the experts interviewed emphasized this as one of the major differences between the CI and the OSI mechanism and noted that *"[CTBT States Parties] are not relying purely on national means to assess whether an inspection should go ahead or not."*[492] In this respect, Tibor Tóth, the former Executive Secretary of the Preparatory Commission for the CTBT characterized this unique feature of the CTBT verification regime as the 'democratization of verification activities'.[493]

Notably, the CWC and CTBT provisions differ in eligibility with respect to the location, where an inspection can be requested. As such, CWC challenge inspections can be requested anywhere on the "*territory or in any other place under the jurisdiction or control of any other State Party*.[494] In contrast to that, the CTBT provisions go even further by entitling a State Party to request an on-site inspection also "*in any area beyond the jurisdiction or control of any State"*.[495] This de-facto 'unlimited geographical scope' aims to allow also for inspections on High Seas, where nuclear tests could also be carried out.

[489] See Expert Interview 1, paragraph 33 and Expert Interview 10, paragraph 21.
[490] CTBT, Article IV, D. paragraph 37.
[491] See Expert Interview 1, paragraph 33 and Expert Interview 10, paragraph 21.
[492] Expert Interview 1, paragraph 33.
[493] See Tóth (2011), p.4.
[494] CWC, Article IX, paragraph 8.
[495] CTBT, Article IV, D. paragraph 34.

CWC and CTBT treaty provisions also differ considerably with respect to the time when the exact boundaries of the inspection area are to be identified. While the CTBT requires the immediate identification of the proposed boundaries of the inspection area in the request, the CWC offers the requesting State Party to provide the exact site location also separately and later to the Director-General (i.e. the inspected State Party needs to be informed not less than 12 hours before the planned arrival of the team at the point of entry).[496] Late notification of the exact inspection site can be seen as a measure of reducing the time for the inspected State Party to carry out any 'clean up operations' and remove potential evidence at the suspected site in case prohibited activities indeed took place. Making use of this option, however, requires close coordination with the Technical Secretariat as deployment and notification activities need to be harmonized.

Furthermore, considerable differences with respect to the transmission of the request exist between the two treaty provisions. The CTBT requires the Director General to transmit the inspection request to the State Party sought to be inspected within six hours and moreover to communicate the request within 24 hours to the Executive Council and to all State Parties.[497] Hence, all States Parties are officially informed of the request and also the State Party against which compliance concerns are raised is notified relatively early. On the other hand, the CWC does not envisage the formal notification of the request to all States Parties. Additionally, the State Party to be inspected needs to be informed of the request for a challenge inspection theoretically only 12 hours before the planned arrival of the Inspection Team.[498] However, as the Executive Council has to decide on the request within 12 hours upon its receipt, it can be assumed that the State Party sought to be inspected is fully aware of the charges against it.[499]

Inspection Team and Equipment Assembly

Once the inspection request conforms to the treaty requirements, the Technical Secretariat has to begin with the preparations for the mission.[500] Respective preparations in both organisations upon receipt of an inspection request must be considered as top-priority events and

[496] See CTBT, Protocol Part II, paragraph 41 (b); CWC, Verification Annex Part X, paragraph 6.
[497] See CTBT, Article IV, D. paragraph 40.
[498] See CWC, Article IX, paragraph 12; CWC, Verification Annex, Part C, paragraph 11.
[499] See CWC, Article IX, paragraph 17. It should be noted different interpretations can be used as regards to the "receipt of the request" by the Executive Council. Whereas one interpretation relates to the presentation of the request by the requesting state party as the defining moment, another interpretation refers to the moment when the exact location of the inspection site is provided by the requesting state party as the kick off time for the 12 hours. See Krutzsch/Trapp (1994), p.191.
[500] See CTBT, Article IV, D. paragraph 41; CWC, Article IX, paragraph 14.

hence require cross-divisional cooperation and support from the entire organisation.[501] Accordingly, one can assume that lower priority activities like routine inspections (probably except the verification of CW destruction operations at CWDFs) or training activities might be postponed by the respective organisation upon receipt of an inspection request in order to focus all available resources on such a special event.

As the Technical Secretariat/OPCW regularly launches inspections which involve the support from various units in the Technical Secretariat, vast experience has been gained in this process. However, and in spite of it, and with the notable exception of the launch of the recent UNSG investigation in Syria in 2013, all these have been a (routine)-type of inspections involving less demanding preparatory timelines. Moreover, they are of comparably minor scope and much lower political profile and do not require such complex and sensitive interactions (e.g. with the Executive Council, inspected and requesting State Party). Nevertheless, this experience stands out in comparison with CTBTO's situation, where no routine inspections are carried out at all. Hence, given this fundamental difference, the CTBTO's Technical Secretariat will need to operate from different premises and tailor its procedures accordingly. Though the CTBT's Technical Secretariat's organizational structure upon entry into force has not yet been defined, current PTS organisational practices envisage the temporary creation of an Operations Support Centre as the organisational entity charged with the lead in all coordination activities upon receipt of an OSI request.[502] As such, staff with relevant expertise from various divisions becomes part of the OSC in order to support OSI preparations. In contrast to this, the TS/OPCW can permanently make use of an Operations Centre, which is embedded as a standing unit within the Inspectorate Division of the Technical Secretariat. Besides, the TS/OPCW envisages the creation of a 'Contingency Operations Planning Group', which consists of operationally experienced personnel from the Secretariat and has the responsibility to coordinate the preparation and conduct of all contingency operations such as CIs and IAUs.[503]

One of the first activities in both organisations is to select and assemble the inspection team. As already outlined under the general rules for inspection, a fundamental difference exists

[501] The need for cross-divisional cooperation and utilization of the entire organization's resources for such an event is reflected in the respective internal standard operating procedures of both organization and has been tested in previous exercises (e.g. OPCW Challenge inspection exercise 2011/Thailand, Build-Up Exercise Series CTBT/PrepCom 2012-2013).
[502] See PC/CTBTO (2012): CTBT/PTS/INF.1195, p. 5.
[503] See OPCW (2013): EC-74/DG-15, p.2.

with respect to the mobilization and assembly process of the inspection team. In case of the OPCW, the TS can make use of a standing inspectorate and a pool of inspectors employed by the organisation. Therefore, team members are selected from the list of inspectors designated for challenge inspections.[504] Depending on the number of inspectors on mission or otherwise not available for various reasons, the Director can choose from a pool of inspectors readily available. These inspectors work and train together on a regular basis; they have all their visas and/or *laissez-passer* documents in order and they have a range of vaccinations their regular inspection duties may require.[505] All these aspects are considered essential prerequisites for a speedy deployment and represent a major advantage compared to the approach chosen under the CTBT.

In contrast, assembly of the inspection team for an OSI under the CTBT is a more complex undertaking. Though the Director-General can also select inspectors and inspection assistants from among designated headquarters staff, the vast majority of designated inspectors are nominated by Member States.[506] Accordingly, short notice activation of these experts, which are located around the globe, becomes much more difficult compared to a standing inspectorate.[507] One of the interviewed experts identifies a number of associated challenges that may need to be overcome: *"[…] they do not work together; they may only do some training together on a periodic basis; they may not have travel documents in order; and it is unlikely that they will have all necessary vaccinations beforehand."*[508] Given the potential uncertainties as regards their availability and also the need to cover various techniques, the pool of inspectors needs to be much larger for an OSI. Estimates made at the Provisional Technical Secretariat/CTBTO envisage a pool of 400 designated and trained inspectors).[509]

A 'core team' approach has been applied at the PTS in previous trainings in order to initiate planning and preparation activities quickly. This concept stipulate that headquarters staff

[504] In order to avoid limiting the choice of the Director-General in selecting team members, most/all inspectors designated for routine inspections are also designated for challenge inspections. Besides 'full-time inspectors, the Director-General can also designate headquarters staff as inspectors and inspection assistants. CWC, Verification Annex Part X, paragraph 1. Designation procedures follow the provisions of Section A, Verification Annex Part II, CWC.

[505] See Expert Interview 11, paragraph 70.

[506] See CTBT, Protocol Part II, B. Standing arrangements: Designation of inspectors and inspection assistants, paragraphs 14-25.

[507] Operational aspects related to the designation of inspectors and inspection assistants (including, contractual aspects, activation issues, responsibilities of the Organisation vis-à-vis those of the nominating State Parties, etc.) are currently discussed at the Provisional Technical Secretariat. See PC/CTBTO (2013): CTBT/PTS/INF.1036/Amend.1.

[508] Expert Interview 11, paragraph 70.

[509] See PC/CTBTO (2002): CTBT/PTS/INF.475, p. 19.

occupies essential leadership and other crucial team positions, whereas Member States' inspectors augment the team primarily in expert functions. As a result of such an approach, TS staff selected for an inspection team position can initiate respective planning and preparations and external experts join the team later during the launch phase.

While both the CWC and CTBT provisions stipulate that the size of the inspection team shall be kept to the minimum necessary for the proper discharge of the inspection mandate[510], the CTBT poses a limit of maximum 40 inspectors present at any time, except during drilling, on the territory of the inspected State Party.[511] In contrast to that, the CWC does not provide a fixed upper ceiling and hence leaves the Director-General with some level of flexibility.[512] In this context, one of the interviewed experts highlights this difference in straightforward terms as follows:

> *"One of the advantages that the OPCW guys have is that there is no limit on the inspection team that you can have; you could deploy the entire 150-odd inspectors if you wanted - most of them would be patrolling the perimeter. For OSI we're stuck with 40 though we can rotate them, which is, of course, a mercy."*[513]

However, both under the respective CWC and CTBT provisions, the inspection team does not allow for the inclusion of nationals of the requesting and inspected State Party.[514] As regards the general inspection team structure, one can note some similarities pertaining to the functions to be occupied therein. These primarily relate to command and control related aspects, as requirements are similar in nature.[515] Taking into account the amount of data gathered and to be analyzed, an OSI inspection team encompasses specific inspection team functions such as Geographical Information System or data flow officer function that are not represented in a typical CI team structure. Naturally, other functions vary and relate specifically to the specifics of a CI or OSI and depend on the nature of each individual scenario and the ISP support provided, and are eventually considered in the initial inspection plan preparation.

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510 See paragraph 9 of Part II to the Protocol of the CTBT; paragraph 2 of Part X of the Verification Annex of the CWC.

511 See CTBT, Protocol Part II, paragraph 9. However and not explicitly mentioned in the CTBT, the rotation of team members has been practiced during field exercises (not least in view of the maximum duration of an OSI of 130 days).

512 Paragraph 2 of Part X/Verification Annex of the CWC stipulates that *"[t]he Director-General shall determine the size of the inspection team and selects its members taking into account the circumstances of a particular request. The size of the inspection team shall be kept to a minimum necessary for the proper fulfillment of the inspection mandate […]."*

513 Expert Interview 1, paragraph 19.

514 CWC, Verification Annex, Part X, paragraph 2; CTBT, Protocol Part II, paragraph 9.

515 Expert Interview 1, paragraph 17.

Hand in hand with the inspection team selection and the preparation of the initial inspection plan, logistic arrangements are to be made. As already noted above, selecting, preparing and transporting the inspection equipment within tight treaty timelines to the point of entry of the inspected State Party is considered one of the most challenging logistic tasks during the launch phase. Identical under both treaties, the equipment selection process is based on the list of equipment approved by the First Conference of States Parties.[516] Hence all equipment used during a challenge-type inspection needs to conform to the specifications approved by Member States. Though the principle logistic process is exactly the same for a CI versus an OSI, practical implications differ considerably. Due to the different scope, requirements, duration and verification activities conducted on-site, the amount of equipment to be shipped for a CI versus an OSI differs greatly.[517] As such, experience gathered from field exercises shows variations of a magnitude between CWC and CTBT inspections (i.e. 100-150 tonnes[518] for an OSI compared to approx. 5 tonnes of inspection equipment for a CI).

Arranging the equipment preparation, packing and transport in case of an OSI requires particular attention. As readying such a high amount of equipment would pose a major challenge within the given treaty timelines, current PTS procedures envisage maximising the operational readiness of the equipment to the extent possible. As such, equipment items are (to the extent possible) already pre-packed, based on a modular structure, and stored in special transport containers, which can be readily airlifted or transported by truck. Hence, this approach envisages that the preparation and packing activities are limited to changes in the standard configuration as a result of the initial inspection plan. Additionally, and for accountability purposes, all items are bar-coded and equipment data are stored in an asset management system. While in case of an OSI all equipment needs to prepared and shipped to the POE within 6 days after receipt of a request, the respective TS target timeline for a CI envisages equipment ready for deployment within 24 hours. As such, and as a contingency measure, one separate kit of OPCW inspection equipment is permanently kept aside, prepared and pre-packed to the extent possible for short notice deployment. Therefore, in spite of the different

[516] See CWC, Verification Annex Part II C. Standing arrangements: Approved equipment, paragraphs 27-30; CTBT, Protocol Part II, B. Standing arrangements: Approved inspection equipment, paragraphs 36-40.
[517] See also Expert Interview 1, paragraph 19.
[518] 51 tonnes of equipment were transported to the exercise site during the 2008 Integrated Field Exercise 2008. See PC/CTBTO (2009): CTBT/PTS/INF.1021, p.8. Approximately 150 tonnes of equipment are envisaged to be shipped for the 2014 Integrated Field Exercise in Jordan.

timelines and amount of equipment to be shipped to the POE, both organizations apply the same principle approach by having equipment set readily prepared for shipment.

As regards personal protective equipment upon designation, each OPCW inspector and inspection assistant is issued with a personal kit that comprises various individual protection equipment items. In case of the CTBT, and also not least due to the pre-entry into force status, personal equipment is only available to a very limited extent. Hence, detailed procedures have yet to be developed, which need to take into account the different circumstances with respect to a non-permanent inspectorate.

Besides the preparation and shipment of the equipment, also a number of other logistic and operations support related issues such as the inspectors' travel, visa arrangements, medical contingency measures and insurance aspects need to be taken care of. Notwithstanding the obligation of the inspected State Party to provide logistic support during the inspection,[519] close coordination and early clarity on the scope of support provided by the inspected State Party helps the inspection team to adjust its planning and preparations accordingly.

Not least in view of the major impact of the degree of ISP support on an OSI, a number of related suggestions are currently discussed in the organs of the Preparatory Commission for the CTBTO. In order to facilitate respective arrangements, the Draft OSI Operational Manual/CTBTO provides for the option of an ISP liaison officer during the launch phase.[520] Moreover, current discussions in Working Group B also include the preparation of arrangements with States Parties, which should facilitate respective preparations in case of an OSI.[521] Current CTBT procedures stipulate that all team related logistical aspects are captured in a 'Logistical and Operations Support Plan', which is prepared during the launch phase and regularly updated in the field. Furthermore, and given the different contractual status between CI team members (i.e. all employees of the Technical Secretariat/OPCW) and OSI team members (comprised of both TS/CTBTO employees and nominated States Parties' experts), different solutions need to be developed. Negotiations on the status of future CTBTO inspectors and inspection assistants have been ongoing for a number of years with a view to clarifying issues

519 See CWC, Verification Annex, Part II, paragraph 26; CTBT, Protocol Part II, A. General Provisions, paragraph 11.
520 See PC/CTBTO (2012): CTBT/WGB/TL-18/47, p. 26.
521 See PC/CTBTO (2012): CTBT/WGB/TL-18/47, pp. 36-37.

such as the obligations of the Organization versus those of the Member States, deployment timelines and contractual arrangements.[522]

In sum, ISP related logistic arrangements for a CI can be considered considerably less extensive than those posed by an OSI. This can be attributed to a number of factors such as the much shorter duration of a CI compared to an OSI (84 hours versus up to 130 days), the potentially smaller team size, the much smaller amount of inspection equipment (approx. 5 tonnes versus approximately 100 – 150 tonnes) and the different type of the inspection activities to be carried out (e.g. drilling under an OSI).

Decision by the Executive Council

When the inspection request meets the treaty requirements, preparations at the Technical Secretariat for the challenge-type inspection have to be initiated. Both treaties require the approval of the Executive Council for the inspection to go ahead. However, one can identify a fundamental difference between the CI and the OSI approval mechanism in the Executive Council: In case of a request for a challenge inspection a 'red light' mechanism is applied. Under this procedural approach the inspection proceeds unless three quarters of all Executive Council Members vote against carrying out the request. Therefore, and as put by one of the interviewed experts *"[t]he decision with the majority relations of a three quarter majority makes it highly improbable that any kind of credible request would be stopped."*[523]

However, in the case of the CTBT, a 'green light' mechanism is applied, which means that 30 out of 51 Member States represented in the Executive Council actually have to vote in favour of the OSI request. Obtaining 30 supportive votes for an OSI represents a major challenge that might in fact be difficult to obtain.[524] One of the interviewed experts considers this substantially different approach to be the outcome of concerns raised by many countries of the developing world on the relative ease of launching a CI under the CWC and remarks: *"So, when negotiations for the CTBT were taking place, they actually were taking place against the backdrop of what the developing countries gave up in the CWC and they ensured that the position was reversed in the CTBT.*" In his account on the CTBT negotiations, Ramaker also notes the clear divergence of opinion on how easily on-site inspection should be initiated:

> *"Generally those countries supportive of a strong role for on-site inspections in the verification process preferred a red light approach while those more*

[522] See PC/CTBTO (2009): CTBT/PTS/INF.1036 and PC/CTBTO (2013): CTBT/PTS/INF.1036. Amend.1.
[523] Expert Interview 2, paragraph 43.
[524] See National Academy of Sciences (2012), p. 70.

> *concerned with protecting national security interests preferred a green light approach."*[525]

Furthermore, both decision making mechanisms differ also with respect to the timeline within which the EC Members have to make their decision. Whereas the CWC stipulates only 12 hours[526], the CTBT requires obtaining a decision within 96 hours. Table 27 provides a summary of both decision making mechanisms.

EC decision making mechanism pertaining to a request for a Challenge Inspection/CWC	EC decision making mechanism pertaining to a request for an On-Site Inspection/CTBT
• Decision no later than 12 hours after receipt of the request from the requesting State Party • Three quarter majority of all its members (i.e. 31 out of 41 votes) required to stop CI if request frivolous, abusive or clearly beyond the scope as per paragraph 8/Article IX • Neither requesting State Party nor the inspected State Party to participate in the decision	• Decision no later than 96 hours after receipt of the request from the requesting State Party • At least 30 out of 51 affirmative votes required from EC members to proceed with OSI • Neither requesting State Party nor the inspected State Party to participate in the decision • State Party sought to be inspected has 72 hours to provide clarification, which the EC takes into consideration when taking decision

Table 27: Executive Council decision making mechanism for a challenge inspection/CWC versus on-site inspection/CTBT
Source: CWC, Art.IX, paragraph 17; CTBT, Art. IV, paragraph 46

In case the inspection request fails to receive the required support by the Executive Council, all preparations for the inspection are to be stopped and no further actions on the request are to be taken. However, in case the request for the inspection has been approved, inspection preparations proceed.

Inspection Mandate and Initial Inspection Plan Preparation

Among the many activities that take place during the launch phase, the preparation of two documents is of particular relevance: the Inspection Mandate and the Initial Inspection Plan. Both these documents have official character and are essential for the inspection, as they provide clear guidance on the inspection aims as well as give information on the planned execution of the mission.

525 See Ramaker et al. (2003), p. 142.
526 Krutzsch/Trapp note the potential for different interpretations regarding the triggering time for the 12 hours timeline (i.e. either 12 hours upon receipt of the (incomplete) request or 12 hours upon information by the Director-General about the inspection site)). See Krutzsch/Trapp (1994), p. 191.

Work on the initial inspection plan can start once the core inspection team members have assembled. Based on the specifics of the request, this internal team document has the aim to outline the planned inspection approach taken by the team, assigns roles and responsibilities within the team, elaborates on concrete activities to be performed and lists the equipment to be taken by the team. Additionally, it highlights respective support requirements from the inspected State Party. This plan is, however, of a tentative nature and normally covers only the first phase of the inspection in detail, as certain aspects need to be negotiated and agreed with the inspected State Party.

The actual approach taken with respect to the inspection plan preparation follows a different methodological approach in case of an OSI versus a CI. Though some guidance as regards specific plans (e.g. health and safety plan, perimeter monitoring plan, sampling and analysis plan, etc.) exists in internal TS/OPCW quality documentation, neither the OPCW Inspection Manual nor other TS/OPCW internal documents provide specific methodological guidance on the preparation of the (overall) initial inspection plan. In contrast to that, the PTS/CTBTO has developed an information-led search logic approach for the technical and scientific work of the inspection team. This approach, captured in an 'Inspection Team Functionality Manual', follows defined and discrete methodological steps, through which the inspection team narrows down the inspection area into smaller areas of interest. While noting that an OSI and a CI differ in many aspects such as duration, team size, inspection techniques used, etc. they are both, however fact finding missions as a result of compliance concerns raised. Similar for CI and OSI preparations, the inspection team receives a number of different briefings in the course of mission preparation. These focus on, *inter alia*, operational, technical, administrative, logistic, confidentiality, health and safety, inspection team media policy issues and political background information about the requesting and inspected state parties.

In parallel to the preparation of the initial inspection plan by the inspection team, headquarters staff drafts the inspection mandate. The inspection mandate is one of the key reference documents in an inspection. Based on the information specified in the inspection request, it informs about the inspection aims and provides other essential information about the mission. Table 28 below lists the aspects that are to be captured in the inspection mandate for a CI and OSI, respectively:

Contents of the Inspection Mandate for a CI/CWC	Contents of the Inspection Mandate for an OSI/CTBT
a) State Party to the inspected and, if applicable,	a) Decision of the Executive Council on the OSI

Contents of the Inspection Mandate for a CI/CWC	Contents of the Inspection Mandate for an OSI/CTBT
the Host State; b) Point of entry to be used; c) Name and nationality of the observer; d) Inspection site; e) Convention provisions about which the concern has arisen; f) Nature and circumstances of possible non-compliance; g) All appropriate information on the basis of which the concern has arisen; h) Names of the inspectors and inspection assistants; i) Any particular operating instructions for the team; Attachments: 1. Inspection request; 2. Location of inspection site as well as site diagram with requested perimeter; 3: Inspection equipment selected from the list of approved equipment;	request; b) Name of the State Party or States Parties to be inspected or an indication that the inspection area or part thereof is beyond the jurisdiction or control of any state; c) Location and boundaries of the inspection area specified on a map, taking into account all information on which the request was based and all other available technical information, in consultation with the requesting State Party; d) Planned types of activity of the inspection team in the inspection area; e) Point of entry to be used by the inspection team; f) Any transit or basing points, as appropriate; g) Name of the head of the inspection team; h) Names of the members of the inspection team; i) Name of the proposed observer, if any; and j) List of equipment to be used in the inspection area;

Table 28: Information contained in the Inspection Mandate for a challenge inspection/CWC versus on-site inspection/CTBT

Source: CWC, Art. IX, paragraph 18 and VA Pt. X, paragraph 12; CTBT, Prot. Pt. II, C. paragraph 42

As indicated above, various types of information are reflected in the inspection mandates. Information stems from, *inter alia*, the inspection request, the Executive Council decision, the inspection aims as per the treaty text, and key outputs from the inspection team's planning process (e.g. the equipment list and the list of team members). Additionally it can be noted that the contents of CI and the OSI inspection mandates show a high level of similarity. A notable difference, however, is the fact that the CI mandate does not make reference to the Executive Council decision. Additionally, the CTBT provisions exactly specify the issues to be addressed in the mandate,[527] whereas the CWC does not do so. Nevertheless, the CWC gives clear guidance and binds its content closely to the inspection request by stipulating that *"[t]he inspection mandate shall be the inspection request [...] put into operational terms, and shall conform with the inspection request."*.[528] The importance of this document is underlined by the fact that the mandate is personally signed off by the Director-General of the respective organ-

[527] See CTBT, Protocol Part II, C. paragraph 42.
[528] See CWC, Article IX, paragraph 18.

isation. Signing off the mandate and handing it over to the inspection team leader is normally one of the last activities before the team departs from the headquarters to the POE.

Notification of the Inspected State Party

In order to inform the ISP about the arrival of the inspection team, both the CWC and CTBT provisions stipulate the issuance of a notification to the inspected State Party. As such, current working practices stipulate the preparation of the notifications by staff of the respective Operations (Support) Centre at the Technical Secretariat. The CTBT sets a minimum requirement of 24 hours before the planned arrival.[529] As part of the notification, the CTBT stipulates the provision of detailed information containing, *inter alia*, the inspection mandate, arrival means and time at the POE and any equipment requested to be made available to the inspection team for use in the inspection area.[530] On the other hand, the CWC's CI provisions stipulate the transmission of the notification to the inspected State Party no later than 12 hours before the arrival of the inspection team at the point of entry.[531] This notification has to include, *inter alia*, the inspection request, the location of the inspection site, the arrival date, time, means and the inspectors' names.[532]

The last step in the launch phase of the inspection is the departure of the inspectors from the Technical Secretariat to the Point of Entry in the inspected State Party. Given the standing inspectorate at the OPCW, the inspection team would assemble accordingly at the TS headquarters in The Hague and depart from there to the POE. While the inspection team for an OSI would consist of both experts from the TS and Member States, current exercise practices and draft procedures also stipulate the assembly of the entire team at the CTBTO Headquarters in Vienna and its joint travel to the POE of the inspected State Party.

4.2.4 Rules pertaining to the Pre-Inspection Phase

Pre-inspection activities start upon arrival of the inspection team at the point of entry in the inspected State Party and last until the start of the inspection activities. Figure 23 highlights the four key activities taking place during this phase.

529 CTBT, Article IV, paragraph 55.
530 See CTBT, Protocol Part II, paragraph 43.
531 See CWC, Verification Annex Part X, paragraph 11.
532 See CWC, Verification Annex Part X, paragraph 11 and Verification Annex Part II, paragraph 32.

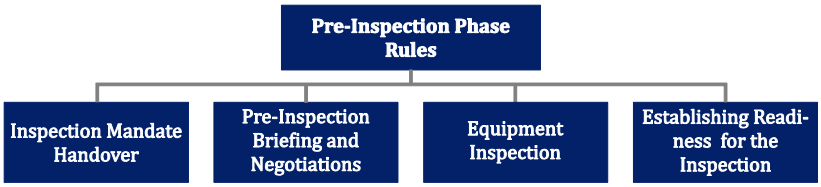


Figure 23: Regime Rules related to the pre-inspection phase

Source: author

In the course of this phase, the Inspection Team hands over its mandate, receives briefings from the inspected State Party and presents its initial inspection plan. Moreover, negotiations take place and the team's equipment may be inspected. Finally, the team is brought to the inspection area/site and establishes its readiness for the inspection.

Handover of the inspection mandate

Both the CWC and the CTBT stipulate the handover of the inspection mandate as the first activity of the inspection team upon arrival at the point of entry.[533] Subsequently, CWC and CTBT procedures differ to some extent, particularly with respect to issues to be negotiated during this phase, timelines and sequence of main events. Nevertheless, one can still identify essentially the same key activities taking place during this phase, namely the pre-inspection briefing and related negotiations, the inspection of the team's equipment and establishing readiness for the mission at the inspection site/area.

Pre-inspection briefing and negotiations

Both the CWC and the CTBT stipulate conducting a pre-inspection briefing as an integral part of the pre-inspection phase, they differ, however, with respect to the locations where these activities may take place. Respective CTBT provisions imply that the pre-inspection briefing is to take place at the point of entry.[534] At this briefing, the inspection team presents the initial inspection plan and receives a briefing by representatives of the inspected State Party. The ISP briefing has to include natural terrain features, safety and confidentiality issues and logistic arrangements, particularly the support available to the inspection team.[535] Moreover, one can expect that the ISP will also present its political views towards the inspection request.

Negotiations may evolve between both sides over the proposed initial inspection plan presented by the team and related operational and logistical support requirements. The inspect-

[533] See CWC, Part X, paragraph 12; CTBT, Protocol Part II, paragraph 52.
[534] See CTBT, Protocol Part II, paragraph 52.
[535] See CTBT, Protocol Part II, paragraph 52.

ed State Party may indicate any areas within the inspection area that, in its view, are not related to the purpose of the inspection. As such, the ISP may declare restricted access sites (RAS) up to 50 km^2, with each individual RAS up to 4 km^2.[536] Additionally, negotiations are likely to be conducted about the conduct of the overflights. Whereas the CTBT provides the IT with the right to carry out an initial overflight of the IA of maximum 12 hours, the conduct of an additional overflight is subject to the agreement of the inspected State Party. In this context, the ISP may pose different restrictions on the conduct of the overflight, which may trigger negotiations.[537]

As indicated above, CTBT negotiations focus on the initial inspection plan and the conduct of inspection activities, the scope of support provided to the inspection team and access restrictions within the inspection area. However, the size and borders of the inspection area cannot be negotiated under the CTBT. On the other hand, respective CWC provisions allow for negotiations on the final perimeter (i.e. area within which inspection activities are to be carried out), which are to be conducted as a matter of priority and start right at the POE. They are to be conducted between the inspection team and the inspected State Party based on the requested perimeter. The focus on perimeter negotiations in case of CI during the pre-inspection phase stems from the difference in the nature of the event and the ease with which potential evidence can be removed/hidden. Accordingly, the perimeter plays a much more important role in a CI compared to an OSI, as the perimeter needs to be monitored to prevent potential removal of evidence. A number of scenarios can be envisaged with regard to the perimeter negotiations, depending on whether the site was previously declared or not. In case of a declared facility under Article III, IV, V and Schedule 1 - 3 facilities/plants under Article VI of the CWC, the following applies: if the requested perimeter is within or conforms to the declared perimeter, the declared perimeter becomes the final perimeter. The final perimeter may however, with the agreement of the ISP, be reduced in order to conform to the perimeter requested by the RSP.[538] In such a scenario, the IT has to be transported to the final perimeter within 24 hours upon its arrival at the POE.[539]

[536] See CTBT, Protocol Part II, paragraph 92.
[537] Restrictions may relate to the flight altitude, the number of passes and circling, the duration of hovering, the type of the aircraft, the number of inspectors on board and the type of measurements and observations to be made. Additionally, the ISP may declare prohibitions on the overflight of sensitive sites not related to the purpose of the CTBT. See CTBT, Protocol Part II, paragraph 75.
[538] See CWC, Verification Annex Part X, paragraph 15 (a).
[539] See CWC, Verification Annex Part X, paragraph 15 (b).

In case of non-declared facilities, the ISP may either agree to the requested perimeter or may object and propose an alternative perimeter. In case of the former, the requested perimeter shall be designated as the final perimeter and the IT has to be brought to the final perimeter within 36 hours upon arrival at the POE.[540] In case of the latter, and if the IT agrees to the alternative perimeter, the IT has to be brought to the final perimeter within 36 hours upon arrival at the POE.[541] Finally, there is also the option that no agreement can be reached about the alternative perimeter. Under such circumstances the IT needs to be brought to a location at the alternative perimeter within 36 hours upon arrival at the POE.[542] Negotiations will then continue at the location at the alternative perimeter for up to 72 hours.[543] In case no agreement can be reached, the inspected State Party's proposal pertaining to the alternative perimeter becomes binding and serves as the final perimeter. [544] In sum, the inspected State Party can delay access to the inspection site for up to 108 hours before the inspection team needs to be granted access, while perimeter monitoring by the IT needs to be started not later than 36 hours after arrival at the POE.[545]

In contrast to the OSI provisions under the CTBT, the CWC CI provisions stipulate the conduct of the ISP's pre-inspection briefing and the presentation of the initial inspection plan by the inspection team not at the POE, but later at the inspection site.[546] At the end of the pre-inspection briefing, the inspected State Party may offer a site tour to the inspection team. The purpose of such a tour is to clarify the exact boundaries of the perimeter, inform about installations and buildings within the perimeter and draw attention to any particular (health and safety) regulations to be observed by the team. Whereas the pre-inspection briefing and the transport of the team including its equipment in case of an OSI is to be conducted within 36 hours[547], respective CWC provisions limit its duration to a maximum of three hours.[548]

Equipment inspection

An integral part of the pre-inspection activities in both treaties is the inspection of the team's equipment. As such, the inspected State Party has the right to check the equipment at the POE

[540] See CWC, Verification Annex, Part X, paragraph 15.
[541] See CWC, Verification Annex Part X, paragraph 18.
[542] See CWC, Verification Annex Part X, paragraph 19.
[543] See CWC, Verification Annex Part X, paragraph 21.
[544] See CWC, Verification Annex Part X, paragraph 21.
[545] See CWC, Verification Annex Part X, paragraph 39.
[546] See CWC, Verification Annex Part II, paragraph 37 and Verification Annex Part XI, paragraph 33-34.
[547] See CTBT, Protocol Part II, paragraph 54.
[548] See CWC, Verification Annex Part II, paragraph 37.

in the presence of the inspection team.[549] In principle, the ISP may inspect each individual item and verify whether the equipment conforms to the list of approved equipment. Additionally, the ISP may check whether the equipment has been certified, properly calibrated, is free from any contamination, and whether respective serial numbers match the supporting shipping documentation. Furthermore, the ISP may check whether seals applied to the equipment boxes and containers are intact and have not been tampered with. Considering the amount of equipment brought by the inspection team in case of a challenge inspection (up to 5 tonnes), performing a full equipment check is certainly feasible. However, in case of an OSI, a full equipment inspection (e.g. 100 – 150 tonnes and several thousands of items) requires considerable ISP resources and takes some time. Hence, the ISP might also perform a random equipment inspection or focus on specific items.

Checking the equipment is an activity that might be conducted in parallel with other pre-inspection activities, such as negotiations of the initial inspection plan or perimeter negotiations. Importantly, experts familiar with the respective equipment and shipping documentation should be present during this activity in order to facilitate its conduct. In case the ISP has identified any equipment that does not meet the specifications, is not listed correctly at the inspection mandate, is contaminated or not duly certified, it may refuse the use of such equipment during the inspection. Hence, such equipment may be put under joint custody at the POE until the end of the inspection.

Establishing readiness at the inspection area/site

Arranging in-country transport for both the team and its equipment from the POE to the inspection area/site is the responsibility of the inspected State Party. As already referred to above, CWC procedures stipulate that the inspection team has to arrive at the inspection site within 36 hours.[550] Similarly, in case of an OSI under the CTBT, the ISP has to ensure the safe transportation of the team and its equipment to the inspection area not later than 36 hours after arrival at the POE.[551]

Though not explicitly stipulated as such in the CTBT provisions, current PTS working practices envisage the option of sending an advance team to the planned base of operations before

[549] See CWC, Verification Annex Part II, paragraph 29; CTBT, Protocol Part II, paragraph 51.
[550] See CWC, Verification Annex Part X, paragraph 19.
[551] See CTBT, Protocol Part II, paragraph 54.

the main bulk of the team arrives.[552] This approach, which requires the consent of the ISP and also needs to be negotiated at the POE, should facilitate the arrival of the remainder of the team including its equipment. Tasks of the advance team, *inter alia*, include verifying the location, checking the suitability of the proposed base of operations area at the inspection area, performing a risk assessment (including checking for radiation and other potential hazards), as well as allocating space for the various technical sub-teams and the inspection equipment. In contrast to that, no such approach is envisaged for a CI, not least in view of the much more limited requirements of the team.

One of the first inspection team tasks upon arrival at the inspection site/area is to confirm the location. As such and identical under both treaties, inspectors verify that the location to which the team has been transported corresponds to the inspection site/area specified in the inspection request.[553] This activity is done in the presence of ISP representatives and both sides take note of the geographical coordinates, which are reflected in the inspection report.

Additionally, and once the inspection team has arrived at the inspection site/area, it has to get ready for inspection activities. As such, the CTBT sets a timeline of 72 hours upon arrival at the POE, within which the inspection team has to commence inspection activities.[554] Accordingly, all efforts are directed towards setting up the team's base of operations either in a fixed installation offered by the ISP (preferred choice), or in tents brought by the IT. Given the considerable amount of equipment shipped by the team, establishing full readiness of the BoO may take up to a few days and require the logistic support of the inspected State Party.

In contrast to that, inspection activities in case of a CI may start at the latest 108 hours upon arrival of the IT at the POE.[555] Though negotiations on the final perimeter may continue at the alternative perimeter, CWC provisions stipulate that the inspection team can commence perimeter activities immediately upon its arrival at the site and take over exit monitoring activities performed by the ISP.[556] Perimeter activities have the purpose of securing the site and ensuring that potential evidence is not transported out of the inspection site. Dependent on

[552] The Draft OSI Operational Manual stipulates another, additional option for an advance team: depending on the consent of the State Party sought to be inspected, the Director-General may send an agreed number of individuals responsible for administrative, logistical and equipment issues and amenities prior to the main body of the inspection team's arrival into the State Party to be inspected. However, the individuals do not start actual work earlier than the approval of the OSI by the EC. See PC/CTBTO (2013): CTBT/WGB/TL-18/50, p. 49.
[553] See CWC, Verification Annex Part X, paragraph 22; CTBT, Protocol Part II, paragraph 55.
[554] See CTBT, Protocol Part II, paragraph 57.
[555] See CWC, Verification Annex Part X, paragraph 39.
[556] See CWC, Verification Annex Part X, paragraphs 23 and 35.

the inspection site, perimeter monitoring can be an arduous activity, which requires considerable team resources. In view of the need to secure the site on a 24/7 basis throughout the entire 84 hours inspection duration, a shift approach needs to be implemented. Exercise experience has shown that perimeter monitoring is an important activity that requires the full attention and vigilance of inspectors.[557]

In parallel to the perimeter activities, the inspection team, *inter alia*, sets up its command post, assembles its field laboratory, takes stock and prepares necessary inspection equipment and establishes contact with the TS Headquarters. All these activities require limited space (i.e. a few rooms) allocated to the team at the inspection site in case of a CI. As such, preparations are much smaller in their dimension compared to the set-up of the base of operations for an OSI. While in case of a CI the inspection team fully relies on support from the inspected State Party regarding accommodation, OSI related contingency measures also foresee the option that the inspection team can set up its own, tent based living quarter for an OSI.

4.2.5 Rules pertaining to the Inspection Phase

Once the inspection team leader and the head of the inspected State Party team agree on the official starting time of the inspection, inspection activities begin. In the course of this phase, the inspection team conducts its fact finding mission in order to fulfil the inspection aims and objectives as per the inspection mandate. As already indicated earlier, the duration of the inspection phases differ fundamentally between both treaties. Whereas CI provisions stipulate a relative short timeframe of 84 hours, an OSI may last up to 130 days from the time of the Executive Council approval. As one of the interviewed experts remarks *"[t]he duration of the CWC CI is much shorter than the initial duration of the CTBT OSI, and very much shorter than the maximum duration of the CTBT OSI, but that reflects the nature of the evidence being sought and the technical challenges faced in each case."*[558]

This huge difference in the duration of the inspection not only has impact on the overall logistic arrangements to be taken by both the IT and the ISP, but also naturally affects operational and planning issues. As already mentioned before, the area to be inspected under an OSI can be up to 1,000km^2. On the other hand, and while assuming a much smaller size of the

[557] Perimeter activities played an integral part in the OPCW's two most recent CI exercise in The Netherlands and Thailand in 2007 and 2011, respectively.
[558] Expert Interview 11, paragraph 71.

site to be inspected, no such specifications with respect to the size can be found for a CI. Furthermore, and also already addressed before, OSI provisions limit the inspection team number present at any given moment on the ISP territory to 40 experts[559] (except during drilling), whereas no absolute number[560] is provided in the CWC for a CI ('kept to the minimum for the proper fulfilment of the inspection mandate'). Against these basic inspection related parameters, figure 24 below shows essential inspection phase related regime rules, which address, *inter alia*, general inspection rules, the conduct of inspection activities and techniques, IT communications, managed access provisions and observer related issues. Furthermore they also regulate the extension and conclusion of the inspection.

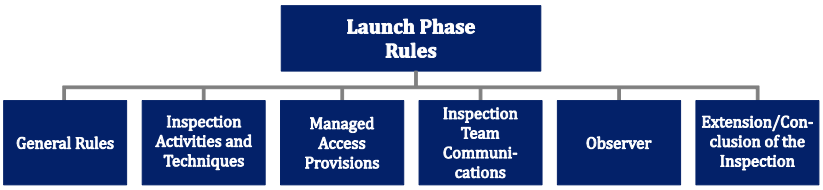


Figure 24: Regime Rules related to the inspection phase

Source: author

General rules

Both treaties lay down general rules that are to be followed during the inspection.[561] Both the CWC and CTBT are consistent by highlighting that the IT shall collect and document only facts related to the purpose of the inspection, and refrain from activities that are not relevant and hence neither seek nor document information that is clearly unrelated thereto.[562] Moreover, both treaties both provide clear guidance on the approach to be taken by the inspection team. As such, they mandate the team to conduct its inspection in the least intrusive manner possible, and wherever possible, to start first with the least intrusive procedures and proceed to more intrusive procedures only as deemed necessary.[563] Besides these consistencies regarding general inspection principles, CWC CI provisions also address access issues as part of the general rules. As such, they highlight, *inter alia*, the inspected State Party's obligation *"to allow the greatest degree of access […]"*, while at the same time stressing its *"right under managed access to take such measures as are necessary to protect national security"*. [564] Managed access issues are discussed in more detail later in this sub-chapter.

[559] CTBT, Protocol Part II, paragraph 9.
[560] See CWC, Verification Annex Part X, paragraph 2.
[561] See CWC, Verification Annex Part X, paragraphs 38-45; CTBT, Protocol Part II, paragraphs 56-61.
[562] See CWC, Verification Annex Part X, paragraph 44; CTBT, Protocol Part X, paragraph 60 (e).
[563] See CWC, Verification Annex Part X, paragraph 45; CTBT, Article IV, paragraph 58.
[564] See CWC, Verification Annex Part X, paragraph 41.

In comparison to that, OSI general rules focus, with a high level of specificity on the rights and obligations of the ISP and the IT. Notwithstanding key IT rights such as determining the inspection proceedings and modifying its plan as necessary, the CTBT also places a number of important rights to the ISP. Accordingly, the ISP may, *inter alia*, examine and even retain photographs taken by the IT under specific circumstances as well as examine measurement products and samples.[565] Additionally, the CTBT obliges the IT, *inter alia*, to provide copies of information and data collected in the inspection area[566] and to take into account and include in its report data and explanations from the ISP on the nature of the event that triggered the request[567]. Overall, it can be noted that general rules stipulated under the CTBT provisions provide a relatively strong position to the ISP.[568]

Inspection activities and techniques

To gather evidence on the non-compliance concerns stated in the inspection request, an inspection team has to apply different inspection activities and techniques in the course of its mission. Both treaties differ in the variety of techniques to be utilized for inspection purposes. The table below provides an overview of the different inspection activities and techniques applicable for challenge-type inspections.

CI inspection activities under the CWC	OSI inspection techniques and activities under the CTBT
Not defined:[569] • Position finding; • Physical (visual) inspection of equipment, buildings, bunkers, and areas; • Non-Destructive evaluation of munitions, containers and tanks; • Survey of the area by detection instruments or air monitoring; • Conduct of interviews; • Review of records and other documents for internal consistency and corroboratory evidence; • Collection and analysis of samples both on-	Defined as per Protocol Part II/ paragraph 69/CTBT:[570] • Position finding; • Visual observation, video and still photography and multi-spectral imaging, including infrared measurements; • Radioactivity measurements of levels using gamma radiation monitoring and energy resolution analysis; • Environmental sampling and analysis; • Passive seismological monitoring; • Resonance seismometry and active seismic surveys;

565 CTBT, Protocol Part II, paragraph (e).
566 See CTBT, Protocol Part II, paragraph 60 (g).
567 See CTBT, Protocol Part II, paragraph 60 (f).
568 Indicatively for the strong ISP position, 11 out of 15 subparagraphs stipulated under paragraphs 60 and 61/Protocol Part II provide the ISP with rights and the IT with obligations.
569 Illustrative examples of inspection activities and techniques are provided in OPCW (2012): QDOC/INS/IM/01, pp. 18-20 and have been amended by the author in this table.
570 While most of the inspection activities and techniques are ground based, the IT may conduct visual observation activities, multi-spectral (including infrared) imagery, gamma spectroscopy and magnetic field mapping also from the air. See Protocol to the CTBT, Part II, paragraphs 71-85.

