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**Conference on Facilitating the Entry into Force  
of the Comprehensive Nuclear-Test-Ban Treaty**  
New York, 27 September 2013

**BACKGROUND DOCUMENT BY THE PROVISIONAL TECHNICAL  
SECRETARIAT OF THE PREPARATORY COMMISSION FOR THE  
COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION  
PREPARED FOR THE CONFERENCE ON FACILITATING  
THE ENTRY INTO FORCE OF THE CTBT (NEW YORK, 2013)**

**TREATY**

1. The Comprehensive Nuclear-Test-Ban Treaty (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”.
2. The CTBT, and the international norm of non-nuclear testing, have grown in strength since the adoption of the Treaty 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 are the States which formally participated in the work of the 1996 session of the Conference on Disarmament, thus having contributed to the final stage of the negotiations on the CTBT, and which appear in the lists, compiled by the International Atomic Energy Agency (IAEA), of States with either nuclear power reactors (as of April 1996) or nuclear research reactors (as of December 1995).
3. Significant progress has been made towards the much desired goal of entry into force and universalization of the Treaty. To date, the CTBT has been signed by 183 States and ratified by 159 States, including 36 of the 44 States listed in Annex 2. Since the 2011 Article XIV conference, several countries were able to complete their ratification procedures, including Indonesia in February 2012, thereby lending significant momentum to the CTBT and reducing to eight the number of Annex 2 States that must ratify the Treaty to prompt its entry into force. In the context of universalization, Guinea

ratified the CTBT immediately prior to the 2011 Article XIV conference, followed by Guatemala in January 2012, Brunei Darussalam in January 2013 and Chad in February 2013. Niue signed the CTBT in April 2012.

4. Over 100 States attended the sixth Ministerial Meeting that was held on 27 September 2012 in New York to promote the Treaty. Foreign Ministers and other high-level officials issued a joint call for the entry into force and universalization of the CTBT. The Treaty promises to remain, as it has always been, a uniting force in the multilateral system, and continues to be a rallying point for nuclear non-proliferation and disarmament.

## **PREPARATORY COMMISSION**

5. In advance of the entry into force of the Treaty and the establishment of the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), a Preparatory Commission for the Organization was established by States Signatories on 19 November 1996. The purpose of the Commission 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. Altogether 135 States are accredited to the Commission and 143 have designated their National Authorities or focal points.
6. 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. The second is the promotion of signature and ratification of the Treaty to achieve entry into force. The Commission is made up of a plenary body responsible for directing policy and composed of all States Signatories, as well as a Provisional Technical Secretariat (PTS) which assists the Commission in its duties and carries out such functions as the Commission determines.

## **2011 ARTICLE XIV CONFERENCE**

7. 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.
8. The 2011 Article XIV conference<sup>1</sup> was held on 23 September 2011 in New York with 100 ratifying States and States Signatories participating, as well as 1 observer State. This conference adopted a Final Declaration calling upon all States which had not yet done so to sign and/or ratify the Treaty (document CTBT-Art.XIV/2011/6, Annex). The declaration includes a number of measures to promote the entry into force of the CTBT.

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<sup>1</sup> Previous Article XIV conferences were held in Vienna (in 1999, 2003 and 2007) and in New York (in 2001, 2005 and 2009).

9. In the course of the follow-up to the 2011 Article XIV conference, and in accordance with paragraph 11(c) of the Final Declaration, Mexico and Sweden, which served as the Presidency of the conference, were selected as coordinators of the process “to promote cooperation, through informal consultations with all interested countries, aimed at promoting further signatures and ratifications”. On 21 May 2013, at informal consultations within the framework of this ‘Article XIV process’, Hungary and Indonesia were appointed to serve as Presidents-designate in preparing for the 2013 Article XIV conference in New York.

## **VERIFICATION REGIME**

10. The CTBT provides for the establishment of a unique global verification regime that consists of an International Monitoring System (IMS), a consultation and clarification process, on-site inspections (OSIs) and confidence building measures. Data from IMS stations are to be sent via a secure global satellite network (the Global Communications Infrastructure (GCI)) to an International Data Centre (IDC) for processing and analysis, and IMS data and IDC products are to be made available to States.

