

Message from the Executive Secretary  
of the Preparatory Commission for the  
Comprehensive Nuclear-Test-Ban Treaty Organization  
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The OSCE is at the forefront of the international community's efforts for nuclear disarmament and non-proliferation, and has a rich history of supporting the multilateral mechanisms that enhance and strengthen existing norms against the proliferation of weapons of mass destruction, including with respect to the Comprehensive Nuclear-Test-Ban Treaty (CTBT).

The 56 participating States of the OSCE are all signatories to the CTBT and ratification is nearly all encompassing in the OSCE region. Nearly half of the monitoring stations and facilities that make up the International Monitoring System envisaged in the Treaty are hosted by OSCE participating States.

We are grateful for OSCE participating States' support for the Treaty and the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (Commission). Promotion of the Treaty and contributions to the work of the Commission by the Partners for Cooperation—all State Signatories to the CTBT—are all very welcome.

Similarly, Kazakhstan in its capacity as Chairmanship-in-Office of the OSCE has pursued avenues with which to increase the OSCE's contribution to achieving the goals of UN Security Council Resolution 1540 and supporting the global efforts in the area of nuclear disarmament, particularly with regard to putting an end to nuclear testing through promotion of the CTBT. Moreover, the steps taken by Kazakhstan in nuclear disarmament firmly established that States can relinquish their nuclear arsenals without endangering their security.

To fulfil its mandate, the Commission works closely with the United Nations and other international organizations. In this context, enhanced cooperation in the field of nuclear nonproliferation and disarmament reinforces the cooperative security structures that promote international peace and security through universal adherence to treaties and conventions that comprise the international nonproliferation regime, a concept endorsed by OSCE

participating States in the Ministerial Declaration on Non-Proliferation adopted in Athens last year.

A few short months ago, the 2010 NPT Review Conference overcame the failure of 2005. The Conference reaffirmed the CTBT's essential role in the nuclear disarmament and non-proliferation regime and the vital importance of its entry into force. It is imperative that the international community implements the undertakings of the 2010 Review Conference. There is no shortcut to the implementation of these commitments. As the last barrier against nuclear weapons, the CTBT offers a systematic approach to addressing the challenges to the nuclear non-proliferation regime.

As of today, 182 countries have signed, and 153 States have ratified. Yet 9 of the 44 nuclear-capable States (that possessed nuclear power reactors or research reactors at the time of the negotiation of the Treaty) listed in Annex 2 to the Treaty whose ratification is needed for entry into force have not yet done so. Indonesia, one of these 9 States, is expected to ratify in the very near future.

What is urgently required is leadership. Leadership in those States that have not yet ratified. And leadership to ensure the future of the Treaty and its verification regime.

The Commission has made major achievements in the build up of CTBT's unprecedented verification regime. As it stands today, more than 80% of the International Monitoring System has been built and certified.

The Commission recognizes the true value of the investment with which it has been entrusted by Member States. This investment is a platform for scientific knowledge and capacity development in Member States. Whether it is in the area of early tsunami warning, aviation safety, climate change, or marine life research, the four monitoring technologies provide obvious benefits.

Since its establishment, the Commission has trained more than two thousand technicians and professionals from Member States. Significantly, funding from OSCE participating States has enabled it to design and develop many capacity building activities. The Commission is grateful for the financial support coming from OSCE countries. More importantly, the scientific and technological cooperation and support of many OSCE States is crucial for the Commission.

In order to build and strengthen its relationship with the broader science community in support of the Treaty, and the concept of multilateral verification more broadly, the CTBTO Preparatory Commission will host a scientific conference CTBT: Science and Technology 2011 (S&T2011), which will be held from 8 to 10 June 2011 at the Hofburg Palace in Vienna, Austria. The aim of this multidisciplinary scientific conference is to foster a lasting partnership between scientific and diplomatic communities, and therefore provide substantial investment in the future of multilateral arms control.

Another initiative undertaken by the Commission is the capacity development strategy, which is part of the Commission's efforts to build and enhance the necessary capacities in States Signatories so that they can participate equally in the implementation of the Treaty and benefit equally from the services of the Treaty's verification system.

Recently, the Commission hosted an introductory course entitled “Strengthening Verification, Enhancing Security: The Science and Political Significance of the CTBT”, the first in a series of new undertakings that constitute the capacity development strategy. Held from 18 to 22 October 2010 in Vienna, the course was designed to strengthen and broaden participation in global monitoring and verification efforts. The Commission plans to host advanced courses on the Treaty’s verification technologies in the near future.