CI inspection activities under the CWC	OSI inspection techniques and activities under the CTBT
site and off-site at designated laboratories; • Medical examinations of victims of CW use; • Use of monitoring and recording equipment incl. video and still photography; • Application of tags and seals; • Request clarifications in connection with ambiguities arisen during the inspection; • Conduct of exit monitoring and perimeter activities; • Collection of evidence;	• Magnetic and gravitational field mapping, ground penetrating radar and electrical conductivity measurements; • Drilling to obtain radioactive samples;

Table 29: Inspection activities and techniques under a challenge inspection/CWC versus on-site inspection/CTBT

Source: OPCW (2012): QDOC/INS/IM/01, pp.18-20 (adapted by the author); CTBT, Protocol Part II, paragraph 69

As indicated above, the CWC does not specify the inspection techniques and hence in theory makes it easier to widen its pool in case new verification means and methods may become available. Accordingly, and while States Parties would need to approve the respective equipment specifications, no amendment of the CWC would be required. Accordingly, respective CWC provisions only make reference to some inspection activities by way of examples (e.g. sampling and analysis, records review, picture taking, etc.). Notably also, the OPCW Inspection Manual, which is an internal document not approved by Member States, does not list all activities, but makes reference to them in a non-exhaustive manner. This approach stands in stark contrast to the CTBT provisions, which specify the allowed techniques and activities and also stipulate conditions for their use.

Both the CWC and the CTBT oblige the inspection team to start with the least intrusive procedures. However, the CTBT sets additional limitations by specifying the use of certain techniques during distinct periods of the inspection and upon approval of the Executive Council (see table below). This is a difference to the respective CWC provisions, which do not set such absolute limitations, and which can also be explained to some extent by the much shorter duration of a CI, which would make the implementation of a similar approach practically not feasible.

Inspection Period	OSI techniques and activities permitted
Initial Period (up to day 25 after approval of the OSI request by the Executive Council) • Submission of a progress inspection report by the IT required not later than 25 days af-	Activities and techniques as per paragraph 69 (a) – (e) Protocol Part II

Inspection Period	OSI techniques and activities permitted
ter the approval of the inspection • Approval of the EC required for the continuation of the inspection (i.e. continuation approved unless majority of all EC votes against inspection continuation within 72 hrs. after receipt of progress inspection report)	
Continuation Period (up to day 60 after the approval of the OSI request by the Executive Council) • EC decision (majority vote) for the extension required within 72 hrs. after receipt of request for extension)	Activities and techniques as per paragraph 69 (a) – (g) Protocol Part II
Extension Period (up to day 130 after the approval of the OSI request by the Executive Council)	Inspection Team needs to indicate in the request for the extension of the inspection the inspection activities and techniques intended to be used
Request for drilling at any time during the inspection: (EC decision (majority vote) within 72 hours after receipt of request required)	Drilling (paragraph 69 (h) Protocol Part II

Table 30: Use of inspection activities and techniques under the CTBT
Source: CTBT, Art. IV, paragraphs 47 - 49 and Protocol Pt. II paragraph 70

Visual observation (i.e. physical inspection) represents a key inspection activity in both a CI and an OSI. Importantly and independent of their particular field of expertise, all members of the inspection team need to know what and where to look for potential evidence and to draw conclusions from these observations. Documentation of evidence by taking photos or use of video recordings plays an equivalently important role in both missions and complements the range of cross cutting skills required. Additionally, the use of position finding devices during the inspection is another inspection activity that all inspectors need to be familiar with. Interestingly, only the CWC encompasses the conduct of interviews as another inspection technique, whereas the CTBT does not list this technique explicitly in its portfolio.

Both during an OSI and a CI, different types of sensor based devices are used by the inspection team. As such, OSI inspection activities and techniques aim to detect and analyze the various signs and symptoms caused by a nuclear test (e.g. release of radiation and noble gases, changes and anomalies in the subsurface structure, aftershocks, heat stress on plants, man-made structures, etc.). In comparison to that, the different types of sensors used during a CI focus on the detection and analysis of relevant chemicals. Additionally, different methods in the field of non-destructive evaluation (e.g. x-ray, neutron induced prompt photon analysis,

ultrasonic pulse echo) may be performed during CIs to distinguish conventional munitions from CW munitions and check the contents of containers.

Final conclusions on the conduct of a nuclear test or the presence/absence of specific chemicals can, however, only be drawn though sampling and analysis and therefore both treaties place major emphasis on it accordingly. A special and highly complex form of sample collection represents drilling as per paragraph 69 (h)/Protocol Part II of the CTBT. This technique has the aim of drilling several hundred meters down to the detonation point and collecting a radioactive sample. This operation requires massive logistic efforts, special expertise and is very costly.[571] Conduct of sampling and analysis is often regarded as the inspection technique that can provide conclusive evidence pertaining to compliance concerns. However, and notwithstanding the high value of sampling and analysis for inspection purposes, special care needs to be taken not to overcharge the laboratory with too many samples during the inspection. Taking into consideration that processing and analysis of samples is a resource and labour intensive process, a carefully designed sampling strategy needs to be implemented by the team.

Both treaties give the Director-General a special role in the overall S&A process. This can be explained by the fact that samples can contain highly sensitive information and may serve as ultimate non-compliance proof as a result of the inspection. As such, the Director-General "*shall have the prime responsibility for the security, integrity and preservation of samples and for ensuring that the confidentiality of samples transferred for analysis off-site is protected*."[572] Among these responsibilities are, *inter alia*, the obligations to establish a stringent quality control regime and to perform the selection process from among the designated laboratories for off-site analysis purposes.

Overall, one can note that treaty guidance on the collection, handling and analysis of samples is essentially identical for CIs and OSIs and most of the CWC provisions have been reflected in the OSI provisions under the CTBT. The table below provides an overview of the different types of samples (incl. potential sampling locations) to be taken during challenge-type inspections including key provisions for on- and off-site analysis:

[571] Estimates from a U.S. study of 1999 indicate purchase costs of roughly USD 2 million without spare parts, consumables and other ancillary equipment. If the equipment were to be rented, daily costs were estimated in the range of USD 50,000. See Cohen/Pittard/Deskins/Rock/Vorkinn/Heuze (1999), pp. 20-22.

[572] See CWC, Verification Annex Part II, paragraph 56; CTBT, Protocol Part II, paragraph 102.

Sampling and analysis during a CI	Sampling and analysis under an OSI
Types of samples: • Effluent • Air or other gaseous mixtures and emissions • Solid matter like concrete, rubber, paint/rust • Wipe/smear • Soil and vegetation • Heavily stained areas	Types of samples: • Atmospheric noble gas samples • Subsurface noble gas samples • Air particulate samples • Solid samples • Liquid samples
Sampling locations: • Waste outflows, treatment or storage areas • Debris of any burned or demolished structures • Vehicle tiers • Floor areas in munition storage areas • Filling lines • Flanges • Reactors/vessels/glassware • Filters, vessels, tanks • Outside of buildings (entrance and exits) at random parts of the perimeter • Ventilation filters • Seals	Sampling locations: • Gas sampled from fractures, faults, or other features that might transport gases quickly to the earth's surface • Ground samples will be taken at sites for which a relevant anomaly has been found by gamma radiation survey or other techniques
On-site analysis • Where possible, analysis of samples to be performed by the IT on-site ISP right to be present during analysis • ISP right to retain portions of all collected samples and take duplicate samples	On-site analysis • Whenever possible, on-site analysis of samples by the IT ISP right to be present during analysis • ISP right to retain portions of all collected samples and take duplicate samples
Off-site analysis • Allowed in case IT deems it necessary to transfer samples for off-site analysis at designated laboratories • To be performed in at least two designated laboratories	Off-site analysis • Allowed only in case the IT can credibly demonstrate that necessary sample analysis cannot be performed on-site • To be performed at least in two designated laboratories

Table 31: Sampling and analysis during a CI and an OSI
Source: CWC, VA Pt. II, paragraphs 52-58 and OPCW (2012): QDOC/INS/IM/01, p. 19 (adapted by the author); CTBT, Protocol Pt. II paragraphs 97-104

As indicated above, and taking into account current CI techniques, an OPCW inspection team would focus on ground based inspection activities.[573] However, CTBT contains provisions that give inspection team the explicit right to make use of slow fixed or rotary wing aircrafts (helicopters). Besides visual observation from the air, also a number of different sensors such as

[573] In accordance with paragraph 40 of Part X of the Verification Annex to the CWC, the ISP may provide aerial access to the inspection site upon request of the inspection team.

multispectral/infrared, gamma radiation and energy resolution analysis, magnetic field mapping can be mounted on these types of aircraft in order to provide data to the inspection team. Given the potentially much larger inspection area in case of an OSI, overflights should provide the inspection team with a *"general orientation of the inspection area, narrowing down and optimizing the locations for ground-based inspection and facilitating the collection of factual evidence [...]"*[574] However, acknowledging the potential intrusiveness of aerial overflights including the application of certain inspection technologies, the inspected State Party has the right to impose restrictions or prohibitions on the overflight of sensitive sites not related to the purpose of the inspection.[575]

In the course of the inspection, the team gathers a considerable amount of data that needs to be analyzed and interpreted. The results obtained guide the further conduct of the inspection by providing input to the next planning steps and hence determining the search logic of the inspection team. Of course, all the data gathered throughout the mission needs to be documented in the inspection report, as they serve as evidence in the subsequent compliance deliberations of the Executive Council.

Much larger data volumes are gathered throughout an OSI compared to a CI, taking into account, *inter alia*, the longer duration of the inspection, as well as the different technologies applied by the inspection team. As such, and in order to manage and facilitate the interpretation of large amount of data, particular technical tools (e.g. Integrated Information Management System (IIMS) and a GIS-based Field Information Management System (FIMS) have been developed by the Provisional Technical Secretariat and are used for OSI exercises. In addition and in order to cope with the large amount of data, specific functions are reflected in the inspection team structure (e.g. FIMS and IIMS officer in the IT structure). In comparison with the respective approach envisaged for an OSI, no such specific information management related capability has been developed for CI purposes.

Inspection Team Communication

Communication forms a cross-cutting issue with important implications for the conduct of an inspection. From an operational perspective, one can distinguish between two communications legs:

1. Communication between the Inspection Team and the TS Headquarters; and

[574] CTBT, Protocol Part II, paragraph 71.
[575] CTBT, Protocol Part II, paragraph 75

2. Communication within the Inspection Team.

Both Treaty provisions give the inspection team the right to communicate with the Technical Secretariat during the mission.[576] For this purpose, the team may use its own, duly approved and certified equipment. However, in case of an OSI, the inspection team may use its own communications equipment only with the explicit consent of the ISP, which may alternatively provide the inspection team with its own communications means.[577] Satellite based communications with both voice communication and data transfer capability is envisaged in a CI and an OSI as the prime communications means between the inspection team in the field and the TS Headquarters. Specifically, the use of a Very Small Aperture Terminal (VSAT) is planned as prime means for OSI purposes,[578] whereas the use of a Broadband Global Area Network (BGAN) is foreseen in case of a challenge inspection.[579] Current work practices envisage in both a CI and an OSI daily reporting back from the team in the field to the operations (support) centre at the TS Headquarters, unless special circumstances warrant more frequent interaction.

For communications within the inspection team, the CWC specifically provides the IT with the right to use its own two-way radio system between the perimeter sub-team and other IT members.[580] On the other hand, also the CTBT stipulates the right of the IT to communicate with each other at all times during the inspection. However, as indicated above already, the IT needs the consent of the ISP to use its own communications equipment during an OSI and may alternatively be provided with ISP equipment. Additionally, OSI communications means for in-field communication (i.e. between the base of operations and the teams in the field) need to have the capability to cover distances of possibly more than 50km, given the potential dimensions of the inspection area. Hence, while handheld UHF/VHF communication means may suffice for CI purposes, a variety of different means such as car mounted hybrid communications systems (i.e. HF/UHF/VHF kit) as well as handheld satellite based communication means are envisaged for an OSI.

576 See CWC, Verification Annex Part II, paragraph 44; CTBT, Protocol Part II, paragraph 62.
577 See CTBT, Protocol Part II, paragraph 62.
578 The VSAT technology is the base technology for entire data transfer of the International Monitoring Stations network and provides for voice communications as well as large data amount transfer. Moreover, it allows the inspection team to connect to the CTBT's internal communications means network.
579 The BGAN technology also allows for voice communication and (limited) data transfer.
580 See CWC, Verification Annex Part II, paragraph 44.

Managed Access Concept

The United Kingdom has had a lead role in developing the 'managed access' concept.[581] This concept is designed to strike a careful balance between acknowledging legitimate national security interests of the inspected State Party, while at the same time underlining its obligations to demonstrate compliance and cooperation with the inspection team. One of the interviewed experts recalls the early stages, when the concept was developed and extensively tested:

> *"After the PCI [practice compliance inspection] programme was completed, we had come to the view that the UK could live with inspections at any facility, including nuclear weapons sites, but we had a problem that certain buildings might have to be placed off-limits. From a negotiation point of view, this was not entirely desirable because someone could put a whole factory out of bounds and the effectiveness of verification would be diminished. So, we did a follow-up programme called the managed access follow-up work where we went back and looked at a couple of nuclear weapons sites in the UK plus some civil nuclear sites which had a military component, to see how we could solve the problem, and the net result of this was that, if we were careful and planned it carefully, we could let inspectors into any building."*[582]

Both the CWC and CTBT encompass the principle of managed access and give considerable weight to this aspect in their provisions. Accordingly, negotiations between the ISP and the IT may play a particularly important role in resolving access issues within the inspection area/site. Both treaties also list, by way of examples, different measures to protect sensitive installations, taking into account related inspection activities and techniques.[583] In this context, a particular measure only envisaged under an OSI is the declaration of 'Restricted Access Sites (RAS)' [584], which may be up to 4km^2 per site and cover up to 50km^2 in total within the Inspection Area.[585] At the same time, both treaties also highlight the obligation of the inspected State Party to make every reasonable effort to demonstrate its compliance and enable the inspection team to fulfil its mandate.[586] Overall it can be noted that the CTBT provides the inspected State Party with a stronger position regarding managed access compared with the CWC. Indicative of this stronger ISP position under the CTBT are, *inter alia*, the inspected State Party's right "to make the final decision regarding any access of the inspection team

581 See Krutzsch/Trapp (1994), p. 490.
582 Expert Interview 1, paragraph 9.
583 See CWC, Verification Annex Part X, paragraph 48 (a)-(g); CTBT, Protocol Part II, paragraph 89 (a)-(e).
584 See CTBT, Protocol Part II, paragraphs 89 (e).
585 See CTBT, Protocol Part II, paragraph 92.
586 See CWC, Verification Annex Part X, paragraphs 49 and 50; CTBT, Article IV, paragraph 57 and Protocol Part II, paragraph 88 (b).

[…]"[587] as well as the ISPs right to defer access to buildings and structures until after the approval of the continuation of the inspection.[588]

Observer

Both the CWC and CTBT contain almost identical provisions regarding the participation of an observer in a CI and an OSI, respectively.[589] As such, the requesting State Party may send an own national or a representative of a third party to follow the inspection proceedings. Whereas CWC provisions limit the observer presence to one person, the CTBT allows for up to three observers from an aggregate of requesting state parties.[590] However, irrespective of the different numbers of possible observers, both treaties are consistent in stipulating that the proposed observer shall, as a rule, be accepted by the ISP. In case the ISP refuses to do so, the inspection team is obliged to record this fact in the inspection report.[591]

A key task of the observer is keeping the requesting State Party informed about the conduct of the mission by closely following the inspection proceedings and regularly reporting back to it. However, the rights of the observer go beyond that, as s/he may play an active role in the inspection by making recommendations to the inspection team, which the team should take into account as deemed appropriate.[592] As such, the observer may directly feed in any new information regarding compliance concerns from the requesting State Party to the inspection team and thereby draw its attention to special issues.

The provision of information however does not flow only in one direction from the observer to the inspection team. On the contrary, the inspection team is obliged to keep the observer informed about the inspection conduct and its findings.[593] This, of course, requires the frequent interaction between the inspection team leader and the observer, which in turn needs to be negotiated and agreed with the inspected State Party.

[587] See CTBT, Protocol Part II, paragraph 88 (c).
[588] CTBT, Protocol Part II, paragraph 90. Exempted from this ISP right are however the access to buildings and other structures housing the entrance to a mine, other excavations, or caverns or large volume otherwise not accessible.
[589] See CWC, Article IX, paragraph 12 and Verification Annex Part X, paragraphs 53-56; CTBT, Article IV, paragraph 61 and Protocol Part II, paragraphs 63-68.
[590] See CWC, Article IX, paragraph 12; CTBT, Article IV, paragraph 61.
[591] See CWC, Article IX, paragraph 12 (c); Article IV, paragraph 61 (d).
[592] See CWC, Verification Annex Part X, paragraph 55; CTBT, Protocol Part II, paragraph 66.
[593] See CWC, Verification Annex Part X, paragraph 55; CTBT, Protocol Part II, paragraph 67.

Extension/Conclusion of the inspection

As already indicated before, the inspection duration greatly varies between a CI and that of an OSI. Considering that the CWC does not pose a limit to the maximum size of the inspection site (except in case of a declared site), the 84 hours[594] duration envisaged for a challenge inspection must be considered as relatively short. Therefore, under these tight time parameters, conducting a CI requires careful analysis of the compliance concerns, as well as the implementation of a focused inspection approach.

On the other hand, an OSI may last in total up to 130 days from the date of the approval of the OSI request.[595] While noting the huge difference in the duration of the inspection compared to a CI, one has to acknowledge that the team has to gather evidence within an inspection area of up to 1,000 km^2. Narrowing down such a large inspection area into smaller areas of interest is both a time consuming and laborious task of the inspection team and requires the application of various inspection activities and techniques, including analysis of the obtained data. However, the rationale for the long inspection period can also be explained by signs and signatures of an underground nuclear explosion that can potentially be observed only after some time following the nuclear explosion (e.g. seepage of noble gases from the underground to the surface).

Totally different approaches are taken between the CWC and the CTBT to extending the inspection duration. While the extension of a CI beyond the principal 84 hours period requires the explicit agreement of the inspected State Party, no such decision making right is given to the ISP in the case of an OSI. In contrast, the Executive Council is the only decision making body that can approve the continuation and extension of an OSI upon the request of the inspection team. Table 32 below provides an overview of the respective decision making mechanisms.

Inspection Period	Decision Making Mechanism
Initial Period (up to day 25 after approval of the OSI request by the Executive Council)	• Submission of a progress inspection report by the IT required not later than 25 days after the approval of the inspection • Approval of the EC required for the continuation of the inspection (i.e. continuation approved unless majority of all EC votes against inspection continuation within 72 hrs. after

[594] See CWC, Verification Annex, Part X, paragraph 57.
[595] See CTBT, Protocol Part II, paragraph 4.

Inspection Period	Decision Making Mechanism
	receipt of progress inspection report)
Continuation Period (up to day 60 after the approval of the Executive Council)	• Submission of a request for extension • EC decision (majority vote) for the extension required within 72 hrs after receipt of request for extension)
Extension Period (up to day 130 after the approval of the OSI request by the Executive Council)	• Submission of a request for extension by the IT

Table 32: Inspection Periods of an OSI
Source: CTBT, Art. IV, paragraphs 47-49

Once the team has reached the end of the inspection period or, in case of an OSI, decides to conclude the inspection, it ceases all inspection activities and starts its undertakings in the post inspection phase.

4.2.6 Rules pertaining to the Post-Inspection Phase

The post-inspection phase represents the last phase of the challenge-type inspection and encompasses the activities upon the conclusion of the inspection until the review of the inspection report by the Executive Council.

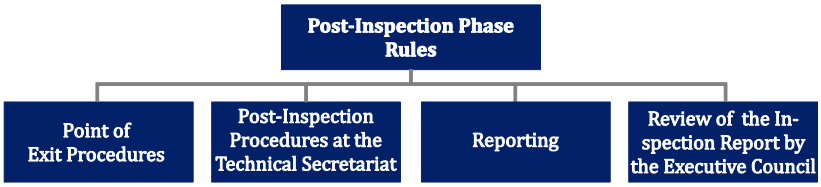


Figure 25: Regime Rules related to the post-inspection phase
Source: author

Point of Exit Procedures (POExit)
Upon the conclusion of the inspection, the inspection team goes through the Point of Exit procedures, which are applicable for a CI and an OSI. In parallel to the finalisation of the Preliminary Findings, which are further described below, the vast majority of the inspection team engages in the checking and packing of its equipment. Upon departure from the inspection area/site, the team moves to the Point of Exit, which is normally identical with the location of the Point of Entry.[596] Before leaving the country, the inspected State Party has the right to

[596] The CTBT specifically states that the POExit shall be the same as the POE, unless agreed otherwise between the ISP and the IT. See CTBT, Protocol Part II, paragraph 110. No such specification is made in the CWC.

check the equipment that is removed from its territory.[597] As such, this check may focus on ensuring that information on any data storage devices from inspection team equipment has been erased.[598] Additionally, and during the POExit procedures, the ISP has to return to the IT any equipment that was excluded at the POE.

Arranging the in-country transport of the inspection team back to the POExit, including ensuring the safety and security throughout the entire stay on ISP territory is the responsibility of the inspected State Party. On the other hand, planning the return from the POExit to the OPCW and CTBTO headquarters is to be arranged by their respective organizations. Neither the CWC nor the CTBT provisions include an exact time indication for the duration of the post-inspection procedures in the inspected State Party. However, both treaties stress that the inspection team (and the observer) shall leave the territory of the inspected State Party as soon as possible.[599]

Post inspection procedures at the Technical Secretariat

Upon the return to the Technical Secretariat headquarters, inspection team members undergo a series of post-inspection related activities and have to prepare an inspection report. Neither the CWC nor the CTBT elaborate on post-inspection procedures upon return to the headquarters, however they focus exclusively on the reports to be prepared. Treaty provisions determine in detail the type, contents, preparation timelines and recipients of the reports. This high level of detail can be explained by the fact that the inspection report represents the key product of the entire inspection and provides the basis for the compliance assessment to be made by the States Parties. Hence, treaty negotiators understandably saw the importance of having clarity on these important report related issues.

On the other hand, and in comparison to the above, the post inspection procedures at the headquarters are of operational nature only and neither involve interaction with the requesting, nor the inspected State Party. Accordingly, only lower level documents such as the OPCW Inspection Manual and the (Draft) CTBT Operational Manual reflect on post inspection activities at the headquarters.[600] Besides returning equipment (as applicable) and reporting any malfunctions and anomalies related to it, all team members undergo a series of debriefings.

[597] See CWC, Verification Annex Part II, paragraph 29.
[598] This equipment check may either be performed directly at the base of operations/inspection site or can be performed at the PoExit.
[599] See CWC, Verification Annex Part X, paragraph 58; CTBT, Protocol Part II, paragraph 110.
[600] See OPCW (2012): QDOC/INS/IM/01, Chapter I, Sections 7-8 and Chapter XII, Section 6; See PC/CTBTO (2012): CTBT/WGB/TL18-47, Chapter 12.

One of these debriefings relates to operational issues in connection to the conduct of the mission. Capturing all these aspects is considered particularly important in the context of the preparation of the inspection report. Another debriefing covers health and safety related issues. As such, it may include a medical check and screening measures, taking into account the potential exposure of team members to toxic industrial chemicals/chemical weapons during a CI and radiation during an on-site inspection, respectively. Furthermore, confidentiality issues including the return of confidential material obtained and generated during the mission are to be addressed upon return to the headquarters. In addition, and once the mission equipment arrives back at the headquarters, an inventory needs to be performed and follow-up work on any equipment anomalies together with cleaning, maintenance and re-certification activities are to be initiated.

Reporting upon conclusion of the inspection

As regards reporting issues, it can be noted that both Treaties focus on the same four key aspects in the inspection report:[601]

1. Inspection team activities conducted,
2. Factual findings regarding the non-compliance concerns,
3. Account of the cooperation granted during the inspection, and
4. Assessment of the extent of access granted to the team.

On the other hand, the respective treaty provisions also show some differences (e.g. regarding the number of reports to be prepared and the reporting timelines), which are presented in the table below.

Issue	Challenge Inspection/CWC	On-Site Inspection/CTBT
Reports envisaged	• Preliminary Findings Document • Preliminary inspection report • Draft final inspection report • Final inspection report	• Preliminary Findings Document • Draft inspection report • Inspection report
Reporting timelines	• Preliminary inspection report: 72 hours upon return to the prime work station (i.e. headquarters) • Draft final inspection report: not later than 20 days after the completion of the CI; • Final inspection report: not later	• Draft inspection report: no timeline for making available draft inspection reports to the ISP; ISP has right to provide DG within 48 hours with comments, explanations and identify any information and data, which in its view are not related to the pur-

[601] See CWC, Verification Annex Part X, paragraph 59; CTBT, Article IV, paragraph 62.

Issue	Challenge Inspection/CWC	On-Site Inspection/CTBT
	than 30 days after the completion of the CI;	pose of the inspection and should not be circulated outside the TS; • Inspection report: no timeline ('promptly') indicated in the CTBT;
Report Recipients	• Preliminary inspection report: RSP, ISP, EC; • Draft final inspection report: ISP • Final inspection report: RSP, ISP, EC and all other SPs;	• Draft inspection report: ISP; • Inspection report: RSP, ISP, EC and all other SPs;

Table 33: Reporting upon conclusion of the inspection
Source: CWC, Art. IX, 21 and Pt. X, paragraphs 59-61; CTBT, Art. IV, paragraphs 62-64

Both the CWC and the CTBT show a high degree of similarity in their provisions pertaining to immediate activities upon the conclusion of the inspection. In this respect, one of the first activities at the end of the inspection is the preparation of the preliminary findings (PF). Importantly, work on this document by the inspection team has to start at the very beginning of the inspection and drafting needs to be continued throughout the entire inspection. The PF contains a chronological, factual account of the inspection team's activities in fulfilling the aims of the inspection mandate. As part of it, the PF, *inter alia*, encompasses the results from all measurements and analyses, information about samples, copies of written information and gathered data taken off-site, and provides an assessment by the team on the degree of cooperation with the inspected State Party.

Upon receipt of the document from the inspection team leader, the inspected State Party has the right to review it, indicate factual errors, clarify any ambiguities and provide its official comments. Both the head of the inspection team and the inspected State Party need to sign the PF within 24 hours after the conclusion of the inspection. [602] Importantly, the ISP signature on the preliminary findings indicates only that it has taken notice of the contents and does not imply that it agrees with the findings.

As stated above, both the CWC and the CTBT require the preparation of a PF within identical timelines and, moreover, with essentially the same outline. However, given the major differences in the duration of the mission, as well as the amount of technical data gathered during

[602] See CWC, Verification Annex Part II, paragraph 60; CTBT, Protocol Part II, paragraph 109.

it, one may expect a more voluminous PF (particularly Data Annexes) in case of an OSI. Moreover and taking into account the different inspection parameters, the preparation process of the PF follows a different approach: whereas the data compilation for the report is to be performed manually for a CI, this process is semi-automatic in an OSI. Hence, all datasets captured from the inspection area are immediately registered, classified and processed upon return from the field, and uploaded with the use of tailor made software into an 'Integrated Information Management System'[603]. Hence, many of the preliminary findings annexes can be generated automatically at the end of the inspection, and at the same time effective data control can be executed during the mission.

Both treaties equally provide the inspected State Party with an important right, namely the option to review the draft report and make comments before the final report is issued.[604] This should allow the inspected State Party to identify any issues, which, in its view, are not related to the purpose of the inspection, and to point out confidential issues that should not be circulated outside the Technical Secretariat. Furthermore, both the CWC and CTBT provisions stress that these comments should, whenever possible, be incorporated.[605] In case of the CTBT, the Director-General has to annex these comments and explanations to the report.[606]

Both the CWC and CTBT also provide the inspected and the requesting State Party with the right to provide their assessments on the inspection, which are to be distributed by the Director-General together with the (final) inspection report.[607] Additionally, and as part of the reporting, the Director-General has to submit any other relevant information in connection with the report (e.g. results of the sample analysis from the designated laboratories, relevant IMS data in case of the CTBT, views of other States Parties conveyed to the Director-General in case of the CWC).[608]

[603] The creation of the Integrated Information Management System (IIMS) is the result of lessons identified from the 2008 Integrated Field Exercise 2008 in Kazakhstan. It was developed by the PTS between 2009 and 2013.
[604] See CWC, Verification Annex Part X, paragraph 61; CTBT, Article IV, paragraph 63.
[605] See CWC, Verification Annex Part X, paragraph 61; CTBT, Article IV, paragraph 63.
[606] See CTBT, Article IV, paragraph 64.
[607] See CWC, Article IX, paragraph 21; CTBT, Protocol Part II, paragraph 64.
[608] See CWC, Article IX, paragraph 21; CTBT, Article IV, paragraph 64.

Executive Council Review of the Inspection Report

The review of the report, including the judgement to be made by the Executive Council, represents the last and politically most important step in the course of the inspection process. Both under the CWC and the CTBT, the Council has to address any concerns as to:[609]

1. Whether any non-compliance has occurred; and
2. Whether the right to request such an inspection has been abused.

In addition to the above issues, the Executive Council also needs to address under the CWC whether the inspection request was within the scope of the treaty provisions.[610] While it is evident that neither the requesting, nor the inspected State Party have any voting rights during the review process, the CWC provides them nevertheless with the explicit right to participate in the review process, whereas the CTBT remains silent about it.[611]

A number of interrelated results might be possible as an outcome of the Executive Council deliberations, which can be categorized as follows:[612]

1. Report findings do not reveal any non-compliance;
2. Report findings provide conclusive evidence of non-compliance by the inspected State Party;
3. Report findings provide some supportive evidence regarding non-compliance, however do not allow for a definite conclusion on it;
4. Report findings make it clear that the requesting State Party abused its right to request a challenge-type inspection;
5. Report findings support concerns that the requesting State Party might have abused its right to request a challenge-type inspection;
6. Report findings indicate that the inspected State Party complied with its procedural obligations during the inspection; and
7. Report findings indicate that the inspected State Party did not comply with its procedural obligations during the inspection and that this negatively affected the fulfilment of the inspection mandate.

Both treaties also equally provide the Executive Council with the option to take measures to redress a situation and to ensure compliance with the respective treaty provisions in case

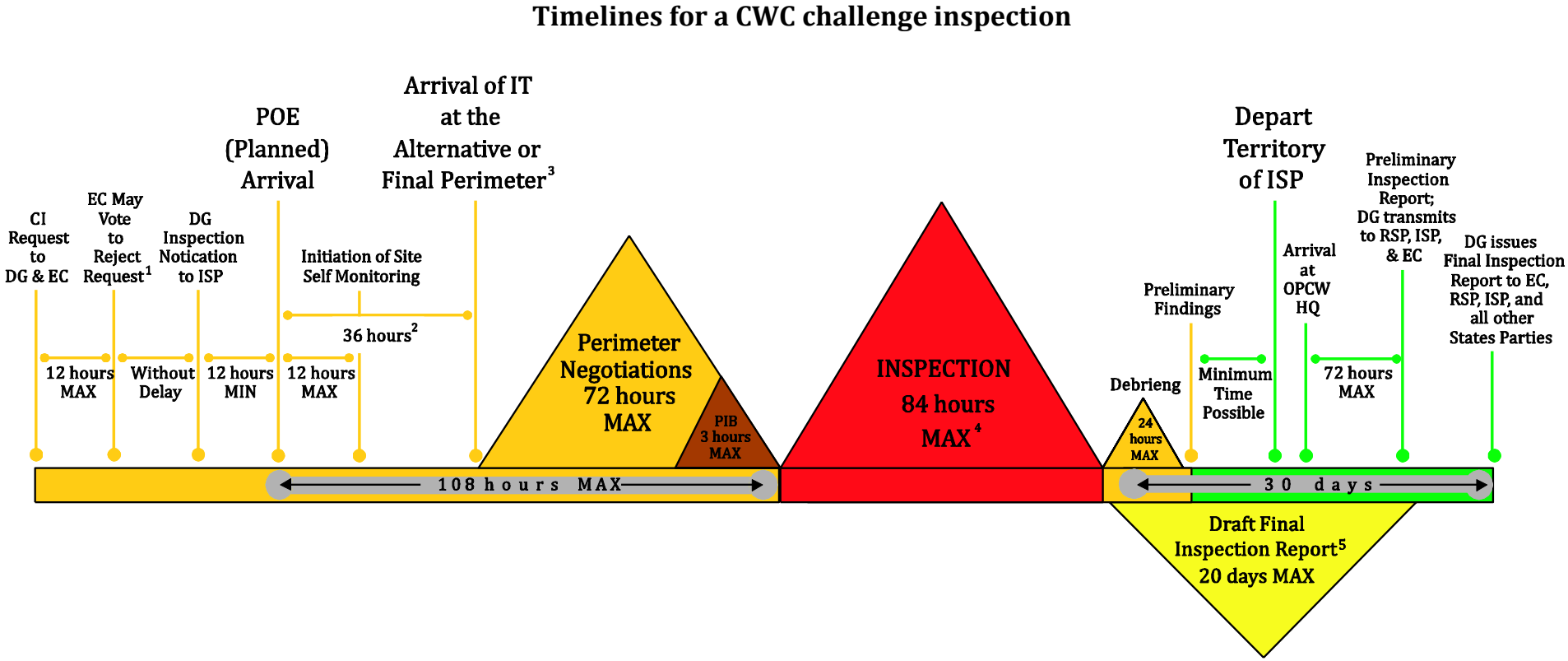
609 See CWC, Article IX, paragraph 22; CTBT, Article IV, paragraph 65.
610 See CWC, Article IX, paragraph 22 (b).
611 See CWC, Article IX, paragraph 24.
612 See Krutzsch/Trapp (1994), pp. 195-196 (adapted by the author).

further action may be necessary and to make specific recommendations to the Conference of the States Parties.[613] Respective measures may include various actions, ranging from restricting or suspending the State Party in exercising its rights and privileges under the treaty, over taking collective measures in conformity with international law, to bringing the issue to the attention of the United Nations.[614]

In the same vein, both treaties also stipulate measures in case of an abusive inspection request. One measure highlighted both under the CWC and the CTBT is to require the requesting State Party to bear the costs of the inspection, or the Technical Secretariat's preparations in case the request is turned down earlier for this reason.[615] Moreover, the CTBT also allows for suspending the right of the requesting State Party to request an on-site inspection, or to serve on the Executive Council for a period of time.[616]

The following two figures below summarize the processes and give information on the timelines for a Challenge Inspection and an On-Site Inspection, respectively.

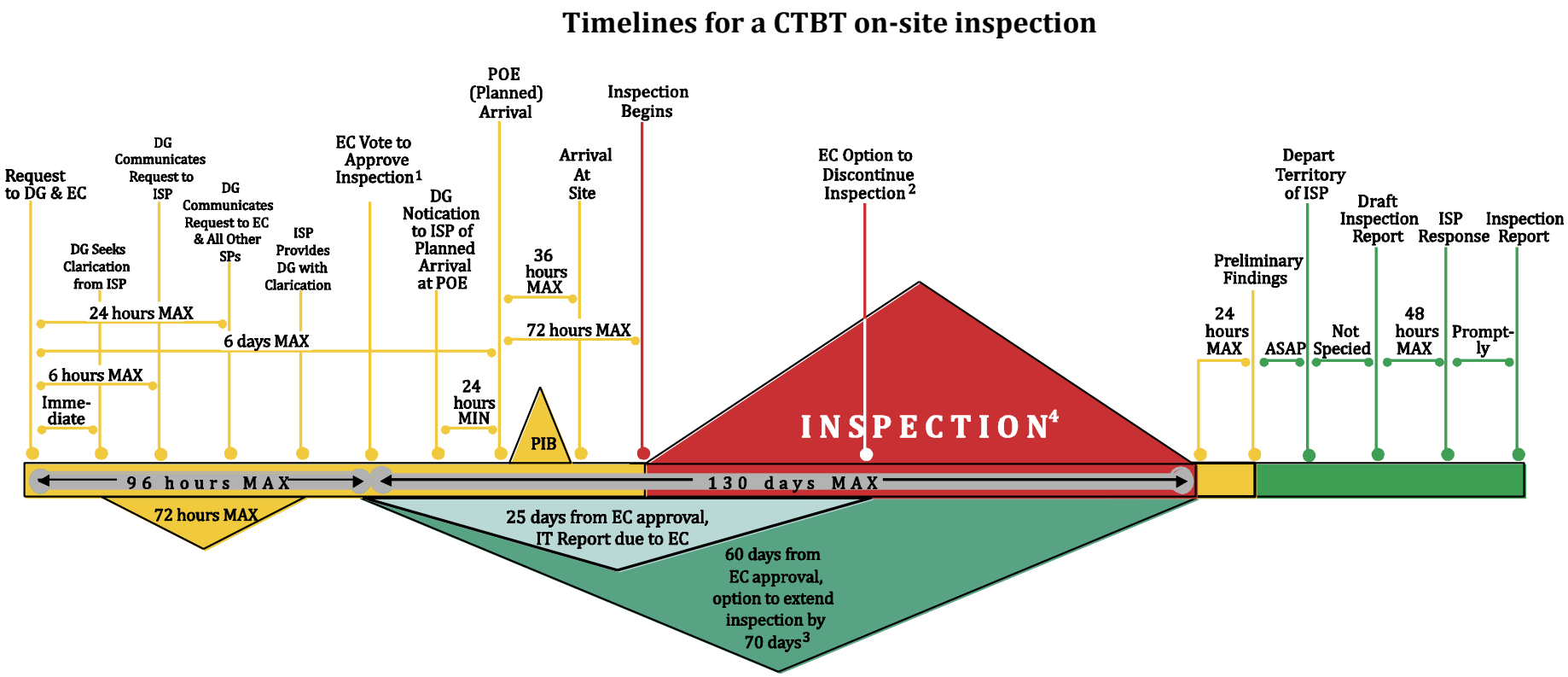
[613] See CWC, Article IX, paragraph 23; CTBT, Article IV, paragraph 66;
[614] See CWC, Article VIII, paragraph 36; CTBT, Article V, paragraphs 2-4.
[615] See CWC, Article IX, paragraph 23; CTBT, Article IV, paragraph 67 (a).
[616] See CTBT, Article IV, paragraph 67 (b) and (c).



1 A vote to block a challenge inspection requires 3/4 majority vote of the EC; neither the RSP or ISP may participate in the vote
2 Twenty-four (24) hours in case of a declared facility
3 Transportation of the IT may begin as early as 12 hours after IT arrival at the POE
4 Unless extended by agreement with the ISP
5 The ISP has a right to identify any information and data not related to CW which should (in its view, due to its confidential character) not be circulated outside the TS; the TS shall consider proposals for changes to the draft final inspection report made by the ISP and, using its own discretion wherever possible, adopt them

Figure 26: Timelines for a challenge inspection under the CWC

Source: See DTRA (2011), p. 12.



1 The decision to conduct an inspection requires an affirmative vote of 30 members (the Executive Council [EC] is composed of 51 members)
2 The inspection shall proceed automatically unless the EC, no later than 24 hours after receipt of the progress report, votes by a majority of all its members not to continue the inspection
3 The inspection may be extended beyond 60 days by a maximum of 70 days if the EC by a simple majority, approves a request by the IT within 72 hours of receipt of such a request
4 The IT may request the termination of an inspection at any time; such a request will be considered approved unless the EC, by a 2/3 majority vote, blocks such a request within 72 hours of receipt of the request

Figure 27: Timelines for an on-site inspection under the CTBT

Source (adapted by the author): See DTRA (2011), p. 11.

4.3 Findings

This chapter had the objective of analyzing the emergence, role and function of on-site inspections with a particular view to assessing the regime rules pertaining to challenge-type inspections under the CWC and CTBT verification regimes. Upon a brief analysis of the emergence of on-site inspections, a comparative analysis pertaining to CWC challenge inspections and CTBT on-site inspections was carried out with a view to highlighting commonalities and differences between these challenge-type inspections. As part of this effort, challenge-type inspection-related regime rules throughout the four phases of an inspection were examined in order to address the following sub-question:"What are the key features of challenge-type inspections under the CTBT and CWC verification regimes?" As a result of this analysis, the following key findings were identified.

Role and function of inspections

Inspections have the purpose to gather facts on-site. As such, they can provide information, which would be difficult or even impossible to collect by other (off-site) verification elements, or by National Technical Means of verification. Inspections serve three core purposes, namely to deter and detect non-compliance and enhance confidence and trust among the Member States that treaty provisions are properly implemented and adhered to by all parties. Inspections can be categorized into two broad categories, namely routine inspections and challenge-type inspections.

Emergence of inspections in arms control and disarmament

The first proposal regarding the use of inspections as a verification tool was made by the U.S. in the 1946 Baruch Plan. However, opposing views about arms control and disarmament including verification existed between the U.S. and the Soviet Union. Hence, it took some time until a breakthrough was achieved with the entry into force of the Antarctica Treaty in 1961, which for the first time made use of on-site inspections as verification means.

However, given the emergence of sensor technology in the 1960s, demands for inspections as verification tools temporarily diminished. A major push towards inspections brought the establishment of the IAEA's safeguards system and the entry into force of the NPT, as they paved their way as key means of verification. Since the mid-1980s, and due to the shift in political relations under Mikhail Gorbachev, the Soviets gave positive signs of accepting inspections in bi-and multilateral arms control and disarmament. As such, both the adoption of the

1986 Stockholm Accord at the Conference on Confidence and Security-Building Measures and Disarmament in Europe, but particularly the entry into force of the Intermediate-Range Nuclear Forces Treaty in 1988 represented the acceptance of inspections in modern arms control and disarmament regimes. The period between the late 1980s and the 1990s confirmed the crucial role of inspections as essential means of verification, and treaties like START or the CFE Treaty were adopted.

Emergence of challenge-type inspections concept

The concept of challenge-type inspections emerged in the mid-1980s during the CWC negotiations in order to address concrete compliance concerns. Central to it was the 'anytime, anywhere, without right of refusal' approach, which was eventually manifested in the CWC challenge inspection mechanism. Subsequently, the CWC challenge inspection provisions served as a blueprint for the respective CTBT negotiations in the mid-1990s and a number of these features also characterize the On-site Inspection mechanism. Challenge-type inspections strike a balance between intrusiveness in order to detect and deter possible non-compliance, while at the same time respecting legitimate national security interests. As part of these efforts, the concept of 'Managed Access' was developed and rigorously tested by, *inter alia*, the United Kingdom in several trial inspections at sensitive national security installations.

Wide use of inspections in arms control and disarmament

In total, approximately 15 different regimes can be identified, encompassing some form of inspections. Though unprecedented in their scope and intrusiveness compared to contemporary verification regimes, the inspections under UNSCOM and UNMOVIC in Iraq between 1991 and 2003 provided an important impetus to the further evolvement of on-site inspections. While inspections remain essential means of verification and have the continued support by states, one can nevertheless see a trend among states to search for an optimised and less costly on-site verification approach.

Key features of challenge-type inspections

Both CWC CIs and CTBT OSIs are characteristic with respect to their role and position they occupy within their verification regimes. Both inspection types share the same underlying purpose, namely to clarify and resolve questions regarding non-compliance with the respective Treaties through gathering facts on-site. At the same time, the scope of a CI is comparably much wider compared to the one of an OSI: whereas a CI can address any compliance concern with the CWC provisions, an OSI can only be requested if there are concerns regarding the conduct of a nuclear (weapons test) explosion. Notably, both challenge-type inspec-

tions are closely intertwined with a cooperative mechanism to settle compliance concerns, which, however, is understood to be of optional nature.

Procedural commonalities between Challenge Inspections and On-Site Inspections

From a procedural perspective challenge inspections and on-site inspections resemble each other in a number of ways. As such, they encompass the same four inspection phases (i.e. launch, pre-inspection, inspection and post-inspection) with the same key features characterizing the overall inspection process:

- Submission of the request by the requesting State Party to the Executive Council and the Director-General,
- Initiation of inspection-related preparations at the Technical Secretariat,
- Executive Council decision on the request,
- Issuance of the inspection mandate by the Director-General,
- Arrival of the inspection team at the Point of Entry,
- Handover of the inspection mandate by the Inspection Team Leader to the inspected State Party and conduct of other pre-inspection procedures,
- Start of inspection activities,
- End of inspection activities,
- Review of preliminary findings by the Inspection Team and the inspected State Party representatives upon the conclusion of the inspection,
- Preparation of a draft inspection report and its submission to inspected State Party for comments,
- Finalization of a final inspection report and its submission to the Executive Council, and
- Review of the final inspection report and addressing of the issue of non-compliance by the Executive Council.