### **International Monitoring System**

11. The IMS is to consist of a network of 321 monitoring stations and 16 radionuclide laboratories. The mission of these facilities is to produce data to detect possible nuclear explosions that are to be provided to States Parties for verification of compliance with the Treaty after entry into force.
12. The momentum to complete the IMS network continues at a moderate pace. Progress has been made since mid-2011 in all four technologies – seismic, hydroacoustic, infrasound and radionuclide. As of 30 June 2013, 280 (87%) of the IMS stations had been installed. A total of 264 (82%) stations and 11 (69%) radionuclide laboratories had been officially certified as meeting the specifications of the Commission. Progress was also made towards completing the installation of further stations. Given their remote location and complexities, these stations represent substantial achievements for the Commission. Major parts of the primary seismic network, the auxiliary seismic network, the infrasound network and the radionuclide network have already been certified and the network of hydroacoustic stations is virtually complete, with 10 of the 11 envisaged stations now certified. Finally, since the events in the Democratic People’s Republic of Korea in 2006, 2009 and 2013, which demonstrated the importance of noble gas monitoring, the PTS has continued to place a greater emphasis on noble gas technology. The installation of noble gas detection systems at radionuclide stations, the smooth transition of these systems into IDC operation and the first certifications of such systems were important achievements. As of 30 June 2013, of the 40 noble gas detection systems envisaged by the Treaty, 31 had been installed, of which 14 systems have been certified (35%). All these gains are not just about increases in data and information. They are about network resilience, progress in network coverage, greater diversity of recording systems and higher quality review.
13. In addition, political support was received from a number of countries hosting IMS facilities where the PTS could not proceed in previous years, bringing the prospect of a complete IMS network closer.

## International Data Centre

14. The mission of the IDC is to support the verification responsibilities of States by providing data, products and services necessary for effective global monitoring after the entry into force of the Treaty.
15. The IDC continues in its provisional mode of operation and supports State Signatories by acquiring and forwarding continuous real time data, selected data segments and radionuclide spectra from the IMS. The IDC processes the IMS data along with compiled meteorological data and distributes the resulting products to support the verification responsibilities of States as well as their civil and scientific efforts. Over 11 terabytes of data and products were distributed in the past year. States were supported through an online help desk, data retrieval services, training courses, workshops, software and equipment.
16. IMS noble gas systems are improving the capability of the monitoring system, as demonstrated in the aftermath of the announced nuclear test in the Democratic People's Republic of Korea in February 2013, where noble gases consistent with the announced test were detected. A categorization scheme was introduced into the IDC radionuclide products for the noble gas systems. The scheme provides States Signatories with a quantitative measure of the importance of the measurements.
17. Through the International Noble Gas Experiment, support from European Union Joint Action V and the Workshop on Signatures of Medical and Industrial Isotope Production, the global radioxenon background signature and the effects of emissions from the radiopharmaceutical industry have been studied. Efforts are being made in partnership with the industry to manage emissions so that the detection capability of the IMS noble gas systems is as sensitive as possible to nuclear explosions. The Executive Secretary Elect of the Commission, Lassina Zerbo, and Jean-Michel Vanderhofstadt, Managing Director of the Institute for Radioelements, signed in June 2013 a pledge on co-operation in noble gas mitigation.
18. Improvements are being made to the atmospheric transport modelling (ATM) capability of the IDC. Higher resolution meteorological data are now available and will be used to produce better quality ATM products at the request of States Signatories.
19. States Signatories rely on the data and products provided by the IDC for their verification activities. The timeliness of data has been substantially improved as a result of the GCI data repository being put into operation in 2012. Following this development, for example, data from auxiliary seismic stations are rarely late and requests by States Signatories for these data are serviced without delay.
20. The CTBT "Science and Technology" conference held from 17 to 21 June 2013 in Vienna, following similar events in 2006, 2009 and 2011, continued to be a process for exploring new and improved verification methods and nurturing them for possible inclusion in the verification system. This process helps maintain the Treaty mandate to stay current with monitoring and verification technologies.