On the multilateral level, the Fifth Ministerial Meeting to promote the Entry into Force of the CTBT was held on 24 September 2010 on the margins of the United Nations General Assembly. Attended by over 70 States, the meeting underscored the Ministers’ commitment individually and collectively to make the Treaty a focus of attention at the highest political level.

The biannual Conference on Facilitating the Entry into Force of the CTBT, or Article XIV Conference, is convened by the Secretary General of the United Nations at the request of States that have ratified the Treaty. Through the Article XIV process, States seek measures with which to facilitate and accelerate the entry into force of the Treaty. The seventh Article XIV Conference is expected to take place in September 2011. This gathering will be crucial for building and sustaining political momentum in support of the Treaty and keeping its entry into force high on the international agenda.

The OSCE participating States are natural partners and allies on the road to entry into force of the Treaty. The voices of the leaders of OSCE States calling for the early entry into force of the CTBT shall resonate far and wide in all corners of the earth. As an organization actively promoting security through cooperation, OSCE’s active engagement in facilitating the entry into force of the CTBT can only reinforce its own principles and very foundations. But time is of the essence. The good will and momentum generated recently needs to be met with equally good action.

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**BACKGROUND DOCUMENT BY THE PROVISIONAL TECHNICAL  
SECRETARIAT OF THE PREPARATORY COMMISSION FOR THE  
COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION  
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## **INTRODUCTION**

1. Since its establishment in 1996, the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) and the Provisional Technical Secretariat (PTS) have made significant progress in all areas of implementation of their respective mandates. This includes, with respect to development of the verification system of the Comprehensive Nuclear-Test-Ban Treaty (CTBT), progress in areas such as establishment and sustainment of the International Monitoring System (IMS), improvements to International Data Centre (IDC) processing methods and capabilities, development of a more integrated and effective approach to provisional operations and maintenance of the IMS, and further steps towards achieving on-site inspection (OSI) operational readiness at entry into force of the Treaty. Finally, outreach activities have been pursued more strategically with the aim of promoting, among other things, entry into force and greater universality of the Treaty, as well as broader participation by States Signatories in the work of the Commission, and enhanced access to IMS data and IDC products.
2. The Treaty lies at the very heart of the global nuclear non-proliferation and disarmament regime. The Treaty represents a milestone in the efforts to prohibit any nuclear weapon test explosion or any other nuclear explosion in any environment and is, thus, a key component of the international nuclear non-proliferation and disarmament regime.
3. The importance of the entry into force of the CTBT has been widely recognized by the international community. This support is evidenced through the overwhelming support for the Treaty during the 2010 Review Conference of the States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), the Security Council's call upon States to bring the CTBT into force as expressed in Resolution 1887 and the unprecedented high-level attendance at the 2009 Conference on Facilitating the Entry into Force of the CTBT. Moreover, over 70 countries participated in the fifth Ministerial Meeting to Promote CTBT Entry into Force, of which 24 were represented at the ministerial level. These events, coupled with recent political developments and declarations in the area of arms control, have generated a new momentum towards the Treaty's entry into force.

## **THE TREATY**

4. The CTBT prohibits all nuclear test explosions, whether for a military or any other purpose. It covers all environments and does not set a threshold from which the prohibitions should apply.

The preamble of the Treaty states that its objective is “to contribute effectively to the prevention of the proliferation of nuclear weapons in all its aspects” and “to the process of nuclear disarmament”.

5. The CTBT, and the international norm of non-nuclear testing, has grown in strength since its adoption in 1996. In order to enter into force, the CTBT must be ratified by all 44 States listed in Annex 2 to the Treaty. These States participated in the 1996 session of the Conference on Disarmament (CD), participated in the negotiations of the CTBT at the CD, and were either included in the International Atomic Energy Agency’s list of States with nuclear power reactors or nuclear research reactors.

## **THE PREPARATORY COMMISSION**

6. In advance of the Treaty’s entry into force and the establishment of the CTBTO, a Preparatory Commission for the organization was established by States Signatories on 19 November 1996. The Commission’s purpose is to carry out the necessary preparations for the effective implementation of the CTBT and to prepare for the first session of the Conference of the States Parties to the Treaty. The Commission has two main activities. The first consists of undertaking all necessary preparations to ensure that the verification regime foreseen by the CTBT is capable of fulfilling its operational mission at entry into force of the Treaty. The second is the promotion of the Treaty’s signature and ratification to achieve entry into force.