CTBT On-Site Inspections are much larger in their dimension than CWC Challenge-Inspections

In spite of the similarities regarding the overall inspection process and the general rules of verification between both inspections, the operational parameters of these two inspection types differ considerably, with an OSI being several magnitudes larger in its dimension compared to that of a CI. As such, an OSI can last up to 130 days from the approval of the request, whereas a CI is principally limited to 84 hours. The same applies with respect to the size of the inspection area: whereas in case of an OSI the maximum size of the inspection area may be up to 1,000km^2, no such parameters have been set for a CI. Though this leaves the *de facto*

size of the inspection site open, one can, however, envisage an area considerably smaller compared with that of an OSI. Furthermore, treaty provisions differ regarding the inspection team size: while both treaties stipulate in their provisions that the size of the inspection team is to be kept to the minimum necessary for the proper fulfilment of the inspection mandate, the CTBT puts an absolute cap of 40 persons on the number of inspectors present at any given time during an OSI (except during drilling). In contrast to that, no such absolute number is stipulated for a challenge inspection. Finally, and as a result of the different inspection activities and techniques applied, the amount of equipment brought by the inspection team is much higher in case of an OSI compared with a CI: experience from exercises indicate that 100 - 150 tonnes of equipment might need to be shipped in case of an OSI, while only a few tonnes of inspection equipment would be required for the conduct of a CI.

Same initiation mechanisms, different information sources for an inspection request

Only Member States can request a challenge-type inspection, which means that the Director-General is not given the right to trigger a request for a challenge-type inspection by him-/herself. In turn, this fact implies that states clearly want to retain political control over this highly sensitive aspect and are not willing to give away authority over this powerful tool. The information on which the request for each respective non-routine inspections can be based, may considerably differ: the information for a challenge inspection request would effectively rely on national technical means and intelligence information, which may be difficult to be independently assessed by other Member States. In contrast to that, an OSI request can be based on information from the International Monitoring System, national technical means, or a combination thereof. The fact that the data products generated by the IMS are accessible to all Member States allows for an independent, technical assessment of the evidence provided by the Requesting State Party.

Different geographical scope of inspection requests

Important differences can be also noted with respect to the geographical scope of where a CI or an OSI can be requested. A challenge inspection can be requested anywhere on the territory, or in any other place under the jurisdiction or control of any other State Party.[617] On the

[617] Notwithstanding the different geographical scope of the inspection requests, it is noted for completeness purposes that any State Party may initiate the consultation and clarification mechanism under Article IX of the CWC (which does not mention any territorial restrictions), in order to clarify and resolve any matter which may cause doubt about compliance with the CWC or which gives rise to concerns about a matter which may be considered ambiguous.

other hand, and taking into account the potential environment where nuclear explosions might be carried out (i.e. underground, underwater/at high seas, in the atmosphere), a CTBT on-site inspection may also be requested in any area beyond the jurisdiction or control of any State.

Different inspection approval mechanisms

Furthermore, requesting a CI or OSI does not automatically have to lead to an inspection, but requires the approval of the Executive Council. Different approval mechanisms have been chosen for a CI and an OSI, respectively. Whereas a 'red light mechanism' (i.e. request goes through unless a ¾ majority of all 41 EC members vote against it) is applied in case of a CI, a 'green light mechanism' (i.e. at least 30 affirmative votes from among the 51 EC members are required to approve the inspection) is applied in case of an OSI. Given these different approval mechanisms, the approval of a challenge inspection is comparably easier than an OSI.

Similar standing arrangements and general rules of verification

Standing arrangements and general rules of verification play an important role in both a CI and an OSI, and very similar provisions can be found in both treaties. For instance, POEs and standing diplomatic clearance numbers for the use of non-scheduled aircraft are to be designated by Member States both under the CWC and CTBT. In addition, both treaties regulate the use of inspection equipment by identical approval mechanisms (i.e. equipment list approval at the first Conference of States Parties). Another very similar approach is taken for the designation process of inspectors and inspection assistants, and their acceptance or non-acceptance by State Parties. Furthermore, both the CWC and CTBT encompass essentially identical provisions regarding privileges and immunities for the inspection team during its mission, and assign similar responsibilities to the inspected State Party regarding logistic and administrative support to be provided to the IT.

Different nominating authorities for inspectors

In spite of very similar designation processes for inspectors, a fundamental difference can be noted with respect to the nominating authority. As the TS/OPCW possesses a standing inspectorate to conduct all the routine inspections, inspectors and inspection assistants are drawn from professional inspectors from within the Technical Secretariat/OPCW. In contrast to that, and given the absence of routine inspections under the CTBT, an OSI pool of inspectors is composed of experts from both the Member States and the Technical Secretariat/CTBTO.

Different approval mechanisms for Inspection Manual

Another important difference exists regarding the approval of detailed procedures for the conduct of inspections: while the Inspection Manual for OPCW inspectors has been developed internally as a technical document based on guidelines approved by the initial session of the Conference of States Parties, the elaboration of the OSI Operational Manual is the task of the Preparatory Commission, with its final approval by the initial session of the Conference of States Parties. As a consequence of this approach, the elaboration of the OSI Operational Manual has turned into a much more complicated process, where agreements needs to be reached on various political views expressed by Member States.

Similarity of launch activities, differences in scope, complexity and timelines

Differences in the timelines allocated for the launch phase stem, *inter alia*, from the nature of and signatures left by both events. A challenge inspection needs to be launched as soon as possible, as some of the evidence may quickly disappear naturally or may be quickly removed by the inspected State Party. In contrast to that, some of the signatures and observables in relation to a nuclear tests may be of longer lasting nature and cannot be removed that quickly. Accordingly, a challenge inspection is to be launched as soon as possible and the team shall arrive at the POE within the minimum time possible. In case of an OSI, the team has to arrive at the POE within six days upon receipt of the inspection request. Though the latter timeline may in fact give more time to the team, preparations for an OSI can be considered more demanding and complex, taking into account, *inter alia*, the non-availability of a standing inspectorate, as well as the much larger amount of inspection equipment to be taken by the team. From a process perspective, essentially the same preparatory activities are to be performed during the launch phase of the inspection. These include, *inter alia*, the acknowledgement of the receipt and validity of the inspection request by the Director-General, the selection and assembly of the inspection team and the equipment including respective logistical arrangements, the conduct of various briefings to the team, the preparation of key documents such as the inspection mandate, the initial inspection plan and notifications to be sent to the inspected State Party.

Different timelines and *foci* of IT-ISP negotiations during the pre-inspection phase

Upon arrival at the Point of Entry of the inspected State Party, the team goes through the sequence of pre-inspection activities, which are similar both under a CI and an OSI. In both missions, the handover of the inspection mandate represents the first activity upon arrival of the

team at the POE. Subsequently, a number of crucial activities are to take place, including the pre-inspection briefing, negotiations on the initial inspection plan, and the equipment check.

CWC and CTBT provisions to some extent differ both with respect to the location where these activities take place, as well as regarding the focus of the IT-ISP negotiations.[618] CTBT provisions imply that all the pre-inspection activities take place at the POE. Negotiations focus on issues such as the initial inspection plan, the team's logistic support needs as well as managed access issues. On the other hand and in case of a CI, POE activities most likely focus on perimeter negotiations and may also continue at the site to be inspected. This stands in stark contrast to the CTBT, where the size and borders of the inspection area cannot be negotiated by the inspected State Party. Furthermore, CWC CI provisions stipulate that the ISP's pre-inspection briefing as well the presentation of the initial inspection plan is carried out later at the inspection site, and not already at the POE. In addition, the maximum permissible duration of these activities differs considerably between the CWC and CTBT. OSI pre-inspection activities at the POE may last up to 36 hours (incl. transport to the inspection area) and the IT has to start the inspection within 72 hours upon arrival at the POE. In contrast to that, the CI pre-inspection briefing itself is limited to three hours, however, the ISP can delay access to the inspection site up to 108 hours, while monitoring and securing of the perimeter by the inspection team must start not later than 36 hours after arrival at the POE.

Same rights regarding observers and managed access procedures

As regards the conduct of the inspection, both treaties lay down general rules of verification to be followed during the inspection. As such, almost identical provisions exist regarding observer(s)[619] to be nominated by the requesting State Party. Though they are the ultimate verification tools under both regimes to address compliance concerns, both the CWC and the CTBT mandate the inspection team to conduct its inspection in the least intrusive manner possible, and to proceed with more intrusive techniques only as deemed necessary. Additionally, and under both treaties, the inspected State Party may apply managed access procedures for the inspection team.

[618] The focus on perimeter negotiations in case of CI during the pre-inspection phase stems from the difference in the nature of the event and the ease with which potential evidence can be removed/hidden. Accordingly, the perimeter plays a much more important role in a CI compared to an OSI, as the perimeter needs to be monitored to prevent potential removal of evidence. In case of an OSI, some of the evidence cannot be removed, so there is no need to monitor the perimeter and therefore no need to negotiate it accordingly.

[619] While CI provisions limit the number of observers to one person, CTBT provisions stipulate a maximum of three observers from an aggregate of requesting States Parties.

Different approaches towards the application of inspection activities and techniques

Different approaches can be observed with respect to the use of inspection techniques and activities. In case of an OSI, they are clearly specified in the CTBT and dependent on conditions such as the respective inspection period and the EC approval. In fact, this can be considered a limiting factor and the introduction of new activities and techniques would require an amendment to the CTBT provisions. In contrast to that, the CWC does not specify the various inspection techniques, and hence, in theory, does not pose any limitations, provided that States Parties would approve the respective equipment for it.

Key role of sampling and analysis as an inspection technique

Under both verification regimes, sampling and analysis represents a key inspection technique to gather evidence besides visual observation/physical inspection. Taking into account the multiple signatures and observables potentially generated by a nuclear test, a wide range of inspection activities and techniques are at the disposal of the inspection team. Furthermore, and given the inspection techniques applied by OPCW inspectors during routine inspections thus far, only ground based inspection techniques have been applied during CI exercises, whereas aerial based technologies also play a prominent role in OSIs.

Different inspection extension mechanisms

Importantly, notable differences also exist with respect to the extension of such an inspection. While a CI cannot be extended unless the requesting State Party agrees to the request made by the inspection team, the power to decide upon the continuation and extension of an OSI solely rests with the Executive Council.

Same post-inspection procedures

CI and OSI post inspection share a high degree of similarity. As such, both treaties oblige the inspection team to hand over its preliminary findings to the ISP in written form within 24 hours after the end of the inspection. Afterwards, the inspection team departs from the inspection site/area and moves to the Point of Exit, where it may undergo another equipment check before eventually leaving the country. Neither the CWC nor the CTBT specify the duration of the post-inspection procedures in the inspected State Party and urge the inspection team and the observer to leave the country in the minimum time possible. Upon return to the Technical Secretariat Headquarters, the inspection team essentially undergoes similar post-inspection procedures by being debriefed and handing in equipment. All these aspects are, however, neither addressed in the CWC, nor the CTBT, but elaborated only in lower level documents such as the OPCW Inspection Manual and the (Draft) OSI Operational Manual.

Commonalities and differences on reporting issues

Both treaties are consistent regarding the aspects to be covered in the report (i.e. contents), however show some differences with respect to the number of reports to be prepared, as well as reporting timelines. As such, only the CWC stipulates the issuance of a preliminary inspection report that is to be issued within 72 hours and shared with the RSP, ISP and EC. Thereafter, both the CWC and the CTBT require the issuance of a draft inspection report and a final inspection report. Whereas the former is only provided to the ISP for review and comments, the latter is to be issued to the RSP, ISP, the EC and all States Parties. A difference can be noted with respect to the timelines when these reports are to be made available: while the CWC sets clear timelines (20 and 30 days after the inspection), no explicit timelines are set under the CTBT.

Executive Council to address non-compliance and abuse question under both treaties

Finally, under both verification regimes the judgment on possible non-compliance rests with the Member States. In this respect, and based on the findings in the inspection report, the Executive Council plays an important role by addressing any concerns regarding non-compliance as well as abuse of the right to request such an inspection. Furthermore, both treaties provide the Executive Council with the option to take measures to redress a situation and to ensure compliance with the respective treaty provisions.

5. Policy Making Analysis of Challenge-Type Inspections

Upon examining the regime rules pertaining to challenge-type inspections, this chapter focuses on the policy-making vis-à-vis these type of inspections in the OPCW and the Preparatory Commission for the CTBTO. In accordance with the adopted research model three particular aspects are looked at – the input, conversion and output dimensions.

Given the intergovernmental character of the OPCW and CTBTO, Member States represent the key actors, which by and large define the input into the political system of these international organizations.[620] Accordingly, both common as well as divergent positions expressed by the regime member towards this non-routine verification mechanism are analyzed in order to address the related sub-question: "What are Member States' political demands and support regarding challenge-type inspections?"

Upon obtaining clarity on the demands and support towards challenge-type inspections from States Parties, it is important to address the conversion dimension. Looking at this aspect sheds light on the way decisions are made with respect to challenge-type inspections within these two international organizations. In particular the institutional structure of these two organisations is assessed, their roles as well as their decisions making procedures with respect to challenge-type inspections. For the purpose of my research, the following sub-questions are posed to address this issue: "What roles do the organs of the OPCW and CTBTO (incl. Preparatory Commission) have with respect to challenge-type inspections and what do the related decision making processes look like?"

Third, an analysis of the output dimension with the aim of looking at implementation aspects is performed, particularly at activities undertaken by the Organizations with respect to these specific verification mechanisms. Accordingly, an answer should be found to the following sub-question in this research step: "Which activities have been undertaken by the Organizations with respect to challenge-type inspections and how do they impinge on their role and importance?"

[620] Administrative staff of the international organisations represent another stakeholder group, whose mandate however is limited to the implementation of the guidance given by Member States through the policy making organs. Furthermore, one can note the increasing role, commitment and influence of civil society, academia, as well as non-governmental organisations in arms control and disarmament. However, they may exert only indirect influence on the policy making process by raising awareness, sensitizing the public, and thus impacting on national policies and positions.

5.1 The Input Dimension: Demands and Support regarding Challenge-Type Inspections

This first sub-chapter focusses on the input dimension with respect to policy making in international organisations. As such, it looks at Member States' political support and demands regarding CWC challenge inspections and CTBT on-site inspections and aims to address the following research sub-question: "What are Member States' political demands and support regarding challenge-type inspections?"

5.1.1 Demands and Support regarding Challenge Inspections/CWC

One of the options to analyse common positions and views on, *inter alia*, demands and support expressed by Member States pertaining to CIs is to look into official documents and reports issued by the OPCW, as well as States Parties' positions expressed through national papers. In this context, Review Conferences offer a unique opportunity, as they have the purpose to undertake a review of the operation of the Convention and serve as fora for Member States to take stock of accomplishments made and provide strategic guidance on the way forward.

5.1.1.1 Positions Reaffirmed by all Member States

Among several other agenda items, the issue of challenge inspections has also been addressed by all three Review Conferences under the agenda item titled "consultation, cooperation and fact-finding".[621] Member States' jointly reaffirmed positions on challenge inspections as reflected in these three Review Conference Reports can be divided into four broad thematic clusters:

1. Reaffirming of important challenge inspection related Convention provisions;
2. Information on the conduct of bilateral consultations, clarification requests made to the Council, and requests for challenge inspections under the periods of review;
3. Highlighting unresolved issues and requested the Executive Council to continue its deliberations to resolve them;
4. Taking note of the Secretariat's preparations and requesting to continue maintaining a high standard of readiness and regular reporting to the Council on the issue.

[621] See OPCW (2003): RC-1/5, pp. 22-23; OPCW (2008): RC-2/4, pp. 21-22; OPCW (2013): RC-3/3*, pp. 21-22.

The reaffirmation of important Challenge Inspection related Convention provisions

Review Conferences reaffirmed the right of each State Party to request an on-site inspection for the sole purpose of clarifying and resolving any questions concerning possible non-compliance with the provisions of the Convention.[622] This CWC paragraph contains a number of important elements which bear mentioning: first this provision clearly attributes the right to request a CI to each State Party, which implies that all Member States have the equal right to do so under the CWC. Second, this provision also makes it clear that the requesting State Party is obliged to keep the inspection request within the scope of the Convention and refrain from extending it to issues alien to the CWC. Third, a request does not have to be limited to specific non-compliance concerns. Krutzsch and Trapp note, that *"[…] a limitation to provisions of Article I might be too restrictive. However to recognize the possible non-compliance of any provisions of the Convention as a cause for a request would be inconsistent with the character of a challenge inspection."*[623]

At the same time, Conferences also recalled the provisions envisaged in case of any abuse and expressed their confidence that States Parties shall keep inspection requests within the scope of the Treaty and refrain from unfounded or abusive requests.[624] Moreover the Review Conferences also reaffirmed the rights and obligations of an inspected State Party under Article IX, paragraph 11.[625] In this respect, the CWC clearly stipulates that the inspected State Party is obliged to assist the Inspection Team throughout its inspection and provide access within the requested perimeter in order to clarify the compliance concern. At the same time, the inspected State Party has, however, also the right to protect legitimate security interests and apply managed access procedures.

Additionally, all three Conferences also recalled and reaffirmed an important provision contained in Article IX, paragraph 2 of the CWC:

> *"Without prejudice to the right of any State Party to request a challenge inspection, States Parties should, whenever possible, first make every effort to clarify and resolve, through the exchange of information and consultation among themselves, any matter which may cause doubt about*

[622] See OPCW (2003): RC-1/5, para 7.88, p. 22; OPCW (2008): RC-2/4, para 9.85, p.20.
[623] See Krutzsch/Trapp (1994), pp. 181-182.
[624] OPCW (2003): RC -1/5, para 7.89, pp. 22-23; OPCW (2008): RC-2/4, para 9.87, pp. 20-.21; OPCW (2013): RC-3/3*, para 9.107, p. 21.
[625] See OPCW (2003): RC-1/5, para 7.88, p. 22; OPCW (2008): RC-2/4, para 9.86, p.20.

> *compliance with this Convention, or which gives rise to concerns about a related matter which may be considered ambiguous."*[626]

However, while all Member States reaffirmed the above provision, they nevertheless interpret the above CWC paragraph very differently. Krutzsch and Trapp note in their commentary on the CWC provisions that the wording in this paragraph *"[…] does not establish any precondition for requesting challenge inspection and second, the expression 'whenever possible' leaves it to the discretion of the State Party having doubts or concerns to follow the appeal made in this paragraph or not."* [627]

Use of consultations, clarifications and fact-finding

All three Conferences underlined the value of the bilateral consultation mechanism provided by Article IX, paragraph 2 and encouraged States Parties to make full use of this mechanism, as appropriate.[628] In this context, the First Review Conference explicitly noted that bilateral consultations to clarify issues had been used to clarify and resolve concerns.[629] While clearly recognizing the value of this mechanism to resolve compliance concerns amongst the States Parties directly concerned, one can critically note that this bilateral mechanism remains non-transparent for other States Parties.[630]

All Review Conferences also took note of the fact that the Executive Council had received no clarification requests under paragraph 3 to 7 of Article IX since entry into force of the Convention.[631] Moreover, all Conferences noted that no challenge inspections had been requested since entry into force of the Convention.[632] This fact however causes both relief and uneasiness among experts.[633] Asada sees this aspect as the biggest practical problem of the challenge inspection system of the CWC and points out that this issue gets even more weight when considering that Member States have actually publicly raised compliance concerns and still did not use the CI mechanism stipulated under the CWC. [634] Inter-

[626] See OPCW (2003): RC-1/5, para 7.85, p. 22; OPCW (2008): RC-2/4, para 9.82, p.20; OPCW (2013) RC-3/3*, para 9.104, p. 21.
[627] See Krutzsch/Trapp (1994), pp. 177-178
[628] OPCW 2003): RC-1/5, para 7.86, p. 22; OPCW (2008): RC-2/4, para 9.83, p.20; OPCW (2013): RC-3/3*, para 9.111 (a), p. 22.
[629] See OPCW (2003): RC-1/5, para 7.86, p. 22.
[630] See OPCW (2011): S/951/2011, p. 16.
[631] See OPCW (2003): RC-1/5, para 7.87, p. 22; OPCW (2008): RC-2/4, para 9.84, p.20; OPCW (2013): RC-3/3*, para 9.105, p. 21.
[632] See OPCW (2003): RC-1/5, para 7.88, p. 22; OPCW (2008): RC-2/4, para 9.85, p.20; OPCW (2013): RC-3/3*, para 9.106, p. 21.
[633] See Levy (1999), p. 24.
[634] See Asada (2006), p. 88.

estingly, he points out potential root causes for this phenomenon, and names the difficulty to reveal evidence of non-compliance, as a potential reason. Hence, such a situation is in fact cause more political damage than potential benefits obtained through a challenge inspection, particularly in case no clear evidence of non-compliance could be found by the inspection team. Additionally, he considers fears by a requesting state party to receive a retaliatory request for a challenge inspection as another reason that has led to the non-use of this mechanism in spite of compliance concerns. Furthermore, the possibility of disclosing own intelligence capabilities and sources might serve as another concern speaking against requesting a CI. Finally, Asada argues that overall political considerations concerning bilateral relations between the inspected and the requesting State Party may eventually also work against invoking a CI request.

The United States also addressed the issue of political apprehensions towards the use of the CI mechanism in a 2004 Non-Paper at the Vienna EU Seminar on Challenge Inspections in the Framework of the CWC:

> *"The challenge inspection is intended as a unique and robust means within the CWC to address concerns about non-compliance. But if we allow apprehension regarding receipt of a challenge inspection to be the overriding determinant of our respective national policies, it will create an environment where challenge inspections are so politically difficult and ominous as to become essentially unusable. […] In short, the challenge inspection provision could become a hollow measure, without any deterrent or diplomatic value. This would drastically weaken the CWC regime and would limit its collective benefits. Such weakening may seem remote and abstract now, but in the long run the effects will be real and tangible, measured in a loss of confidence in the regime and reduced security for all."*[635]

At the same time, one needs to be careful regarding the circumstances that justify invoking a challenge inspection request. As noted in the conclusions of a workshop on CIs carried out by the Center for Nonproliferation Studies in 2002, "*[i]t would be counterproductive to use a challenge inspection to address a trivial violation. Requesting a challenge inspection without a real foundation could be as damaging to the CWC as no challenge inspection at all"*[636].

635 United States (2004): Non-Paper, p. 4.
636 Tucker (2002), p. 30.

Unresolved issues to be addressed by the Executive Council

The third cluster addressed at the Review Conferences relates to aspects which require the commitment of the Executive Council on a number of CI issues that still need to be resolved. Importantly, all Review Conferences requested the Executive Council to continue its deliberations in order to resolve them expeditiously.[637] However, while some delegations explicitly highlighted specific aspects in their national statements and position papers, the Conference Reports remained vague with respect to the specific issues to be addressed by the Council. Interestingly, as a matter of fact the Council has not engaged in deliberations to take up unresolved issues, which indicates the comparably low priority as well as the unwillingness of a number of States Parties to engage in these issues. In this context, one of the interviewed experts confirms the hesitancy to proactively address these unresolved issues and notes the following:

> *"We also had a number of expert discussions on challenge to deal with so-called unresolved issues, which we thought a) they don't need to be resolved, they're not issues and b) it's better not to have these discussions at all because it undermines the concept."*[638]

Technical Secretariat Preparedness

The fourth thematic cluster relates to the state of preparedness by the Technical Secretariat for challenge inspections. All Review Conferences acknowledged the preparations undertaken by the Secretariat to respond swiftly and effectively to any request for a challenge inspection. [639] In this context, all Conferences requested the Secretariat to continue maintaining a high standard of readiness for such mission and proposed the conduct of table top exercises and mock inspections as concrete measures.[640] Moreover, the Conferences also encouraged States Parties to assist the Secretariat in maintaining the necessary level of readiness through, *inter alia*, the conduct of challenge inspection exercises.[641] A detailed analysis of the challenge inspection exercises conducted by the Secretariat is presented in sub-chapter 5.3.

As highlighted above, the regular conduct of exercises by the Secretariat is crucial to maintaining readiness for these non-routine type of inspection. Experts such as John Walker

[637] See OPCW (2003): RC-1/5, para 7.90, p. 23; OPCW (2008): RC-2/4, para 9.88, p.21; OPCW (2013): RC-3/3*, para 9.111 (e), p. 22.
[638] Expert Interview 1, paragraph 13.
[639] See OPCW (2003): RC – RC-1/5, para 7.91, p. 23; OPCW (2008): RC-2/4, para 9.89, p.21; OPCW (2013): RC-3/3*, para 9.109, p. 22.
[640] See OPCW (2003): RC – RC-1/5, para 7.91, p. 23; OPCW (2008): RC-2/4, para 9.90, p.21; OPCW (2013): RC-3/3*, para 9.109, p. 22.
[641] See OPCW (2003): RC – RC-1/5, para 7.91, p. 23; OPCW (2013): RC-3/3*, para 9.111 (d), p. 22.

stress the vital need for regular training and exercises for inspectors in order to have the capability to mount an effective challenge inspection if the need should arise:

> *"Learning by doing is fundamental. Although exercises cannot replicate the highly charged political atmosphere that is likely to obtain in a real challenge, they can simulate many of the practical problems that will be encountered and teaches inspectors how to organize themselves and how to conduct the inspection."*[642]

Importantly, all Conferences requested the Secretariat to keep the Council informed about its readiness and report any problems accordingly.[643] For this purpose, the Secretariat has issued since the First Review Conference annual updates on the Secretariat's readiness to conduct a challenge inspection.[644] An analysis of these annual updates is presented later in sub-chapter 5.3.

Interestingly, one can note a change from the report of the Second Review Conference onwards with respect to including aspects pertaining to investigations of alleged use of chemical weapons in the chapter on consultations, cooperation and fact-finding. The Third Review Conference gave even more prominence to this issue, and stressed the importance of investigations of alleged use or threat of use of chemical weapons and with it the need for readiness of the Organisation at all times to respond to such contingencies.[645] This high attention on investigations of alleged use can be explained against the background of the allegations of CW use in Syria and the engagement of the Organisation under the UN Secretary-General Mechanism in accordance with Verification Annex Part XI, paragraph 27. Additionally, addressing both challenge inspections and investigations of alleged use together can also to some extent be attributed to the change in the Secretariat's approach on merging preparations for these missions including addressing headquarters activities by the same procedural approach.

642 Walker (2007), p. 5.

643 See OPCW (2003): RC – RC-1/5, para 7.91, p. 23; OPCW (2008): RC-2/4, para 9.90, p.21; OPCW (2013): RC-3/3*, para 9.111 (c), p. 22.

644 Since 2010 this update also includes information on the Secretariat's readiness for investigations of alleged use. See OPCW (2004): EC-36/DG.5/Rev.1; OPCW (2005): EC-41/DG.10; OPCW (2006): EC-46/DG.6; OPCW (2007): EC-49/DG.11; OPCW (2008): EC-54/DG.9; OPCW (2009): EC-58/DG.8; OPCW (2010): EC-62/DG.8; OPCW (2011): EC-66/DG.10; OPCW (2012): EC-70/DG.12; OPCW (2013): EC-74/DG.15; OPCW (2014): EC-76/DG.11.

645 See OPCW (2013): RC-3/3*, para 9.108, p. 21.

5.1.1.2 Divergent Views Expressed by Member States

While the above mentioned jointly reaffirmed positions by Member States on challenge inspections in the three Review Conferences reports can be regarded as the smallest common denominator reached among States Parties, individual Member States naturally also have different positions on some issues. Soon after entry into force of the Convention it became evident that Member States have divergent treaty interpretations and views regarding some of the provisions related to challenge inspection that lead to competing political demands and support for this mechanism. Three issues have received particular attention in the course of the debates, which are further analyzed below.[646]

1. Purpose, scope and activation of the challenge inspection mechanism;
2. The role of prior consultations;
3. The question of abuse of the right to request a challenge inspection.

Purpose, scope and activation of the challenge inspection mechanism

It is evident from the Convention provisions that challenge inspections are to be regarded by their nature as non-routine inspections aimed at addressing compliance concerns. However, views of Member States differ as to exactly what may constitute a compliance concern that would justify a request for a challenge inspection. Generally speaking, some states are in favour of a very cautious and highly restrictive approach towards invoking this mechanism and regard challenge inspections solely as an option of last resort. One of the interviewed expert, who also supports a very cautious use of CIs, expresses his position as follows:

> *"[…] just because a provision exists under the Convention, you don't have to use it. In euphemistic terms, I would call it that the developing countries would prefer it to be a phantom in the room: it exists, it's not seen, but it can be called upon. That sort of situation is far more acceptable to the developing countries than the approach that 'just because we have a Convention, we have to operationalize it'. And then run the risk of undermining the credibility of the organization, and what the organization is built on, by actually launching an investigation which turns out to be a non-event, because then you are actually attacking the sovereignty and the*

[646] It should be noted that some of these views have officially been expressed by Member States in position papers or national statements at sessions of the policy making organs of the Organisation. However, other positions referenced in this thesis have been derived from national non-papers and discussion papers presented at challenge inspection seminars (e.g. Combined United Kingdom of Great Britain and Northern Ireland and Secretariat of the OPCW Seminar on Challenge Inspections. The Hague, 11 February 2000; EU Seminar on Challenge Inspections in the Framework of the CWC, Vienna, 24-25 July 2004). While fully acknowledging the non-official character of the latter type of discussion documents, they nevertheless allow highlighting principle views and divergent positions expressed by Member States.

> *good name of another country. […] Even by not being activated, it is still a powerful deterrent element."*[647]

Both the Non-Aligned Movement (NAM) as a group, as well as individual States Parties such as China, Iran, India, Pakistan and also Russia are among those states that support the former argument. In line with it, they argue that the object of a challenge inspection should be consistent with the objective and purpose as defined in Article I.[648] They also contend that the right to request a challenge inspection should be exercised extremely carefully and only under exceptional circumstances.[649] NAM Member States and China have reiterated their position several times and see *"a challenge inspection [as] an instrument to be used as a last resort and under exceptional circumstances.* [650] India shares a similar position, which it has expressed at the Second Review Conference when it noted that "*the Provisions of the Convention pertaining to consultation and fact finding are important aspects of the Convention and need to be invoked only under certain safeguards against abuse, and in exceptional circumstances."*[651] Furthermore, Iran also considers that *"[c]hallenge inspection should be an instrument to be used as a last resort and under exceptional circumstances."* [652] Also Pakistan, while recognizing the importance of challenge inspections as an important pillar of the CWC' verification regime, shares the view that the right to invoke this mechanism needs to be *"exercised with proper discretion under exceptional circumstances when sufficient and credible information is available to justify launching of challenge inspection by one State Party against the other."*[653]

On the other hand, a group of States Parties, most notably EU Member States and the United States, have argued in favour of invoking the challenge inspection mechanism on a broader range of compliance concerns and potentially on a more frequent basis, which reflects a principally different view with respect to the overall role, perception and usage of the challenge inspection mechanism. The EU's supportive approach towards CIs is rooted in the 2003 EU WMD Strategy[654], which not only recognizes the proliferation of Weap-

[647] Expert Interview 4, paragraph 26.
[648] See Russian Federation (2004): Non-Paper, p. 3.
[649] See Russian Federation (2004): Non-Paper, pp. 1-3.
[650] OPCW (2008): RC-2/NAT.17/Rev.1, paragraph 44, p. 7.
[651] OPCW (2008): India, p. 4.
[652] OPCW (2013): RC-3/NAT.10, p. 1.
[653] Khan, (2000), pp. 5-6.
[654] Council of the European Union (2003): 15708/03. Moreover, the 2008 *Council Conclusions and new lines for action by the European Union in combating the proliferation of weapons of mass destruction and their delivery means* re-emphasized the growing threat posed by WMD and their delivery systems and specifically re-

ons of Mass Destruction and their means of delivery as a *"growing threat to international peace and security"*, but at the same time sets the objective to *"prevent, deter, halt and where possible, eliminate proliferation programmes of concern worldwide"*.[655] In order to reach this goal, the EU has chosen a multi-layered approach that relies on 'effective multilateralism' as the strategy's cornerstone. As such, the Strategy underlines the EU's clear commitment to the multilateral treaty system and pursues, as policy, the implementation and universalization of the existing disarmament and non-proliferation regimes.[656] In the context of this multilateral focus, the Strategy also pays due consideration to the issue of verification and notes:

> *"17. If the multilateral treaty regime is to remain credible it must be made more effective. The EU will place particular emphasis on a policy of reinforcing compliance with the multilateral treaty regime. Such a policy must be geared towards enhancing the detectability of significant violations and strengthening enforcement of the prohibitions and norms established by the multilateral treaty regime [...].*
>
> *18. To ensure effective detectability of violations and to deter non-compliance the EU will make best use of, and seek improvements to, existing verification mechanisms and systems. It will also support the establishment of additional international verification instruments and, if necessary, the use of non-routine inspections [...]."*[657]

This position on CIs has also been echoed by the European Union in statements regularly made at the Review Conferences. [658] As such, the EU is of the view that *"[c]hallenge inspections should be seen primarily as deterrent. It also serves to restore confidence in compliance and can act as enforcement measure to ensure that violators are exposed. For a deterrent to be credible, it must be effective; and for it to be effective in a CW context, there must be the possibility that inspections can be requested and conducted at any time."*[659]

The United Kingdom of Great Britain and Northern Ireland has taken a lead role among the EU Member States in an attempt to "*demystify challenge inspections and to reinforce its*

ferred to the Middle East and Asia as regions of tension particularly prone to proliferation and posing a real risk of WMD use. New Lines also highlighted the emerging risk that these weapons may also be developed and used by terrorists/non state actors. Overall and while providing a modest update to the WMD Strategy, New Lines were *"widely regarded as a call for more coherence and effectiveness of an EU WMD Strategy that had not (yet) delivered on its promises*" See Council of the European Union (2008): 17172/08, p. 3.

655 Council of the European Union (2003): 15708/03, p. 1.
656 See Council of the European Union (2003): 15708/03, p. 2.
657 Council of the European Union (2003): 15708/03, p. 6.
658 See Council of the European Union (2012):2012/712/CFSP.
659 OPCW (2003): RC-1/NAT.21, p. 1.

status as a normal and legitimate tool of verification".[660] As part of this effort, it has conducted more than 20 practice challenge inspections since 1994, co-organized one challenge inspection seminar in 2000 and also sponsored several policy papers on challenge inspections. While all these activities have greatly helped to provide a better understanding on challenge inspections both to States Parties and the Technical Secretariat and have been also instrumental in the training of inspectors, *"[…] the UK view that it should be seen as a normal clarification didn't get broad acceptance."*[661]

A similar position like the EU towards CIs has been taken by the United States. As indicated in a 2004 US Non-Paper, *"it is a flexible tool that, if viewed realistically and used appropriately, can be instrumental in achieving the goals of the CWC".*[662] Furthermore, this group of Member States also believes that the scope of challenge inspections is in fact quite wide and goes beyond Article I. Hence it is argued that *"[i]t would diminish the utility of challenge inspections and further politicize perceptions and expectations if resort to challenge inspections were restricted to only Article I CW concerns."* [663]

As is clearly in the above, the principal positions between those states very much in favor of CIs and those advocating a highly restrictive approach have not changed. However, as remarked by one of the experts interviewed, shifts with respect to the question of the acceptability of challenge inspections have taken place among the developing countries. [664] In his view, these shifts come as a result of accepting CIs as an operational tool provided that some conditions prior to their use are met. One of these central conditions would be the conduct of prior consultations before a CI is in fact requested. The following part looks further into the different positions among Member States on this subject matter.

The role of prior consultations

The issue of the role of prior consultations is clearly connected to the activation of challenge inspections. As already mentioned, the interpretation of Article IX, paragraph 2 represents one of the most debated and controversial issues in the context of Article IX. Member States have rather opposing views regarding the role of prior consultations before requesting a Challenge inspection. Whereas some States Parties are of the view that chal-

660 UK Delegation (2004), p.1.
661 Expert Interview 1, para 13.
662 United States of America (2004): Non-Paper, pp. 4-5.
663 United States of America (2004): Non-Paper, pp. 2-3.
664 Expert Interview 4, paragraph 20.

lenge inspections should only be invoked after all other options, including consultations and clarification, have been exhausted, other Member States consider this mechanism as optional and at the discretion of each Member State.

Some States Parties such as China, India, Iran and Russia and the NAM Member States belong to those that see challenge inspections as the last measure after all other options have been exhausted and view "*the consultation and clarification procedure [as] an integral part of Article IX, which shall precede any request for a challenge inspection.*" [665] In the same vein, the Russian Federation in a 2004 Non-Paper argues that *"[c]hallenge inspections may only be applied when all other possibilities to clarify the situation related to a possible case of non-compliance have been exhausted, and in particular, in the framework of the Executive Council under the procedures envisaged in Article IX."*[666] Iran most recently re-iterated this position at the Third Review Conference and stressed that "*challenge inspection should be an instrument to be used as a last resort and under exceptional circumstances. Considering the sensitive and special nature of the challenge inspection, States Parties should first make every effort to use the consultation and clarification mechanism, as an integral part of Article IX of the Convention, to resolve their concerns before requesting a challenge inspection.*"[667]

In strong contrast to these views stands the position shared by a group of other States Parties, most notably the European Union Member States and the US. Their position is very different and they see the role of prior consultations as an optional measure at the discretion of each Member State and stress the legal right of States Parties to request a challenge inspection without prior consultation. [668] They made their position clear at the First Review Conference and highlighted the following three points in support of their argumentation:[669]

- Article IX contains two self-contained parts (i.e. 'Procedure for requesting clarification', 'Procedures for challenge inspections') that lay out the respective procedures in an independent, non-hierarchical and non-sequential manner.
- Moreover, the EU position paper also provides for a legal interpretation of the term "*without prejudice*" in Article IX, paragraph 2, which is to be seen as "*without diminish-*

[665] OPCW (2008): RC-2/NAT.17/Rev.1, para 44, p. 7.
[666] Russian Federation (2004): Non-Paper, p. 2.
[667] OPCW (2013): RC-3/NAT.10, p. 1.
[668] See OPCW (2008): RC-2/NAT.14, p. 5.
[669] See OPCW (2003): RC-1/NAT.21, pp. 2-3.

ing, affecting or detracting from an existing right". Accordingly, this supports the unqualified right of each State Party to request a challenge inspection without prior fulfilment of any conditions or procedures.

- Finally, Article IX, paragraph 2 makes use of the terms "*should, whenever possible*" instead of the term "*shall*", which is used to confer an absolute obligation. Hence, this language explicitly admits occasions, when the exchanges of information and consultations are not feasible and Member States may directly resort to requesting a Challenge Inspection.

The UK tabled also a national paper for the First Review Conference, in which it underlined its views towards consultation procedures:

> *"We believe it is essential for all States Parties to make use of the Article IX consultation procedures. […]. But consultations are not appropriate in relation to every concern about non-compliance. Nor are they mandatory in all cases […]. In any particular case, the United Kingdom would not wait for prior consultations if concerns were serious and urgent enough to warrant an immediate challenge inspection."* [670]

As is clear from the above, the selected statements clearly reflect the very different interpretations of the nature of the consultation and clarification mechanism among Member States. In this respect, one of the interviewed experts concludes that *"[u]ntil such time as the CI provision is invoked, these matters will likely remain subjects for (theoretical) discussions."* [671]

<u>The question of abuse of the right to request a challenge inspection</u>

The question of abuse has remained another challenge inspection related issue under debate among Member States. This aspect is very much related to fears expressed in parts of the developing world that CIs could be launched against them for political reasons.[672] As indicated by one of the interviewed experts, this fear of abuse can be attributed to some extent to an initial lack of experience with the concept of inspections:

> *"This is a very typical developing country syndrome because they've never had the experience; the Soviets, and the Russians and the Americans have already started doing bilateral, so they were sensitised to the concept of 'trust but verify'; […]. But to the developing world this was a new concept and naturally it comes from a very reflexive reaction of diplomats from*

[670] OPCW (2003): RC-1/NAT.13, p. 4.
[671] Expert Interview 11, para 79.
[672] See Expert Interview 1, paragraph 23; Expert Interview 2, paragraphs 10 and 34; Expert Interview 3, paragraph 23; Expert Interview 4, paragraph 6.

> *developing countries, that if the West is suggesting something it is inherently something biased against them. This is where in most international organizations you will find the divide that takes place between the developing world and the developed world comes because it is almost a reflex action. And it works the other way also: that when the developing countries propose something, the West looks at it to say, 'Is there a catch here that I'm worried about?' So, in this case, because it was a concept which was promoted vigorously by the developed countries, there was an element of suspicion or scepticism that 'is this really going to be used in the way they say it's going to be used, or the devil is going to be in the detail that we accept the concept and later all the challenge inspections will take place on our own territories?"*[673]

In particular, the debate revolves around the question as to what constitutes an abuse of the right to request a challenge inspection. The Executive Council plays a crucial role during the entire challenge inspection process, namely by first considering the inspection request with respect to being frivolous, abusive or clearly beyond the scope of the CWC, and making a decision regarding the approval of the inspection;[674] second it also has the mandate to review the final report of the inspection team after the conclusion of the inspection and address any concerns as to, *inter alia*, whether the request has been within the scope of the Convention and whether the right to request a challenge inspection has been abused.[675]

At its First Session in 1997 the Conference of the States Parties adopted a decision regarding an illustrative list of objective indicators of whether the right to request a challenge inspection has been abused.[676] Against this backdrop, a few Member States have called for expanding the definition of abuse and would also like to have instances included, where inspection results do not substantiate the original compliance concern and where the requesting state party has not exhausted all other procedures available under Article IX to resolve a compliance concern (e.g. consultations and clarification) prior to the presentation of a request. In this context, Iran has re-iterated its position at the Third Review Conference and stated that

> *"[a]ny abuse of the right to request a challenge inspection is an act of violation of the Convention, would jeopardise the trust among States Parties*

673 Expert Interview 4, paragraph 4.
674 See CWC Article IX, paragraph 17.
675 CWC Article IX, paragraph 22 (b) and (c).
676 See First Conference of the States Parties/OPCW: Illustrative list of objective indicators to facilitate the Executive Council in addressing any concern, in accordance with paragraph 22 of Article IX, whether the right to request a challenge inspection has been abused. See OPCW (1997): C-I/DEC.45.

> *and would be contrary to the letter and spirit of the Convention. States Parties shall refrain from requests that are unfounded or abusive in order not to undermine the integrity of the Convention. Once abuse has occurred, there should be a penalty applied through the unanimous decisions of the States Parties.*[677]

Also China has expressed its concerns and is of the opinion that

> *"[i]t is an act in violation of the Convention to abuse the right to request a challenge inspection. As it will seriously damage the authority of the Convention and its verification system and undermine confidence among States Parties and their support for the Convention, such a move must be resolutely forestalled. Once abuse has occurred, there should be a penalty. In order to effectively deter, prevent and penalise abuse, it is essential that States Parties develop a wide-spread political consensus and send out unanimous signals."*[678]

Moreover, countries such as China and Iran have re-emphasized the need for the Organisation to address and resolve, *inter alia*, the outstanding issue of punishment of abuse as soon as possible. [679]

These views towards abuse stand in stark contrast to those of other States Parties, who believe that the current legal guidance is sufficient and who are strictly against expanding the definition of abuse. As such, the US has made it clear that *"[t]his expanded understanding of abuse conflicts with both the letter and spirit of the CWC, and, if implemented, would equate to a de facto amendment of the treaty, effectively undermining the challenge inspection as a viable option for verifying compliance*."[680] At the 2004 EU Seminar on challenge inspections also Poland indicated that *"the mechanism of the challenge inspections […] is complete. It does not require any amendments or corrections. The mechanism is ready for implementation."*[681] Even stronger language has been used on this issue by the European Union on the occasion of the First Review Conference when it stated that "*[a]ttempts to reinterpret the challenge inspection regime do more than weaken an individual Convention component; they also strike at its continued effectiveness and relevance by attacking its resilience to technological change."*[682]

[677] OPCW (2013): RC-3/NAT.10, p. 1.
[678] OPCW (2008): RC-2/NAT.2, p.1
[679] See OPCW (2008): RC-2/NAT.2, p.1; OPCW (2013): RC-3/NAT.10, p. 1.
[680] United States (2004): Non-Paper, p. 4.
[681] Poland (2004), p. 1.
[682] OPCW (2003): RC-1/NAT.21, p. 3.

More than 17 years have gone by since entry into force of the CWC with no challenge inspection actually being launched. Therefore one can argue that concerns of those States Parties that fear political motives as trigger for unfounded and abusive challenge inspection requests can be disproved.[683]

5.1.2 Demands and Support regarding On-Site Inspections/CTBT

Following the examination of CWC challenge inspection related political demands and the support by regime members, this sub-chapter looks at the input dimension pertaining to on-site inspections under the CTBT. By looking, *inter alia*, at official reports of the sessions of the Preparatory Commission for the CTBTO including its organs and national statements from CTBT States Signatories between 1997 and 2013, the positions held by Member States' on political demands and support of OSIs can be identified. In this context it needs to be recognized that the analysis of the OSI related input dimension has to go beyond the OSI regime pillar and be looked at from an overall CTBT verification regime development related perspective.