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## Sustaining and Maintaining the IMS

21. In accordance with Article IV of the Treaty, the Technical Secretariat supervises, coordinates and ensures the operation of the IMS and its component elements. Preparing a global verification regime is not just about building stations. It is about taking a holistic approach to establishing and sustaining a system that meets the verification requirements of the Treaty and ensures minimal downtime of IMS facilities.
22. Operational experience with the system has increased over time, leading to the establishment of an IMS sustainment structure and concerted efforts for more effective operations, preventive maintenance, logistical and engineering strategies and programmes. These sustainment activities are essential to preserve the investment already made by States Signatories. As the construction of the IMS advances, the importance of reviewing and improving operation and support of the facilities is amplified.
23. Since 2011, the PTS has continued to develop its expertise in configuration management, logistics support analysis, establishment of equipment support contracts, shipping and customs clearance, and storage and advance location of spares to ensure availability of replacement equipment and consumables on site. It has also continued to recapitalize IMS facility components reaching the end of their lifetime and to address unscheduled maintenance in a timely fashion. Furthermore, owing to the central role played by the station operator in resolving problems on site and hence contributing to high levels of data availability, the PTS has continued to invest in local training courses for station operators that are tailored to their needs. Monitoring software has also been developed to facilitate the tasks of monitoring and detecting incidents in the IMS network.
24. Operation and maintenance of IMS auxiliary seismic stations are the responsibility of the host States. Challenges related to sustainment of these stations have been more systematically addressed jointly with the host countries and other organizations over the last two years. These efforts have resulted in an increase in data availability of certified auxiliary seismic stations and a better understanding of roles and responsibilities for sustaining them.
25. Through its Joint Actions IV and V, the European Union provides useful financial support for IMS auxiliary seismic stations that do not belong to parent networks and are hosted by developing countries or countries in transition. This initiative includes actions to bring stations back into operation. It also encourages targeted countries to secure a sustainable support structure for their auxiliary seismic facilities. A similar initiative of the United States of America has provided voluntary contributions for 2012 and 2013 to improve several auxiliary seismic stations belonging to global parent networks, as well as stations based in the USA.
26. Increasing the number of facility agreements and arrangements between the Commission and the States hosting IMS facilities is important for providing the required support for the functioning and sustainment of the IMS. The development of mechanisms such as timely customs clearance and tax exemption for equipment brought into an IMS host State by the Commission has proven to be highly relevant.

27. The PTS has continued to increase its focus on engineering and development activities, with the aim of enhancing IMS monitoring facilities and improving the performance and capabilities of associated technologies. It continues to develop and implement cost effective solutions to address engineering problems arising at certified IMS stations. Furthermore, progress has been made with the quality assurance/quality control programme to monitor the performance of the IMS network, i.e. to ensure that data produced are of acceptable quality.
28. As the IMS network grows, the costs associated with ageing and sustainment also rise. Provisions are in place to address peaks in obsolescence of IMS equipment in the foreseeable future. However, workable solutions need to be identified by the Commission in the case of repairs at IMS facilities following damage caused by natural forces. In 2010, extrabudgetary funding was successfully secured to accommodate a multimillion dollar reconstruction at two IMS stations in the Juan Fernández Islands (Chile). As a result, infrasound station IS14 is already back in operation and hydroacoustic station HA3 is expected to be reinstalled in February-March 2014.
29. The establishment of an IMS technology development programme has continued to ensure that the IMS remains scientifically and technologically relevant and to provide the appropriate engineering solutions for IMS stations. The programme relies on interaction with the science and technology community through the organization of annual technology meetings. It also includes studies and experiments at test facilities, such as the infrasound and test facility at the Conrad Observatory near Vienna. The PTS completed a technology foresight exercise to develop a long term vision of the developments and issues that will shape the next generation of technologies and systems. This exercise is being followed up by development of more detailed technology specific road maps to assess relevant technical developments in the near future.
30. Continued improvements of PTS computer systems have been implemented with the aim of eliminating temporary downtime of service and accelerating the data backup process.
31. The PTS sustainment strategy and the joint efforts with delegations, national governments, station operators and national institutions have been rewarded. There has been a continuous improvement in raw data availability from IMS stations, which reached a level of 90% over 2012. Such an achievement is all the more remarkable when measured against the continuous growth of the whole system.
32. Post-certification activity (PCA) contracts, agreements and arrangements support station operators in operating and maintaining primary IMS stations after certification. The PTS has standardized the services provided under PCA contracts, taking into consideration sustainment costs for the entire lifetime of a facility. Keeping the operational costs of IMS stations at reasonable levels is a joint responsibility of the PTS and the host country.