## **VERIFICATION REGIME**

7. The CTBT provides for the establishment of a unique global verification regime that consists of the IMS, a consultation and clarification process, on-site inspections, and confidence building measures. Data from IMS stations are sent via a secure global satellite network known as the Global Communications Infrastructure (GCI). The data is routed from the satellites to hubs on the ground and then transmitted through terrestrial links to the IDC for processing and analysis. All IMS data and IDC products are made available to States Signatories. The national data centres, which States may establish or expand to handle IMS and IDC products, can also lead to enhanced research capabilities, as well as assist in expanding political and scientific ties in the region.

### **International Monitoring System**

8. The IMS is to consist of a network of 321 monitoring stations and 16 radionuclide laboratories. After entry into force of the CTBT, these facilities will produce data to detect possible nuclear explosions and provide evidence thereof to States Parties for verification of compliance with the Treaty.
9. Significant progress has been made towards the completion of the IMS network in all four technologies – seismic, hydroacoustic, infrasound and radionuclide. As of 18 November 2010, 271 IMS stations have been installed, representing 84.5% of the total number of stations envisaged by the Treaty. Of these, 248 stations as well as 10 radionuclide laboratories have been officially certified as meeting the specifications of the Commission.

## **International Data Centre**

10. The mission of the IDC is to support the verification responsibilities of States by providing products and services necessary for effective global monitoring after entry into force of the Treaty. Prior to entry into force, its task is to establish and test the facilities that will handle the data from the IMS stations. In this regard, provisional operation of as many stations as possible is crucial in developing IDC data processing capabilities pending entry into force of the Treaty. The data collected by the IMS stations are transmitted via the GCI to the IDC and are made available to National Data Centres (NDCs). Ensuring data availability and data quality are amongst the priority issues for the IDC.

## **On-site Inspections**

11. As a final verification measure, an OSI is provided for in the Treaty. The purpose of an OSI, which can only be invoked after entry into force, will be to clarify whether a nuclear weapon test or any other nuclear explosion has been carried out in violation of the Treaty and to gather facts, as far as possible, which might assist in identifying any possible violator. Inspections are likely to consist of field activities which would incorporate the use of visual, seismic, geophysical and radionuclide analysis techniques. In 2008, the Commission conducted an Integrated Field Exercise (IFE) in Kazakhstan in order to test the preparedness of the OSI regime. Work that was carried out subsequent to a review of the IFE and follow-up process eventually culminated in the preparation of a comprehensive OSI action plan. The Commission continues to build up the OSI regime as part of the CTBT verification regime in accordance with Treaty requirements.

## **Events in the Democratic People's Republic of Korea**

12. The Democratic People's Republic of Korea announced on 9 October 2006 that it had conducted a nuclear test explosion. Although only partially completed and operating in test mode, over 20 seismic stations of the IMS located throughout the world, including one as far away as South America, detected signals originating from the 2006 event. Noble gas readings picked up by a station in Canada more than 7500 kilometres away from the DPRK demonstrate the global reach of the verification system. Observations from the station were shown to be consistent with hypothesized release from the DPRK event, providing compelling evidence of the nuclear character of the event. A detailed analysis of the event on 9 October 2006 was issued and distributed to States Signatories only two days after the event.
13. On 25 May 2009, the Democratic People's Republic of Korea announced that it had conducted a second nuclear test explosion. Twenty-three primary seismic monitoring stations registered the event and were used in the initial, automatically generated event list, compared with the 13 that were used in 2006. States Signatories received the first automatic estimation of time, location and magnitude hours before the Democratic People's Republic of Korea publicly announced the test. The PTS also produced bulletins reviewed by IDC analysts within the time line anticipated for operation after entry into force. The bulletins were based on data from 61 seismic stations of the IMS, reflecting the improvement in coverage of the IMS since the 2006 event.

14. The vast improvement in system performance between October 2006 and May 2009 evince the Commission's continued success in developing the CTBT verification regime. During the 2009 event, the system's timely, integrated and coherent performance demonstrated a high level of reliability. The system has proven to be a valuable investment by the States Signatories to ensure that no nuclear test goes undetected.