5.1.2.1 Different departure point for the development of the OSI regime pillar

Sub-chapter 3.2 provided an analysis of the different verification regime pillars to be established under the CTBT. As pointed out, the verification regimes under the CWC and CTBT show fundamental differences in the design of the verification regime and have also faced different political support since the Treaties were opened for signature. These and a number of other factors influenced the OSI regime development, which are briefly addressed below.

Importantly, one needs to take into account the specific role and position that OSIs play within the CTBT's verification regime. The International Monitoring System provides the backbone of the verification regime and no routine inspections are envisaged under the CTBT. This represents a major difference to the CWC verification regime, where various types of inspections in both chemical weapons related facilities and chemical industry sites are carried out on a regular basis. As a result, and notwithstanding the particular differences between routine and non-routine inspections, the OPCW has naturally been at

[683] See Expert Interview 1, paragraph 23.

an advantage when establishing the principal capability to conduct challenge-type inspections.

Furthermore, and also pointed out under chapters 3 and 4, CTBT on-site inspections are technologically more complex missions that encompass various ground- and aerial based inspection activities and techniques. Application of several of these techniques requires both considerable conceptual work, as well as technological research and development. While some equipment, such as that for visual observation, radiation detection or geophysics related inspection activities, is commercially available off the shelf, concepts and procedures for the utilization of these technologies however need to be specifically developed in view of the particular signatures to be detected upon a nuclear (weapons) explosion. Detailed expertise on the specific characteristics and effects of nuclear tests is limited to a small number of states, and proliferation concerns raised by the nuclear weapon possessor states naturally impact on the development of some of these inspection techniques. Moreover, other inspection techniques such as those for the detection of the noble gases Argon and Xenon have had very limited civilian application, which in turn require long term research and development in close cooperation with Member States. Again, this represents another challenging factor impacting on the overall OSI regime development.

Additionally, work on the development of the individual CTBT verification regime pillars started from different departure points. As such, the initial PTS programme of work related to the IMS and supporting the IDC verification regime element could build upon efforts already made in the context of the Conference on Disarmament, and the Group of Scientific Experts that led to important resources becoming available in the form of a prototype IDC and global experimental sensor networks. As of 1997 – and notwithstanding the specifications developed subsequently by the Preparatory Commission - the IMS primary network was 64% complete, the auxiliary seismic network was 32% complete, the infrasound network 2%, the hydroacoustic network was 27 % complete; and the radionuclide network was 15 % complete.[684] In contrast to that, the OSI development had to start very much from scratch. Hence, OSI work focused initially on basic conceptual issues such as the establishment of proposals for guidelines and procedures for the conduct of an OSI, and for OSI infrastructure to support the OSI regime, drafting requirements for procurement of

[684] See PC/CTBTO (1997): CTBT/PC-1/22, Annex IV, Part II, p. 19.

OSI equipment and logistics as well as an initial outline of an OSI Operational Manual. [685] Moreover, OSI efforts concentrated on the development of a training programme[686] including the conduct of the first training courses for future inspectors[687] and the conduct of OSI Workshops as means of contributing to the technical development of the OSI regime.[688] As a result of these diverse departure points, one of the interviewed expert recalls:

> *"[…] so it was a very natural, smooth way for further development of IMS/IDC, and again, based on experience from many years of work done before initiation and, well, for OSI there was some delay because of a lack of understanding about how to go forward in the situation of an uncertain timeframe for Entry into Force."*[689]

As indicated above, prospects for entry into force of the CTBT have also considerably influenced States Signatories' political priorities for overall CTBT verification regime development and particularly those with respect to the pace of the build-up of the OSI verification regime pillar. OSI regime development was always closely linked to the prospects of entry into force of the Treaty, given that such an inspection can only be requested and carried out upon entry into force of the CTBT. [690] In contrast to that, the IMS and IDC could already operate, albeit provisionally, in advance of entry into force. Accordingly, States Signatories can already obtain data products from the monitoring stations for further analysis, and moreover use them also for different scientific and civil applications. Hence, Member States can get clear benefits from the build-up and operation of the International Monitoring System and the International Data Centre before entry into force, and independently of the CTBT prospects for entry into force, which explains to some extent the priority set in favor of this regime pillar.

5.1.2.2 Initial priority on the build-up of the International Monitoring System

Against these challenging framework conditions, the OSI regime pillar development was at a comparable disadvantage already at the beginning of the PTS in the first years. Upon the establishment of the Provisional Technical Secretariat in early 1997, CTBT Member States' immediate priority rested on the build-up and commissioning of the International Monitoring System and International Data Centre and as many resources as possible were de-

685 See PC/CTBTO (1997): CTBT/PC/III/I/Add.2, pp. 10-11.
686 See PC/CTBTO (1997): CTBT/PC/IV/1/Add.2, p. 22
687 The PTS conducted the first OSI introductory training course in 1998. See PC/CTBTO (1998): CTBT/PC/VI/I/Annex.3, p.11.
688 See PC/CTBTO (1998): CTBT/PC/VI/I/Annex 3, p.10.
689 Expert Interview 9, paragraph 34.
690 See PC/CTBTO (2013): Looking back over 15 years, p. 18.

voted to it.[691] This is evidenced in the staffing priority given to the IMS and IDC Divisions in comparison to the OSI Division. The two charts below clearly indicate the uneven human resource allocation as a result of this policy decision made.

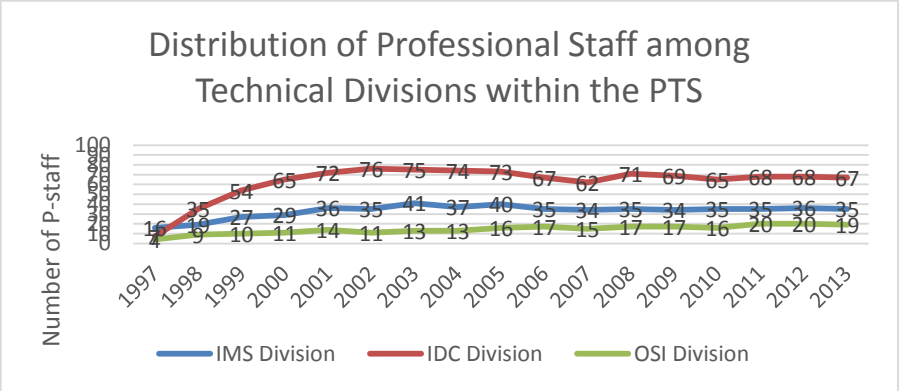


Figure 28: Distribution of Professional Staff among the PTS Technical Divisions
Source: PC/CTBTO (2013): Looking back over 15 years, p. 12; PC/CTBTO (2014): CTBT/PTS/INF.1275, p. 14

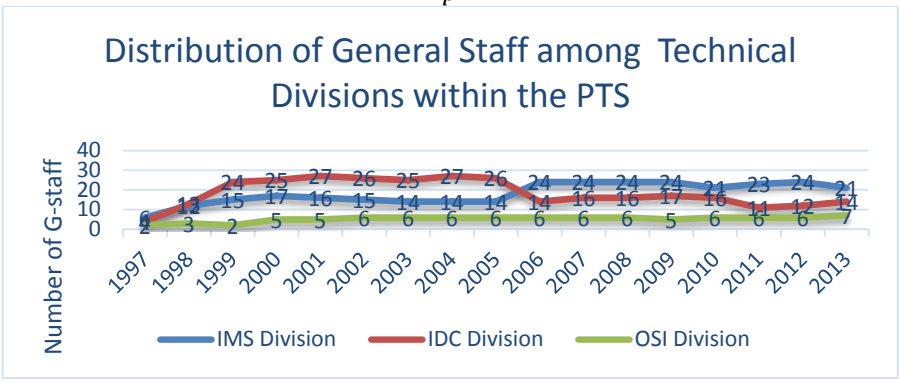


Figure 29: Distribution of General Staff among the PTS Technical Divisions
Source: PC/CTBTO (2013): Looking Back over 15 years, p. 127; PC/CTBTO (2014): CTBT/PTS/INF.1275, p. 14

One of the experts interviewed remembers the early PTS days as a time of enthusiasm and optimism for early entry into force of the Treaty and notes:

> *"[...] [T]he intention was to build as much as possible just in a few years with a high level of readiness to provide maximum support to this. It is quite natural if you expect that this treaty will enter into force in 3 or 4 years' time, you should put all the effort necessary for building your verification system and providing, of course, financial support.* [692]

Member States at the same time already recognized that OSI is lagging behind the other verification regime elements and considered allocating substantive financial resources to

691 See PC/CTBTO (2013): Looking back over 15 years, p. 18.
692 Expert Interview 9, paragraph 28.

OSI to speed up its development. However, and as noted by one of the interviewed experts, *"[i]t never happened because of the lack of capabilities within the PTS to run this development at such a high level of speed at the very beginning."*[693] Notwithstanding the fact that States Signatories gave overall priority at the beginning to IMS and IDC establishment, they differed in their positions on the pace of verification regime development, which was evidenced through, *inter alia*, the report of the Third Session of the Preparatory Commission in September 1997:

> *"Taking into account the Reports of Working Groups A and B, and having regard to the relevant Treaty provisions, some delegates called for the establishment of an operational verification system at the earliest possible date, while some others either favoured a measured pace or felt such a pace to be unavoidable."*[694]

Upon unequivocal IMS support and prospects for early entry into force in the early PTS days, a number of policy decisions made by the United States considerably shaped the further development of the CTBT verification regime and with it also the OSI related one. As a result of it, differing policy priorities emerged among States Signatories, which are further described below.

5.1.2.3 Differing positions on regime development priorities and pace

In the midst of expectations of an early entry into force, came the US Senate refusal to ratify the Treaty in October 1999. Naturally, this negative vote came both as a surprise and shock to Treaty supporters. UK Ambassador Michael Weston, former U.K. Representative to the Conference on Disarmament recalls this situation as follows:

> *"It frankly never occurred to me that the United States would not ratify. After all, it had been the United States that had been the most enthusiastic of the NWS about the treaty and it had been President Clinton who had launched the negotiations and, by a series of initiatives, largely determined their course, sometimes to the discomfort of the other NWS, and their outcome. But clearly we were all forgetting the checks and balances of the American constitution."*[695]

The reasons for the negative US Senate vote in 1999 were manifold and concerns raised by Treaty opponents focused on a number of issues:[696] critics questioned the ability to main-

[693] Expert Interview 9, paragraph 34.
[694] PC/CTBTO (1997): CTBT/PC/III/1/Rev.2, p. 3.
[695] Arms Control Association (2012), p. 9. .
[696] O'Hanlon (2008), pp. 119-132.

tain the US nuclear weapons stockpile in a safe, secure and reliable manner without nuclear testing. Additionally, scepticism was raised about the verifiability of the Treaty and opponents questioned the CTBT verification regime's capability to detect cheaters that apply evasive testing methods such as mine masking and decoupling. Furthermore, some also questioned the relevance of the CTBT to non-proliferation goals.

While this negative vote by the Senate represented a major setback for the overall prospects of entry into force, another US policy decision made in 2001 particularly negatively impacted the build-up of the OSI regime pillar: this was the US decision to cease participating in and funding activities of the Commission not related to the International Monitoring System.[697] The report of the Fifteenth Session of the Preparatory Commission for the CTBTO in August 2001 provides a record of the discussions about the US decision:

> *"States Signatories expressed views ranging from disappointment, concern, to serious concern over this statement, and urged that State Signatory to reconsider its decision. Some States Signatories expressed serious concern over the consequences that may flow therefrom, inter alia, for the prospects of the entry into force of the Treaty. A number of States Signatories expressed the view that such an action runs counter to the commitments undertaken by that State Signatory upon signature of the Treaty. It was also stated that there is no legal basis for selective payment of assessed contributions."*[698]

As a result of this policy decision, OSI regime related development efforts slowed further down and States Signatories did not feel to be in a rush to establish readiness for on-site inspections.[699] The absence of scientific and technical support from US experts meant a major setback for OSI regime development and one could notice the "*[...] drastic change between the first few OSI workshops in which American experts contributed a lot and subsequent workshops without their participation."*[700] On the other hand, the non-participation of the US in OSI related work between 2001 and 2008 also brought with it a change in regime dynamics. Whereas in the late 1990s much of the OSI Operational Manual related material and negotiations were kept firmly amongst the P-5 states, this changed with the departure of the Americans in 2001. Other States Signatures were able to engage more, which some-

697 See PC/CTBTO (2001): CTBT/PC-15/1, p.3, paragraph 11.
698 See PC/CTBTO (2001): CTBT/PC-15/1, p.3, paragraph 11.
699 See Expert Interview 9, paragraph 28.
700 Expert Interview 9, paragraph 36.

what freed up OSI discussions with less political pressure to address the sensitivities of the P-5.[701]

Not least partially motivated by the US decision in 2001 to exclusively provide support to the IMS regime pillar, members of the Group of 77 and China, as well as Iran opposed this approach and have emphasized the importance of a balanced approach in the build-up of the verification regime:

> *"The Group believes that all the elements of the verification regime of the Treaty, including IMS, IDC and OSI, are important and in this regard attaches great importance to a balanced approach dealing with all those elements. Due to the complexity of the OSI issues, active participation of all members is important. We therefore urge all the States Signatories to actively participate in the OSI discussion. From our point of view elaboration of the draft OSI Operational Manual, based on the initial draft rolling text (IDRT), remains a priority task for all members of the Commission. From our point of view, enough resources should be allocated to the OSI Major Programme in order to enable the necessary preparations for the establishment of the OSI regime at EIF of the Treaty."*[702]

Since then, they regularly expressed their position at the sessions of the policy making organs of the Preparatory Commission for the CTBT.[703] Closely linked to the discussion on the overarching verification regime development priorities is the allocation of financial resources for the Organisation by its regime members. As such, the G-77 and China have repeatedly advocated the following four main principles that should guide the Organization's annual programme and budget:

1. the current well advanced status of the verification system;
2. the mandate of the Preparatory Commission on the provisional operation of the system;
3. the actual prospects of entry into force of the treaty; and
4. the need to minimize the financial burden to be borne by States Signatories.

In view of the above, the G77 and China, but also GRULAC and the African Group have been calling for a strict observance of a zero-real-growth budget policy. [704] In contrast to that,

[701] See Expert Interview 11, paragraph 45.
[702] PC/CTBTO (2003): CTBT/PC-20/BR/1, p. 4.
[703] See e.g. PC/CTBTO (2003): CTBT/PC-20/BR-1, p.4; PC/CTBTO (2004): CTBT/PC-22/DZ.1, p.5; PC/CTBTO (2007): CTBT/PC-28/SD-1, p.4; PC/CTBTO (2009): PC-33/NAT.2, p.1; PC/CTBTO (2011): PC-36/NAT.1, p.2; PC/CTBTO (2013): CTBT/PC-41/NAT.2, p. 2. See also Expert Interview 7, paragraph 25.
[704] See PC/CTBTO (2010): CTBT/PC-35/NAT.1, pp. 2-3; This principle position was re-iterated by the G77 and China, *inter alia*, at PC/CTBTO (2003): CTBT/PC-20/BR-1, p. 2; PC/CTBTO (2007): CTBT/PC-28/SD-1,

the EU has repeatedly advocated programme driven budgets oriented at the needs of a steady build-up of the CTBT's verification regime which should not fall below zero real growth.[705] Similarly, and in contrast to observing a zero real growth budget policy, the US has since its return to OSI in 2009 been the most vocal supporter of programme driven budgets with the aim of delivering an operational verification regime to the first Conference of States Parties. This demand is echoed, *inter alia*, in the US National Paper presented on the occasion of the Thirty-Ninth Session of the Preparatory Commission in October 2012:

> "*Focusing on zero real growth and lamenting that some Annex 2 States have not yet ratified does nothing to improve the effectiveness of this organization. An adequately funded and demonstrably effective verification regime will hasten the Treaty's entry into force by demonstrating the capability to detect and deter violations.*" [706]

Against the background of these principally different political positions on the allocation of resources for the build-up of the verification regime, the European Union has repeatedly highlighted its priorities concerning verification regime establishment. As such, it has expressed the following three priorities (in order) concerning CTBT verification regime development in the midterm perspective:[707]

- Sustainment of the IMS as a whole;
- Completion of the IMS, with priority given to noble gas technology and the build-up of stations to ensure an equitable global coverage;
- Build-up of the OSI regime to reach same level of operative readiness as the IDC and the IMS by entry into force.

Notwithstanding the fact that sustaining the IMS has been considered the top priority, the EU has presented itself also as a very strong supporter of OSI regime development and financially supported a number of OSI related development projects, which are addressed

pp. 3-4; PC/CTBTO (2008): CTBT/PC-30/BR-1, p.4; PC/CTBTO (2010): CTBT/PC/34/NAT.3, p.3; GRULAC: PC/CTBTO (2003): CTBT/PC-21/VE-1, p. 1; PC/CTBTO (2012): CTBT/PC-39/NAT.5, p. 2; African Group: PC/CTBTO (2011): CTBT/PC-37/NAT.5, pp.2-3.

705 See PC/CTBTO (2003): CTBT/20/GR-1, p. 2; Similar positions were raised in PC/CTBTO (2003): CTBT/PC/21-IT-1, p. 2; PC/CTBTO (2009): CTBT/WGB-32/NAT.3, p. 3; PC/CTBTO (2011): CTBT/PC-36/NAT.2, p. 3.

706 See PC/CTBTO (2012): CTBT/PC-39/NAT.4, pp. 2. Similar statements on this issue were delivered at, *inter alia,* PC/CTBTO (2010): CTBT/PC-35/NAT.2, pp. 1-2; PC/CTBTO (2012): CTBT/PC-38/NAT.4, pp.2-3; PC/CTBTO (2013): CTBT/PC-41/NAT.7, p. 3.

707 See PC/CTBTO (2007): CTBT/WGB-28; PC/CTBTO (2007): WGA-31/DE/1, pp. 3-4. The EU expressed similar positions in PC/CTBTO (2006): CTBT/PC-27/FI.2, p. 2; PC/CTBTO (2007): CTBT/PC-29/PT-1, p. 2; PC/CTBTO (2009): CTBT/PC-33/NAT.3, p. 2.

in further detail in sub-chapter 5.3. Additionally, a number of EU States Signatories also provided in their individual capacities in-kind equipment contributions, as well as expertise for both the preparation and conduct of the 2008 and 2014 Integrated Field Exercises. Similarly, and since the US administration's decision to return to OSI in 2009, it has spearheaded efforts to support OSI regime development, *inter alia*, through sizeable voluntary contributions[708], the equipment loans, as well as significant expertise for the preparations of the 2014 Integrated Field Exercise. However, and apart from the major efforts by the US and EU, one can note, particularly since 2008, an overall heightened political support for the OSI regime by States Signatories, which is further described below.

5.1.2.4 Increased support for OSI since 2008

Notwithstanding the fact that the OSI pillar has been lagging behind, the accomplishments made with respect to the build-up of the OSI regime pillar have to be acknowledged. A first milestone in the OSI regime development was reached with the conduct of the 2008 Integrated Field Exercise. More than 200 persons including, a full Inspection Team of 40 inspectors, participated in IFE08 that was carried out at the former nuclear testing ground Semipalatinsk in Kazakhstan.[709] The exercise, which cost US$6.151 million[710], provided the first opportunity to test major elements of the on-site verification regime in a comprehensive and integrated manner. The then Executive Secretary Tibor Tóth characterized the importance of IFE08 for the OSI regime development as follows:

> *"[T]he conduct of the first ever Integrated Field Exercise (IFE) in 2008 in Kazakhstan was a turning point in our efforts. The exercise helped further augment our knowledge and experience in OSI related techniques and methods by applying the procedures and taking actions required by the Treaty and defined by a provisional draft OSI Operational Manual. It also resulted in a more widespread recognition among States Signatories that there was a need to build on this momentum through allocation of more resources to OSI development."* [711]

Building on the achievements of IFE08, Member States agreed to give high priority to the further development of the OSI component,[712] which is also evidenced through the re-

[708] See PC/CTBTO (2013): Voluntary contribution by the United States.
[709] The official exercise report is documented in PC/CTBTO (2008): CTBT/PTS/INF.1020.
[710] See PC/CTBTO (2008): CTBT/PTS/INF.1020, p. 22, Annex F.
[711] PC/CTBTO (2013): CTBT/PC-40/ES-1, p. 5, paragraph 30.
[712] See PC/CTBTO (2009): CTBT/PC-32/WGB/1, p. 3.

sponses of several interviewees.[713] In this respect, Expert 5 illustrates this notable change based on the heightened level of States Signatories' active participation in OSI related preparatory and development work:

> *" [...] But as we neared 2008 and later, suddenly you saw, at least I see, and I'm backed up by numbers, a bloom in the number of participating countries, up to 30, so more than double, and not just sitting on the bench, but taking part in exercises, training, in seminars, [and] in workshops [...]."*[714]

The increased political support for OSI is also reflected by Member States' joint approval of the OSI Action Plan[715], which presented the strategic road map for further OSI regime development until 2013. As a result of the 2008 Integrated Field Exercise, lessons were integrated in this action plan in a concerted manner from 2009 to 2013 and encompassed the implementation of 38 distinct projects in the fields of (1) policy planning and operations (2) operations support and logistics, (3) OSI techniques and equipment, (4) training and (5) procedures and documentation.

Closely linked with OSI Action Plan implementation was the planning and preparation for the 2014 Integrated Field Exercise, which has the purpose to evaluate the progress made in the development of the OSI regime pillar since 2008. The IFE14 concept[716] envisaged a focused and steady development of critical inspection capabilities and was carried out by conducting three build-up exercises during 2012-2013[717] followed by the IFE14 exercise itself. This exercise represents the biggest ever OSI field activity by the Organization and aims to test core/crucial inspection activities and techniques in an integrated manner over a timeframe of more than a month. The fact that such a major exercise with a budget of US$ 10.3[718] million has been approved by States Signatories in times of financial austerity, can be interpreted as a strong political signal in support of OSI. In line with other States Signatories, the EU emphasized its full support of OSI and the conduct of the 2014 Inte-

[713] See e.g. Expert Interview 6, paragraphs 27, 31, 49; Expert Interview 8, paragraph 28; Expert Interview 9, paragraph 44, Expert Interview 5, paragraphs 50. 51, 53; Expert Interview 11, paragraph 85.
[714] Expert Interview 5, paragraph 51.
[715] PC/CTBTO (2009): CTBT/PTS/INF.1020, and PC/CTBTO (2011): CTBT/PTS/INF.1106.
[716] The concept for the preparation and conduct of the next Integrated Field Exercise is laid out in detail in PC/CTBTO (2011): CTBT/PTS/INF.1105.
[717] Build-Up Exercise I took place in April 2012 and focussed on the launch phase of an OSI. Build-Up Exercise II/IV was carried out in September 2012 and had the objective of exercising the pre- and post-inspection phase of an OSI. Build-Up Exercise III was conducted in May/June 2013 and targeted the inspection phase of an OSI. See PC/CTBTO (2014): CTBT/TR-2.
[718] See PC/CTBTO (2011): CTBT/PC-37/2, p. 5, paragraph 23.

grated Field Exercise on the occasion of the Thirty-Sixth Session of the Preparatory Commission in June 2011:

> "14. *The EU is very pleased that a general agreement has been reached during the Thirty-Sixth Session of WGB on planning an Integrated Field Exercise (IFE) for 2014. The EU will spare no effort in supporting the PTS in the preparation and the implementation of IFE14, including its evaluation which is an integral element of this project.*
>
> 15. *The EU is also convinced that this starting process, based on implementation of the OSI action plan and the "IFE14 concept", when being associated with concrete and ambitious objectives, will permit to increase very significantly the level of readiness of the OSI regime by the year 2014."* [719]

More recently in 2013, States Signatories re-confirmed their unequivocal political support for OSI in the context of their guidance given on the preparation of the 2014 programme and budget preparation. As such, they agreed that *"appropriate balance should be established between all elements of the verification regime, namely IMS, IDC and on-site inspection (OSI), with priority given to further development of the OSI element."*[720]

In conclusion, it is fair to judge that in the last years OSI has garnered very good political support. At the same time, one needs to be cautious and should not automatically equate political support with financial support.[721] Following this assessment of the support and demands component by Member States, it is important to look at the conversion dimension in order to see how political demands and support is converted into decisions pertaining to challenge-type inspections.

5.2 The Conversion Dimension: Decision Making Processes

This sub-chapter focuses on assessing both the institutional and constitutional structure of these two organisations in order to address the following sub-question: "What roles do the organs of the OPCW and CTBTO (incl. Preparatory Commission) have with respect to challenge-type inspections and what do the related decision making processes look like?"

[719] Statement made by Hungary on behalf of the European Union. PC/CTBTO (2011): CTBT/PC-36/NAT.2, p.3, paragraphs 14 and 15.
[720] PC/CTBTO (2013): CTBT/PC-40/2, 2013, p. 5; PC/CTBTO (2013): CTBT/PC-40/WGB/1, p. 3.
[721] See Expert Interview 7, paragraph 34.

5.2.1 Decision Making Processes within the OPCW

Chapter 2 introduced in all briefness the three organs of the OPCW, which are (1) the Conference of the States Parties, (2) the Executive Council, and (3) the Technical Secretariat. The following part builds upon this overview and analyses in more detail the principle roles and decision making procedures of these organs, particularly with respect to challenge inspections.

5.2.1.1 The Conference of the States Parties

As stipulated in Article VIII of the CWC, the Conference of the States Parties is the principal organ of the Organization.[722] It is composed of all members of the Organization on an equal basis. Accordingly, all States Parties have one representative in the Conference, who may be accompanied by alternates and advisors.[723] In accordance with Article VIII, paragraphs 11-12 of the CWC, the Conference meets in regular sessions on an annual basis[724], however may also convene for special sessions, such as 'Review Conferences' to review the operation of the CWC or other special sessions as decided by the Member States.[725] As already analyzed in the previous sub-chapter, the three Review Conferences have addressed the issue of 'consultation, cooperation and fact-finding' in their reports. In addition, the Conference approves the annual reports of the Organisation on the implementation of the CWC.[726] These reports, which are prepared by the Technical Secretariat, also give an account on CI related preparedness measures undertaken in the course of the year, as well as inform whether the Organisation has received a request for clarification or for a challenge inspection in the respective calendar year. An analysis of these annual reports is made in the context of the next sub-chapter that deals with decisions made within respect to CI issues.

[722] See CWC, Article VIII, paragraph 19.
[723] See CWC, Article VIII, paragraph 9.
[724] As of December 2013, the Conference has met for a total of eighteen regular sessions.
[725] As of December 2013, the Conference has met for three special sessions besides the conduct of the three Review Conferences in 2003, 2008 and 2013, respectively: the first special session was convened in 2002 to terminate the appointment of the then Director-General; the second session took place in 2003 and had the purpose of adopting a decision for the implementation of the tenure policy in the OPCW; the third special session was held in 2008 and made a decision pertaining to the amendment of the rules of procedure of the Conference of the States Parties, specifically regarding the election of the Chairman, Vice-chairmen and officers for the Review Conferences in the context of the principle of equitable geographical representation.
[726] A total of 18 reports have been approved as of December 2013.

As its prime task, the Conference oversees the implementation of the Convention and acts in order to promote its purpose and objective.[727] Moreover, the Conference has to review compliance with the Convention provisions and also has the function of guiding the activities of the other organs – the Executive Council and the Technical Secretariat.[728] In this respect, the Ekéus-Panel that was established in 2010 by the Director-General to advise on future priorities of the OPCW emphasizes the following:

> *"The Conference of the States Parties should strengthen its oversight function, and States Parties should collectively use annual sessions of the Conference to review the compliance status of the Convention."* [729]

As regards the latter recommendation it can be noted that Member States review the compliance status of the CWC as a matter of fact in the course of the deliberations of the annual Verification Implementation Report issued by the Organisation.

Article VIII, paragraph 21 of the CWC outlines the specific functions of the Conference of the States Parties. They encompass, *inter alia*, the adoption of reports as well as the regular budget of the Organization, election of the members of the Executive Council, appointment of the Director-General, approval of the rules of procedure of the Executive Council, establishment of subsidiary organs considered necessary, and review of scientific and technological developments. A key task in the context of compliance concerns is reflected under Article VIII, paragraph 21 (k), which obliges the Conference to perform the following function:

> *"[t]ake the necessary measures to ensure compliance with this Convention and to redress and remedy any situation which contravenes the provisions of this Convention, in accordance with Article XII."*[730]

In order to act accordingly, the first Conference of the States Parties adopted its rules of procedure in 1997, which were later amended in 2008.[731] The rules of procedure regulate, *inter alia*, aspects such as representation of the members, participation of Signatory States, Observer States and other observers, election of the chairpersons and vice-chairpersons, functions of the organs, conduct of business at the meetings as well as decision making procedures. With respect to the latter, the rules of procedure stipulate two types of decisions, namely those on matters of substance or on matters of procedure. In this respect, it

[727] See CWC, Article VIII, paragraph 20.
[728] CWC, Article VIII, paragraph 20.
[729] OPCW (2011): S/951/2011, p. 16.
[730] CWC, Article VIII, paragraph 21 (k).
[731] OPCW: C-I/3/Rev.1, 7 April 2008.

is important to point out that all decisions taken in accordance with the CWC are of binding character for its Member States.

Dependent on the specific issue at hand, decisions on aspects related to challenge inspection would most likely fall under matters of substance, which are to be taken, if possible, by consensus or if this is not feasible by a two-thirds majority of the members present and voting.[732] On the other hand, decisions with respect to matters of procedure are taken by a simple majority of the members present and voting.[733]. Thus far, the Conference of the States Parties has in almost all instances been able to take its decisions on a consensual basis.[734] With respect to challenge inspections, the Conference of States Parties has taken two decisions at its First Session. C-I/DEC.44[735] related to notification formats, and the format of an inspection mandate for the conduct of a challenge inspection, whereas C-I/DEC.45[736] refers to an illustrative list of indictors regarding abuse of the right to request a challenge inspection. Since then, no aspect related to challenge inspection has been on the agenda of the Conference at its regular session. However, the Conference regularly makes decisions that have an impact with respect to preparedness for such missions. This is done annually in the context of the adoption of the Organisation's Programme and Budget and further analyzed in sub-chapter 5.3.2. While acknowledging the importance of the Secretariat's preparedness for CIs, also States Parties' readiness for such missions is crucial. The Ekéus-Panel also addressed this aspect by noting the following:

> *"[…] States Parties themselves should further develop and maintain a good understanding of the procedures of challenge inspection. Past experience with national as well as multilateral trial challenge inspections has shown the benefit of such trials for national preparations to receive and effectively conduct a challenge inspection. The OPCW could help States Parties develop and maintain their practical understanding of these requirements by organizing workshops and exercises. States Parties should also attempt to finally settle the remaining unresolved issues related to challenge inspection."*[737]

732 CWC, Article VIII, paragraph 18.
733 CWC, Article VIII, paragraph 18.
734 The most recent example where a decision by the Conference of the States Parties as well as the Executive Council was adopted by voting and not on a consensual basis refers to the decision on the final extended deadline of 29 April 2012 for the destruction of the remain chemical weapons by Libya, the Russian Federation and the United States of America. See OPCW (2011): C-16/DEC.5, p. 5.
735 OPCW (1997): C-I/DEC.44.
736 OPCW (1997): C-I/DEC.45.
737 OPCW (2011): S/951/2011, p. 17.

5.2.1.2 The Executive Council

The Executive Council represents the executive organ of the Organisation.[738] It has limited membership and consists of 41 members composed of five geographical regions: nine States Parties each from Africa and Asia, five States Parties from Eastern Europe, seven States Parties from Latin America and the Caribbean, ten States Parties among Western European and other States and one State Party to be designated consecutively from the Asian and American and Caribbean Group.[739] The selection process pays due regard to equitable geographical distribution, the importance of chemical industry, as well as to political and security interests.[740] Each EC member has one vote and is elected by the CSP for a term of two years. Hence, the above composition strikes a balance between the need for a small and effectively operating body and the wish of Member States to be frequently represented in the Council, as well as taking into account interests of states with significant chemical industry.[741]

As Krutzsch and Trapp point out, *"[p]aragraph 31 [of Article VIII of the CWC] highlights that the most prominent function of the Executive Council is to promote the effective implementation of, and compliance with, the Convention".*[742] The Executive Council is responsible to the Conference of the States Parties, supervises the activities of the Technical Secretariat and, *inter alia*, facilitates consultation and cooperation among Member States at their request.[743] Additionally, and in accordance with Article VIII, paragraph 32 of the CWC, the EC has the task to consider and submit to the CSP both the draft programme and budget of the Organisation as well as draft reports on the implementation of the Convention. With respect to decision-making, the Executive Council takes decisions on matter of substance by a two-third majority of all its members, whereas a simple majority is sufficient on questions of procedure.[744]

Particularly important in the context of the topic of this dissertation, the Executive Council has to perform a crucial role with respect to compliance concerns and cases of non-compliance. In its consideration, it may inform all States Parties of the issue at hand, bring

738 CWC, Article VIII, paragraph 30.
739 See CWC, Article VIII, paragraph 23.
740 See CWC, Article VIII, paragraph 23.
741 See Myjer (2001), p. 94.
742 Krutzsch/Trapp (1999), p. 7.
743 See CWC, Article VIII, paragraph 31.
744 See CWC, Article VIII, paragraph 29.

it to the attention of the Conference of the States Parties, and make recommendations to the Conference to redress the situation and ensure compliance.[745] Moreover, and in cases of particular gravity and urgency, the Council has the power to bring the issue or matter directly to the attention of the UN General Assembly and the UN Security Council.[746] As already highlighted before in this thesis, the Executive Council has a central role in the procedure for clarification under Article IX, paragraphs 3-7. The Ekéus-Panel notes the fact that many of the clarification procedures available under Article IX, paragraphs 3-7 of the Convention have not been made use of by Member States. In particular, it suggests that the Executive Council should take a more active role in this process and recommends that "*[i]t would be desirable for the Executive Council to devote a part of its substantive work to promoting and applying the mechanisms of the Convention to address and resolve concerns about possible non-compliance*"[747]

Additionally, the Executive Council plays a central role during the entire challenge inspection process, namely by first considering the inspection request with respect to being frivolous, abusive or clearly beyond the scope of the CWC, and making a decision regarding the approval of the inspection (see table 34 below).[748]

EC decision making mechanism pertaining to a request for a Challenge Inspection/CWC
• Decision no later than 12 hours after receipt of the request from the requesting State Party • Three quarter majority (i.e. 31 out of 41 votes) required to stop a CI if request considered as frivolous, abusive or clearly beyond the scope as per paragraph 8/Article IX • Neither requesting State Party nor the inspected State Party to participate in the decision

Table 34: Executive Council decision making mechanism for a challenge inspection/CWC
Source: CWC, Article IX, paragraph 17

Myjer points out that the Executive Council can make a (three quarter) majority-decision against carrying out a challenge inspection request under Article IX, paragraph 17 of the Convention and notes the following:

> *"The required greater majority to block a challenge inspection underlines the central importance that is being attached to this element of challenge inspection. This is understandable because the possibility of a challenge inspection was crucial in order to have the Convention agreed upon in the*

[745] See CWC, Article VIII, paragraph 35-36.
[746] See CWC, Article VIII, paragraph 36.
[747] OPCW (2011): S/951/2011, p. 16.
[748] CWC Article IX, paragraph 17.

> *first place. Furthermore it underlines the non-discriminatory nature of this Convention by allowing a single vote at both levels for each State Party represented."* [749]

Moreover, the Executive Council has to review the final report of the inspection team and address any concerns regarding non-compliance, whether the request had been within the scope of the CWC, as well as whether the request was abusive or not.[750] As already indicated under 5.1.2, the Executive Council has never been requested to assist in clarifying an ambiguity nor concern about possible non-compliance under Article IX. Furthermore, no request for a challenge inspection has ever been presented to the Executive Council. In this context it can be noted that the Executive Council only once engaged in a simulation of the decisions making process required by a challenge inspection request in the context of a field exercise carried out in Brazil in 1999. Though the active engagement of the Executive Council in this process is of high benefit both to the Member States as well as the Technical Secretariat as it exercises procedural as well as decision making related aspects, there seem to be some hesitations to do so again in view of the highly charged political context of challenge inspections.

As a result of the first Review Conference and re-iterated by the Second and Third Review Conference, the Technical Secretariat has been requested to keep the Council informed on its readiness to conduct a challenge inspection and report any problems that may arise in relation to maintaining its necessary level of readiness.[751] This task clearly reflects the supervisory function of the Council regarding the Secretariat's activities, and also underlines its central role regarding questions of compliance and non-compliance, and, moreover, in promoting the effective implementation of, and compliance with, the CWC. Accordingly, and as of December 2013, the Secretariat submitted ten *Notes by the Director-General* to the Executive Council about the Organization's readiness to perform a challenge inspection[752], which are further analzyed in the next sub-chapter. The close link between the work of the Executive Council and the Technical Secretariat is also pointed out by Krutzsch and Trapp:

> *"[...] [T]he work of the Executive Council depends on a reliable, professional fact-finding by the Technical Secretariat. Clear understanding and interpretation of the provisions of the verification regime and professional*

[749] Myjer (2001), p. 98.
[750] CWC, Article IX, paragraphs 17 and 22.
[751] OPCW (2003): RC-1/5, p. 23; OPCW (2008): RC-2/4, p. 21; OPCW (2013): RC-3/3*, p. 23.
[752] See OPCW (2013): EC-74/DG-15, p. 1.

and competent inspectors guided by the procedures consistent with the Convention are the preconditions for this."[753]

5.2.1.3 The Technical Secretariat

The Technical Secretariat represents the third organ of the Organisation, being subordinated to the Executive Council and the Conference. As such it assists the two other organs in the performance of their functions and carries out functions delegated to it. Moreover, the Secretariat has the central task *"to carry out the verification measures provided for in this Convention"*[754], which represents the most important purpose of the Organization. The Technical Secretariat is led by a Director-General, who is appointed by the Conference upon recommendation of the Council for a maximum of two terms, each lasting four years.[755] The Director-General as the chief administrative officer and head of the Technical Secretariat is responsible to the Conference and the Council for the appointment of the staff and, *inter alia*, the organization and functioning of the Technical Secretariat.[756] The Technical Secretariat as the implementing body of decisions and guidance received by the Conference and the Council needs to pool the technical competence required to fulfill the verification activities. For doing so, the structure encompasses a standing inspectorate that carries out the on-site verification activities as well as other scientific, technical, legal and administrative experts in support of the tasks mandated by the Convention.

Figure 30: (Simplified) Structure of the Technical Secretariat/OPCW

Source: author

753 Krutzsch/Trapp (1999), p. 10.
754 CWC, Article VIII, paragraph 37.
755 CWC, Article VIII, paragraph 43.
756 CWC, Article VIII, paragraph 44.

Moreover, and among its specific functions, the Secretariat also has the task to prepare and submit to the Council the draft programme and budget and the draft report of the Organization on the implementation of the Convention and provide other administrative and technical reports to the other organs.[757] Furthermore, the Secretariat is the focal point for receiving and analyzing States Parties' declarations, which serve as the basis for subsequent routine inspections. Given its technical competence, it is also entrusted with providing technical assistance and technical evaluation to Member States in the implementation of the provisions of the CWC.[758] In carrying out the verification measures and other functions entrusted to it under the Convention, it is mandated to inform the Council at all times of the following:

> *"[…] [A]ny problem that has arisen with regard to the discharge of its functions, including doubts, ambiguities or uncertainties about compliance with this Convention that have come to its notice in the performance of its verification activities and that it has been unable to resolve or clarify through its consultations with the State Party concerned."* [759]

As is clear from the above, the Technical Secretariat does not make any programme decisions, but rather has the task of executing and implementing decisions made by the Conference of the States Parties and the Executive Council. Hence, decisions made by the Secretariat are limited to decisions in execution of programme decisions taken by Member States or guidance received by the Council. In this context, and with respect to consultations, cooperation and fact-finding, the Technical Secretariat has the task of ensuring the Organisation's preparedness for challenge inspections. This encompasses the readiness and availability of inspectors and headquarters staff, equipment, procedures for launching, carrying out and supporting the conduct of a CI. Additionally, it also requires close interaction with Member States in support of ensuring their readiness to receive an inspection. An analysis of the Organisation's readiness for CIs and specific decisions taken on the issue are provided in sub-chapter 5.3.

5.2.2 Decision Making Procedures within the PrepCom/CTBTO

Upon the analysis of the decision making procedures within the OPCW, the following subchapter gives information on the respective constitutional and institutional structures of

[757] CWC, Article VIII, paragraph 38.
[758] CWC, Article VIII, paragraph 38 (e).
[759] CWC, Article VIII, paragraph 40.

both the CTBTO and the Preparatory Commission. Accordingly, it looks in more detail at the principle roles and decision making procedures of these organs, particularly with respect to on-site inspections.

5.2.2.1 The Preparatory Commission/The Conference of the States Parties

On 19 November 1996 CTBT States Signatories adopted Resolution CTBT/MSS/RES/1, which calls for the establishment of the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization. The Commission, which has the standing of an international organization[760], has two organs: (1) the Preparatory Commission as the plenary body, which is composed of all States Signatories and (2) The Provisional Technical Secretariat. The Preparatory Commission is assisted by three groups: Working Group A, Working Group B and the Advisory Group. The Commission is tasked with carrying out all necessary preparations for the effective implementation of the CTBT and for the first session of the Conference of the States Parties.[761] As part of this task, the Commission is mandated to establish the CTBT's verification regime. In this respect, paragraph 15 of the Resolution outlines the key tasks of the Commission with respect to OSI issues:

> *"(a) Develop and prepare for the approval of the initial session of the Conference of the States Parties:*
> *(i) An operational manual containing all appropriate legal, technical and administrative procedures; and*
> *(ii) A list if equipment for use during on-site inspections:*
> *(b) Develop a programme for the training of inspectors; and*
> *(c) Acquire or otherwise make provision for the availability of relevant inspection equipment, including communications equipment, and conduct technical tests of such equipment as necessary."*[762]

Furthermore, the Appendix of the Resolution provides an indicative list of 19 issues that need to be addressed in order to the compile the OSI Operational Manual.[763] As of December 2013, the Commission has held 42 sessions[764], in which a number of decisions pertaining to on-site inspection issues such as the adoption of equipment specifications for testing and training purposes, the 2010-2013 OSI Action Plan[765] and the concept for the plan-

[760] See PC/CTBTO (1996): CTBT/MSS/RES/1, Annex, paragraph 7.
[761] See PC/CTBTO (1996): CTBT/MSS/RES/1, Annex, paragraph 1.
[762] PC/CTBTO (1996): CTBT/MSS/RES/1, Annex, paragraph 15.
[763] See PC/CTBTO (1996): CTBT/MSS/RES/1, Appendix: Preparatory Commission Text paragraph 15: On-Site Inspection.
[764] The PC held its first session in 1996 and 1997; it conducted three sessions each per year between 1997 and 2002; since 2003 it has held two sessions each year.
[765] PC/CTBTO (2009): CTBT/PTS/INF.1020, PC/CTBTO (2011): CTBT/PTS/INF.1006.

ning and preparation of the 2014 Integrated Field Exercise[766]have been taken. These decisions of the Commission are based on recommendations mostly made by Working Group B as the body assisting the Commission on verification related issues, and are subsequently analyzed in-depth in sub-chapter 5.3. In addition, the Conference shapes the build-up of the verification regime by adopting the Organisation's Programme and Budget. An analysis of the annual programmes and budget with respect to OSIs is also carried out in the following sub-chapter.