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## On-Site Inspections

33. On-site inspections (OSIs) represent the ultimate verification measure of the CTBT in order to address possible compliance concerns with the Treaty. An OSI can only be invoked after the entry into force of the Treaty. The sole purpose of OSI is to clarify whether a nuclear weapon test explosion or any other nuclear explosion has been carried out in violation of the Treaty and to gather facts which might assist in identifying any possible violator.
34. The Commission has continued to build up the OSI verification regime in accordance with Treaty requirements. Considerable progress has been made in the last two years with the implementation of the OSI action plan. The planned projects relate, inter alia, to the areas of operations, operations support and logistics, equipment development, documentation and training. Financial and human resource constraints in 2011 and 2012, as in previous years, presented a major challenge to the implementation of the action plan.
35. Preparations for the next Integrated Field Exercise (IFE) in 2014 have significantly advanced since 2011. Jordan was selected by the Commission as the host country. Accordingly, in-depth planning and preparation activities started jointly with the host country. The legal framework documents covering the responsibilities of each respective party during the preparation and conduct phases of the exercise were agreed upon and signed in November 2012.
36. Preparation of a scientifically credible and comprehensive scenario for the IFE commenced in March 2012 with the establishment of a task force of external experts from States Signatories. A series of meetings were held throughout 2012, including a first host country visit in December 2012 to define the inspection area and specific locations of interest as well as to agree upon the overarching background scenario.
37. As part of the preparations for the IFE in 2014, three build-up exercises related to the launch, pre-inspection and post-inspection phases as well as the inspection phase of an OSI were successfully carried out. These exercises provided valuable lessons that will be useful for further preparations for the IFE.
38. The first build-up exercise was conducted from 16 to 20 April 2012 at the Equipment Storage and Maintenance Facility (ESMF) in Guntramsdorf, Austria, covering the launch period of an OSI. Various aspects were exercised, including activation of the Operations Support Centre (OSC), verification of the validity of the OSI request by senior management, preparation of the initial inspection plan and the inspection mandate (including an equipment list), call-up of prospective inspection team members, and equipment preparation, packing and certification.
39. The second build-up exercise, covering the pre-inspection and post-inspection phases of an OSI, was carried out from 8 to 14 September 2012 at the ESMF and the Austrian Armed Forces Military Training Ground in Bruckneudorf. Key exercise activities included testing point of entry related procedures, setting up a base of operations and establishing operational readiness, as well as conducting crucial elements of the post-inspection procedures.

40. The third build-up exercise, focusing on the inspection phase, was held from 26 May to 7 June 2013 at a military training ground near Veszprém, Hungary, and in the prototype OSC in the ESMF. It was the second biggest exercise organized and conducted by the PTS to date; only the IFE conducted in Kazakhstan in 2008 was bigger and more complex. A total of 147 experts from 40 States Signatories and the PTS participated. Around 120 tonnes of equipment were transported from the ESMF for the exercise, and two complete parts of the base of operations were established (accommodation and inspection team offices, laboratories and all support infrastructure).
41. The exercise provided an opportunity to test in an integrated way almost all the OSI techniques for which equipment is currently available in the PTS. A specially developed search logic methodology, a newly developed Integrated Information Management System (IIMS), a modernized field information management system and an updated communications set-up for OSI purposes were used intensively. The exercise also provided an opportunity to test some of the OSI techniques that had not yet been tested or exercised at such a complex level. These included augering and sampling for radioactive noble gas detection, and ground based gamma survey, as well as geophysical techniques that are used in the continuation period of an OSI.
42. Inspection techniques such as ground based visual observation, as well as cross-cutting aspects pertaining to inspection team communications, a field geographical information system, the IIMS, search logic and functionality, have been developed further since 2011. Additionally, progress has been made in the application of multispectral including infrared (MSIR) imaging for OSI purposes. Two field tests related to MSIR monitoring were conducted at military sites in Hungary in September 2011 and May 2012.
43. Significant efforts have been dedicated to noble gas detection systems for OSI purposes. Beside the continuation of development of a draft concept of operations for noble gas sampling, work has concentrated on the further development of equipment for argon-37 and radioxenon analysis. Additionally, the Seismic Aftershock Monitoring System has been optimized and work on the development of a concept of operations for continuation period techniques has been carried out.
44. An Integrated Inspection Support System was updated to take into account lessons learned from OSI exercise activities. This included updating and adjustment of such projects as the establishment of an OSI databank, development of a rapid deployment system and improvement of the OSI health and safety regime. In addition, the ESMF has been fully utilized, serving as a combined facility to support training, tests and exercises together with the original concept of storage, maintenance and calibration of OSI equipment. The facility also hosts the mock-up of the future OSC.
45. The second training cycle for surrogate inspectors was implemented further. The aim of this cycle is to add another 50 trained experts from States Signatories to the roster of surrogate inspectors. Beside a number of tabletop exercises, an advanced OSI training course was carried out in 2011, and a tailor-made OSI leadership training course and a comprehensive OSI health and safety training course were held in 2012. Complex training courses for more than 300 attendees were also conducted as preparation for conduct of the three build-up exercises for the IFE.