## **ENTRY INTO FORCE AND UNIVERSALIZATION**

15. Significant progress has been made towards the much desired goal of entry into force and universalization of the Treaty. To date, the Treaty has been signed by 182 States with 153 ratifying States, including 35 of the 44 States listed in its Annex 2. In recent years, we have welcomed the ratifications of the Republic of the Marshall Islands, Trinidad and Tobago and the Central African Republic. In addition to reaffirming the vital importance of the entry into force of the Treaty as a core element of the international nuclear disarmament and nonproliferation regime, the 2010 NPT Review Conference welcomed expressions by remaining Annex 2 States of their intention to pursue and complete the ratification process, including Indonesia and the United States. Furthermore, the Review Conference welcomed the recent expression by Iraq, Papua New Guinea and Thailand of their intentions to ratify the Treaty.

### **Article XIV Process**

16. Under Article XIV, if the Treaty has not entered into force three years after the date of the anniversary of its opening for signature, a conference of those States that have already ratified it may be held to decide by consensus what measures consistent with international law may be taken to accelerate the ratification process and to facilitate entry into force. States Signatories will also be invited to attend the conference.
17. The sixth Article XIV conference was held on 24-25 September 2009 in New York, which was opened by the Secretary-General of the United Nations, Ban Ki-moon, and chaired by the Foreign Ministers of France and Morocco. A great sense of purpose and hope characterized the conference, as manifested in the high attendance figures: 106 States, comprising 89 ratifying States, 14 signatory States and 3 non-signatory States, participated and nearly 40 Ministers addressed the conference. During the first plenary meeting, the conference adopted a Final Declaration calling upon all States which had not done so to sign and/or ratify the Treaty. The declaration includes a number of measures to promote the entry into force of the CTBT.
18. In the course of the follow-up to the 2009 Article XIV conference France and Morocco were selected as coordinators of the process "to promote cooperation, through informal consultations with all interested countries, aimed at promoting further signatures and ratifications". The seventh Article XIV Conference will be held in September 2011.

### **Outreach Activities**

19. The purposes of PTS outreach activities include: enhancing understanding of the Treaty amongst States, media, civil society, and the general public; promoting signature and

ratification of the Treaty, and thereby its universality and entry into force; assisting States Signatories in the implementation of their national verification measures and in the realization of the benefits to be gained from the peaceful applications of the verification technologies; and assisting in promoting the participation of States Signatories in the work of the Commission. In its bilateral interactions to assist States in promoting the entry into force and the universality of the Treaty, the PTS has placed emphasis on those States listed in Annex 2 to the Treaty as well as on those States hosting IMS facilities.

### **Capacity Development**

20. Throughout the last decade, the Commission has spared no effort in building and enhancing the necessary capacities in States Signatories, in particular in the developing States Signatories, to benefit from the services of the Treaty's verification system. With a view to expanding our activities in this area and further strengthening the universal character of our work, the Commission has launched a new capacity development initiative. The capacity development initiative is part of the Commission's efforts to build and enhance the necessary capacities in States Signatories so that they can participate equally in the implementation of the Treaty and benefit equally from the services of the Treaty's verification system.
21. The first in a series of new undertakings has been a weeklong introduction course entitled "Strengthening Verification, Enhancing Security: The Science and Political Significance of the CTBT". The course, which was held from 18 to 22 October 2010 in Vienna, was designed to strengthen and broaden participation in global monitoring and verification efforts. It involved legal, political and security related aspects of the Treaty. It also included the scientific and technological issues that underpin our verification regime.
22. The Commission also intends to continue with the project on promoting the participation of experts from developing countries in official technical meetings. The project, which was set up by the Commission in 2007, has played a notable part in fostering broader participation by developing countries in our technical work. For example, in 2000 representatives from 15 developing countries, on average, participated in sessions of Working Group B, whereas this number has increased to 43 developing countries in 2010.
23. Another initiative aimed at building and strengthening the Commission's relationship with the broader science community in support of the Treaty is the scientific conference "CTBT: Science and Technology 2011" to be held from 8 to 10 June 2011 at the Hofburg Palace in Vienna, Austria. This multidisciplinary scientific conference, designed to foster partnerships on many levels, will be of interest to working scientists and technologists, science administrators, scientific representatives to the CTBTO Preparatory Commission's policy-making organs, and representatives of agencies that fund research and development in areas potentially relevant to the Treaty's verification system.