The Commission adopted its Rules of Procedures in 1996, which apply *mutatis mutandis* also to WGA and WGB[767], and govern the respective decision making of these policy making organs. As such, they envisage consensus decisions whenever possible. In case this is not possible, decisions on matters of substance shall be taken by a 2/3 majority, whereas decisions on questions of procedure are to be taken by a simple majority.[768]

Upon entry into force of the CTBT, the Conference of the States Parties will replace the Preparatory Commission as representing the highest and principal organ of the Organization. The composition, procedures and decision-making of the Conference of the States Parties, which is outlined in Article II.B of the CTBT, very much resemble those of the Conference of States Parties of the OPCW. As such, the CSP shall make decisions on matters of procedure by a majority of members present and voting, whereas decisions on matters of substance shall be taken, as far as possible by consensus. In case the latter is not possible, it shall take a decision by a two-thirds majority of its members present and voting.[769] In the context of OSIs, the Conference plays a crucial rule with respect to ensuring compliance with the CTBT and redressing and remedying any situation which contravenes the CTBT provisions.[770] As such, it may, in urgent cases, even bring the issue to the attention of the United Nations.[771]

[766] PC/CTBTO (2011): CTBT/PTS/INF.1105.
[767] See Rule 6 of the Rules of Procedure for the Preparatory Commission - PC/CTBTO (1996): CTBT/PC/I/2/Corr. 1.
[768] See Rule 26 of the Rules of Procedure for the Preparatory Commission - PC/CTBTO (1996): CTBT/PC/I/2/Corr. 1.
[769] See CTBT, Article II, paragraph 22.
[770] See CTBT, Article V.
[771] See CTBT, Article V, paragraph 4.

5.2.2.2 Working Groups A and B/The Executive Council

At its first Session the Preparatory Commission decided to establish Working Groups A, B and the Advisory Group to assist the Commission in its work.[772] Whereas Working Group A is charged with administrative and financial issues, Working Group B deals with verification related issues before entry into force of the CTBT. Therefore, particularly Working Group B plays a crucial role with respect to the build-up of the On-Site Inspection verification regime and is therefore the focus of this analysis. Since the establishment of the Preparatory Commission in 1996 up to the end of December 2013, a total of 44 WGA and 41 WGB sessions have taken place.[773] In addition, a total of 21 joint Working Group A and B meetings have taken place since their introduction in 2005.[774] As indicated in the third report of the Preparatory Commission, Working Group B has two main tasks:

- *"To support the Preparatory Commission in directing the yearly activities of the Provisional Technical Secretariat and review its proposed work programme and budget;*
- *To monitor and assess the results of the Provisional Technical Secretariat in relation to the implementation of the verification-related work programme as established by the Preparatory Commission."*[775]

To facilitate its work programme, Working Group B has made use of 'Task Leaders'. These experts from States Signatories take the lead on subject specific assignments pertaining to the build-up of the verification regime. In the fulfilment of their tasks, Task Leaders make use of a variety of means to progress with their work during intersessional periods, ranging from issuing non-papers, initiating discussions on the Organisation's web-based 'Expert Communications Network' or requesting active contributions such as background papers from PTS experts. Moreover, they chair related WGB sessions as well as serving as focal points between States Signatories and the PTS. Since the establishment of the Preparatory Commission, a total of 26 individual and eight joint assignments were given to Task Leaders. Particularly Task Leaders 4 (On-Site Inspection) and 18 (Draft OSI Opera-

[772] Decision to establish WGA and WGB was taken at the fourth plenary meeting of the Preparatory Commission on 3 March 1997. See PC/CTBTO (1997): CTBT/PC/I/9.Rev.2, and PC/CTBTO (1997): CTBT/PC/I/10.Rev.4.

[773] Four WGB sessions took place in 1997, three sessions per year took place between 1998 and 2001 and two sessions take place each year since 2002.

[774] See PC/CTBTO (2005): CTBT/PC-24/3, paragraph 27.

[775] PC/CTBTO (1997): CTBT/PC/III/I/Add.2, p.12.

tional Manual) bear a major responsibility for OSI issues,.[776] In addition, Task Leaders were assigned Task 25 (Common Issues related to the IFE) and Task 26 (Evaluation of the IFE).[777] Moreover, Task Leaders (TL-4, 12, TL-4, 18 and TL-4, 21) have also jointly worked on OSI related assignments such as designated laboratories and standing arrangements.[778] Taking into account the consensual principle applied in WGB, making progress in their respective work assignments has not always been easy for the Task Leaders, particularly in light of the highly political sensitivities surrounding OSIs. This fact is particularly evident in the context of the preparation of the OSI Operations Manual, which has been discussed in Working Group B for more than 17 years.

Upon entry into force of the CTBT, the tasks of WGA and WGB will be taken over by the Executive Council. As for the CWC, the Executive Council also plays a central role under the CTBT with respect to the OSI process.[779] However, in contrast to the EC under the CWC, the EC under the CTBT is made up of six regional groups.[780] Each EC member has one vote and is elected by the CSP for a two year term. While the rotational principle should ensure that also smaller States Parties within the regional group can serve in the Executive Council, election criteria do, however, take into account the interests of larger and powerful states. Accordingly, their permanent representation in the Executive Council is ensured by other specific selection criteria stipulated in the CTBT, such as political and security interests, nuclear capabilities relevant to the CTBT, the number of IMS stations hosted on the territory, expertise and experience in monitoring technology and contribution to the annual budget of the organization.[781]

Looking at its tasks with respect to OSI issues, the EC plays an important role in facilitating consultation and clarification among States Parties as per Article IV of the CTBT. Addition-

[776] As of 31 December 2013, 86 documents have been prepared by Task Leader 4 on OSI issues and 72 documents have been issued by Task Leader 18 pertaining to the OSI Operations Manual.

[777] As of 31 December 2013, 1 paper has been prepared by Task Leader 26 on Evaluation of IFE, none by Task Leader 25.

[778] As of 31 December 2013, 1 joint TL- 4/12 paper has been issued on OSI and Designated IMS Radionuclide Laboratories, 2 joint TL-4/18 papers on OSI Standing Arrangements and 1 joint TL-4/21 paper pertaining to a possible addition to the mandate of the Radionuclide Expert Group.

[779] At the same time, the CTBT encompasses also a consultation and clarification mechanism, which is however considered a separate verification regime element and is not further addressed here. States Signatories have had consultations on this issue and draft Guidelines and Procedures for Consultation and Clarification as contained in PC/CTBTO (2003): CTBT/WGB/TL-16/3/Rev.7 have been prepared.

[780] 1. North America and Western Europe (NAWE): 10 seats; 2. Eastern European Group (EEG): 7 seats; 3. Latin America and the Caribbean: 9 seats; 4. Africa: 10 seats; 5. South East Asia, the Pacific and Far East: 8 seats; 6. Middle East and South Asia: 7 seats.

[781] See CTBT, Article II, paragraph 29.

ally, the EC is mandated to consider and make a decision on a request for an OSI, which is reflected in the table below:

EC decision making mechanism pertaining to a request for an On-Site Inspection/CTBT
• Decision no later than 96 hours after receipt of the request from the requesting State Party • At least 30 out of 51 affirmative votes required from EC members to proceed with OSI • Neither requesting State Party nor the inspected State Party to participate in the decision • The State Party sought to be inspected has 72 hours to provide clarification, which the EC takes into consideration when taking a decision

Table 35: Executive Council decision making mechanism for an OSI/CTBT
Source: CTBT, Art. IV, paragraph 46

Furthermore, it has the sole authority to approve the continuation and extension of the inspection, as well as to approve the inspection team's request for drilling. Finally and upon the conclusion of the OSI, the EC is charged with making a political judgment on the inspection findings and has to address any concerns as to whether any non-compliance has occurred and whether the right to request such an inspection has been abused.[782] In addition, the Executive Council is also charged, *inter alia*, with promoting the effective implementation of, and compliance with the Treaty, as well as supervising the activities of the Technical Secretariat.[783]

Furthermore and in accordance with Article II, paragraph 38 (e), the EC also needs to consider and submit to the CSP the draft programme and budget of the Organization as well as reports by the organization on the implementation of the treaty. As such, it also considerably shapes the OSI verification regime pillar. With respect to decision-making, the Executive Council takes decisions on matters of substance by a two-third majority of all its members, whereas a simple majority is sufficient on matters of procedure.[784]

5.2.2.3 The (Provisional) Technical Secretariat

The PTS represents the second main organ of the Preparatory Commission. It is led by an Executive Secretary, who is appointed by the Commission for a maximum of two terms, each lasting four years. As the main technical body of the Organization, it is tasked with setting up the CTBT's verification regime based on guidance received by the Commission.

[782] CTBT Article IV, paragraph 65.
[783] CTBT, Article II, paragraph 38 (a) and (b).
[784] CTBT, Article II, paragraph 36.

Since its start of operations in 1997, the size of the PTS has almost tripled from 95[785] (51 P staff and 44 G-staff) to 261[786] (172 P staff and 89 G-staff) (as of 31 December 2013) in support of carrying out this task. The Provisional Technical Secretariat operates from the following structure in order to establish an operational verification regime by the time the Treaty enters into force.

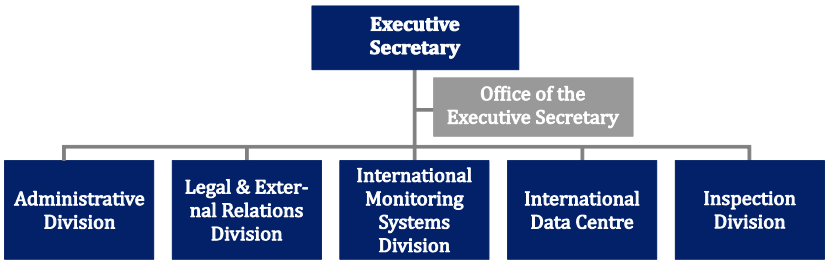


Figure 31: Structure of the PTS

Source: PC/CTBTO (2014): CTBT/PTS/INF.1275

The On-Site Inspections Division represents the key unit within the PTS charged with establishing the OSI verification regime pillar by the time the Treaty enters into force. Key tasks include the development of the various inspection activities and techniques, definition of equipment specifications, putting in place the requisite infrastructure, support of the Commission in the preparation of the OSI Operational Manual, and the establishment of a programme for the training of inspectors. The PTS has used various means in working towards this goal. These included conducting expert meetings, equipment tests, OSI workshops, different types of training courses, table-top exercises, Directed Exercises, build-up exercises and also Integrated Field Exercises. In order to track progress made with respect to the completion of the non-technical and technical tasks set out in the 1996 Resolution CTBT/MSS/RES/1, the PTS has put in place an online tool called 'ISHTAR' (Information System with Hyperlinks on Tasks Assigned by the Resolution Establishing the Preparatory Commission). This tool, which is available to delegations, gives information on the implementation status of respective Resolution tasks, makes reference to decisions and issued documents and provides clarity on the designated lead units within the PTS for these tasks. A detailed analysis of the decisions made by Member States with respect to OSI issues and the implementation of these decisions by the PTS is performed in the next subchapter.

[785] PC/CTBTO (2013): Looking back over 15 years, p. 126.
[786] PC/CTBTO (2014): CTBT/PTS/INF.1275, p. 1.

Figure 32: Online tool ISHTAR

Source: Provisional Technical Secretariat/PrepCom/CTBTO

Upon entry into force of the Treaty, the Provisional Technical Secretariat will become the Technical Secretariat. Its mandate is to assist the Conference and the Executive Council in the performance of their functions, and to carry out the verification and other functions entrusted to it by the Treaty as well as those delegated to it by the other two organs.[787] The Secretariat has a number of functions with respect to compliance verification as per Article IV and the Protocol of the Treaty. With respect to OSI issues, it has the following key tasks:

> *(e) Assisting the Executive Council in facilitating consultation and clarification among States Parties;*
> *(f) Receiving requests for on-site inspections and processing them, facilitating Executive Council consideration of such requests, carrying out preparations for, and providing technical support during, the conduct of on-site inspections and reporting to the Executive Council;*
> *(g) Negotiating agreements or arrangements with States Parties, other States and international organizations and concluding subject to prior approval by the Executive Council, any such agreements or arrangements relating to verification activities with States Parties or States; and*
> *(h) Assisting the States Parties through their National Authorities on other issues of verification under this Treaty.[788]*

Moreover, the Technical Secretariat also has a number of administrative related responsibilities, which include, *inter alia*, preparing and submitting the draft programme and budget of the Organization to the Executive Council as well as the draft report on the im-

[787] CTBT, Article II, paragraph 42.
[788] CTBT, Article II, paragraph 43 (e)-(h).

plementation of the Treaty.[789] Additionally, and in the execution of its functions, the Technical Secretariat is mandated to do the following:

> *"[…] Promptly inform the Executive Council of any problems that have arisen with regard to the discharge of its functions that have come it its notice in the performance of its activities and that it has been unable to resolve through consultations with the State Party concerned."* [790]

Like in the OPCW, the Technical Secretariat is led by a Director-General, who is appointed by the Conference upon recommendation of the Council for a maximum of two terms, each lasting four years.[791] The Director-General as the chief administrative officer and head of the Technical Secretariat is responsible to the Conference and the Council for the appointment of the staff and, *inter alia*, the organization and functioning of the Technical Secretariat.[792]

Essentially in the same vein as the Technical Secretariat of the OPCW, the (Provisional) Technical Secretariat does not take any strategic decisions, but rather has the task of executing decisions made by the other organs or the Organization. As such, the Provisional Technical Secretariat is charged with the build-up of the OSI verification regime pillar by the time the Treaty enters into force, based on the guidance received by the Commission and its assisting organs. Upon entry into force, the Secretariat is mandated to ensure the Organization's readiness for OSIs.

5.3 The Output Dimension: Decisions made regarding Challenge-Type Inspections

Following the examination of the conversion dimension, the following research step addresses the output dimension. As such, activities undertaken by the Organization as a result of decisions made are analyzed in order to address the following sub-question: "What decisions have been taken by the Organizations with respect to challenge-type inspections and how do they impinge on their role and importance?" In view of the fact that the decisions taken and activities undertaken mostly relate to the implementation of norms and rules pertaining to challenge-type inspections, they can be considered as operational activities. In order to allow a comparative analysis of the activities undertaken in both the

[789] CTBT, Article II, paragraphs 45 (a) and (b).
[790] CTBT, Article II, paragraph 48.
[791] CTBT, Article II, paragraph 49.
[792] CTBT, Article II, paragraph 50.

OPCW and PrepCom/CTBTO with respect to challenge-type inspections, the following six key aspects are examined:

1. Organizational responsibilities and implementation aspects;
2. Personnel and training issues;
3. Inspection equipment issues;
4. Supporting infrastructure issues;
5. Procedures;
6. National preparedness, implementation and support issues;

5.3.1 Decisions made regarding CWC Challenge Inspection

5.3.1.1 Organizational responsibilities and implementation aspects

Challenge-inspections are missions of strategic importance and require a Secretariat-wide approach both from a preparedness and implementation perspective. Many units within the Secretariat are engaged, directly or indirectly in facilitating the planning, preparation, conduct or follow-up of inspections. At the same time and notwithstanding the various support roles that many units in the Organisation have with respect to verification activities, the Inspectorate and Verification Division share the key responsibilities for challenge inspections. As of entry into force of the CWC, these two Divisions have the following structures:

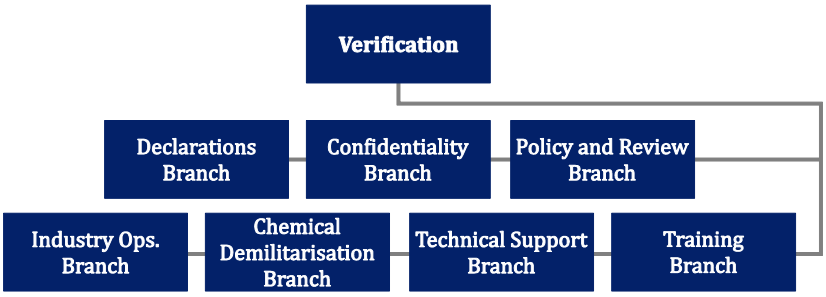


Figure 33: Verification Division Structure/TS/OPCW as of 1997

Source: OPCW (1997): C-I/DEC.74, Annex, p. 3*

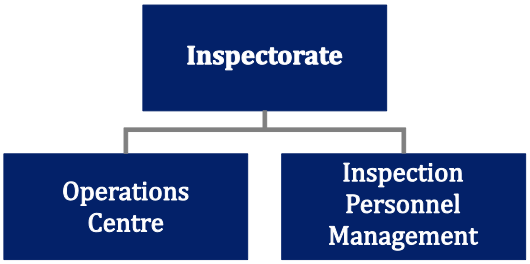


Figure 34: Inspectorate Structure/TS/OPCW as of 1997

Source: OPCW (1997): C-I/DEC.74, Annex, p. 3*

As indicated above, the technical verification related expertise at the Headquarters level has been concentrated within the Verification Division and as part of it, many verification related process responsibilities rest with this Division. Accordingly, the Verification Division has been charged with, *inter alia*, the following tasks: [793]

- managing declarations and inspection-related documentation;
- planning, technical supervision and assessment of on-site verification activities;
- coordinating non-routine missions such as CIs and IAUs;
- formulating policy advice on verification related issues;
- reporting verification results to the Director-General and to the PMOs;
- establishing and overseeing a quality assurance and control regime;
- contributing to the establishment of a quality regime for the verification process;

In contrast to that, the personnel resources to conduct the inspections including their management have been placed under the responsibility of the Inspectorate alongside operational coordination duties of the inspections, including running the Operations Centre. As such, the duties of the Inspectorate include: [794]

- conducting the various types of inspection missions on a world-wide basis;
- undertaking short-term inspection mission planning and medium/long-term assessment of resource requirements;
- serving as the organization wide focal point of inspection activities;
- operating the Operations Centre 24/7;
- maintaining operational command and control of, and communications with, the inspection teams in the field;
- managing all support actions for inspectors and inspection assistants;
- managing the overall review and assessment of inspection activities.

This principle distribution of responsibilities between the Verification Division and the Inspectorate, which was established at entry into force, has, to a large extent, remained in force. At the same time some organizational changes within the Secretariat did, however take place, which also led to the re-assignment of certain responsibilities not only between

[793] See OPCW (1999): C-IV/DEC.23, p. 32.
[794] See OPCW (1999): C-IV/DEC.23, p. 41.

these two Divisions but across the entire Secretariat and in turn also had an impact on challenge inspection related responsibilities and tasks:

- Establishment of an 'Inspection Review Branch' under the Inspectorate between 1999 and 2008 with a view to assisting in the establishment of a Quality Assurance regime in the Inspectorate and thus enhancing the efficiency and effectiveness of inspections; respective responsibilities particularly relate to overseeing the development of operational procedures, including on CIs and analysing lessons from inspections conducted;[795]
- Abolition of the 'Confidentiality Branch' within the Verification Division and shifting related responsibilities to a newly established 'Office of Confidentiality' directly under the Director-General as of 2000 with a view to strengthening the Executive Management function;[796]
- Transfer of the Training Branch within the Verification Division to the Administration Division and renaming it 'Training and Staff Development Branch' in charge of inspector training and training for other Secretariat staff during 1997.[797] Subsequently, the planning and implementation of inspection and verification related training activities was gradually transferred by mid-2000 to the 'Inspectorate Management Branch' within the Inspectorate Division. This gradual allocation of training related responsibilities for inspectors under the Inspectorate, particularly with respect to the introductory training courses, had the advantage that the Inspectorate was provided with the means and resources to implement the lessons identified from missions and organize the training for its inspectors;
- Integration of the Equipment Store (formerly part of the 'Technical Support Branch' within the Verification Division) and related responsibilities under the 'Operations and Planning Branch' within the Inspectorate in 2008: this decision was made to merge all related functional responsibilities with respect to inspection equipment issues in one entity (i.e. from the planning of related requirements through storage, maintenance and issuance of equipment for inspections);[798]

[795] OPCW (1998): C-III/DEC.16, pp. 101-102.
[796] See OPCW (1999): C-IV/DEC.23, pp.12, 69. As of 2001, organization wide responsibilities with respect to confidentiality and security were merged in one office ('Office for Confidentiality and Security'). See OPCW (2000): C-V/DEC.18, p. 16
[797] OPCW (1997): C-II/2/Rev.2, p. 14.
[798] OPCW (2008): C-13/DEC.5, p. 29.

- Merger of the Policy Review Branch/Verification Division and the Office for Special Projects in the new Office of Strategy and Policy as of 2013. Thereby strategic planning, integrated policy advice and robust implementation of policies across all programmes should be strengthened within the Secretariat. Former responsibilities of the Policy Review Branch (e.g. CI exercise planning and assessment of results, development of CI related procedures) have, however, remained within the work programme of the Verification Division. [799]

As of 31 December 2013, the Verification and Inspectorate Divisions have the structures shown below. Evidently, the core responsibilities have remained the same, however some fine-tuning of the divisional structures has taken place over time with a view to harmonize related responsibilities:

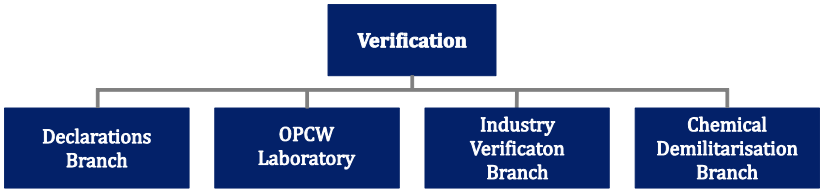


Figure 35: Verification Division Structure/TS/OPCW as of 2014

Source: OPCW (2013): C-18/DEC.6, Annex, Appendix 3, p. 110

Figure 36: Inspectorate Structure/TS/OPCW as of 2014

Source: OPCW (2013): C-18/DEC.6, Annex, Appendix 3, p. 110

Notwithstanding the lead roles of these two Divisions in the planning, preparation, conduct and follow-up of challenge inspections within the Secretariat, TS internal procedures envisage the creation of a temporary and Secretariat wide support structure ('Mission Support Group'), which is activated upon receipt of a CI request by the Director-General. This group, which is headed by the Director of Verification and composed of senior staff and experts of various Divisions, serves as the entity charged with the planning and coordination of all activities at the Secretariat upon receipt of a CI request. The Mission Sup-

[799] OPCW (2012): C-17/DEC.4, p. 74,

port Group remains on duty throughout the entire planning and inspection phases of the challenge inspection, and has the power to call upon additional staff, as and when necessary. Furthermore, it serves as the liaison between the inspection team and all HQ units. Accordingly, all communications to and from the team go through this body, which provides guidance to the team in the field and, in turn, relays information concerning its progress to the Director-General. This concept was tested during several challenge inspection related exercises (e.g. 2006, 2007, 2009 and 2011) and as a result of lessons identified from these activities, a major re-design of the Mission Support Group concept was initiated in early 2012.[800]

Since entry into force of the CWC, a great deal of progress has been made with respect to establishing respective organizational capabilities to conduct challenge inspections. As such, the first years of the Organization were devoted to setting up a well-trained inspectorate, purchasing approved equipment, establishing procedures to plan and conduct inspections, and putting in place technical support infrastructure including a network of designated laboratories for off-site chemical analysis.[801] At the First Review Conference Member States positively noted these preparations undertaken by the Secretariat for a challenge inspection and "*requested the Secretariat to continue maintaining a high standard of readiness to conduct a challenge inspection in accordance with the provisions of the Convention, to keep the Council informed about its readiness, and to report any problems that may arise in relation to maintaining the necessary level of readiness to conduct a challenge inspection*".[802] Since then both the Second and Third Review Conferences stressed the importance of the Organization's preparedness for such missions. Accordingly, the Second Review Conference in 2008 requested the Secretariat "*to continue to maintain a high standard of readiness to conduct a challenge inspection and […] to maintain competence in the light of scientific and technological developments*"[803], whereas in 2013 the Third Review Conference even requested the Secretariat *"to continue to improve the standard of readiness to conduct a challenge inspection […]"*.[804]

800 OPCW (2012): EC-70/DG.12 p. 2.
801 OPCW (2003): RC-1/5, p. 8.
802 OPCW (2003): RC-1/5, p. 23.
803 OPCW (2008): RC-2/4, p. 21.
804 OPCW (2013): RC-3/3*, p.22.

In line with this policy guidance, the Secretariat has established and maintained readiness for such non-routine missions. The annual programmes and budgets give information on the indicators established by the Organization in support of measuring preparedness and readiness for challenge inspections. As such, one can identify three distinct reporting approaches since entry into force of the CWC, which reflect the way the formulation of the programmes and budget documents have evolved over time and correlate with the gradual introduction of a results based budgeting approach since 2005. This in turn has led to more concise targets and measureable performance indicators with respect to challenge inspections.

In the period from entry into force to 2004, no measurable indicators regarding CI readiness were defined and focus was put on detailed descriptions of organizational responsibilities and objectives to be reached. Challenge inspection related aspects were addressed briefly and in a general manner in the context of inspection and verification related tasks and outputs, but no specific indicators regarding readiness and allocated resources for these non-routine missions were provided.

As a result of a recommendation of the First Review Conference[805], a results-based budgeting approach was introduced in 2005. As part of this effort, seven core objectives were defined, which still remain valid today.[806] While the achievement indicators of the two relevant core objectives 1 and 2 of the OPCW remain silent regarding challenge inspections in the 2005 to 2011 Programmes and Budgets, CI readiness aspects were addressed as one of the programme objectives at the programme level (Programme 2: Inspectorate'). The factor of training was gradually introduced as an indicator for achieving and maintaining the capability and readiness to support each of the OPCW programme objectives for inspections. As such, between 2007 and 2011 the Inspectorate had the annual goals to

[805] OPCW (2004): C-9/DEC.14, p. 9.

[806] OPCW (2004): C-9/DEC.14, pp. 12.13. The 'elimination of chemical weapons stockpiles and chemical weapons production facilities' as well as 'non-proliferation of chemical weapons' represent the two verification related core objectives of the Organization and as such fall under the joint responsibility of the Verification Division and Inspectorate. Originally the seven core objectives were further differentiated as four core objectives, two supporting objectives and one operational objective, which was however discarded as of the 2010 Programme and Budget.

conduct more than 5,000 inspector days of technical training for inspectors[807], which also covered CI related trainings.

In 2010, the Organization decided to go beyond results based budgeting and introduced results based management in the Organization. This has led to changed programmes and budgets as of 2012 and readiness for challenge inspections has since then been defined in qualitative and quantitative terms. Challenge inspections are considered programme objectives in both the Verification Division and the Inspectorate programmes and full preparedness (i.e. 100%) for these missions is assumed.[808] Moreover, and in contrast to earlier programmes, baselines and targets were introduced and aligned with the Medium Term Plan for better performance measurement.[809] Full preparedness is defined by key performance indicator for the related Verification Programme Objective as the *"ability to the OPCW to conduct a CI or IAU as and when requested"* and further specified as follows:

> *"The Secretariat is able at any point in time, and within 24 hours of receiving a request under Article IX or X of the Convention, to send a qualified inspection/investigations team of 30 to 50 team members, with appropriate and fully functioning equipment, to conduct a CI or IAU anywhere in the world."*[810]

The above KPI is noteworthy for a number of reasons. First, it defines a deployment timeline for CIs, which is not stipulated in the CWC. However, this can be attributed to some extent to the fact that the same KPI applies to both CIs and IAUs and the Secretariat decided in 2010 to utilize a single, unified headquarters approach to respond to both requests for CIs and IAUs.[811] Second, the KPI gives an approximation of the size of the inspection team. The variations in team size can be explained by the specific sites to be inspected, which may vary considerably. Particularly the perimeter-sub team can make up a large portion of the entire team size and may vary in size considerably, based on the perimeter to be secured by the inspection team. Nevertheless, readiness to deploy a team of at least 30 qualified inspectors at any point and to any place in the world must be considered a

807 See OPCW (2006): C-11/DEC.11, p. 36; OPCW (2007): C-12/DEC.4, p. 33; OPCW (2008): C-13/DEC.5, p. 30; OPCW (2009): C-14/DEC. 8, p. 32; OPCW (2010): C-15/DEC. 6, 2010, p. 32.

808 See OPCW (2011): C-16/DEC.12, pp. 23-40; OPCW (2012): C-17/DEC.4, pp. 30-39; OPCW (2013): C-18/DEC.6, pp. 32-41.

809 See OPCW (2011): C-16/DEC.12, pp. 8-9-

810 OPCW (2011): C-16/DEC.12, p. 24.

811 In the case of an investigation of alleged use scenario, the Director-General needs to inform the Executive Council and Member States about the reasons for the delay in case the inspection team has not been dispatched within 24 hours upon receipt of the request for assistance. See CWC, Verification Annex Part XI, paragraph 12.

major challenge. Third, deployment of such a large team within 24 hours requires the readiness of equipment, which can only be achieved through specific preparedness measures, including, *inter alia*, setting aside a separate set of equipment for such a mission and making standing arrangements with respect to air-transport providers.

The Inspections Programme related KPI is less precise compared with the Verifications Programme and omits absolute figures with respect to the deployment timeline as well as the inspection team size. It however stipulates conducting a biennial IAU and challenge inspection exercise to evaluate the core team and to support staff proficiency as part of the outputs/activities for the challenge inspection related programme objective 3.[812] This decision should lead to a more balanced and systematic approach towards conducting CI and IAU exercises regularly, as they were previously conducted at irregular intervals. Moreover, the fact that both types of missions are now handled in the same standardized manner from a headquarters' perspective, should also facilitate the Secretariat's preparedness measures.

In early 2014, the Technical Secretariat released its Medium-Term Plan for the period 2015 to 2019, which makes reference to four equally feasible scenarios that the Organisation could face in light of the changing environment and the lack of a clear vision regarding the end state of the OPCW's evolution.[813] As such, verification requirements and capabilities will vary under the four scenarios. However, the Medium-Term Plan nevertheless acknowledges the following with respect to challenge inspections related preparedness:

> *"As part of its core capabilities and capacities, the Secretariat is expected to maintain its preparedness to promptly respond to a request for an IAU or CI as provided for in Articles IX and X of the Convention. To this end, the Secretariat will ensure that a core group of staff are available to perform a CI […]. Based on lessons learned (e.g. from events in 2013 and previous exercises), the Secretariat will augment its capabilities under Articles IX and X."*[814]

As evident from the assessment of the programme and budgets, preparedness for challenge inspections has been and will remain one of the key priorities of the Organization. In order to ensure readiness for such missions, actions need to cover a wide range of prepar-

[812] See OPCW (2011): C-16/DEC.12, p. 35; OPCW (2012): C-17/DEC.4, p. 39; OPCW (2013): C-18/DEC.6, p. 42.
[813] The following four scenarios, which differ according to the level of conflict and/or chemical weapons use and the resources available are laid out in the medium term plan: 'Civilian Uses', 'Resurgance', 'Complacency', and 'Mission Improbable'. See OPCW (2014): EC-77/S/1, C-19/S/1, pp. 6-7.
[814] OPCW (2014): EC-77/S-1, C-19/S/1, p. 10.

edness aspects pertaining to personnel and training, equipment and infrastructure, procedural matters and also national preparedness and implementation issues, which are further addressed below.

5.3.1.2 Personnel and Training Issues

Qualified and trained inspection team personnel is crucial for the conduct of an effective inspection. Given the regular conduct of CW and industry related inspections under the CWC, the Secretariat can make use of a standing inspectorate within the Organization for the conduct of challenge inspections. Since entry into force, the Secretariat has hired 396 inspectors, which were trained in fourteen training groups:

Training Group	Year	Number of inspectors	Training duration	Source
A	1997	111 experts[815]	20 weeks	OPCW (1997):C-II/2/Rev. 2, p. 14; OPCW (2003): RC-1/S/1, p. 7
B	1998	80 experts[816]	21 weeks	OPCW (1999): C-IV/5, p. 42
C	2004	20 experts	7 weeks	OPCW (2004): S/434/2004, p. 3
D	2004	9 experts	7 weeks	OPCW (2005): EC-41/DG.10, p. 2.
E	2005	17 experts	9 weeks	TS/OPCW (IMB Training Cell)
F	2006	15 experts	8 weeks	OPCW (2007): C-12/6, p. 21
G	2007	22 experts	11 weeks	TS/OPCW (IMB Training Cell)
H	2008	33 experts	12 weeks	OPCW (2009): C-14/4, p. 12
H+	2008	5 experts	12 weeks	OPCW (2009): C-14/4, p. 12
I	2009	16 experts	13 weeks	OPCW (2019): C-15/4, p. 13
J	2009	13 experts	13 weeks	OPCW (2010): C-15/4, p. 13
K	2010	31 experts[817]	17 weeks	OPCW (2011): C-16/4, p. 11
L	2011	8 experts[818]	15 weeks	OPCW (2012): C-17/4, p. 13
M	2013	16 experts	11 weeks	OPCW (1997):C-II/2/Rev. 2, p. 14; OPCW (2003): RC-1/S/1, p. 7

Table 36: OPCW Training Group of Inspectors
Sources: TS/OPCW

[815] 135 experts successfully concluded the training programme: 111 came from States Parties that have ratified and received contracts and 24 from non-ratifying states. Some of latter group of experts joined the Organisation once their states had ratified the Treaty. By the end of 1998, a total of 205 inspectors (incl. 80 inspectors from Training Group B were on staff of the Secretariat.
[816] Out of the 82 experts that conducted the training 80 were recruited.
[817] 32 inspectors of Training Group L joined the Organisation, 31 of them successfully concluding the training. One inspector was scheduled to conclude the initial training in 2011 together with Training Group L.
[818] Nine inspectors underwent the training, one expert left the Secretariat before successfully concluding all the training segments,

Inspectors that have successfully concluded their introductory training, are also designated for challenge inspections in accordance with paragraph 1, Part X of the Verification Annex to the CWC. In the early days of the Secretariat, all inspectors received the same amount and type of training on CI related issues. Moreover, all inspectors received general inspector refresher training and training in specialized inspection skills. However in 2005, the Secretariat refined its CI related training approach for inspectors with a view to creating a core group of inspectors that receive specific CI training.[819] The purpose of this approach is to train in greater depth an adequate number of team leaders and inspectors with various specializations in different skills that are required during a CI and to ensure that the most highly qualified experts will be selected in case of need.[820]

The specific training for the CI core group of inspectors therefore focuses on aspects such as negotiation skills, report writing, methodology and policy associated with CIs, command and control of a large inspection team and perimeter issues. This training has mostly been limited to periods immediately preceding the conduct of a CI exercise. Moreover, the overall training concept has changed over the years and aspects previously not covered are now included in the training plans, such as live agent training and handling of dangerous goods. Subsequently, inspectors also undergo training in non-destructive evaluation, sampling and analysis and other related topics. Overall, almost 5,000 inspector days per year are spent on the basic training programme for inspectors, which prepares inspectors for the conduct of both routine and non-routine inspections.[821]

While the CI core team concept has definitely helped improve the Secretariat's preparedness measures, the applied implementation practice also had some adverse effects. Originally the CI core group was comprised mostly of experts that had served long in the Secretariat, were at the end of their contracts and were complemented by only a limited number of newly recruited inspectors. Hence, at some stage this situation led to a gap in the number of experienced inspectors as part of the CI core group, which is also reflected in a Note by the Director-General on the Secretariat's readiness to conduct a CI:

> *"The turnover of inspectors due to the implementation of the tenure policy requires that considerable attention be paid to ensuring that, during inspections, the team consists of a mix of both "old" and "new" inspectors,*

819 OPCW (2006): EC-46/DG.6, p. 2.
820 OPCW (2010): EC-62/DG.8, p. 2.
821 OPCW (2011): EC-66/DG.10, p. 2.

> *thus facilitating knowledge transfer and the maintenance of crucial expertise."*[822]

Besides full time inspectors, also a number of headquarters staff, mostly from the Verification Division, are designated as inspectors and augment the pool of experts that can be deployed to challenge inspections. However, some States Parties have declared their non-acceptance of all headquarter inspectors, which could negatively affect the Secretariat's ability to dispatch a CI team with the requisite expertise.[823]In order to ensure a sufficiently large pool of inspectors designated for CI at any time, the Secretariat would take a number of contingency measures such as delaying missions or trainings, as well as re-assigning inspectors from other missions or recalling them from short-term assignments.[824]

Since entry into force, Technical Secretariat staff has participated in a total of 28 exercises, which were either carried out by the TS or TS participants were invited to join for training purposes.[825] While most of these exercises focused on inspection related issues, the aspect of headquarters involvement (i.e. exercising the launch and support of the inspection) has received more attention in the more recent past. However, Executive Council related aspects were only exercised once, during the Brazil challenge inspection exercise in 1999. Since entry into force, exercises with more diverse objectives and testing both headquarters and field aspects have been gradually introduced. In this respect, WEOG Member States have been the key supporters in hosting such exercises. Notwithstanding the considerable efforts made by the Secretariat to be ready for a CI, a number of issues require further attention. The lessons of the external evaluation team from the most recent CI exercise in 2011 in Thailand highlight, *inter alia*, the following training and personnel related issues:[826]

- The Secretariat possesses strong skills in sampling and analysis and showed high level performance in activities that are regularly performed during routine inspections;

[822] OPCW (2008): EC-54/DG.9, p. 2.
[823] OPCW (2007): EC-49/DG.11, p. 2.
[824] OPCW (2004): EC-36/DG.5/Rev.1, p. 2.
[825] See OPCW (2003): RC-1/S/1, pp. 26-27; OPCW (2003): RC-1/S/1, Add.1, p. 1; OPCW (2008): RC-2/S/1*, p. 64; OPCW (2013): RC-3/S/1, p. 62.
[826] OPCW (2011): S/973/2011, pp. 4-5.

- Intrusiveness and an inquisitive mind-set are necessary skills to be applied during CIs; given the fact that these aspects are not so rigorously exercised during routine inspections, further focus needs to be paid to these aspects in the future;
- The size of inspection teams during routine inspections is normally fairly limited and consist of two to five inspectors; however non-routine inspections may require team-sizes of 40 to 50 inspectors, which require specific leadership skills; hence selection of experts with such capabilities is crucial for leadership functions within the inspection team;
- Effective decision-making and command and control processes are vital both at the field and headquarters level; requirements during a CI differ from routine inspections and need to be improved;
- CI exercises need to be carried out more frequently than in the past, including possibly on a smaller scale to concentrate on specific aspects of a CI; in this respect, the Secretariat has already reacted on this issue and the biennial conduct of CI exercises is envisaged;
- Staff turnover as a result of the tenure policy has had an adverse impact especially on key leadership positions;

When looking at the locations where CI exercises have thus far taken place, one can note an imbalance with respect to the geographical regions, where these exercises were conducted. Mostly WEOG states, and here most notably the UK as a staunch supporter of CIs have been willing to support the Secretariat in this activity. The Secretariat aims to address this shortcoming by carrying out exercises on a wide geographical basis and test both operations at the field as well as headquarters level, including the role of the Executive Council.[827] The table below gives an account of the challenge inspection exercises carried out thus far:

Location	Type of Exercise	Date
RAF Valley/UK	Mock challenge inspection	1998
Royal School of Artillery – Larkhill/UK	Mock challenge inspection	1999
OPCW Headquarters	Call out exercise	1999
Wassenaar/The Netherlands	Mock challenge inspection	1999

[827] OPCW (2012): EC-70/DG.12, p. 4.

Location	Type of Exercise	Date
São Paulo/Brazil	Mock challenge inspection	1999
Culdrose Royal Navy Air Base/UK	Mock challenge inspection	2000
RAF Stafford/UK	Mock challenge inspection	2001
Washington/US	Table-top exercise	2001
Naval Weapons Centre Maryland/US	Table-top exercise	2001
OPCW Headquarters	Call out exercise	2001
Marchwood Military Storage Depot/UK	Mock challenge inspection	2002
Coevorden/The Netherlands	Joint NL-UK mock CI	2002
OPCW Headquarters	Table-top exercise	2003
UK	Field exercise (small scale)	2004
Switzerland	Field Exercise	2004
OPCW Headquarters	Table-Top Exercise	2005
UK	Field exercise (small scale)	2005
Germany	Field Exercise	2006
UK	Field exercise (small scale)	2006
The Netherlands	Table Top Exercise and Field exercise	2007
OPCW Headquarters	Exercise in procedures and Logistics	2007
The Netherlands	Field Exercise	2007
UK	Small scale national field exercise	2008
US	Small scale national field exercise	2009
OPCW Headquarters	Headquarters Exercise	2009
Thailand	Headquarters and Field Exercise	2011
OPCW Headquarters	Headquarters C3I Exercise	2012
UK	HQ & Field CI Exercise “Macavity”	2012

Table 37: Challenge Inspection Exercises Conducted 1997-2012
Sources: OPCW (2003): RC-1/S/1, 2003, pp. 26-27; OPCW (2003): RC-1/S/1, Add.1, p. 1; OPCW (2008): RC-2/S/1, p. 64; OPCW (2013): RC-3/S/1, p. 62

Overall, one can say that considerable efforts have been made by the Secretariat to have a sufficiently large pool of trained inspectors available to conduct a challenge inspection. In addition to the preparedness of personnel, the availability of adequate equipment represents another important aspect that needs to be ensured as part of the readiness

measures. Respective measures taken by the Organization on this matter are presented in the next sub-chapter.

5.3.1.3 Inspection equipment

In accordance with paragraph 27, Part II of the Verification Annex of the CWC, only approved equipment may be used by inspectors during inspections. Upon elaboration of the equipment needs and specifications by experts during the time of the Preparatory Commission, the Conference of the States Parties approved the list of equipment at its first session.[828] This list distinguishes between six categories of equipment:

1. General inspection equipment: 16 items/kits;
2. Administrative equipment; 16 items/kits;
3. Analytical equipment: 8 items/kits;
4. Non-destructive evaluation (NDE) equipment: 5 items/kits;
5. Health and safety equipment: 41 items/kits; and
6. Medical equipment: 7 items/kits.

Importantly, this list does not, however, identify any specific brands or models of equipment, but rather defines, *inter alia*, general and specific operational requirements and technical specifications, including common evaluation criteria applicable to all inspection equipment. Recognizing the need to have up-to-date equipment available to ensure effective verification, the Secretariat, on the advice of the Scientific Advisory Board, has carried out a review of the operational requirements and technical specifications and proposed an updated list, which was approved in 2010 by the Conference of the States Parties.[829]

Equipment to be used during challenge inspections does not differ from equipment that is used for routine inspections. In order to ensure its permanent availability for a challenge inspection, the Secretariat maintains a set of equipment critical to such a mission.[830] However, this does not mean that one particular kit of equipment is earmarked and permanently set aside, which would have an adverse effect on the equipment not being used, but stocks are managed in such a way that a sufficient number of items is available at all times. This equipment related contingency measure is based on an internal assessment regarding the type and quantity of specific equipment items potentially required for a challenge

[828] See OPCW (1997): C-I/DEC.71.
[829] OPCW (2010): C-I/DEC.71*.
[830] See OPCW (2005): EC-41/DG.10, p. 6.

inspection and takes into account the experience made from previous exercises and routine inspections.[831]

Besides having a sufficient stockpile of equipment available for a challenge inspection, ensuring its preparation, packing and shipment is another crucial aspect of the preparedness measures. All these activities need to be carried out under tight timelines and are complicated by the fact, that that some of the items cannot be transported as regular cargo, but have to be shipped as dangerous goods by a separate cargo company. Following discussions with the International Civil Aviation Organization, the Secretariat can transport certain hand-held detection equipment as carry-on items or check-in baggage.[832] In order to test all these logistic aspects, the Secretariat has carried out a number of no-notice exercises, *inter alia*, in 2005, 2007 and 2009, in which the equipment packing, preparation and readiness to arrange for its shipment were tested. While these exercises demonstrated that the Secretariat's ability to promptly respond to a challenge inspection request and arrange equipment for transport at short notice,[833] follow-up reports nevertheless highlight, that the Secretariat needs to test these aspects under complex logistical framework conditions.[834] In this context, the Secretariat has set itself a very ambitious goal, namely to send an inspection tem including its equipment within 24 hours. [835]

The capability to ship up to five tons of equipment within one day to any location in the world presents a major challenge and requires certain advance preparations. The Secretariat has explored a number of alternatives[836] such as chartering an entire aircraft for the transport of the team with its equipment, or to lease an aircraft from the United Nations. Furthermore, the Secretariat also requested guidance by Member States whether it would be appropriate to make use of a transport aircraft offered by one or more States Parties, which could take both the team and its equipment to the site.[837] Eventually, the Secretariat made contractual arrangements with two charter companies that could transport the inspectors including its equipment (incl. dangerous goods) at short notice to the Point of

831 See OPCW (2003): RC-1/S/1, p. 24.
832 See OPCW (2007): EC-49/DG.11, p. 4.
833 See OPCW (2005): EC-41/DG.10, p. 6; OPCW (2007): EC-49/DG.11, p. 3; OPCW (2009): EC-58/DG.8, p. 3.
834 See OPCW (2009): EC-58/DG.8, p. 3; OPCW (2011): EC-66/DG.10, p. 3.
835 See OPCW (2011): C-16/DEC.12, p. 24.
836 See OPCW (2003) RC-1/S/1, p. 25.
837 See OPCW (2004): EC-36/DG.5/Rev.1, p. 4.