46. Progress has been made in standardizing, revising and further developing OSI subsidiary documents, including standard operating procedures and work instructions, and in further updating the OSI document management system with new subsidiary documents and revised templates. A new draft equipment list for initial period techniques has been produced on the basis of technical advances and development work. Another priority task of the Commission remains the elaboration of the draft OSI Operational Manual. The product of the third round of elaboration is intended to be a draft manual that can be used during the IFE in 2014.

### **2013 ANNOUNCED NUCLEAR TEST BY THE DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA**

47. The announced nuclear test by the Democratic People's Republic of Korea of 12 February 2013 led to the most recent demonstration of the viability of the verification system of the Treaty and its relevance to global nuclear disarmament and non-proliferation efforts. The first data and results were made available to States Signatories in little more than one hour and before the announcement by the Democratic People's Republic of Korea. By around 17:00 (UTC) of the following day, the Reviewed Event Bulletin (REB) was issued to States Signatories, well within the time frame specified in the Treaty. Detections were made by 96 IMS stations, 2 of which were infrasound stations and 88 of which were used in the event location estimate reported in the REB.
48. A significant increase has been observed in the number of IMS stations that detected similar events in the Democratic People's Republic of Korea over time (22 in 2006 and 61 in 2009), as well as the ability to locate the event with more precision – 181 km<sup>2</sup> in 2013 compared to 265 km<sup>2</sup> in 2009 and 880 km<sup>2</sup> in 2006. These observations are not only a result of the increased sizes of the events, but also clearly demonstrate the success of the Commission in building up the verification system of the Treaty and the significant progress achieved in its full operationalization.
49. In preparation for the possibility that radionuclides might have been released, ATM was used to estimate where a possible radionuclide release would be detectable. Over subsequent weeks, the radionuclide monitoring system was observed carefully. Although some IMS stations near the Democratic People's Republic of Korea made detections shortly after the event that were high relative to global averages, the radionuclides and activity levels were typical for those stations. On 9 April 2013, 55 days after the announced nuclear test, radioactive noble gases were detected by the IMS noble gas system in Japan with activity levels that were atypical. Isotope ratios and ATM confirmed that the detections were consistent with a nuclear test at the time and place of the announced test, but with a release of the gases at a much later date. These detections, so long after the announced test, demonstrate the monitoring capability of the IMS.

### **TRAINING AND TECHNICAL CAPACITY BUILDING**

50. The Commission accords high importance to training and capacity building in order to improve the capacity of States Signatories to effectively fulfil their verification responsibilities under the Treaty, and to benefit fully from their participation in the

verification regime, in particular through the use of IMS data and IDC products (for verification as well as for their own civil and scientific applications).

51. In addition to traditional training methodologies, information and communication technologies such as e-learning offer broader possibilities to expand and further enhance capacity building. Training and capacity building are provided to States Signatories that have access to IMS data and IDC products (more than 1400 authorized users from 125 States) as well as to those that do not have access (58 States) and those that do have access but make limited use of the information.
52. The training effort has targeted specific audiences, namely IMS station operators, technical staff of National Data Centres (NDCs), OSI field inspectors, officials, diplomats and PTS staff. Currently, 37 e-learning modules, 11 of which are in all of the official working languages of the United Nations, are available to these target audiences. Since 2011, more than 210 NDC technical staff from 67 States Signatories as well as more than 160 station operators from 52 States Signatories have been trained.