Entry of the Inspected State Party.[838] Arranging the assembly, preparation and transport of the inspection team, as well as readying and shipping its equipment in case of challenge inspection requires the availability of trained staff and dedicated supporting infrastructure at the Secretariat, which is further addressed in the next sub-chapter.

5.3.1.4 Supporting Infrastructure

Given the regular conduct of routine inspections by full-time inspectors, the Secretariat has put in place permanent infrastructure to support inspections both from a technical, as well as mission support perspective. For this purpose, the Secretariat runs an Equipment Store in Rijswijk, where all inspection equipment is stored, maintained and readied for missions. Hence, in case of a CI request, the experts at the Equipment Store prepare are charged with, *inter alia*, the following tasks:

- Providing information on the overall availability of equipment for planning purposes,
- Preparing, checking and packing equipment and prepare supporting documents and certificates,
- Identifying weight and dimensions of equipment and dangerous goods for transport arrangements,
- Providing technical advice on equipment related issues during the inspection,
- Receiving equipment upon return of the challenge inspection;

In the same building in Rijswijk is the OPCW Laboratory also located. This laboratory maintains a stringent accreditation regime[839] for quality assurance purposes and plays a crucial role in the sampling and analysis related verification activities of the Organisation. As such, it carries out, *inter alia*, regular proficiency tests to maintain and expand the network of States Parties' designated laboratories, maintains the OPCW Central Analytical Database, performs continuous maintenance and upgrading of the Organisation's analytical laboratory equipment, and improves methods for on-site analysis. With respect to challenge inspections, the OPCW Laboratory plays an important role in a number of ways:

- Conducting certification of laboratory equipment before its shipment,
- Making preparations for on and off-site analysis;

[838] See OPCW (2006): EC-46/DG.6, p. 7.

[839] The OPCW maintains the accreditation by the Raad voor Accreditatie (Dutch Accreditation Council, RvA), which is achieved through compliance with ISO9-17025 and ISO-17043. See OPCW (2012): C-17/DEC.4, p. 32.

- Providing information to the Director-General on designated laboratories in case off-site analysis is performed;
- Supporting off-site analysis of samples by:
  - receiving authentic samples from the inspection team,
  - retaining one aliquot of the authentic sample at the lab as a future reference,
  - packing of authentic samples aliquots and sending to the selected designated laboratories for off-site analysis together with prepared control samples and matrix blanks for quality control purposes;
- Compiling and analyzing the analytical results of the designated laboratories and provide an assessment on the results;
- Providing technical support and advice during the mission and in the preparation of the inspection report regarding sampling and analysis issues;

As indicated above, the OPCW Laboratory plays a key role in preparations for off-site analysis, which may be conducted during non-routine missions such as challenge inspections or investigations of alleged use. 21 laboratories from 17 States Parties have worldwide met the stringent performance and are designated for this purpose.[840] The Technical Secretariat has trained the process both in 2003 in a dedicated off-site sample handling exercise[841] and in 2004 in the framework of a challenge inspection exercise carried out in Switzerland.[842] Moreover, off-site analysis has recently been successfully performed by designated laboratories in the course of the investigation of alleged use of chemical weapons by the Organization in Syria in 2013.[843]

Notwithstanding the unique experience gained and valuable lessons drawn by the Organization from the Syria mission, readiness for off-site analysis requires regular exercises and, in particular, the support and commitment of Member States. The Director-General has repeatedly highlighted the complexity of this aspect as an issue requiring further action by the Secretariat, not least given the overall importance of off-site analysis as verification means during a challenge inspection.[844] In the same vein, the OPCW's Scientific Ad-

[840] OPCW (2014): EC-76/5, C-19/CRP.1, p. 17.
[841] OPCW (2003): EC-32/DG.26.
[842] OPCW (2005): EC-41/DG.10, pp. 3-5.
[843] See UN (2013): A/67/997-S/2013/553, pp. 30-41.
[844] OPCW (2009): EC-58/DG.8, p. 3; OPCW (2010): EC-62/DG.8, p. 3.

visory Board has also stressed the need to practice the entire off-site analysis process more regularly and that funding should be made available for it by Member States.[845]

Besides the OPCW Equipment Store and the OPCW Laboratory, the Organisation also has an Operations Centre at its disposal, which is run on a 24/7 basis and organizationally embedded in the Operations and Planning Branch of the Secretariat's Inspectorate Division. This entity serves as the core planning and coordination element for both routine and non-routine inspections. Accordingly, it engages with several units of the Secretariat in the process of mission preparation, conduct and post-inspection phase and coordinates all operational aspects of the inspection. In order to fulfil its mission, the Operations Centre has technical infrastructure as its disposal, such as secure communications means as well as infrastructure to house confidential meetings in a secure environment and support the planning and monitoring inspections. Staff of the Operations Centre including members of the Operations and Planning Branch occupy a key role in the course of a challenge inspection and have, *inter alia*, the following responsibilities:

- Registering the CI request in case it is received through communications means of the Operations Centre and providing it to the Director-General,[846]
- Identifying, putting on alert and pre-selecting available inspectors for the CI,
- Making arrangements for various inspection team briefings,
- Arranging for the equipment selection, preparation and transport,
- Arranging and coordinating all aspects of the personnel transport,
- Sending out notifications as per CWC requirements,
- Serving as operational point of contact within the Secretariat and to the inspection team during the mission,
- Providing briefings to senior management on the status of the mission,
- Arranging the return of the inspection team, including debriefings and equipment hand-in;

Besides readiness of personnel and equipment as well as availability of the supporting infrastructure, putting in place procedures is considered another essential pillar of the

[845] OPCW (2012): RC-3/DG.1, p. 6. e

[846] While the provision of the CI request to the Operations Centre is one of the principle options, one may assume that the CI request would probably be hand-delivered directly to the Director-General by a senior diplomat of the requesting State Party in view of the political gravity surrounding such a challenge inspection.

preparedness measures for a challenge inspection. The next sub-chapter gives information on the efforts made by the Secretariat in this field.

5.3.1.5 Procedures

Challenge inspection related documentation can be divided into two main areas:

1. Procedures guiding the inspection team activities in the field; and
2. Procedures regulating the headquarters response to a CI request

The CWC (most notably Article IX and Verification Annexes Part II and X) provides the basis for all subsidiary documentation on challenge inspections. Additionally and as per paragraph 42 of Part II of the Convention's Verification Annex, the Secretariat has been charged to put in place an inspection manual that captures the detailed procedures for inspections. After having issued a training manual for inspections in 1997,[847] the Secretariat reviewed the document in 2000 and used it as a basis for developing the OPCW Inspection Manual, which was approved by the Director-General in 2001.[848] Given the voluminous and rigid character of the manual, the document was, however, hardly made use of by the inspectors. Accordingly, a revised Inspection Manual was issued in 2012, which is less detailed compared with the previous manual. Upon providing a broad overview of the inspection process, the manual provides a systematic, activity-based description of each type of inspection. The manual makes reference to subsidiary documentation and respective CWC paragraphs, highlights timelines to be adhered to and provides some guidance for the inspection team based on the experience gained within the Secretariat.

As inspectors gradually gained experience in the conduct of inspection activities, they documented their best practices in more focused issue specific procedures. Hence, this approach has over the years led to an entire suite of further subsidiary documents in the form of standard operating procedures, work instructions and checklists in support of types of inspections (including challenge inspections), which are developed in conformity with an overarching OPCW Quality Management System approach that has been put in place. Moreover, the Secretariat has put in place overarching standard operating procedures for both challenge inspections and investigations of alleged use, which provide guidance on, *inter alia*, the organisation of the respective mission, its command structure

[847] See OPCW (2003): RC-1/S/1, pp. 9-10.
[848] See OPCW (2003): RC-1/S/1, p. 10.

as well as responsibilities and tasks to be accomplished during the various phases of these missions.

As regards headquarters procedures for a challenge inspection, in 2003 the Director-General approved an SOP on planning, launching, supporting and controlling a challenge inspection, which outlines related preparedness measures and responsibilities of the various units at the Secretariat.[849] As originally two separate HQ SOPs existed within the Secretariat for challenge inspections and investigations of alleged use, the decision was taken to merge these procedures into a single document in order standardize the process for both non-routine type of missions. Following a comprehensive drafting and review process, the SOP was approved by the Director-General in 2010. Besides the HQ wide SOP, subsidiary documents were prepared by the various Secretariat units charged with challenge inspection related responsibilities from a HQ perspective. In this respect, lessons from previous exercises suggest that concise checklists bear some advantage compared to voluminous work instructions or SOPs. While also recognizing the risk of a purely mechanistic response in connection with such an approach, the Secretariat has put in place a number of checklists for some headquarters related activities as a result of this finding.

Overall, the Secretariat has invested major efforts since entry into force to build up a quality management system that comprises various types of documentation for all the different verification activities under the CWC. Following this analysis of the Secretariat wide activities undertaken to build up readiness for challenge inspections, the next step looks at Member States' related preparedness and implementation measures.

5.3.1.6 National Preparedness, Implementation and Support Measures

While the Secretariat naturally has the central role in ensuring readiness for challenge inspections, States Parties also bear certain responsibilities with respect to challenge inspections. In particular National Authorities, which serve as the national focal points within the Member States of the Organization, have both coordination and reporting roles at the national level for such missions. The implementation of standing arrangements represents one of the various responsibilities of the National Authorities and includes the provision of the following information to the Secretariat:

[849] See OPCW (2004): EC-36/DG.5/Rev.1, p. 2.

- Designation of Points of Entry: as of September 2013, only 120 States Parties have submitted information on designated Points of Entry to the Technical Secretariat.[850] In order to alleviate missing information in case of a CI, the Secretariat would most probably select a POE used previously during routine inspections;
- In case the Secretariat would make use of a charter or a UN aircraft, Members States are required to provide a standing diplomatic clearance number to obtain overflight and landing clearances. As of September 2013, only 90 States Parties have fulfilled their respective treaty obligations in this regard.[851] Obviously, lacking this information has an adverse impact on the Secretariat's ability to plan for such a contingency and would need to be handled on an *ad hoc* basis.
- As inspectors use radios for team-communications on-site, Member States are required to give information on frequencies inspectors may use. However, as of September 2013, only 87 States Parties have provided respective information to the Secretariat.[852] In order to overcome this deficit, the Secretariat can either resort to use a default frequency or to program radios on-site.

As visible from the figures above, the implementation record of these obligations must be considered mixed as best and has stagnated over the years, as shown below.

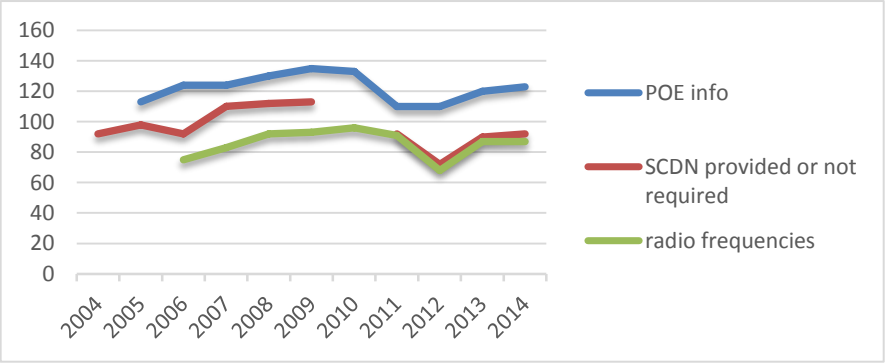


Figure 37: Implementation of standing arrangement aspects between 2004 and 2014[853]

Sources: OPCW (2004): EC-36/DG.5/Rev.1, pp. 5-6; OPCW (2005): EC-41/DG.10, p. 7; OPCW (2006): EC-46/DG.6, p. 7; OPCW (2007): EC-49/DG.11, pp. 5-6; OPCW (2008): EC-54/DG.9, pp. 4-5; OPCW (2009): EC-58/DG.8, pp. 4-5; OPCW (2010): EC-62/DG.8, p. 4; OPCW (2011): EC-66/DG.10, p. 4; OPCW (2012): EC-70/DG.12, p. 7; OPCW (2013): EC-74/DG.15, p. 7; OPCW (2014): EC-76/DG.11, p. 6

850 See OPCW (2013): EC-.74/DG.15, p. 7
851 See OPCW (2013): EC-.74/DG.15, p. 7.
852 See OPCW (2013): EC-.74/DG.15, p. 7.
853 Given different counting approaches reflected in the respective documents, all information has been standardized with a view to reflect the number of States Parties that have lived up to their reporting obligations. Gaps in the graphs indicate timeframes during which no information was provided by the Secretariat.

Various efforts have been made by the Organization to establish and enhance the capabilities of National Authorities in the Member States. As a result of the 'Universality Action Plan' called for by the First Review Conference, considerable progress was made with respect to increasing the number of Member States.[854] By June 2014, 190 states had ratified or acceded to the Convention. In addition, the adoption of the 'Plan of Action Regarding the Implementation of Article VII Obligations'[855] led to the establishment or the designation of a total of 188 National Authorities and 149 States Parties made submissions regarding their legislative and administrative measures for the national implementation of the Convention.[856]

The European Union has been one of the most vocal and strongest financial supporters of measures to promote the universality and full implementation of the CWC at the national level. As such, since 2004 the Council of the European Union has adopted three Council Joint Actions and two Council Decisions in support of implementing the WMD strategy, which encompassed projects worth of 9,488,000 Euros.[857] While these measures have been largely targeted at enhancing the capabilities of National Authorities to fulfil their obligations under the CWC, two of the EU projects reflected in the 2009 and 2012 Council Decisions explicitly relate to the challenge inspections:

1. As part of the 2009 Council Decision, the European Union provided financial support to the conduct of a challenge inspection field exercise in Thailand in 2011 and covered equipment transport costs.[858]
2. In the framework of the 2012 Council Decision, [859] the European Union financially supported the conduct of a workshop in The Hague in 2012 on lessons identified from past OPCW challenge inspection exercises and investigation of alleged use exercises. The experts provided the following key recommendations concerning States Parties' preparedness regarding these non-routine type of inspections:
    - *"Understanding of key Convention provisions and TS procedures needs to be disseminated among relevant national agencies;*

[854] OPCW (2008): RC-2/S/1*, p.2. Rev
[855] See OPCW (2003): C-8/DEC.16.
[856] See OPCW (2014): The Chemical Weapons Ban. Facts and Figures.
[857] Council of the European Union (2012): Council Decision 2012/66/CFSP; Council of the European Union (2009): Council Decision 2009/569/CFSP; Council of the European Union (2007): Council Joint Action 2007/185/CFSP; Council of the European Union (2005): Council Joint Action 2005/913/CFSP; Council of the European Union (2004): Council Joint Action 2004/797/CFSP.
[858] Council of the European Union (2009): Council Decision 2009/569/CFSP, Annex, pp.L197/99-100.
[859] Council of the European Union (2012): Council Decision 2012/166/CFSP, Annex, pp. L87/52-53.

- *SPs need to ensure preparedness to receive a large inspection team: this includes preparing national agencies though training in different possible scenarios and exercises;*
- *SPs need to ensure that necessary national legislation and regulations are in place;*
- *SPs need to ensure that the Inspection Team (IT) and its equipment are guaranteed the privileges and immunities that stem from the Convention;*
- *National and joint exercises are fundamental learning tools also for SPs. In this sense outreach activities organized by the TS in connection with exercises are very useful to raise awareness;*
- *Regional approaches to SPs' preparedness would also be useful;*
- *The TS should continue to engage with SPs in assisting them to ensure preparedness."*[860]

As indicated above, national and joint exercises are essential for preparedness purposes. The SIPRI expert John Hart underlines their importance for preparedness purposes and maintains that *"[i]nspections work best when both the inspection team and the inspected party are well-prepared for and knowledgeable about the convention requirements and procedures."*[861] In the same vein, also John R. Walker argues *that "[p]reparation, well worked procedures and training - including periodic role play exercises – can go a long way in building confidence that challenge inspections can be handled in a way that neither compromises fundamental security interests or disrupts the site's normal business"*.[862]

While information on specific preparedness measures by States Parties for challenge inspections is naturally limited, Member States have nevertheless been forthcoming in regularly hosting challenge inspection exercises or inviting TS staff to participate in national preparedness exercises. 19 out of the 28 CI exercises, where OPCW staff participated, were in fact held on the territory of States Parties from the WEOG regional group, which can be seen as a clear indicator of their strong support towards challenge inspections. Finally, and besides the conduct of exercises, two EU Member States also hosted seminars on challenge inspections with the aim of raising awareness on these type of inspections, sharing national positions on the subject matter and promoting CIs as an integral element of the CWC verification regime:

860 OPCW (2012): Workshop on Challenge Inspections and Investigations of Alleged Use, pp. 2-3.
861 Hart (2004), p. 24.
862 Walker (2007), p. 7.

- Combined United Kingdom of Great Britain and Northern Ireland and Secretariat of the OPCW Seminar on Challenge Inspections. The Hague/The Netherlands, 11 February 2000; and
- 2004 Vienna Seminar on Challenge Inspections EU Seminar on Challenge Inspections in the Framework of the CWC. Vienna/Austria, 24-25 June 2004.

5.3.2 Decisions made regarding CTBT On-Site Inspections

5.3.2.1 Organizational responsibilities and implementation aspects

The principle difference in the design of the CTBT verification regime compared to that of the CWC is also reflected in the organizational structure of the Provisional Technical Secretariat. As already briefly made reference to under sub-chapter 5.2.2, the PTS has at its core three technical Divisions that have been charged with establishing the requisite operational capabilities of the IMS, the IDC and the OSI verification elements. Wolfgang Hoffmann, Executive Secretary Emeritus noted that "[*t]he structure of the Provisional Technical Secretariat that was created in the beginning has basically remained the same, but it has greatly improved as far as division of labour and inter-departmental cooperation is concerned.*"[863] The OSI Division, which is the smallest of the three technical Divisions and started to become operational in July 1997, has the key responsibility to establish readiness of the on-site inspection verification regime pillar when the Treaty enters into force. In this respect, implementation activities have been based on the Resolution[864] establishing the Preparatory Commission for the CTBTO, which lays out an indicative list of tasks to be accomplished by entry into force of the CTBT. In order to execute the related tasks, the following structure for the OSI-Division was put in place in the early days of the PTS:

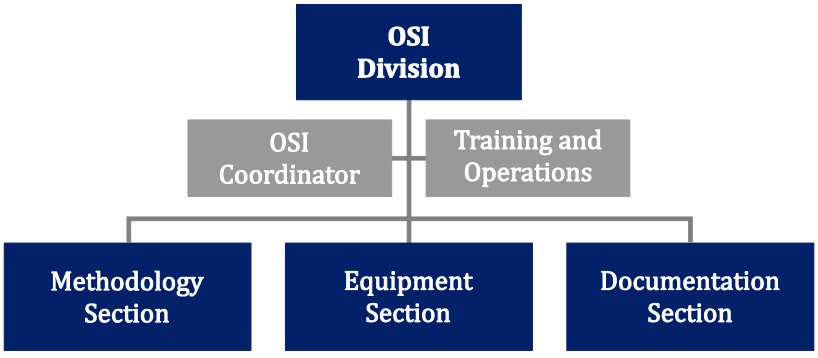


Figure 38: Structure of the OSI Division/PTS as of 31 December 2000

Source: PC/CTBTO (2013): Looking back over 15 years, p. 36

[863] PC/CTBTO (2013): Looking back over 15 years, Foreword.
[864] See PC/CTBTO (1996): CTBT/MSS/RES/1.

This structure reflects key OSI tasks to be accomplished to build up readiness towards OSIs. As such, these tasks relate to development of the methodology for the planning, preparation and conduct of an inspection including a concept of operations; defining equipment needs and specifications including their acquisition and testing in the field; establishing OSI infrastructure to support the development and implementation of the OSI part of the verification regime; putting in place related documentation, most notably contributing to the development of the OSI Operational Manual, and developing a training regime for future inspectors.

Upon approval by the Preparatory Commission in 2002[865], a team of external experts carried out an evaluation of the OSI Major Programme in May 2003. Based on the mandate given the Commission, the team identified, *inter alia*, the following key findings:[866]

- OSI development lags behind other elements of the verification regime;
- There is a need to integrate efforts within the OSI-Division and the wider PTS towards an operational OSI capability;
- There is a need to plan in a goal-oriented manner, and to develop and conduct of a fully comprehensive field exercise no later than 2007;
- Resource utilization should be maximized and resources in the OSI Division gradually expanded;
- Effective evaluation of experimental activities should be carried out and outcomes presented to support the work of WGB;
- The development and evaluation of advanced course training curricula should be concentrated on;
- Options for equipment acquisition other than through purchasing should be explored and the equipment specification approval processes in WGB streamlined;
- The process of the OSI Operational Manual elaboration should be accelerated and the practical usability of the product improved;
- The dialogue between the OSI Division and the policy making organs should be improved.

Shaped by the recommendations of this external evaluation in 2003, the PTS in 2004 developed an OSI Strategic Plan.[867] As part of this plan, three intermediate strategic goals

[865] See PC/CTBTO (2002): CTBT/PC-19/1/Annex II, p. 17.
[866] See PC/CTBTO (2003): CTBT/WGB-21/INF.5.

were identified to reach full readiness at EIF of the CTBT, namely, (1) conducting a near full scale OSI field experiment in 2007; (2) achieving operational readiness to conduct one OSI, to be confirmed by the conduct of a mock OSI in 2009; (3) and eventual establishment of the capability to conduct two simultaneous OSIs at EIF.[868]

However, and in spite of some progress made, it became clear that the implementation of the first intermediate goal in 2007 could not be reached due to a lack of resources available. [869] As a result, the PTS revised this plan in 2006. This Revised OSI Strategic Plan, which is still valid, serves as an informal and internal guide for the Provisional Technical Secretariat (PTS) to establish the readiness of the OSI regime in a two-phased approach:

1. Phase I (lasting till the triggering date 180 days before entry into force of the CTBT) consists of several cycles aimed at further developing OSI capabilities that are benchmarked by an Integrated Field Exercise to generate lessons for the subsequent cycle.
2. Phase II (lasting from the triggering date till entry into force) is characterized by the ramp-up to operational readiness for Treaty purposes after entry into force of the Treaty.[870]

In accordance with the Revised OSI Strategic Plan, an Integrated Field Exercise was conducted in 2008 in Kazakhstan. Lessons identified from this exercise led to a re-adjustment of the organizational structure of the OSI Division in the second half of 2009.

Since the second half of 2011, the On-Site Inspection Division consists of five Sections, which are shown in the following figure.[871]

867 See PC/CTBTO (2004): CTBT/PTS/INF.677.
868 See PC/CTBTO (2004): CTBT/PTS/INF.677, p. 1.
869 See PC/CTBTO (2006): CTBT/PTS/INF.793, pp. 1-2.
870 Activities in phase 2 will include the rapid purchase of OSI equipment (mainly related to the initial period of an OSI), readiness for training inspectors to be nominated by States Parties, final adjustments of the draft OSI Operational Manual and the list of equipment for approval at the initial session of the Conference of the States Parties, and establishment the necessary standing arrangements. See PC/CTBTO (2006): CTBT/PTS/INF.793, p. 4.
871 Upon the reorganization of the OSI-Division in the second half of 2009, 'Policy Planning and Operations' was upgraded from its original status a unit (in the Office of the Director) to a section in the first half of 2011.

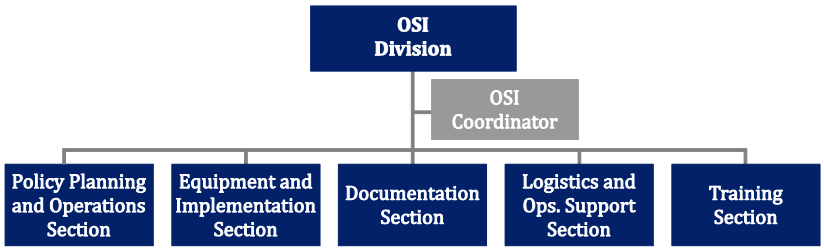


Figure 39: Structure of the OSI Division/PTS as of March 2012

Source: PC/CTBTO (2013): Looking back over 15 years, p. 37

The adjusted Division structure reflects the need to strengthen both the conceptual as well as the operational element in the Division. Accordingly, the newly created 'Policy Planning and Operations Section', serves as an integrating unit to ensure that advancements made with respect to OSI equipment, personnel, logistics and operations are brought together and reflected accordingly in integrated operational concepts and systems developed in support of an OSI. In this respect, this Section has had the lead responsibility in the development of the OSI Action Plan as well as in the planning and preparation of the 2014 Integrated Field Exercise. Moreover, this adjusted structure also acknowledged the need for a strengthened logistics and operations support component due to the considerable increase of equipment obtained within the Division compared to the early years of the PTS. Accordingly, a separate Logistic and Operations Support Section' was established that is in charge of all OSI infrastructure related projects, including running the Equipment Storage and Maintenance Facility.

2008 not only marked a milestone with respect to the OSI regime development, but also brought the introduction of a results based management approach in order to improve the planning, programming and budgeting processes within the PTS.[872] As part of this transition, key performance indicators were introduced in the 2009 Programme and Budget with an overarching KPI at the heart of the OSI Major Programme, namely the 'degree of on-site inspection readiness (progress versus OSI strategic plan)'.[873] Further progress was made in 2010, where for the first time programme and project outputs and outcomes were formulated in the Programme and Budget, as well as related key performance indicators

[872] See PC/CTBTO (2009): CTBT/PTS/INF.1033, pp. 3-4.

[873] See PC/CTBTO (2008): CTBT/PTS/INF.945/Rev.1, p. 75. Approaches to the definition of KPIs for OSI components are reflected in PC/CTBTO (2007): CTBT/PTS/INF.902, and PC/CTBTO (2011): CTBT/PTS/INF.1140.

with related baselines, milestones and targets indicated therein.[874] Overall, and unchanged since then, the objective of the OSI Major Programme is to "*establish the OSI regime by the time of entry into force of the Treaty*" [875] through implementation as per the revised OSI strategic plan.

OSI regime readiness at entry into force of the CTBT represents the final criterion against which progress is to be measured. Intensified efforts have been made to further define 'OSI readiness' including a corresponding matrix with milestones as of 2010, [876] However discussions are still underway on this issue within the policy making organs and no agreement has yet been reached. Nevertheless, and most recently in 2012, the OSI Task Leader in Working Group B prepared a separate paper on this issue that suggests the following nine upper level elements in support of defining a minimum level of readiness:[877]

1. Human resources: IT (≥ 2 shifts x 40) and HQ personnel with limited training, total ≥ 210;
2. OSI equipment: two sets for essential techniques (tbd.), mixed ownership, arrangements for prompt provision;
3. BOO: Limited capabilities (not for harsh environment);
4. Infrastructure; ESMF for CTBTO owned equipment and other facilities in place, at least
   four labs available;
5. Transportation means/platforms: available for selected UNE scenarios (including two aircraft);
6. Methodology, technologies and background knowledge: basic methodology for UNE scenario developed, essential techniques (tbd.) defined;
7. Documentation (OSI OM, SOPs etc.): in place, with limited testing and refinement;
8. Standing arrangements: initial arrangements as for UNE scenarios in place;
9. Training: an initial training programme in place;

[874] See PC/CTBTO (2009): CTBT/PTS/INF.1000/Rev.1, pp.71-81. Related KPIs including baselines, milestones and targets were mostly based on the progress made with respect to the implementation of the OSI Action Plan.
[875] PC/CTBTO (2009): CTBT/PTS/INF.1000/Rev.1, p. 71.
[876] See PC/CTBTO (2010): CTBT/PC-34/WGB/1, p. 11; related efforts are also reflected in PC/CTBTO (2010): CTBT/WGB/TL-4/37/Rev.1; PC/CTBTO (2010): CTBT/WS/OSI-17/1; PC/CTBTO (2011): CTBT/WGB/TL-4/39/Rev.1; PC/CTBTO (2012): CTBT/WGB/TL-4/44/Rev.1;
[877] PC/CTBTO (2012): CTBT/WGB/TL-4/44/Rev. 2.

Besides describing in detail these nine upper level elements, this OSI Task Leader Paper also makes an attempt at assessing the status of OSI capabilities as of June 2012 against these defined capabilities. Overall, "*attainment of this level would enable the CTBTO to launch and conduct an OSI in a safe way for an IT with a limited degree of self-sufficiency and essential reliance on external support, as for relatively simple UNE scenarios and a 'convenient' environment, to fulfil the mission with an acceptable probability of achieving the purpose of the OSI*."[878] In this context, the Integrated Field Exercise 2014 will evaluate progress made with respect to OSI operational capability since IFE08 and address the level of operational capability achieved as of 2014 for those inspection techniques and activities being tested within the scope of IFE14. At the same time, and in spite of diverging views expressed by Member States, this exercise will, however, not make any assessment of the Commission's level of readiness for OSI.[879]

In autumn 2013, the Provisional Technical Secretariat released its Midterm Strategy for the period 2014 to 2017.[880] Based on the assumption that the current economic climate of fiscal austerity will continue throughout this planning period, the strategy spells out the need for reprioritization and reallocation of resources. Accordingly, the strategic goals were reduced to the following two from seven compared with the 2009-2013 Medium Term Plan:[881]

- Strategic Goal 1: Operation and Sustainment of the Verification System; and
- Strategic Goal 2: Development of OSI operational capabilities.

In support of reaching this strategic goal pertaining to OSI, efforts will focus on the following three areas during 2014 to 2017:[882]

- Conducting, assessing, evaluating, following up and planning the IFEs;

878 PC/CTBTO (2012): CTBT/WGB/TL-4/44/Rev.2, p. 1.

879 See PC/CTBTO (2013): CTBT/PC-41/WGB/1, pp. 6-7. While EU Member States and the US advocated a clear statement on the current state of OSI readiness upon the conclusion of the exercise, other States Signatures most notably the Russian Federation were of the view that this would go beyond the agreed scope of IFE14 and argued that a report on the level of operational readiness of the CTBT regime, including OSI, is expected to be presented by the Preparatory Commission only to the initial Conference of the States Parties after entry into force, not earlier (see PC/CTBTO (1996): CTBT/MSS/RES/1, Annex, paragraph 13). Various national papers and statements referred this issue such as PC/CTBTO (2013): CTBT/WGB-40/NAT.3, p. 2; PC/CTBTO (2013): CTBT/WGB-41/NAT.1, p. 2; PC/CTBTO (2013): CTBT/WGB-41/NAT.7, p. 3.

880 See PC/CTBTO (2013): CTBT/PTS/INF.1249.

881 See PC/CTBTO (2013): CTBT/PTS/INF.1249, p. 5.

882 See PC/CTBTO (2013): CTBT/PTS/INF.1249, pp. 16-18.

- Further developing OSI methodologies, techniques, procedures, equipment and the ESMF;
- Supporting WGB in elaboration of the draft OSI Operational Manual;

As clearly indicated in this strategy, development of the OSI regime will remain a key priority over the next years with the following purpose:

> *"[A]chieve an appropriate balance between all elements of the verification regime, namely IMS, IDC and OSI. It is anticipated that during this MTS period, OSI operational capabilities will be further developed and aligned with the level of IMS and IDC development."*[883]

Following this overarching assessment of the organizational responsibilities and related implementation aspects, key elements of the OSI verification regime are analyzed in the following sub-chapters.

5.3.2.2 Personnel and Training Issues

Pursuant to paragraph 15 of Part II to the Protocol of the CTBT, *"[i]nspectors and inspection assistants shall be nominated for designation by States Parties, or in the case of staff of the Technical Secretariat, by the Director-General […]."*[884] As such, the Organisation cannot make use of a standing inspectorate like under the CWC verification regime, but needs to rely on the nomination of experts from Member States and staff of the Technical Secretariat of the CTBTO. Accordingly, special service agreements with inspectors and inspection assistants and, where necessary and appropriate, agreements with the States Parties are stipulated and the Provisional Technical Secretariat has developed model arrangements for future inspectors and inspection assistants.[885]

Furthermore, paragraph 25 of Part II to the Protocol of the CTBT stipulates that *"[e]ach inspector included in the list of inspectors and inspection assistants shall receive relevant training"*, which is to be further specified in the OSI Operational Manual. [886] Accordingly, and as per the current model text of the Draft OSI Operational Manual, this training programme envisages the conduct of interconnected modules, including an introductory course, specialized advanced courses, various exercises and refresher trainings.[887] While this training course can only be carried out once inspectors and inspection assistants have

[883] PC/CTBTO (2013): CTBT/PTS/INF.1249, p. 16.
[884] CTBT, Protocol Part II, paragraph 15.
[885] See PC/CTBTO (2009): CTBT/PTS/INF.1036 and PC/CTBTO (2013): CTBT/PTS/INF.1036/Amend.1.
[886] CTBT, Protocol Part II, paragraph 25.
[887] See PC/CTBTO (2013): CTBT/WGB/TL-18-50, p. 29.

been nominated (i.e. after entry into force of the CTBT), the Provisional Technical Secretariat has nevertheless carried out various trainings in order to identify best practices and topics to be covered. For this purpose in 2001 the PTS prepared a Long Range Plan for the OSI Training and Exercise Programme[888] and most notably also conducted two training cycles for surrogate inspectors in preparation of the Integrated Field Exercises in 2008 and 2014, respectively. At the close of the second training cycle, 58 new surrogate inspectors from 41 States Signatories were added to the roster, which now in total contains 119 trained surrogate inspectors from 54 States Signatories and the PTS.[889] A comparison of the two training cycles, highlighting the differences in the duration, comprehensiveness and scope, can be found in the table below.

Training	1st Training Cycle for IFE08 (Abridged Training Cycle)	2nd Training Cycle and additional training for IFE14
Introductory Course	2 weeks	2 weeks
Advanced Course	2 weeks	3 weeks
H&S Course	0	1 week
Leadership Course	1 week	1 week
Technical Courses and TTEs	2 weeks	10.5 weeks
OSC Training	<0.5 week	0.5 week
Host Country Training	0	1 week
Final Preparatory Course	0	2 weeks
BuE Courses	0	5 weeks
FTX	0	BUE III/FTX 2 weeks
Total No. of weeks	**Approx. 7 weeks**	**Approx. 28 weeks**

Table 38: Comparison between 1st and 2nd training cycle for surrogate inspectors
Sources: Macleod/ Prah (2014), p. 27. See also PC/CTBTO (2009): CTBT/PTS/INF.980, PC/CTBTO (2009): CTBT/PTS/INF.1019 and PC/CTBTO (2013): CTBT/PTS/INF.1264.

Since the inception of the Provisional Technical Secretariat in early 1997, a total of 13 exercises and field experiments have been carried out, which are indicated in the table below.

Year	Activity	Official Reports
1999	Field Experiment in Kazakhstan	PC/CTBTO (2000): CTBT/PTS/TR/2000-1

888 See PC/CTBTO (2002): CTBT/PTS/INF.475. As per the Long Range Plan, it is assumed that a total of 400 trained inspectors and inspection assistants would be required. See PC/CTBTO (2002): CTBT/PTS/INF.475, p. 31.
889 See PC/CTBTO (2014): CTBT/PC-42/WGB/1, p. 9.

Year	Activity	Official Reports
2001	Field Experiment in Slovakia	PC/CTBTO (2001): CTBT/PTS/INF.415, PC/CTBTO (2002): CTBT/PTS/INF.503
2002	Field Experiment in Kazakhstan	PC/CTBTO (2003): CTBT/PTS/INF.572 PC/CTBTO (2003): CTBT/PTS/INF.607
2004	Directed Exercise in Slovakia	PC/CTBTO (2005): CTBT/PTS/INF.755
2005	Directed Exercise in Kazakhstan	PC/CTBTO (2005): CTBT/PTS/INF.755 PC/CTBTO (2005): CTBT/PTS/INF.783
2006	Directed Exercise in Croatia	PC/CTBTO: CTBT/PTS/INF.862
2007	Directed Exercise in Ukraine	PC/CTBTO (2007): CTBT/PTS/INF.903
2008	Integrated Field Exercise in Kazakhstan	PC/CTBTO (2009: CTBT/PTS/INF.1021 PC/CTBTO (2009): CTBT/WS/OSI-15/1 PC/CTBTO (2009): CTBT/WS/OSI-16/1 PC/CTBTO (2009): CTBT/WS/EVA/EVAL-17
2009	Directed Exercise in Finland	PC/CTBTO (2009): CTBT/PTS/INF.1055
2010	Directed Exercise in Jordan	PC/CTBTO (2011): CTBT/PTS/TR/2011-4
2012	Build-Up Exercise I in Austria (ESMF)	PC/CTBTO (2012): CTBT/PTS/INF.1195 PC/CTBTO (2013): CTBT/WS/OSI-20/1 PC/CTBTO (2014): CTBT/PTS/TR/2014-2
2012	Build-Up Exercise II/IV in Austria	PC/CTBTO (2013): CTBT/PTS/INF.1214 PC/CTBTO (2013): CTBT/WS/OSI-20/1 PC/CTBTO (2014): CTBT/PTS/TR/2014-2
2013	Build-Up Exercise III in Hungary/Austria	PC/CTBTO (2013): CTBT/PTS/INF.1244 PC/CTBTO (2014): CTBT/WS/OSI-21/1 PC/CTBTO (2014): CTBT/PTS/TR/2014-2

Table 39: Overview OSI Exercises and Experiments
Source: Provisional Technical Secretariat/PrepCom/CTBTO

The nature of these exercises gradually increased in scale, complexity and functionality. The field experiments carried out in 1999, 2001 and 2002 primarily generated lessons for the initial conceptual development process of the On-Site Inspection Operational Manual and also provided some input into exploring on-site inspection methodologies and techniques. Upon recommendation of Working Group B, an external evaluation of the On-Site Inspection Major Programme was carried out in 2003.[890] Among the various recommendations made, the external evaluation team suggested a goal oriented planning approach towards establishing operational capability for an OSI and therefore recommended a fully comprehensive field exercise and evaluation, to be undertaken no later than 2007.[891]

Moreover, and as another result of this external evaluation, Directed Exercises were introduced with the purpose of testing individual inspection activities or techniques up to the

[890] See PC/CTBTO (2003): CTBT/WGB-21/INF.5.
[891] See PC/CTBTO (2003): CTBT/WGB-21/INF.5, p. 6.

point when they are ready to be exercised in an integrated manner together with other inspection activities or techniques. As such, the Directed Exercises in 2004, 2005, 2006 and 2007 focused on testing particular inspection techniques and elements of an OSI. Though originally envisaged for 2007, the conduct of the first Integrated Field Exercise was eventually postponed to 2008 due to a lack of progress because of insufficient resources.[892] Conducted at the former nuclear testing ground Semipalatinsk in Kazakhstan, the 2008 Integrated Field Exercise provided the first opportunity to test major elements of the on-site verification regime in a comprehensive and integrated manner.[893]

Taking into account the lessons identified from IFE08, the PTS prepared a detailed planning and preparatory concept for another Integrated Field Exercise in 2014[894], which was approved by the Preparatory Commission in 2011.[895] As per this concept, a series of three build-up exercises was carried out between 2012 and 2013, followed by the conduct of the IFE in the Hashemite Kingdom of Jordan in 2014.[896] IFE14 has the following three key aims, namely (1) testing crucial aspects of the launch-, pre-inspection-, inspection-, and post-inspection phases in an integrated manner; (2) testing progress made towards development of procedures (incl. Draft OSI Operational Manual and OSI subsidiary documentation), techniques incl. associated equipment and training programme since IFE08; and (3) identifying gaps and areas requiring further development and training. The table below shows a comparison of the inspection activities and techniques tested in IFE08 and IFE14, respectively.

Inspection activity and technique as per para 69/Part II of the Protocol to the CTBT	Play in IFE08 (fully/limited/not played)	Availability for IFE14 (fully/limited/not played)
Position finding	Fully played	Fully available
Visual Observation	Fully played	Fully available
Video	Not played	Fully available
Still photography	Fully played	Fully available
Multi-spectral imaging incl. infrared measurements	Not played	Fully available

892 See PC/CTBTO (2003): CTBT/PTS/INF.752, p. 2.
893 More than 200 persons including a full Inspection Team of 40 inspectors participated in IFE08 (26 August to 25 September 2008).
894 See PC/CTBTO (2011): CTBT/PTS/INF.1105. Each of the three build-up exercises focused on a separate phase of an on-site inspection (i.e. build-up exercise I on the launch phase; build-up exercise II/IV on the pre- and post-inspection phase and build-up exercise III on the conduct phase of an OSI.
895 See PC/CTBTO (2011): CTBT/PC-36/2*, p. 4, and PC/CTBTO (2011): CTBT/PC-36/WGB/1, p. 6.
896 See PC/CTBTO (2012): CTBT/PC-38/2, p. 4, and See PC/CTBTO (2012): CTBT/PC-38/WGB/1, p. 7.

Inspection activity and technique as per para 69/Part II of the Protocol to the CTBT	Play in IFE08 (fully/limited/not played)	Availability for IFE14 (fully/limited/not played)
Radioactivity measurements	Limited play	Fully available
Measurements of Argon-37	Not played (demo only)	Fully available
Measurements of RadioXenon	Not played	Fully available
Environmental sampling and analysis of solids, liquids and gases	Limited play	Fully available
Passive seismology	Fully played	Fully available
Resonance seismometry	Not played	Not planned
Active seismic surveys	Not played	Available - limited usage
Magnetic field mapping	Limited play	Available - limited usage
Gravitational field mapping	Not played	Fully available
Ground penetrating radar	Limited play	Fully available
Electrical conductivity measurements (ECM)	Not played except electrical conductivity measurements (partially played)	Fully available
Drilling	Not played	Not planned

Table 40: Comparison scope IFE08 vs. IFE14
Source (adapted by the author): Macleod/Prah (2014), p. 30

As indicated in the table above, since IFE08 major progress has been made by the Provisional Technical Secretariat in the development of inspection activities and techniques. Moreover, a comprehensive concept of operations guiding the planning and conduct of an OSI has been established since IFE08, and cross-cutting aspects like health and safety procedures, data flow and data security, geographical information system and communications are now much more advanced than they were in 2008. In addition to personnel related measures, considerable efforts have been made by the PTS also with respect to equipment related issues that are presented in the next sub-chapter.

5.3.2.3 Inspection equipment

Pursuant to paragraph 36 of Part II to the Protocol of the CTBT, inspectors may only make use of approved equipment. For this purpose, at its first session the Conference of the States Parties has to approve a list of equipment to be used during inspections. Interestingly, and in contrast to respective CWC provisions, the CTBT distinguishes between core

and auxiliary equipment.[897] As with the approved list of equipment under the CWC, the specifications do not refer to any particular brands or equipment models, but solely define operational requirements and technical parameters. In this respect, a set of draft specifications for some OSI equipment was developed at OSI workshop-6, and those for initial period techniques were revisited at OSI workshop-19 and presented to Working Group B for its review and consideration.[898] The following table gives information on the status of the specifications for the equipment list and availability of equipment by the PTS for training and testing purposes.

OSI Activity/ Technique	Status Equipment List and Specifications	PTS Availability status
Position finding equipment (CTBT, Protocol Pt. II, paragraph 69 (a))	- Approval at PC-38 for inclusion in the draft list of equipment to be approved by CSP-1 (PC/CTBTO (2012): CTBT/PC-38/WGB-1, and PC/CTBTO (2012): CTBT/PC-38/2)	- Various handheld position finding equipment and 1 total station available
Visual observation (CTBT, Protocol Pt. II, paragraph 69 (b))	- PC approval for inclusion in the draft list of equipment to be approved by CSP-1 (PC/CTBTO (2012): CTBT/PC-38/WGB-1, and PC/CTBTO (2012): CTBT/PC-38/2)	- Some visual observation equipment (4 VOB field team kits) available
Video and still photography (CTBT, Protocol Pt. II, paragraph 69 (b))	- PC approval for inclusion in the draft list of equipment to be approved by CSP-1 (PC/CTBTO (2011): CTBT/PC-37/WGB-1, and PC/CTBTO (2011): CTBT/PC-37/2)	- Various photography equipment (some digital photography and video cameras) available
Multi-spectral imaging incl. infrared measurement (CTBT, Protocol Pt. II, paragraph 69 (b))	- Draft specifications (PC/CTBTO (2011): CTBT/WS/OSI-19/1)	- 1 MSIR system acquired by the PTS under EU Joint Action V
Gamma radiation monitoring and energy resolution analysis (CTBT, Protocol Pt. II, paragraph 69 (c))	- Revised list and specifications for radionuclide gamma survey and analysis equipment approved by PC-8 for testing and training purposes (PC/CTBTO (1999): CTBT/PC-8/1/Annex II)	- Some low resolution gamma radiation monitoring equipment available - 1 Airborne Gamma Spectrometry system received by PTS as CiK from Canada
Environmental sampling and analysis of solids, gases and liquids (CTBT, Protocol Pt. II, paragraph 69 (d))	- Draft specifications (PC/CTBTO (2011): CTBT/WS/OSI-19/1)	- Mobile Xenon noble gas detection system (SAUNA) acquired by the PTS under EU Joint Action IV - 1 fully equipped RN laboratory with a set of High Purity

[897] Core equipment has the purpose of gathering information or data in the inspection area by conducting the activities and applying the techniques listed in Part II, paragraph 69, of the Protocol to the Treaty, auxiliary equipment does not have a data gathering capability. See PC/CTBTO (2013): CTBT/WGB/TL-18/50, p. 249.

[898] See PC/CTBTO (2013): CTBT/PTS/INF.1240, p. 3.

OSI Activity/ Technique	Status Equipment List and Specifications	PTS Availability status
		Germanium detectors and acquisition systems as long-term CiK from the United Kingdom received - Some sub-soil gas sampling units available - Various environmental sampling kits for soil and vegetation samples available - 1 particulate air sampler available
Passive seismological monitoring for aftershocks (CTBT, Protocol Pt. II, paragraph 69 (e))	- PC approval for inclusion in the draft list of equipment to be approved by CSP-1 (PC/CTBTO (2013): PC-41/WGB/1, and PC/CTBTO (2013): CTBT/PC/41-2, and PC/CTBTO (2013): CTBT/PTS/INF.1194/Rev.1)	- 50 sets of seismic stations including processing software available
Resonance seismometry (CTBT, Protocol Pt. II, paragraph 69 (f))	- No official proposal on equipment specifications introduced and discussed in WGB (PC/CTBTO (2013): CTBT/WGB/TL-4/45)	- none
Active seismics (CTBT, Protocol Pt. II, paragraph 69 (f))	- No official proposal on equipment specifications introduced and discussed in WGB - 1 expert meeting funded under EU Joint Action Project IV held in May/June 2011 in Austria (PC/CTBTO (2012): CTBT/PTS/INF.1165)	- none
Magnetic and gravitational field mapping, ground penetrating radar, electrical conductivity measurements (CTBT, Protocol Pt. II, paragraph 69 (g))	- Draft Specifications approved for training and testing purposes (PC/CTBTO (2001): CTBT/PC-14/I/Annex II (for ground-based magnetic field mapping and gravitational field-mapping equipment; PC/CTBTO (2001): CTBT/PC-15/I/Annex II (for ground penetrating radar and electrical conductivity measurement)	- Various equipment (magnetometer Geometrics G-858, gravity meter Scintrex CG-5, Malå GPR ProEx system, conductivity meter Geonics EM31) including processing software available
Drilling (CTBT, Protocol Pt. II, paragraph 69 (h))	- No official proposal on equipment specifications introduced and discussed in WGB - No experimental studies or directed exercises conducted - 1 expert meeting funded under EU Joint Action Project IV held in November 2011 in UK (PC/CTBTO (2012): CTBT/PTS/INF.1166)	- none

Table 41: Status OSI Equipment List Specifications
Source: Provisional Technical Secretariat/PrepCom/CTBTO

PTS planning measures envisage the availability of two full sets of equipment in order to establish the capability of conducting two simultaneous OSIs when the CTBT enters into force.[899] While at this stage equipment is only purchased for training and testing purposes, the Revised OSI Strategic Plan envisages the rapid ramp of OSI capabilities upon ratification of all 44 Annex II states, which, *inter alia*, requires rapid purchase of OSI equipment.[900]

In contrast to equipment to be used for challenge inspections under the CWC, some of the equipment required for an OSI (particularly that for the detection of the noble gases Argon and Xenon) has had very limited civil application, which in turn has required long term research and development in close cooperation with States Signatories. In this respect, and in order to minimize the purchase of equipment for training and testing purposes, the Provisional Technical Secretariat has also made use of equipment provided by States Signatories as contributions in kind.[901] As a matter of fact, the CTBT stipulates pursuant to paragraph 40 of Part II to the Protocol of the CTBT, the option that upon entry into force Member States may provide the Technical Secretariat also with inspection equipment that meets the specifications of the list of approved equipment.[902]

Pursuant to paragraph 53 of Article IV of the CTBT, the inspection team has to arrive at the Point of Entry of the inspected State Party no later than six days following receipt of the request for an OSI. Accordingly, a high level of preparedness is crucial to meeting this short deployment timeline. Therefore, current procedures stipulate that equipment is ready for shipment and already packed in specially designed containers ('Inter-Modular Rapid Deployment System'). Moreover, and taking into account that the total amount of equipment to be shipped within such a short timeframe may be well in the range of 100-150 tonnes (based on IFE figures), special arrangements with commercial shipping com-

899 See PC/CTBTO (2004): CTBT/PTS/INF.677, p. 1.
900 See PC/CTBTO (2006): CTBT/PTS/INF.793, p. 4.
901 Considerable in-kind contributions of equipment were made by nine States Signatories for IFE08 (China, Finland, France, Germany, Hungary, Israel, Italy, Slovakia and the United Kingdom - see PC/CTBTO (2009): CTBT/PTS/INF.1021, p. 4) and by ten States Signatories for IFE14 (Canada, China, the Czech Republic, Finland, France, Hungary, Italy, Japan, the United Kingdom and the United States of America - see PC/CTBTO (2013): CTBT/PC-40/WGB/1, p. 8). Moreover, the European Union has provided under three Council Decisions base camp equipment, a mobile noble gas detection equipment unit ('SAUNA') and MSIR equipment to the PTS.
902 Member States that provide such equipment to the Technical Secretariat shall be responsible for its maintenance and calibration. See CTBT, Protocol Part II, paragraph 40.

panies are considered a pre-requisite.[903] Arranging the maintenance, calibration and short-notice shipment of equipment as well as the assembly and travel of the inspection team in case of an OSI request requires the availability of trained staff and dedicated supporting infrastructure. The next sub-chapter gives information about progress made by the Provisional Technical Secretariat in this area thus far.

5.3.2.4 Supporting Infrastructure

First considerations regarding the required infrastructure for an OSI date back to the early days of the PTS, when in 1998 and 1999 the Provisional Technical Secretariat presented first detailed concepts, requirements and functions for three OSI infrastructure projects, namely (1) an OSI Databank, (2) an Operations Support Centre and (3) an Equipment Storage and Maintenance Facility.[904] Related concepts were further refined in 2001[905], when the PTS presented a more refined approach that also highlighted the importance of 'ongoing arrangements' with commercial enterprises and international organizations, and 'standing arrangements' with States Parties in order to prepare for and conduct an OSI after entry into force.

At the beginning of the PTS, requirements for equipment storage and maintenance were relatively limited given the small number of equipment items in the possession of the PTS. Accordingly, available storage space to the PTS in the Vienna International Centre was sufficient to keep all the equipment there.

However, lessons identified from the Integrated Field Exercise in 2008 clearly highlighted the need to establish an Equipment Storage and Maintenance Facility (ESMF)[906] as part of a wider effort to put in place a comprehensive Integrated Inspection Support System. As such, and in accordance with the OSI Action Plan[907] developed as a result of IFE08, in Guntramsdorf south of Vienna in March 2011 the PTS established a combined multipurpose facility that supports training, testing and exercises together with the capability to store,

[903] Some elements pertaining to the short notice deployment of equipment and personnel were exercised by the PTS during OSI Build-Up Exercise I in 2012. See PC/CTBTO (2012): CTBT/PTS/INF.1195.
[904] See PC/CTBTO (1998): CTBT/PTS/INF.33; PC/CTBTO (1999): CTBT/PTS/INF.85.
[905] See PC/CTBTO (2001): CTBT/PTS/INF.416.
[906] A detailed analysis of the operational requirements pertaining to an Equipment Storage and Maintenance Facility can be found in PC/CTBTO (2010): CTBT/PTS/INF.1057.
[907] PC/CTBTO (2009): CTBT/PTS/INF.1020; PC/CTBTO (2011): CTBT/PTS/INF.1106, and PC/CTBTO (2014): CTBT/PTS/INF.1269.

maintain and calibrate equipment.[908] The facility has been extensively used since then and tested with respect to its functionality during, *inter alia*, the three build-up exercises in preparation for IFE14. In order to ensure preparedness for the short notice deployment of equipment, the PTS has introduced a rapid deployment system consisting of 30 tailor-made containers, in which equipment is stored in a ready-to-go status based on a modular approach.[909] Moreover, and taking into account the fact that several thousand individual equipment items are stored in the facility, the PTS also implemented a barcode based asset management system that can provide permanent information on the status and availability of the inventoried equipment. Both the rapid deployment and the asset management system have been extensively tested in the course of the OSI build-up exercises. As the facility has been rented by the PTS until early 2016, discussions on potential follow-on solutions have been initiated by the PTS in close consultations with Austria as the Host Country.[910]

Another critical infrastructure requirement concerns the availability of an Operations Support Centre. In contrast to the Operations Centre established at the Technical Secretariat/OPCW, an OSI Operations Support Centre is not envisaged to be run on a permanent basis, but only activated upon a request for an on-site inspection or for the conduct of exercises.[911] Initially, available meeting room-type infrastructure at the Vienna International Centre had been utilized by the PTS for training and exercise purposes. Since 2011, the ESMF has housed a provisional OSC as part of its facilities. Besides establishing this infrastructure for training and testing purposes, and taking into account lessons from IFE08 and the OSI build-up exercises, the PTS has also put in place a comprehensive concept for the activation and running of an OSC. Based on the guidance in the Model Text of the Draft OSI Operational Manual[912] and further detailed in a subsidiary standard operating procedure and working instructions incl. checklists, the Operations Support Centre serves as the single focal point at the headquarters between an inspection team in the field and the Di-

[908] See PC/CTBTO (2014): CTBT/PTS/INF.1269, p. 6. A detailed status of the ESMF was provided by the PTS in PC/CTBTO (2012): CTBT/TPS/INF.1162.
[909] See PC/CTBTO (2014): CTBT/PTS/INF.1269, p. 7.
[910] See PC/CTBTO (2014): CTBT/PC-42/WGB/1, p. 5.
[911] At the same time it should be noted that the PTS is running an Intl. Data Centre Operations Centre in provisional mode, which is however currently not designed and equipped to support the OSI needs also, especially during the OSI launch phase. However, one logical option would be to expand the capability of the IDC Operations Centre to be ready to cope with the OSI related demands. Moreover, in accordance with the CTBT, the IDC should be the focal point within the TS for data storage and data processing also from OSIs (CTBT, Art. IV, para 14 b and g).
[912] See PC/CTBTO (2013): CTBT/WGB/TL-18/50, pp. 27-28.

rector-General. As such, it is envisaged that experts from various units of the Secretariat form part of the OSC staff. The OSC structure is defined by specific functions and responsibilities and tailored according to the various phases of an OSI. Its composition comprises the following teams:

- Planning-team (this team includes during the launch phase also core staff of the inspection team),
- Operations and Administration team
- Personnel-team, and
- Logistics-team;

The OSI databank represents another important infrastructure tool in support of an OSI. Major efforts have been invested in the implementation of this project as part of the OSI Action Plan implementation between 2010 and 2012.[913] The databank is designed to store OSI-relevant information required for planning and support of inspections. It consists of several modules such as:

- a country module comprising open source information about Member States and information specifically provided by Member States in relation to inspections (points of entry, contact persons, etc.),
- an inspectors module comprising personal data and information on experience, training and availability of inspectors, and
- an inspection planning module that is linked to the ESMF inspection equipment database and is planned to be used to generate the inspection mandate.

As is from the above, the Provisional Technical Secretariat has made considerable progress particularly after IFE08, in putting in place infrastructure in support of an OSI and in testing it extensively in preparation for IFE14. However, besides the availability of equipment and infrastructure, procedures represent another essential pillar that is required for the training of experts. The next sub-chapter gives information on the efforts made by the Provisional Technical Secretariat in this field.

5.3.2.5 Procedures

The CTBT, most notably Article IV and Part II of the Protocol to the CTBT, provides the basis for all subsidiary documentation on on-site inspections. Furthermore, negotiators at

[913] See PC/CTBTO (2013): CTBT/PTS/INF.1269, p. 9.

the Conference on Disarmament decided to put in place an OSI Operational Manual in order to provide clearly defined, detailed procedures for the implementation of OSIs by the Organization.[914] While this approach is principally the same as under the CWC, one can note a major difference with respect to the responsibility for development and preparation of this document. Unlike charging the technical organ of the Organization (i.e. (Provisional) Technical Secretariat) with this task, Member States wanted to retain maximum control over this process and decided to charge the Commission with this assignment.[915] One of the interviewees reflects on the elaborations of this document in WGB over the years:

> *"A lot of people came out of the negotiations with quite strong views about how they read the treaty in a different way, having just negotiated, they had their own views and their own sensitivities so they were very attuned to that. So, I think the discussion was probably in those days in fact harder than it is these days in some respects. […] It's because comfort has developed over time and we've had a chance to work up some of the balances, and I think that, though this has been an awfully long process, one of the little advantages is that we've had time to actually bring a certain amount of comfort and, frankly, if it wasn't for one or two delegations' views on certain things, I think we'd be basically close to finished. We, as I say, we will always be refining our manual, and there will always be a need for improvement, but some of these fundamental problems we have are really now to just one or two delegations whereas in the early days I think that it was still more widely spread."*[916]

Since the establishment of the Commission in November 1996, WGB has carried out three rounds of elaborations:

- Upon preparation of the Initial Draft Rolling Text (IDRT) by 2001, a first round of reading was carried out by WGB between June 2001 and March 2005 resulting in the preparation of an Annotated Draft Rolling Text (ADRT) in May 2005;[917]
- Based on the ADRT, a second round of elaborations took place between 2005 and 2008, which produced as an key by-product the Test Manual[918] for the On-Site Inspection Integrated Field Exercise in 2008;
- Focussing on lessons identified from IFE08 and unresolved issues in the Model Text, a third round of elaborations was initiated in 2009[919], which should eventual-

[914] See CTBT, Protocol Part II, paragraph 13.
[915] See PC/CTBTO (1996): CTBT/MSS/RES/1, paragraph 15 (a) (i).
[916] Expert Interview 11, paragraph 25.
[917] See PC/CTBTO (2005): CTBT/WGB/TL-18/27/Part A, p. 1.
[918] See PC/CTBTO (2006): CTBT/WGB/TL-18/30, p. 1 and PC/CTBTO (2007): CTBT/WGB/TL-18/30/Add.1, p. 1.

ly lead to a draft OSI Operational Manual for consideration by the Conference of the States Parties at its initial session.[920] As an important by-product, a Model Text for the Draft OSI Operational Manual was prepared for the 2014 Integrated Field Exercise.[921]

Looking at the progress on the elaboration of the draft OSI Operational Manual against guidance set out in the Resolution establishing the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization, a respective assessment has been made by the OSI Operational Manual prepared Task Leader in January 2014. Accordingly, and while acknowledging that some provisions remain under discussion by WGB, the Task Leader considers that "*WGB has substantially addressed the issues listed in the Appendix to the Resolution in its work to elaborate the draft OSI Operational Manual.*"[922]

Though WGB is responsible for elaboration of the OSI Operational Manual, various means have been utilized to generate input to this process. Among them are OSI workshops, which have been carried out since 1997 as informal discussion fora for OSI experts from States Signatories and the PTS with the aim of providing valuable technical input for considerations by WGB.[923] OSI workshops followed a three stage approach:[924]

- From 1997 to 2001, they had a very broad focus and touched on various OSI aspects such as the concept of operations, radiation safety, logistics, relevant radionuclides, inspection equipment specifications and procedures. This eventually led to the creation of a table of functional requirements and specifications for OSI equipment during OSI workshop-6.
- From 2001 to 2007, OSI methodology, techniques, equipment and procedures represented the key topics of the OSI workshops.
- From 2008 to 2013, workshops focussed on the further development of OSI equipment, including updating the equipment list, techniques and procedures, as well as

[919] The model text as reflected in PC/CTBTO (2009): CTBT/WGB/TL-18-40, served as the basis for the third round of elaborations.
[920] See PC/CTBTO (2008): CTBT/WGB/TL-18/37, p. 4.
[921] See PC/CTBTO (2013): CTBT/WGB/TL-18/50.
[922] PC/CTBTO (2014): CTBT/WGB/TL-18/53, p. 3.
[923] 21 workshops have been carried out by the PTS since 1997, in which almost 1.000 experts from 60 States Signatories covering all six geographical regions have participated. See PC/CTBTO (2013): CTBT/PTS/INF.1240, p. 1 and PC/CTBTO (2014): CTBT/WS/OSI-21/1, p. 2. A detailed matrix covering the various topics of OSI workshops 1-20 can be found in PC/CTBTO (2013): CTBT/PTS/INF.1240, p. 3.
[924] See PC/CTBTO (2013): CTBT/PTS/INF.1240, p. 4; and PC/CTBTO (2014): CTBT/WS/OSI-21/1 and Corr.1.

providing a debriefing platform for OSI exercises (incl. IFE08 and the three build-up exercises) and for discussion of preparations for IFE14.

Besides making contributions to the generation of the OSI Operational Manual, PTS efforts focussed on establishing an OSI Quality Management Documentation System including the development of further subsidiary documentation such as SOPs, Working Instructions and Manuals). These documents, which are available to States Signatories,[925] can be divided into two main areas:

1. Procedures guiding the inspection team activities in the field; and
2. Procedures regulating the headquarters response to an OSI request;

Major progress has been made in the field of OSI-documentation over the last years with Integrated Field Exercises serving as key opportunities for testing these procedures and providing feedback on their improvement. The table below provides an indication of the considerable progress made:

Document Type	Status for IFE08	Status for IFE14
OSI Operational Manual	OSI Test Manual, CTBT/WGB/TL-18/30	Model Text for the Draft OSI Operational Manual, CTBT/WGB/TL-18/50
Manuals	0	4
H&S Policy and Standards	2	7
SOP	12	39
WINs	0	42
Equipment User Manuals	Not known	More than 300 items

Table 42: Status OSI Documentation Status
Source: Provisional Technical Secretariat/PrepCom/CTBTO

5.3.2.6 National Preparedness, Implementation and Support Measures

Responsibilities between the Secretariat and Member States regarding preparedness measures for OSIs are similarly distributed like those under the CWC. As such, and upon entry into force of the Treaty, the Secretariat has the central role in ensuring readiness for on-site inspections. At the same time, also States Parties bear responsibilities in relation to fulfilling respective Treaty obligations at the national level. Accordingly, and pursuant to Article III, paragraph 4 of the CTBT, each State Party has to designate or set up a National Authority, which shall serve as the national focal point for liaison with the Organization

[925] See PC/CTBTO (2012): CTBT/WGB/TL-18/47, p. 9.

and with other States Parties.[926] Depending on the approach chosen by each Member State, the National Authority could either be a single institution or an inter-agency body with the participation of several ministries and national institutions. [927] Designation of such national institution is considered crucial to ensure the implementation of OSI related obligations under the Treaty.

The Provisional Technical Secretariat has developed a legal assistance programme aimed at providing assistance to States Signatories on national implementation measures for the CTBT. As such, presentations on various aspects of national implementation are routinely delivered by the PTS at workshops, seminars, training courses, external events and academic lectures. Most notably and as part of these efforts, three workshops on national implementation measures that also addressed OSI issues, were carried out between 2011 and 2013.[928] Feedback from the 2011 workshop indicated that *"[…] implementing legislation with regard to on-site inspection may be needed to ensure compliance with Treaty requirements, in particular with respect to access to private property or obtaining information from third parties*."[929] In order to facilitate respective preparedness measures at the national level, in 2013 the Preparatory Commission issued a *Commentary on National Implementation Measures for On-Site Inspections under the Comprehensive Nuclear-Test-Ban Treaty (CTBT)*, which examines respective national implementation measures upon entry into force of the Treaty. [930] As such, standing arrangements between the Technical Secretariat and individual States Parties could address the following aspects:[931]

- Nomination of inspectors and arrangements for their participation in OSIs and mandatory trainings;[932]
- Privileges and immunities of the inspection team;[933]
- Designation of points of entry;[934]
- Standing diplomatic clearance number for use of non-scheduled aircraft;[935]
- Provision of inspection equipment;[936] and

[926] See CTBT, Article III, paragraph 4.
[927] See PC/CTBTO (2013): LS-05, p. 22.
[928] See PC/CTBTO (2013): CTBT/PTS/INF 1253 and PC/CTBTO (2013): CTBT/PTS/INF 1254.
[929] PC/CTBTO (2013): CTBT/PTS/INF.1254, p. 4.
[930] See PC/CTBTO (2013): LS-05.
[931] See PC/CTBTO (2013): LS-05, pp. 18- 22. Another analysis on issues related to standing arrangements can be found in in PC/CTBTO (2010): CTBT/WGB/TL-4, 18/2.
[932] See CTBT, Protocol, Part II, paragraphs 14-25.
[933] See CTBT, Protocol, Part II, paragraphs 26-31.
[934] See CTBT, Protocol, Part II, paragraphs 32-34.
[935] See CTBT, Protocol, Part II, paragraph 35.

- Provision of logistic support to provide or arrange the amenities required by the inspection team (e.g. communication means, interpretation services, transportation, working space, lodging, meals and medical care).[937]

While there is no obligation under the Treaty for States Parties to enter into agreements or arrangements with the Secretariat to facilitate an onsite inspection, pre-agreement on certain issues could help the respective planning and execution considerable both from the Secretariat's and the inspected State Party's perspective. In addition to the legal commentary on national implementation measures for OSIs under the CTBT and the joint Task Leader paper referenced above, the PTS has carried out a technical study on standing arrangements as part of the OSI Action Plan implementation. By examining best practices from other international organizations (e.g. OPCW and IAEA) and UN agencies, the analysis aimed at identifying areas in which standing arrangements are feasible and also identified principle deployment scenarios and related logistic support requirements.[938] In addition, and also as part of the OSI Action Plan implementation, progress on the status of inspectors and inspection assistants was made, including, *inter alia*, on defining the procedures for the call-up process and preparing OSI draft model exchange of letters between the CTBTO and a nominating State Party.[939]

In addition to the preparedness measures undertaken by the Organization, States Signatories have also made considerable contributions to the build-up of the OSI regime either in their individual capacities or as part of political alliances. As such, and as under the CWC, the European Union has been highly supportive of related efforts in the framework of the EU Strategy against Proliferation of Weapons of Mass Destruction, with the adoption of three Council Joint Actions in 2006[940], 2007[941], 2008[942], and two Council Decisions in 2010[943] and 2012[944], respectively. Whereas most of the financial contributions made by

[936] See CTBT, Protocol, Part II, paragraphs 36-40.
[937] See CTBT, Protocol, Part II, paragraph 11. Though not specifically provided for in the CTBT, standing arrangements may be necessary with States Parties or with commercial providers to ensure the availability of these services when required. See PC/CTBTO (2013): LS-05, p. 21.
[938] See PC/CTBTO (2014): CTBT/PTS/INF.1269, p. 7.
[939] See PC/CTBTO (2009): CTBT/PTS/INF.1036; PC/CTBTO (2013): CTBT/PTS/INF.1036/Amend.1; and PC/CTBTO (2014): CTBT/PTS/INF.1269, p. 20.
[940] See Council of the European Union (2006): Council Joint Action 2006/243/CFSP.
[941] See Council of the European Union (2007): Council Joint Action 2007/468/CFSP.
[942] See Council of the European Union (2008): Council Joint Action 2008/588/CFSP.
[943] Council of the European Union (2010): Council Decision 2010/461/CFSP.
[944] Council of the European Union (2012): Council Decision 2012/699/CFSP.

the EU focused on enhancing the operational performance of the verification system[945] and improving States Signatories' capacity to fulfil their verification responsibilities, one can also note a gradually increasing focus on OSI issues.

In this respect, the 2006 Council Joint Action provided OSI related financial support to the development of e-learning modules. The 2007 Council Joint Action saw the support of the 2008 On-Site Inspection Integrated Field Exercise (IFE08) in three different areas, totaling € 672,000.[946] While no support of OSI activities was provided by the 2008 Council Joint Action, an increase in funding for the further development of the OSI verification regime pillar can be noted since then. The 2010 Council Decision provided, *inter alia*, financial support for the development of three less developed OSI techniques and funded three expert meetings on MSIR[947], active seismics[948] and drilling[949], which provided an important impetus to the development of these technologies. As part of the same 2010 Council Decision, the EU has also funded an expert meeting related to the further development of the field information management system (FIMS)[950] In addition, the 2010 Council Decision also provided financial support to the development of an OSI mobile Xenon noble gas detection system, which is considered a crucial OSI technique.[951] The most recent 2012 Council Decision in support of the CTBT provides support for the development of an OSI multispectral array capability, which will be rolled out during the 2014 OSI Integrated Field Exercise in Jordan.

In addition, in their individual capacities EU member states contributed considerably to the build-up of the OSI regime by, *inter alia*, providing equipment as contributions in kind for training and testing purposes, most notably for IFE08[952] and IFE14[953]. Moreover, and

945 Efforts focused on enhancing the PTS noble gas measurement capability including Atmospheric Transport Modeling capacities as well as improving the auxiliary seismic network.

946 The contributions were covering costs for the transport of equipment, the purchase of inflatable tents for the base of operations and the conduct of an IFE08 evaluation workshop after the exercise.

947 Meeting held from 30 March to 1 April 2011 in Rome, Italy. See PC/CTBTO (2012): CTBT/ES/2011/5, p.32.

948 Meeting held from 30 May to 1 June 2011 in Vienna, Austria. See PC/CTBTO (2012): CTBT/PTS/INF.1165.

949 Meeting held in Edinburgh, UK from 9 to 11 November 2011. See PC/CTBTO (2012): CTBT/PTS/INF.1166.

950 Meeting held from 8 to 12 October 2012 in Guntramsdorf, Austria. See PC/CTBTO (2013): CTBT/ES/2012/5, p. 34.

951 The importance of noble gas detection has become evident in recent years, not the least in the context of the three nuclear tests declared by the Democratic People's Republic of Korea (DPRK) in 2006, 2009 and 2013. The objective of this technical development project is the re-engineering of one existing stationary Xenon unit into one modular unit geared to specific OSI requirements.

952 Seven out of the nine States Signatories that provided equipment were EU Member States (i.e. Finland, France, Germany, Hungary, Italy, Slovakia and the United Kingdom); the remaining equipment came from China and Israel. See PC/CTBTO (2009): CTBT/PTS/INF.1021, p.4.

in order to facilitate the conduct of OSI field activities, the PTS concluded legal agreements with Austria and Hungary in 2011[954] and a total of 11 testing and exercise activities have been carried out between 2011 and 2013 under these legal frameworks.[955] In this context, and looking at the 13 field exercises and experiments carried out since the establishment of the PTS in 1997, EU Member States hosted five of them[956], while the other ones were conducted in Kazakhstan (four times), Ukraine (once), Jordan (once) and Slovakia and Croatia (the two latter before they joined the EU).

In addition to the longstanding EU contributions, the substantial efforts made by the US since its 2009 re-engagement on OSI issues by providing sizable voluntary contributions[957] in support of the OSI Action Plan implementation and for the preparation and conduct of the 2014 Integrated Field Exercise in Jordan must be acknowledged.[958] Overall, it can be noted that a larger number of Member States have been contributing by various means (e.g. hosting of field exercises and experiments, workshops, table-top, exercises, contribution of equipment and provision of experts) to the further development of the OSI regime, than the relatively limited number of states that have supported OPCW CI preparedness measures.

953 Six out of the ten equipment offering States Signatories are EU Member States (i.e. the Czech Republic, Finland, France, Hungary, Italy and the United Kingdom), whereas the other equipment providers are Canada, China, Japan, and the United States of America. See PC/CTBTO (2013): CTBT/PC-40/WGB/1, p. 8.

954 See PC/CTBTO (2011): CTBT/WGB-36/CRP.1, p.2.

955 See PC/CTBTO (2012): CTBT/ES/2011/5, pp. 31-37; PC/CTBTO (2013): CTBT/ES/2012/5, pp. 31-40 and PC/CTBTO (2014): CTBT/ES/2013/5, pp. 33-43.

956 Directed Exercise in Slovakia/2004; Directed Exercise 2009 in Finland, Build Up Exercise- in Austria; Build Up Exercise II/IV in Austria, Build Up Exercise III in Hungary and Austria. Respective figures are calculated on the basis of the EU accession dates of the respective States Signatories that hosted exercises and field experiments. In addition, the PTS has carried out in close cooperation with States Signatories numerous smaller scale equipment testing or other training related activities, which are not considered for the purpose of this calculation.

957 See PC/CTBTO (2013): Voluntary contribution by the United States.

958 The United States has made by far the biggest equipment related contribution from among all offering States Signatories for IFE14.

5.4 Findings

This chapter had the purpose of analyzing the policy making of regime members pertaining to challenge-type inspections. As such, it first examined the input dimension by looking at Member States' demands and support for this type of inspections. In a second step, the conversion dimension has been analyzed by studying the organs of both international organizations and their related decision making processes pertaining to challenge-type inspections. In a third step the output dimension was addressed and decisions made within the OPCW and the Preparatory Commission for the CTBTO with respect to challenge-type inspections were assessed. Overall, the analysis had the objective of addressing the following research sub-question: "What is the policy making by regime members pertaining to challenge-type inspections?" Key findings gathered as a result of the analysis are presented below.

Differing priorities on establishing readiness for challenge-type inspections

Not least as a result of the different development paths of the organizations, including the different treaty status, regime members set divergent priorities regarding the build-up of capabilities for challenge-type inspections under these two verification regimes. Overall, CWC Member States have shared the same demands with respect to the Organisation's need for full readiness regarding the conduct of challenge inspections, which was reached as of 2003. Since then, States Parties have regularly requested the Secretariat to continue maintaining a high standard of readiness for such a mission and to keep the Executive Council regularly informed about its readiness and to report any problems accordingly. Additionally, CWC Member States have also unequivocally acknowledged that the inclusion of the challenge inspection mechanism in the CWC is fundamental to the credibility of its verification regime.

In comparison to that, and notwithstanding agreement on the integral role of OSIs for the CTBT verification regime, the political support by CTBT States Signatories differed for the OSI verification pillar. Member States immediate priority in the first years rested on the build-up of the International Monitoring System and the associated International Data Centre. Moreover, a number of US policy decisions considerably shaped the further development of the OSI regime. The US Senate refusal of CTBT ratification in 1999 had overall negative impact on early entry into force prospects and as such also adversely affected the OSI regime development. In addition in 2001 the US Administration decided to cease participating in and funding activities not related to the IMS. As a result of this, OSI regime

development activities further slowed down and the absence of US scientific and technical support between 2001 and 2008 represented a major setback for the development of the OSI pillar.

Divergent positions on the CTBT (incl. OSI) regime development pace

Not least partially motivated by the US decision to abstain from OSI-related activities, since 2003 the Group of 77, China and Iran started to push for a balanced approach in the CTBT verification regime development. At the same time, these countries linked the extent of financial resources for the CTBT verification regime development to the current well advanced status of the verification regime, the mandate of the Preparatory Commission, actual prospects for entry into force, and the need to minimize the financial burden to be borne by States Signatories. Accordingly, the G-77, China, GRULAC and the African Group have repeatedly called for a strict observance of a zero-real-growth budget policy.

In contrast to that, and while the EU's first priority has rested on the sustainment and completion of the IMS, EU Member States have shown themselves to be staunch supporters of the OSI regime development and argued for programme driven budgets oriented towards the needs of the CTBT's verification regime build up, which should not fall below zero-real-growth. In the same vein, since its re-engagement into OSI-issues in 2009 the US has been the most vocal supporter of the OSI development and argued also in favour of programme driven budgets.

Pace of CTBT OSI regime pillar build-up linked to entry into force prospects

The prospects for the Treaty to enter into force are closely connected to Member States' political priorities for the build-up of the CTBT verification regime. While OSI's can only be requested and carried out after entry into force, the International Monitoring System and International Data Centre have already been operating provisionally and already provide data to States Signatories on a daily basis. This naturally has impacted on Member States preferences and put the OSI regime pillar at a comparable disadvantage to IMS and IDS establishment and sustainment. In contrast to that, and taking into account the fundamentally different design of the CWC verification regime, establishing readiness for challenge inspections under the CWC was easier. Given the fact that different types of routine inspections are carried out on a regular basis, developing the capability for CIs did not constitute a major challenge such as putting in place the OSI verification regime pillar.

Increased support for CTBT OSIs since 2008

The conduct of the 2008 Integrated Field Exercise can be seen as a turning point in support for OSIs by CTBT Member States. Accepting the fact that the OSI regime pillar has lagging behind, States Signatories have intensified their efforts since then and agreed to give high priority to the further development of the OSI component of the verification regime. This is, *inter alia*, evidenced by their joint agreement to conduct another Integrated Field Exercise in 2014 including providing an extra budgetary allocation of USD 10,3 million in times of financial austerity.

Different departure points in establishing readiness for challenge-type inspections

Besides the different levels of political support expressed by Member States between CIs and OSIs, different departure points considerably shaped the development of these verification pillars under both Treaties. As indicated above, establishing readiness for CIs has been easier in light of the Organization's regular task of conducting routine inspections. Notwithstanding the differences between a routine and non-routine inspection, considerable experience has been gained over the years in the conduct of inspections, which undeniably has also helped when building up capabilities for challenge inspections. Moreover, inspection techniques applied by the team during challenge inspections are not fundamentally different from routine inspections, and inspection equipment is commercially available off the shelf equipment.

In contrast, development of OSI capabilities had to start from scratch and initially focused on conceptual issues such as defining guidelines and operational concepts for the conduct of an OSI, identifying equipment requirements and specifications as well as developing training programmes. Moreover, CTBT on-site inspections must be considered technologically more complex, encompassing both ground and aerial based inspection activities and techniques. Utilization of some of the techniques requires considerable conceptual work as well as technological research and development. Moreover, detailed expertise on the characteristics and effects of nuclear test explosions is limited to a small number of countries and proliferation concerns have also impacted on the development of some of the techniques. In addition, some inspection techniques, particularly those concerning the detection of noble gases, have had very limited civil applications, which also impacts on the development pace.

Diverging positions on the frequency, initiation and use of CWC challenge inspections

While there is political support in principle for challenge inspections among regime members, there are nevertheless divergent positions among CWC States Parties on some important CI issues, which have not changed much since entry into force of the CWC. Different positions can be noted particularly on three aspects, namely the purpose, scope and activation of the CI mechanism, the role of prior consultations and the question of abuse of the right to request a challenge inspection. With respect to the purpose, scope and activation of the CI mechanism, a divide can be made out between the position expressed by the Non-Aligned Movement Member States, China, India, Iran, Pakistan and Russia vis-à-vis the one supported by western states, most notably the EU Member States and the United States. The former are in favour of a very cautious and restrictive use of this mechanism and regard challenge inspections as an option of last resort that is to be triggered only under exceptional circumstances.

In contrast to that, the latter ones have argued in favour of invoking the CI-mechanism on a broader range of compliance concerns and potentially on a more frequent basis. In this respect, similar divergent views among States Parties remain concerning the role of prior consultations. Some CWC Member States such as China, India, Iran, Pakistan, Russia and NAM Member States are of the view that challenge inspections should only be invoked after all options, including prior consultations and clarifications, have been exhausted. Accordingly, they see consultations and clarifications as an integral part of Article IX that has to precede any request for a CI. In contrast to that, the US and EU Member States consider this mechanism optional and at the discretion of each regime member. Thus, they stress the legal right of States Parties to request such an inspection without prior consultations. The third debated issue is the question of abuse of the CI-mechanism, particularly as to what constitutes abuse. Most notably China and Iran have called for an expansion of the current definition of abuse, other such as the US and the EU Member States believe that current legal guidance is sufficient and do not see any need for further consultations on this issue.

Same roles of the Organs under both Treaties regarding challenge-type inspections

Looking at both regimes from an institutional perspective, a very high degree of commonality can be noted in the organizational structures and bodies of the OPCW and the CTBTO. As such, both organizations encompass the same three organs for each respective organi-

zation, namely the Conference of the States Parties as the highest and principal organ, the Executive Council as the executive organ and the Technical Secretariat as the implementing body. Given the pre-entry into force state of the CTBT, respective tasks are carried out by the Preparatory Commission, which consists of a plenary body and the Provisional Technical Secretariat. The plenary body is assisted by three groups, namely Working Groups A and B and the Advisory Group. Rules of procedure concerning decision making processes have been adopted by both organizations: while matters of substance are taken whenever possibly by consensus or otherwise by a two-thirds majority, questions of procedure require a simple majority vote of those present and voting.

Important oversight function by the principal organs of both Organizations

The CSP serves as the principal organ of the Organization and has the highest and strategic function. As such, it is composed of all regime members on an equal basis, with one representative in the organ. A prime task of the Conference with respect to CIs is the oversight function concerning the implementation of the Convention, and guiding the activities of the other organs. Moreover, the principal organ of the Organization has to take the necessary measures to ensure compliance with the Treaty and redress and remedy any situation which contravenes the Treaty provisions. Taking into account the pre-entry into force status of the CTBT, the Preparatory Commission serves as the highest organ of the Organization and is tasked with all necessary preparations for the effective implementation of the CTBT, and as a part of it, also with the establishment of the verification regime. Upon entry into force of the Treaty, the Conference of the States Parties will replace the Preparatory Commission as the highest organ and resemble in its function, composition and decision-making procedures those of the CSP of the OPCW.

Central decision-making role of the Executive Council in a challenge type-inspection

The EC as the executive organ of the Organization has the central role regarding challenge-type inspections and is charged with making a number of crucial decisions pertaining to possible non-compliance and abuse. As such, the EC has to consider and adopt a decision with respect to the CI request (three quarter majority required to block request) to review the inspection report upon the conclusion of the inspection, and to take a decision with respect to possible non-compliance and abuse. The supervisory role of the Executive Council is underlined by the fact that the Director-General has to report regularly on the Organisation's readiness for the conduct of a CI.

With respect to the CTBT, Working Group A and Working Group B serve as the executive organs during the pre-entry into force stage. While Working Group A deals with administrative and financial issues, Working Group B bears responsibilities with respect to verification related issues and therefore plays a key role with respect to the build-up of the OSI regime. In order to facilitate the work programme, the Organization has made use of 'Task Leaders'. Upon entry into force, the roles of the two Working Groups will be taken over by the Executive Council, which plays a role similar to the one under the CWC. However, and in contrast to the 'red light approach' utilized for approving CIs under the CWC, the CTBT encompasses a 'green light mechanism' for the approval of an OSI (at least 30 affirmative votes required from among the 51 Members of the Executive Council), which is considered more difficult to obtain. Furthermore, and different from the EC under the CWC, the CTBT's EC consists of one more regional group (i.e. six groups). In addition, the Council is also charged with approving the continuation and extension of an OSI, as well as considering a request for drilling. In sum, the Council has been given additional powers with respect to an OSI compared to its role under a CI.

While acknowledging some differences between the CI related decision making mechanisms established under the CWC and CTBT, it can be said that Member States have delegated considerable power to the Organization, particularly those related to critical compliance judgement of the Executive Council. Moreover, and in case of approval of an inspection request, Member States must allow the conduct of highly intrusive inspections on their territory. At the same time, larger and powerful Member States still try to maintain their political and security interests to the extent possible by being permanently represented in the Council, which in turn very much reflects the interest based concept of regime theory.

Implementing role and technical verification function of the Secretariat

As indicated above, the Technical Secretariat is subordinated to the two other organs and not authorized to make any programme decisions, but rather has the task of executing and implementing decisions made by the Conference of the States Parties and the Executive Council, as well as Preparatory Commission and Working Groups A and B, respectively. The Secretariat has the key function of leading the build-up as well as ensuring the Organization's readiness for challenge-type inspections. Under the CWC, the Secretariat is charged with carrying out the respective verification measures on the ground. This task means ensuring the Organization's readiness for such missions by having available a suffi-

ciently large and qualified pool of inspectors and headquarter staff in support of the process, readiness of the team's equipment, availability of procedures as well as standing arrangements to facilitate the conduct of the mission. Moreover, the Secretariat may also be requested to provide its expertise to the Executive Council in the context of clarifications under Article IX.

The Provisional Technical Secretariat bears the key responsibility to ensure that the OSI regime pillar is ready when the Treaty enters into force. Accordingly, and as per the Resolution of the establishment of the Preparatory Commission, key tasks include the development of the various inspection activities and techniques, definition of equipment specifications, putting in place the requisite infrastructure, support of the Commission in the preparation of the OSI Operational Manual, and establishment of a training programme for inspectors. Upon entry into force, the PTS will become the Secretariat and as such carry out the verification and other functions entrusted to it under the Treaty.

Necessity for an organization wide approach

Challenge-inspections are missions of strategic importance and require an organization wide effort. While the main responsibility to maintain preparedness for CIs under the CWC is borne by the Inspectorate and Verification Division of the Secretariat, many other units are also engaged in related preparedness measures. As such, OPCW procedures stipulate organization wide preparedness and response measures. Similarly, and notwithstanding the differences of the verification regimes and related preparedness states, respective Provisional Technical Secretariat procedures also clearly acknowledge the need for a cross-divisional and organization wide effort in support of executing such a mission.

Challenge of defining full readiness for a challenge-type inspection

The introduction and implementation of results based management in both the OPCW and Preparatory Commission for the CTBTO has led to the introduction of key performance indicators, which has, in turn, also helped to provide a better qualitative and quantitative assessment of actual preparedness for such missions and progress made towards reaching such capabilities, respectively. In case of challenge inspections under the CWC, the Secretariat/OPCW reached readiness in 2003 and the respective KPI clearly defines an internally set deployment time (24 hours) and gives an indication of the size of the inspection team (30 to 50 team members). Alternatively, and with respect to OSIs under the CTBT, no agreement has yet been reached among member states on defining the minimum level of

readiness to be reached when the Treaty enters into force and respective discussions within the policy making organs are still underway.

Implementation of a core group approach for inspection team personnel

Since 1997 almost 400 inspectors have been hired by the OPCW in fourteen training groups. While originally all inspectors underwent the same training for this non-routine type of inspection, this approach was refined in 2005 by creating a core group of inspectors that receive specific CI training. The purpose of this approach is to train an adequate number of team leaders and inspectors in greater depth with various specializations in different skills that are required during a CI, and to ensure that the most highly qualified experts will be selected in case of need. Though notably the CTBT does not stipulate a standing inspectorate, and the inspection team will be composed of both of inspectors from the Member States and the Technical Secretariat, key team positions are also envisaged as being occupied by the TS experts, mainly those involved in developing OSI procedures and testing/maintaining equipment. Training of CTBTO inspectors envisages employing interconnected modules including an introductory course, specialized advanced courses, various exercises and refresher trainings. While this training course can only be carried out upon entry into force of the CTBT and once inspectors and inspection assistants have been nominated, the Provisional Technical Secretariat has nevertheless carried out various trainings in order to identify best practices and topics to be covered. As such, the PTS carried out two training cycles in preparation for the Integrated Field Exercises in 2008 and 2014, in which 119 surrogate inspectors from 54 States Signatories were trained by the PTS.

Importance of regular exercises to maintain preparedness purposes

Since entry into force, Technical Secretariat staff has hosted or participated in a total of 28 challenge inspection exercises. While these exercises focused both on inspection related issues and headquarters aspects, Executive Council related aspects were only exercised once. Lessons from these exercises clearly indicate the need to carry them out at regular intervals and with a clear focus. While participants have shown high level performance in activities that are regularly performed during routine inspections, there is a need to pay particular attention to aspects not so rigorously exercised during routine inspections. With respect to the build-up of the OSI regime, 13 field exercises and experiments have been conducted, which have gradually increased in scale, complexity and functionality. Besides the introduction of Directed Exercises, and, most recently, Build-Up Exercises,

Integrated Field Exercises have served as key opportunities to test major elements of the on-site verification regime in an integrated manner. Besides enhancing capabilities of the inspection team, exercises are also fundamental learning tools for Member States as part of their national preparedness measures and very useful tools to raise awareness and build confidence in these non-routine types of inspections.

High level of preparedness to facilitate the rapid deployment of equipment

Equipment to be used for challenge-type inspections needs to be based on the specifications of list of approved equipment. In order to ensure its permanent availability for a challenge inspection, the Secretariat/OPCW maintains a set of equipment critical to such a mission always available, in a ready-to-use state, at the equipment store. As per current planning measures, the Secretariat has set itself the goal to deploy an inspection team including its equipment (approximately five tons) within 24 hours, which requires advance preparations with respect to packing and shipment. For this purpose, contractual arrangements were made with two charter companies that could transport the inspectors including its equipment (incl. dangerous goods) at short notice to the Point of Entry of the Inspected State Party.

In contrast to that, equipment for OSIs is, at this stage, only procured for training and testing purposes and specifications for some items are still pending. Notwithstanding these pre entry into force conditions, the PTS planning measures stipulate, when the Treaty enters into force, the availability of two full equipment sets in order to establish the capability to conduct two simultaneous OSIs. Similar to CI preparedness measures, current PTS practices imply that equipment is ready for shipment and already packed on a modularized basis in specially designed containers. Moreover, and taking into account a total amount of 100-150 tonnes of equipment needing to arrive at the POE within six days upon receipt of an OSI request, special arrangements with commercial shipping companies are considered a pre-requisite, which can, however, be implemented only after entry into force of the CTBT.

Challenge-type inspections require dedicated support infrastructure

Given the regular conduct of routine inspections by full-time OPCW inspectors, the Secretariat has put in place permanent infrastructure to support inspections both from a technical as well as mission support perspective. For this purpose, the Secretariat runs an Equipment Store in Rijswijk, where all inspection equipment is stored, maintained and readied for missions. The same building also houses the OPCW Laboratory, which plays a

key role in preparing off-site analyses and inspection equipment used for on-site analysis during an inspection, the activities likely to be performed during a challenge inspection. In addition, the Secretariat has an Operations Centre at its disposal, which is run on a 24/7 basis and serves as the headquarters' focal point for the inspection team during both routine and non-routine inspections. In contrast to routine inspections, the procedures for challenge inspections require a Mission Support Group to be created within the Secretariat comprising the Directors of Inspectorate and Verification Division, the Legal Advisor and other key Secretariat functions to advise and support the inspection team in the field.

While PTS concepts already highlighted in the early days the need for dedicated infrastructure elements, they have been established only after IFE08 as part of the OSI Action Plan implementation. Efforts focussed on putting in place an OSI Databank, an Operations Support Centre and an Equipment Storage and Maintenance Facility. The ESMF was opened in 2011 as a multipurpose facility that also houses a prototype Operations Support Centre. However, and in contrast to TS/OPCW practices, the OSI OSC is not planned to be run on a permanent basis, but only activated upon a request for an on-site inspection, which is logical, taking into account that the CTBT regime does not have a system of routine inspections.

Challenge-type inspections are regulated by detailed procedures

Comprehensive quality management systems for challenge-type inspections have been established in both organizations. In addition to the respective provisions stipulated in both treaties, the OPCW Inspection Manual and the OSI Operational Manual serve as guidance and resource documents for challenge-type inspections. However, while the TS/OPCW has been charged with putting in place the Inspection Manual and most recently issued a revised version in 2012, CTBT Member States decided to charge the Commission with the preparation of this document. Given the highly sensitive nature of an OSI, the drafting process has proven to be extremely complex and slow and has therefore still not been concluded. Standard Operation Procedures represent the next lower tier of documentation. In view of the fact that such missions represent organization wide endeavours, overarching SOPs guiding the HQ response have been put in place and tested in both organizations. Moreover, Working Instructions and checklists complement the suite of procedures that guide both inspection team activities in the field, and activities at the HQ level.

Mixed implementation record on standing arrangements by many CWC Member States

While the Technical Secretariat/OPCW naturally has the central role in ensuring readiness for challenge inspections, States Parties also bear certain responsibilities with respect to challenge inspections. In particular National Authorities, which serve as the national focal points within the Member States to the Organization, have both coordination and reporting roles at the national level. The implementation of standing arrangements represents one of the various responsibilities of the National Authorities, which may become particularly important during non-routine missions. Implementation of reporting obligations such as provision of information on Points of Entry, standing diplomatic clearance numbers for use of non-scheduled aircraft and provision of communication frequencies to the Secretariat has, however, been mixed at best and may adversely affect the planning and conduct of a challenge inspection. However, by virtue of receiving and supporting CWC routine inspections, National Authorities of many Member States have some systems in place that are also likely to be used during challenge inspections.

Responsibilities between the Secretariat and Member States regarding preparedness measures for OSIs are similarly distributed to those under the CWC. The Provisional Technical Secretariat has developed a legal assistance programme aimed at providing assistance to States Signatories on national implementation measures for the CTBT, which also covered OSI related aspects. While there is no obligation for States Parties under the CTBT to enter into agreements or arrangements with the Secretariat to facilitate an onsite inspection, pre-agreement on certain issues could considerable help the respective planning and execution, both from both sides given the logistic complexity of an OSI. In addition, and also as part of the OSI Action Plan implementation, a study on standing arrangements as well as progress on the status of inspectors and inspection assistants was made, including, *inter alia*, on defining the procedures for the call-up process and preparing OSI draft model exchange of letters between the CTBTO and a Nominating State Party.

Strong support for challenge-type inspections by the European Union

The European Union has been one of the most vocal supporters to promote challenge-type inspections under both Treaties. As such, since 2004 the Council of the European Union has adopted three Council Joint Actions and two Council Decisions in support of implementing the WMD strategy under the CWC. While these measures have been largely targeted at enhancing the capabilities of National Authorities to fulfil their obligations under the CWC, two of the EU projects reflected in the 2009 and 2012 Council Decisions directly

related to the challenge inspections (financial support for 2011 CI exercise in Thailand and lessons learned workshop on past CI and IAU exercises).

In the same vein, and as part of implementing the EU WMD strategy, the European Union has also been highly supportive of the build-up of the OSI regime. Whereas most of the financial contributions made by the EU under three Council Joint Actions and two Council Decisions focused on enhancing the operational performance of the verification system and improving States Signatories' capacity to fulfil their verification responsibilities, there has been a gradually increasing focus on OSI issues. Most notably, financial support was provided under the 2007 Council Joint Action for IFE08; funding of expert meetings for three under-developed OSI techniques, and the further development of FIMS as well as financial support to the development of an OSI Xenon noble gas detection system under the 2010 Council Decision. Moreover, the most recent 2012 Council Decision in support of the CTBT provides support for the development of an OSI multispectral array capability. In addition, EU member states also considerably contributed in their individual capacity to the build-up of the OSI regime by, *inter alia*, providing equipment as contributions in kind for training and testing purposes, most notably for IFE08 and IFE14, respectively.

Varying degree of support concerning hosting the challenge-type inspection exercises and related activities

While information on specific preparedness measures by States Parties for challenge inspections is naturally limited, particularly CWC Member States of the 'Western European and Other States' Regional Group have been very forthcoming in regularly hosting challenge inspection exercises or inviting TS staff to participate in national preparedness exercises. Among those States Parties, the United Kingdom has taken a lead role in promoting CWC challenge inspections and also inviting OPCW staff to regularly participate in national preparedness exercises.

On the other hand, and looking at the 13 field exercises and experiments carried out since the establishment of the PTS in 1997, one can note a wider geographical distribution of those Member States that have hosted such activities. Moreover, more States Signatories from different geographical regions contributed also by other means (e.g. conducting workshops, table-top exercises, contributing equipment and providing experts) to the further development of the OSI regime than the relatively limited number of states that have supported CI preparedness measures. In this respect, the substantial efforts need to be acknowledged that have been made by the US since its re-engagement in OSI issues in

2009 by providing sizable voluntary contributions in support of the OSI Action Plan implementation and for the preparation and conduct of the 2014 Integrated Field Exercise in Jordan.

Challenge-type inspections continue to receive high priority in the midterm strategies

As evidenced in the most recent medium term strategies and plans issued by both Organizations, challenge-type inspections will continue to receive high priorities in the foreseeable future. As such, preparedness for challenge inspections is one of the key priorities of the OPCW as per the Medium-Term Plan from 2015 to 2019. While starting from a different treaty state and level of preparations, the Provisional Technical Secretariat made the development of OSI operational capabilities one of its two strategic goals as per its Midterm Strategy for the period 2014 to 2017. As such, this should aim at achieving a balance of the operation capabilities among the various verification regime elements.

6. Conclusions

The objective of this dissertation was to examine the relevance of challenge-type inspections in arms control, disarmament and non-proliferation in the early twenty-first century. Regime theory was utilized as the central theoretical basis for this thesis and its arguments were contrasted with those of neorealism and constructivism. In a first step, the role that verification plays in these three theories of International Relations was analyzed. Furthermore, in a comparative case study the thesis explored the role and characteristics of challenge and on-site inspections under the CWC and the CTBT verification regimes, respectively. Importantly, this study also sought to understand the policy making process of CWC and CTBT Member States on these types of inspections. As such, the dissertation aimed to obtain a comprehensive picture of these politically highly charged missions, thereby contributing to the academic debate and analysis of these important verification instruments, as well as providing an impetus for their further use and possible development. Overall, the following central research question was at the heart of this thesis:

"How do regime members view the role, characteristics and importance of challenge-type inspections in verification regimes?"

6.1 Central Empirical Findings

Based on the theoretical framework analysis carried out in Chapter 2, the role, characteristics and importance of challenge-type inspections in verification regimes were examined in three chapters indicated below:

- Chapter 3: Analysis of the CWC and CTBT verification regimes;
- Chapter 4: Analysis of regime rules pertaining to challenge-type inspections; and
- Chapter 5: Analysis of the policy-making on challenge-type inspections by its regime members.

The main empirical findings are chapter specific and were summarized at the end of each respective chapter. Therefore, this section will synthesize these findings in response to the central research question of this dissertation.

Role and emergence of challenge-type inspections

Challenge-type inspections represent the most intrusive type of on-site verification. Whereas routine inspections are triggered by declarations submitted by Member States and primarily serve a confidence building role and have the purpose to ensure transparency, **challenge-**

type inspections are designed to deter and detect. Accordingly, their key purpose is to **clarify and resolve concrete compliance concerns by gathering facts on-site**, which would be difficult or even impossible to collect by other (off-site) verification elements or by National Technical Means. At the same time, they serve a crucial deterrence function, which should increase the potential cost and complexity of attempted violations and thus **avert potential non-compliers**.

The rise of challenge-type inspections is inherently linked to the overall emergence of inspections in arms control. While a first breakthrough with respect to the introduction of inspections for verification purposes was achieved with the entry into force of the Antarctica Treaty in 1961, it took until the 1980s, when the concept of challenge-type inspections emerged during the CWC negotiations in order to address concrete compliance concerns as part of a broader political effort to push for 'effective verification'. Promoted by western states, the central features of the concept embedded an '**anytime, anywhere, without right of refusal**' approach, which was eventually manifested in the CWC challenge inspection mechanism. Subsequently, the CWC challenge inspection provisions served as a blueprint during the early CTBT negotiations in the mid-1990s and turned into a more specific OSI concept and procedures adapted for the CTBT. As such, a number of the CWC features found their way into the CTBT on-site inspection mechanism. In this context, the ratification of important bi- and multilateral accords like the Intermediate-Range Nuclear Forces Treaty, the Strategic Arms Reduction Treaty or the Conventional Forces in Europe Treaty in the late 1980s and early 1990s confirmed the acceptance of inspections as essential verification means in bi- and multilateral arms control and disarmament regimes. Given the politically sensitive nature of these types of inspections, CWC and CTBT negotiations at the Conference on Disarmament in Geneva on the subject matter were arduous and highly complex. However, notwithstanding the formidable difficulties during the negotiations, this dissertation's research findings bring interviewed experts' convictions to light that **the CWC and CTBT regimes would have never been concluded without the provision for challenge-type inspections**.

Early expectations on the frequency of use of challenge-type inspections greatly differed from actual treaty implementation experience. Originally and at the time of the CWC negotiations, some experts believed that there might even be up to a few challenge inspections carried out per year. However, **not a single challenge inspection has been requested since entry into force of the CWC** in 1997. On the one hand this can be interpreted as a positive sign that reflects the high level of compliance by CWC Member States, as well as

the deterrence power of CWC challenge inspection. On the other, hand and in light of the fact that compliance concerns have actually publicly been raised against several CWC States Parties, this obviously indicates that Member States have shown **high political restraint to resort to this type of inspections**.

Challenge-type inspection scenarios may vary considerably depending on the overall scope of the respective treaty. While CTBT on-site inspections have a relatively narrow and clearly defined scope (clarify whether a nuclear (weapon test) explosion has been carried out in violation of the Treaty) and, if possible, to identify the violator, CWC challenge inspections are characterized by the comparably much wider scope of prohibition norms stipulated in the Convention and may therefore be triggered under a broader range of questions concerning possible non-compliance. This, in turn has led to **considerable differences among CWC Member States' positions regarding the purpose, scope and activation of the CWC CI mechanism**. While Members of Non-Aligned Movement such as India, Iran and Pakistan but also China and Russia are in favour of a very cautious and restrictive use of the challenge inspection mechanism, western states - most notably EU Member States and the United States - have argued in favour of invoking the CI-mechanism on a broader range of compliance concerns and potentially on a more frequent basis.

The research also provides evidence that a similar divide exists between the same group of states on the **role of prior consultations and clarifications** that exist both in the CWC and the CTBT. Though notably stipulated under both treaties as an optional measure, CWC Member States interpret these provisions differently. In line with the restrictive approach, the former group of states are of the view that challenge inspections should be only invoked after all options, including the prior consultations and clarifications, have been exhausted. In contrast to that, the US and EU Member States consider this mechanism as optional and at the discretion of each regime member. Interestingly, and while similar in nature, no discussions on the nature of the respective mechanism have been held in the Preparatory Commission for several years and States Signatories decided to freeze the issue until judged necessary to reopen it. Finally, a third divide exists among CWC Member States as to the question of abuse of the CI-mechanism and related consequences. Most notably China and Iran have called for expanding the current definition of abuse, while others such as the US and the EU Member States believe that the current legal guidance is sufficient and do not see any need for further consultations on this issue.

Importance attached to challenge-type inspections by regime members

However, and in spite of strong hesitation to resort to the challenge-type inspection mechanism and the divergent positions expressed by regime members on some important treaty aspects, an analysis of regime members' positions highlights that there is **unequivocal political support for this verification mechanism** under the CWC and Member States neither question its validity nor relevance. **This fact represents one of the key findings of the research conducted**. Demonstrated by various decisions of the policy making organs, CWC States Parties have attributed challenge inspections an integral role in the verification regime. Upon reaching full readiness for the conduct of such non-routine inspections in 2003, regime members have regularly requested the OPCW Secretariat since then to continue maintaining a high standard of readiness for such a mission. This analysis underscores that the OPCW has taken this task seriously and put in place related contingency planning measures to ensure the short notice availability of trained personnel and readiness of the equipment for rapid deployment and conduct of such a mission.

Conversely, and not least due to the different treaty status (i.e. CTBT has not yet entered into force), **regime members set divergent political priorities regarding the pace of build-up of the CTBT on-site inspection regime**. Building on the considerable efforts made earlier by the Group of Scientific Experts, Member States' **immediate priority in the first years of the Preparatory Commission rested on the build-up of the International Monitoring System and the associated International Data Centre**. The fact that these important pillars can operate on a provisional basis and already provide valuable data to regime members, put the OSI regime pillar at a comparable disadvantage over the IMS and IDS establishment and sustainment. Moreover, **OSI development has in the past often been linked to overall regime prospects**, which also adversely affected respective efforts. However, research findings give clear proof that **regime members are in the process of addressing this imbalance and investing major efforts and resources to raise the OSI pillar to the same level of readiness as the other verification regime elements**.

Though recognizing the particular efforts made by western states (most notably the European Union and the United States) since 2008 in the **build-up of the CTBT on-site inspection pillar**, research results show that **regime members from different geographical regions have contributed to this effort** over the years. Conversely, related **preparedness and support measures for the CWC challenge inspection mechanism have primarily been coming from CWC Member States of the 'Western European and Other States' Regional**

Group. Among those States Parties, the United Kingdom has taken a lead role in promoting CWC challenge inspections including inviting OPCW staff to regularly participate in national preparedness exercises. At the same time, official reports indicate that the implementation of reporting obligations with respect to standing arrangements has however been mixed at best by many CWC States Parties. However, by virtue of receiving and supporting CWC routine inspections, National Authorities of many Member States have some systems in place that are likely to be used also during challenge inspections.

As reflected in the current medium term strategies issued by both Organizations, **challenge-type inspections will continue to receive high priority in the foreseeable future**. Therein, preparedness for challenge inspections is one of the key priorities of the OPCW as per the Medium-Term Plan for the period 2015 to 2019. Concurrently, the Provisional Technical Secretariat of the CTBTO made the development of OSI operational capabilities one of its two strategic goals as per its Midterm Strategy for the period 2014 to 2017, which should achieve a balance of the operational capabilities among the various verification regime elements. While recognizing that both these strategies are Secretariat issued documents that have not been formally approved by their regime members, these can be nevertheless regarded as encouraging signals towards the continued support of challenge-type inspections in the mid-term perspective.

Notwithstanding the clear **dominance that political factors have on the regime build-up, technical issues may also ease or exacerbate respective efforts**. As documented in the research**, establishing operational readiness has been comparably easier in case of CWC challenge inspections** in light of the Organization's regular task to conduct routine inspections. Moreover, many inspection techniques applied during a challenge-type inspections are similar to those in routine inspections and all inspection equipment is commercially available off the shelf. In contrast to that, the development of OSI capabilities has proven to be comparably more complex. This can be attributed to the wide range of inspection activities, technologies and techniques that are stipulated under the CTBT, some of which have had very limited civil applications and therefore required considerable research and development. Moreover, detailed expertise on the characteristics and effects of nuclear test explosions is limited to a small number of countries and proliferation concerns have impacted on the development pace of some of these techniques and operational concepts.

Characteristics of challenge-type inspections

By design, challenge-type inspections strike a **balance between the necessary intrusiveness** for effectively detecting and credibly deterring possible non-compliance, while at the same time **respecting legitimate national security interests**. In support of this deterrence and detection capability, inspectors can make use of a wide range of inspection activities and techniques. As shown in the comparative analysis of the regime rules, **sampling and analysis serves as a key inspection technique for gathering evidence under both verification regimes** in addition to visual observation/physical inspection activities. Taking into account the multiple signatures generated by a nuclear test, a **wider choice of technologies is utilized for CTBT on-site inspections** compared to those for CWC challenge inspections and also includes aerial and ground based verification activities.

The comparative analysis of the CI and OSI regime rules also shows that **CWC challenge inspections and CTBT on-site inspections resemble each other from a procedural perspective**. As such, they build upon the same overall inspection process and show some conceptual commonalities. As the ultimate verification tools under both regimes, both the CWC and the CTBT mandate the **inspection team to conduct its inspection in the least intrusive manner possible and proceed with more intrusive techniques only as deemed necessary**. In addition, and as a central feature of the challenge-type inspection mechanism, the inspected State Party may apply **managed access** procedures to protect national security interests not related to the purpose of the inspection. Moreover, both treaties encompass almost identical provisions pertaining to the nomination of an observer by the requesting State Party, which is another characteristic feature of challenge-type inspections. Furthermore, a number of regime rules, such as those standing arrangements, general rules of verification, inspection team related privileges and immunities and responsibilities of the inspected State Party are very similar in substance under both treaties.

Given their intrusive nature, states negotiated detailed rules for challenge-type inspections, which make them **highly regulated missions**. As such, and considering the political dimension of these inspections, **Member States exercise under both treaties tight control over the overall inspection process through the Executive Council**. Hence, this policy making organ is charged with taking two decisive decisions: one before the inspection concerning the decision to approve the request, and one after its conclusion concerning a judgement about possible non-compliance, and whether the right to request such a mission has been abused.

Furthermore, both treaties empower the Executive Council with the right to take measures to redress a situation and to ensure compliance with the respective treaty provisions.

While acknowledging certain commonalities, the analysis also highlights **distinct differences among the two mechanisms**. In this context it is noteworthy to say that **different inspection approval formulas** have been introduced for the CWC and CTBT verification regimes ('red light mechanism' versus 'green light mechanism'), which pose different hurdles to garner the necessary political support. Second, also the **operational parameters of these two types of challenge inspections differ considerably,** with an **OSI being several magnitudes larger than a CI** in dimensions such as inspection duration, number and complexity of applied technologies and techniques, amount of inspection equipment and potential size of the inspection area.

This analysis also reveals a **principle difference in the underlying verification concepts of both treaties** that also impacts on the challenge-type inspection pillar. In contrast to the CWC, there are no routine inspections carried out under the CTBT. Accordingly, no standing inspectorate will be established upon entry into force of the CTBT, which necessitates that inspectors are to be both nominated by Member States and the Director-General. This major difference to the CWC mechanism bears many implications with respect to the training design, deployment concept and contractual arrangements that need to be carefully considered.

Furthermore, the different verification designs of the CTBT and CWC also impact on the **different information acquisition paths for regime members**. As reflected in the research, presented **evidence for a CWC challenge inspection request effectively relies on National Technical Means and intelligence information** that may be difficult to be independently assessed by other Member States. In stark contrast to that, **requests for CTBT OSIs can be based on data products from the International Monitoring System, National Technical Means or a combination thereof**. Taking into account that all Member States have access to the data generated by the IMS allows for an independent, technical assessment of the evidence presented by the requesting State Party and underlines the 'democratic verification' approach introduced by the CTBT.

6.2 Theoretical Implications

As pointed out in this thesis, the purpose of verification has the purpose to make a judgment about parties' compliance or non-compliance with an agreement. Thus it aims to provide con-

fidence that all regime members abide by its provisions in fulfillment of the underlying political goal, which is to strengthen international security. In line with different theories of International Relations, different conclusions can be drawn about the type of verification acceptable to states.

While regime theory supporters acknowledge the central role of states in international relations, they attribute also an important function to multilateral verification. In their view, prospects for verification and regimes are moderate, depend on the support of major players and are linked to the concrete benefits that could not be achieved otherwise. In contrast to that, neo-realists consider prospects for security regimes including verification as rather low unless a hegemon is willing to shoulder costs and initiates cooperation in this field. Being skeptic about the capability of verification to enhance security, they provide only very limited support towards the establishment of multilateral international institutions. Constructivists see prospects for verification in security regimes principally high, particularly if values and norms are widely shared. They do not see verification from an exclusively state centric perspective, but also attach a major role also to other actors such as NGOs, civil society and epistemic communities.

Challenge-type inspections are by their nature fact finding missions to clarify non-compliance concerns and therefore provide valuable information, which could not be achieved by other verification means. In this respect, and considering Member States' **policy making on challenge-type inspections** from a theoretical perspective, related decisions **largely conform to regime theory related explanations**. The broad political support rendered by Member States for these missions as well as demands to reach and maintain a high level of preparedness are clear indications of States Parties' interest in this mechanism. Moreover and looking at both regimes from an overall perspective, they offer a stable negotiations and information exchange framework and thus in turn reduce transaction costs. Additionally, their information provider role stabilizes actors' expectations in this field of security and also conforms to regime theory assumptions.

At the same time, it should not be forgotten that the underlying dynamics of the regimes can have a stabilizing or destabilizing effect on them. The findings of this analysis contribute to this important phenomenon and particularly underline the **change in political interests and priorities of key Member States as a determining factor**. US policy decisions related to the CTBT in 1999 (Senate refusal of the CTBT ratification), in 2001 (cease participating in and funding non-IMS related activities) and 2009 (re-engagement in OSI issues) are clear illustra-

tions in support of these findings, as they have considerably shaped both OSI and overall CTBT regime dynamics. In addition, the shift in political priority among CTBT regime members to bring up the on-site inspection pillar to the same level of readiness as those of the IMS and IDC - without prospects for near entry into force of the CTBT – exemplifies that **regimes are prone to dynamics as a result of different exogenous or endogenous factors**.

Moreover, and while largely conforming to regime theory related assumptions, the analysis of the **policy making on challenge-type inspections under the CWC and CTBT verification regimes also point out the validity of constructivist arguments from an International Relations theory perspective**. Both the CWC and CTBT regimes have emerged also to a considerable degree as a result of a social process and due to the establishment of international norms against chemical weapons and nuclear tests. In this respect, the political backing of intrusive challenge-type inspections credibly reinforces these international norms. The major support provided to challenge-type inspections by, *inter alia*, the European Union, which is an actor that emphasizes the importance of holding dear shared values and norms, can be regarded as an indicator in support of constructivist principles.

While acknowledging that in the mid-term perspective **states will remain the central actors in verification**, this research also highlighted that **new actors** like NGOs (including the civil society), industry, (social) media and scientific communities **may well hold an increasing and more influential role in supporting verification**. Again, this development conforms to constructivist arguments that see verification no longer as an exclusive intergovernmental issue among states, but rather attaches increasing prominence to non-state actors.

6.3 Policy Implications

The key findings of this dissertation clearly support the conclusion that **states consider challenge-type inspections as integral elements of the verification toolbox**. The study's results also can be seen as evidence that **CWC and CTBT Member States believe in the value of regimes**, their capability to reduce transaction costs and help them to better realize their interests collectively through international cooperation.

At the same time, states have shown in the past high political restraint towards the use of challenge-type inspections. It is therefore likely **that challenge-type inspections will also in the future only be activated under very rare circumstances and after careful political considerations**. However, given their crucial role to clarify compliance concerns and to cred-

ibly deter potential non compliers, this analysis results indicate that regime members will attach also in the future a high level of political importance to these missions.

However, **preparedness measures may not only be limited to the Secretariat** as the technical body charged with implementation responsibilities. Member States, in particular their **National Authorities, bear also an important responsibility** in this process.

Given their complexity and strategic importance, **preparations for and the execution of challenge-type inspections necessitate an organization wide and cross-divisional approach**. The conduct of regular, targeted and integrated exercises are fundamental learning tools as part of preparedness measures and can be very useful tools to raise awareness and build confidence about these non-routine types of inspections. In this respect, independent and holistic evaluations can be helpful tools to bring to the surface areas for improvements and accomplishments made. In line with it, the conduct of rigorous and comprehensive follow-up actions is considered essential to transform these lessons into areas of concrete improvements.

Challenge-type inspections are traditional verification tools based on arms control concepts dating back to the time of the Cold War. While acknowledging their continued value, the political environment has however changed considerably, which in turn necessitates the **constant review of these instruments and the openness to take into account new emerging actors that shape the verification process**.

Moreover, credible deterrence and effective verification requires **making best use of new developments in science and technology**. Member States' support for the application of new technologies, including information technologies, must be considered a prerequisite that verification can fulfil its originally intended purpose.

Finally, the dissertation's findings re-iterate that **verification is inherently political in nature** and needs to be considered as such also in this context. Though challenge-type inspections are strictly regulated, forensic-type technical fact finding missions carried out by an impartial inspection team, they also encompass a strong political element. This political dimension is characterized by the positions taken by States Parties with respect to these inspections and underlying theoretical concepts of International Relations in which states believe. Moreover, the political nature of these inspections is also evidenced by the fact that the key decisions regarding approval, non-compliance and abuse is left to political bodies estab-

lished by these organizations. As such – and probably the most important finding of this dissertation - **the success of verification ultimately depends on the political will, confidence and trust exhibited by its regime members**.

6.4 Recommendations for Future Research

Headed by the United Nations, an investigation into the alleged use of chemical weapons was carried out in Syria in 2013. The fact that agreement for the conduct of this mission was reached among the major political opponents represents an important political success for multilateral diplomacy and verification. A wealth of both political and technical lessons has been learnt from this investigation that will be of benefit for future non-routine verification activities. Moreover, it remains to be seen, whether the political consensus reached for its go ahead may eventually represent a shift towards the more frequent use of other non-routine inspections such as challenge-type inspections in the future. Examining the lessons from the Syrian investigation for future arms control, disarmament and non-proliferation may therefore be considered an important topic that qualifies for a separate thesis.

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10. Abbreviations

Abbreviation	Full Name
ACW	Abandoned Chemical Weapon
ADRT	Annotated Draft Rolling Text
BGAN	Broadband Global Area Network
BOO	Base of Operations
BUE	Build Up Exercise
CDE	Conference on
CFSP	Common Foreign Security Policy
CI	Challenge Inspection
CSCE	Conference on Security and Co-operation in Europe
CSP	Conference of States Parties
CTBT	Comprehensive Nuclear-Test-Ban Treaty
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organization
CW	Chemical Weapon
CWC	Chemical Weapons Convention
CWDF	Chemical Weapons Destruction Facility
CWK	Chemiewaffenkonvention
CWPF	Chemical Weapons Production Facility
CWSF	Chemical Weapons Storage Facility
DE	Directed Exercise
DG	Director-General

Abbreviation	Full Name
DOC	Discrete Organic Chemical
DTRA	Defense Threa Reduction Agency
EC	Executive Council
ECMWF	European Centre for Medium-Range Weather Forecasts
EIF	Entry Into Force
ESMF	Equipment Storage and Maintenance Facility
EU	European Union
FIMS	Field Information Management System
FTX	Field Training Exercise
GATT	General Agreement on Tariffs and Trade
GIS	Geographical Information System
GRULAC	Group of Latin American and Caribbean States
G-77	Group of 77
HF	High Frequency
HQ	Headquarters
IAEA	International Atomic Energy Agency
IAU	Investigation of Alleged Use
IDC	International Data Centre
IDRT	Initial Draft Rolling Text
IFE	Integrated Field Exercise
IGO	International Governmental Organization
IIMS	Integrated Information Management System

Abbreviation	Full Name
IMF	International Monetary Fund
IMS	International Monitoring System
INF	Intermediate Range Nuclear Forces
INGO	International Non-Governmental Organization
IO	International Organization
IR	International Regime
ISP	Inspected State Party
IT	Inspection Team
JVE	Joint Verification Experiment
KPI	Key Performance Indicator
KT	Kiloton
MSIR	Multi-spectral Imaging including Infrared
NAM	Non-Aligned Movement
NATO	North Atlantic Treaty Organization
NLT	Not later than
NPT	Nuclear Non-Proliferation Treaty
NTM	National Technical Means
OCPF	Other Chemical Production Facility
OPCW	Organisation for the Prohibition of Chemical Weapons
OCW	Old Chemical Weapon
OM	Operational Manual
OSC	Operations Support Centre

Abbreviation	Full Name
OSCE	Organization for Security and Co-operation in Europe
OSI	On-site Inspection
PC	Preparatory Commission
PF	Preliminary Findings
PMO	policy making organ
PNET	Peaceful Nuclear Explosions Treaty
POE	Point of Entry
POEXIT	Point of Exit
PREPCOM	Preparatory Commission
PTBT	Partial Nuclear Test Ban Treaty
PTS	Provisional Technical Secretariat
RAS	Restricted Access Site
SCDN	Standing Diplomatic Clearance Number
SOP	Standard Operating Procedure
SP	State Party
TNT	Trinitrotoluene
TS	Technical Secretariat
UHF	Ultra-High-Frequency
UK	United Kingdom
UN	United Nations
UNE	Underground Nuclear Explosion
UNGA	United Nations General Assembly

Abbreviation	Full Name
UNIDIR	United Nations Institute for Disarmament Research
UNMOVIC	United Nations Monitoring, Verification and Inspection Commission
UNSCOM	United Nations Special Commission
UNSG	United Nations Secretary-General
UNSC	United Nations Security Council
US	United States
VERTIC	Verification Research, Training and Information Centre
VHF	Very-High-Frequency
VOB	Visual Observation
VSAT	Very Small Aperture Terminal
WGA	Working Group A
WGB	Working Group B
WMD	Weapon of Mass Destruction
WS	Workshop

11. Attachment: Interview Questionnaire

Basic Information:

Interview-number	
Interviewer	Hermann Lampalzer
Interviewee	
Interview Location	
Interview Date and Time	
Interview Duration	
Remarks	

Checklist regarding introductory explanations

√ Explanation of the interview aim

√ Information regarding the aim of the dissertation

√ Request to record the interview by dictaphone

√ Assurance of anonymity for the interviewee

√ Information regarding feedback to the interviewee upon finalization of the dissertation

Introductory statement interviewer

Thank you for your willingness to support me in the research process for my dissertation. This thesis aims at making an assessment regarding today's relevance of challenge-type inspections in arms control, disarmament and non-proliferation. This is done by performing a case study on two challenge-type inspections, namely challenge inspections under the CWC and on-site inspections under the CTBT verification regimes.

Besides literature research, I am carrying out a number of interviews with experts in the field of arms control in order to gather first-hand information on the issue at hand. Your honest

opinion is very important for me. All your statements will be anonymized. Furthermore, I would like to inform you that I have received the permission from the employer to do research on this topic for my dissertation. If you have any questions in the course of the interview, please feel free to ask immediately. Additionally, I would like to note that this questionnaire below serves only a guideline for this interview.

Introductory questions:

1. How long have you been dealing with arms control and disarmament issues, particularly with challenge type inspections?

2. What has been your role and function when dealing with challenge-type inspections issues?

3. Have you participated in any challenge-type inspection related activities such as exercises or seminars?

Key questions regarding the role of challenge-type inspections under the CWC and CTBT verification regimes:

4. How do you see the particular role of challenge-type inspections under the CWC and CTBT verification regimes?

5. What do you see as the key features of challenge-type inspections under the CTBT and the CWC verification regime?

6. What, from your perspective, are the main commonalities and distinct differences between challenge inspections/CWC and on-site inspections/CTBT?

Key questions regarding Member States' policy making vis-à-vis challenge-type inspections

7. How do you see Member States' demands and support regarding challenge-type inspections?

8. Do you see a shift in Member States' positions since the treaty negotiations towards challenge-type inspections and if so why?

9. What are the different positions taken by Member States on challenge-type inspections?

10. Do you see any difference in Member States' support for challenge inspections compared to on-site inspections?

11. What impact do the political decision-making processes have on the way challenge-type inspections are conducted?

12. What political decisions have been taken by Member States with respect to challenge-type inspections and how do they impinge on their current role and importance?

Key questions regarding today's role and relevance of challenge-type inspections:

13. How would you judge the current relevance of these non-routine type of inspections in verification policies?

14. Which actions do you consider important in order to sustain and enhance their function in arms control and disarmament?

Final question:

15. Would you like to add something or make a final statement regarding this topic?

12. Zusammenfassung

Vorortinspektionen stellen einen integralen Bestandteil der Verifikationsmaßnahmen in verschiedenen Rüstungskontroll-, Abrüstungs- und Non-Proliferationsregimen dar. Während 'wiederkehrende Inspektionen' regelmäßig durchgeführt werden, stellen 'Verdachtsinspektionen' die Ausnahme dar und dienen als ultimative Verifikationsmaßnahme zur Verifikation von allfälligen Vertragsverletzungen. Wenngleich von einer sehr restriktiven Handhabung zur Beantragung von Verdachtsinspektionen aufgrund deren politischen Sensibilität auszugehen ist, muss es trotzdem als bemerkenswert beurteilt werden, dass keine einzige Verdachtsinspektion unter der Chemiewaffenkonvention (CWK) seit deren Inkrafttreten im Jahre 1997 beantragt wurde. Dies kann nun einerseits als positives Indiz für eine hohen Vertragstreue aller CWK-Mitgliedsstaaten interpretiert werden, kann jedoch anderseits auch sehr kritisch im Lichte von öffentlich vorgebrachten Vertragsverletzungsvorwürfen gegen manche CWK-Vertragsstaaten hinterfragt werden. In Anbetracht dieser Sachlage wirft dieses Faktum Fragen nach der Relevanz von Verdachtsinspektionen als probates Verifikationsinstrument auf.

Basierend auf einer vergleichenden Analyse von Verdachtsinspektionen gemäß der CWK sowie Vorortinspektionen gemäß dem Umfassenden Nukleareteststoppvertrag (CTBT) untersucht die Dissertation die verschiedenen Positionen der Mitgliedsstaaten hinsichtlich deren Rolle, Charakteristika und Bedeutung in multilateralen Rüstungskontroll-, Abrüstungs- und Non-Proliferationsregimen am Anfang des 21. Jahrhunderts. Die Arbeit baut hierzu auf die Regime-Theorie als zentrale theoretische Basis auf und verfolgt einen qualitativen Forschungsansatz. In diesem Kontext werden die Regime-Prinzipien, Normen, Regeln und Entscheidungsfindungsverfahren für diese Inspektionen gemäß der CWK und dem CTBT untersucht, um sowohl Ähnlichkeiten als auch markante Unterschiede herauszuarbeiten. Darüber hinaus beleuchtet die Dissertation ebenso die Politikgestaltung der Mitgliedsstaaten gegenüber diesen Inspektionen und operationalisiert dabei ein Forschungsmodell von Rittberger, Zangl und Kruck, anhand dessen das politischen Systems von Internationalen Organisationen analysiert werden kann. Die Dokumentenanalyse von Primär- und Sekundärliteratur stellt die wesentliche Forschungsmethode dar, die durch Interviews mit internationalen Experten und Delegierten von CWK- und CTBT-Mitgliedsstaaten ergänzt wird.

Die zentralen Forschungsergebnisse zeigen klar auf, dass Regimemitglieder Verdachtsinspektionen trotz deren Nichtgebrauch in der Vergangenheit nach wie vor als integrale Bestandteile der CWK- und CTBT-Verifikationsregime betrachten. So messen CWK-Mitgliedsstaaten

diesem Verifikationsinstrument eine hohe Bedeutung zu und die Organisation für das Verbot von Chemischen Waffen unterhält dementsprechend einen hohen Grad an Einsatzbereitschaft für derartige Missionen. Gleichzeitig bestehen aber klare Positionsunterschiede zwischen den Vertragsstaaten hinsichtlich der Umstände sowie vorgelagerter Maßnahmen zur Beantragung einer CWK-Verdachtsinspektion. Unter Berücksichtigung des sehr unterschiedlichen Entwicklungspfades des CTBT-Verifikationsregimes gab es beim Aufbau des CTBT-Vorortinspektions-Mechanismus seit 2008 erhebliche Fortschritte und CTBT-Vertragsstaaten unterstützen unisono weitere derartige Maßnahmen, um auch in diesem Bereich die gleiche Einsatzbereitschaft wie in den anderen CTBT-Verifikationselementen zu erreichen. Zusammenfassend lässt sich daher aus den Untersuchungen ableiten, dass Regime-Mitglieder Verdachtsinspektionen nach wie vor als probate und sehr wertvolle Verifikationsinstrumente betrachten, wenngleich sie dieses auch in Zukunft nur unter besonderen und sehr raren Umständen beantragen werden. Darüber hinaus kann ebenso klar abgeleitet werden, dass Verdachtsinspektionen zwar auf einer technischen Faktensammlung vor Ort beruhen, nichtsdestotrotz in deren Gehalt wie alle anderen Verifikationsmaßnahmen im Zuge von Rüstungskontroll-, Abrüstungs- und Non-Proliferationsregimen zutiefst politisch sind und letztlich vom politischen Willen und gegenseitigen Vertrauen der Regime-Mitglieder abhängen.

13. Abstract

As evidenced by various arms control-, disarmament- and non-proliferation-accords, on-site inspections have established themselves as a key element in the verification toolbox. While 'routine-type' inspections are carried out on a frequent basis in various security regimes, challenge-type inspections are considered the exception to this norm and serve as the ultimate verification tool to address compliance concerns. Though clearly not envisaged to be used on a frequent basis, it is nevertheless remarkable that not a single challenge inspection has been requested under the Chemical Weapons Convention (CWC). On the one hand, this can be interpreted as a positive sign and as supporting the high level of compliance by CWC Member States. On the other hand, this has to be critically questioned in light of the fact that compliance concerns have actually publicly been raised against several CWC States Parties. Accordingly, this raises immediate questions regarding the actual relevance of the challenge-type inspection mechanism for multilateral verification.

Based on a comparative case study of challenge inspections (CIs) under the CWC and on-site inspections under the Comprehensive Nuclear-Test-Ban Treaty (CTBT) verification regimes, this dissertation analyzes regime members' positions regarding the role, characteristics and importance of challenge-type inspections in multilateral arms control, disarmament and non-proliferation of the early 21st century. This thesis builds upon the regime theory as its central theoretical embedding and utilizes a qualitatively oriented research approach. As such, the regime principles, norms, rules, and decision-making procedures pertaining to these inspections under the CWC and CTBT are examined and commonalities and distinct differences between them are carved out. Moreover, and in order to analyze the policy-making by regime members towards these types of inspections, the research operationalizes a research model proposed by Rittberger, Zangl and Kruck for studying the political system of international organizations. While extensive document analysis of primary and secondary literature serves as the main research method, interviews with international experts and delegates of CWC and CTBT Member States corroborate the research results.

The main findings clearly highlight that regime members consider challenge-type inspections as integral elements of the CWC and CTBT verification regimes, respectively. Despite not resorting to CIs in the past, CWC Member States attach pivotal importance to this mechanism to address potential non-compliance concerns and the Organization maintains a high level of readiness for such inspections. At the same time, States Parties' positions considerably vary

with respect to the circumstances and preceding measures, under which CWC challenge inspections should be triggered. Notwithstanding the very different development path compared to the CWC, the build-up of the on-site inspection pillar under the CTBT has also seen major progress, particularly since 2008, with Member States unequivocally supporting further measures aimed at bringing it to the same level of operational readiness as that of the other CTBT verification elements. In conclusion, and acknowledging that these types of non-routine inspections will most likely be used only under very rare and exceptional circumstances, they still represent an adequate and valuable verification mechanism. Moreover, and though challenge-type inspections are in essence technical fact finding missions, the overall verification process is inherently political in nature and ultimately depends on the political will and trust exhibited by its regime members.

14. Curriculum Vitae

Curriculum Vitae

Personal information

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Employment Record

Since May 2008	**Policy Planning Officer,** On-site Inspection Division, Provisional Technical Secretariat, Preparatory Commission for the Comprehensive Nuclear-Test-Ban-Treaty Organization, Vienna, Austria
April 2003 – May 2008	**Senior Policy Officer,** Verification Division, Technical Secretariat Organisation for the Prohibition of Chemical Weapons (OPCW), Den Haag, The Netherlands
June 2002 – April 2003	**Analyst,** Directorate-General for Security Politics/Ministry of Defence, Vienna, Austria
October 2000 - June 2002	**Desk Officer NBC Defence & Int. Disaster Relief Operations,** Operations Division, Ministry of Defence, Vienna, Austria
January 1998 – October 2000	**Chemical Weapons (CW)/Munitions Specialist,** Inspectorate Division, Technical Secretariat OPCW, Den Haag, The Netherlands
August 1995 – December 1997	**Head NBC Defence Procedures Section,** NBC Defence School, Vienna, Austria
September 1994 – July 1995	**Platoon Commander and Training Officer,** Theresan Military Academy, Wr. Neustadt, Austria
January 1994 – June 1994	**Sub-team Leader/CW Inspector,** UN Special Commission Chemical Destruction Group 38 Iraq
October 1992 - August 1994	**Commander NBC Defence Platoon & Training Officer,** NBC Defence School, Vienna, Austria

Education

September 2009 – June 2011	**MSc (passed with distinction),** Intl. Project Management, Danube University Krems
October 1996 - June 1997	**Diploma (passed with excellent results), N**atural science-technical training for

	NBC Defence Officers, Akademie für Katastrophen- u. Umweltmanagement, Seibersdorf, Austria
September 1989 – March 1992	**Officer's patent,** Theresan Military Academy, Wr. Neustadt, Austria
June1987	**High school leaving exam qualifying for university entrance (passed with excellent results),** MilRG/Theresan Military Academy, Wr. Neustadt, Austria

Other training and courses

- PRINCE2 Foundation and Practitioner Certificate (2009)
- Company Commander Course/Nuclear-Biological-Chemical (NBC) Defence (passed with distinction, 2002)
- Company Commander Course/General Part (passed with distinction, 1996)
- Chemical Weapons Training Programme/OPCW (January – June 1998, concluded as best out of 80 international trainees)

Language skills

Mother tongue(s): German

Other languages:
- English (working language), Russian (UN proficiency exam), French (lower intermediate), Dutch (lower intermediate)

Selected assignments (since 2005)

- Since Jan/2013: Appointed Member of the Temporary Working Group on Verification/Scientific Advisory Board under the auspices of the OPCW Director-General
- Since Jan/2012: Deputy Project Manager CTBTO Integrated Field Exercise 2014/Jordan
- Nov/2011: External evaluator OPCW Challenge Inspection Exercise 2011/Thailand
- Oct/2010: External evaluator OPCW Delivery of Assistance Exercise Assistex-3/Tunisia
- 2008: Deputy Project Manager CTBTO Integrated Field Exercise 2008 (Kazakhstan)
- 2007: Member of the International Group of Experts tasked with the update of the UN Secretary General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons
- Oct/2005: Member Project Management Team/OPCW/NATO/EADRCC Exercise Joint Assistance 2005/Ukraine