### **Capacity Development Initiative**

53. The need to invest in the next generation of nuclear non-proliferation and disarmament specialists is a key driver of the Capacity Development Initiative (CDI) of the Commission. By increasing the awareness and understanding of the international non-proliferation and disarmament framework, this initiative aims at building capacities in areas related to the Treaty. To achieve this objective, the PTS developed an online e-learning platform complete with issue specific training modules, a database of CTBT related resources and materials, and an archive of lectures on the Treaty and the science and technology that underpin its verification regime. The Commission also launched an iTunes U page in 2012 which allows users to access and download lectures, documents and presentation files on the policy, legal, technical and scientific aspects of the CTBT. The Commission became the first security based international organization to create a free and open educational platform on iTunes U.
54. As part of the overall capacity development, the PTS organized a week-long diplomacy and public policy course, entitled “Proven Treaty, Political Challenge: The CTBT and Multistakeholder Security”, from 15 to 19 July 2013 in Vienna. This course was attended by representatives from foreign ministries, including Vienna based diplomats, NDC staff and station operators, as well as university students, researchers and other interested members of civil society. The course was broadcast live via the public website of the Commission to many other participants around the world who could not attend in person.
55. To broaden the scope of the initiative, the Commission held a CTBT Academic Forum from 18 to 20 March 2013, during which the Test-Ban Academic Network (T-BAN) was launched. The objective of T-BAN is to expand on the existing network of global partnerships, including States, disarmament and non-proliferation organizations, universities, research institutes, non-governmental organizations, corporations and individuals with expertise and interest in the Treaty and the science and technology behind its verification regime. By forming these partnerships, the Commission is

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actively enhancing awareness and understanding of the Treaty, as well as increasing the number of stakeholders involved in the implementation of the Treaty.

## EVALUATION

56. The PTS undertakes to continuously enhance effectiveness and efficiency through its Quality Management System (QMS), which encompasses all contributing PTS processes and work products. One of the functions of the QMS is to identify and implement key performance indicators (KPIs) for evaluating these processes and products. The overall aim of the QMS is to support the objective of consistently meeting verification system requirements.
57. The capabilities of the performance reporting tool (PRTool) were expanded to strengthen its potential for helping to assess improvement of processes and products on the basis of the related KPIs. PRTool is setting ambitious standards of transparency and accountability. It allows States Signatories to monitor PTS programme implementation with the possibility of retrieving data for any given year and making a judgement on the value gained for the resources invested.
58. The performance monitoring and testing framework was established by the PTS to create a culture in which quality is monitored as part of normal activities so that customers, such as States Signatories and NDCs, have assurance that the Commission is in compliance with the requirements set forth in the Treaty and its Protocol. As part of this process, NDCs, which use the products and services of the IDC, meet in annual workshops to provide their feedback.
59. The evaluation of OSI events focused on the preparations for undertaking the next IFE in 2014 and more specifically on the third build-up exercise conducted in May-June 2013. The concept and method for the evaluation of the next IFE and its preceding build-up activities are set out in a rolling draft blueprint which continues to be developed and refined on the basis of experience gained during each build-up exercise. In addition, an evaluation framework together with an appropriate toolset is being developed and used by the external evaluation team to evaluate each exercise.
60. In recent years, new landmarks in the exchange of experience and knowledge have been reached through a series of NDC Preparedness Exercises (NPEs) conducted by the NDCs. NPEs represent a further advance along the 'learning curve' for NDCs to perform their verification duties, enhancing the dialogue and cooperation between experts in the various CTBT monitoring technologies and the PTS.
61. The 2012 NDC Evaluation Workshop, which took place from 1 to 5 October in Asunción, was jointly organized by the Government of Paraguay and the PTS. The objective of the workshop was to provide a forum for NDC experts to share their experiences in fulfilling their verification responsibilities and to provide feedback on all aspects of the data, products, services and support provided by the PTS.

## **PROVISIONAL TECHNICAL SECRETARIAT**

62. As of 30 June 2013, the PTS comprised 263 staff members from 80 countries. The number of staff at the Professional level was 175. The PTS is committed to a policy of equal employment opportunity, with a particular emphasis on improving the representation of women, especially in the scientific and technical areas within the Professional category. Fifty-six women held Professional positions as of 30 June 2013, corresponding to 32% of the Professional staff.
63. The approved Budget of the Commission for 2013 amounts to US\$121.9 million. From 1997 up to and including the financial year 2013, the total budgetary resources amounted to \$1032.9 million and €461.2 million. In equivalent US dollars this corresponds to a total of \$1612.3 million calculated using the budgetary rate of exchange of €1:US\$0.796. Of this total, 79.3% has been dedicated to verification related programmes, including \$376.6 million (23%) for the Capital Investment Fund for the installation and upgrade of IMS stations.

## **OUTREACH ACTIVITIES**

64. The purposes of the PTS outreach activities include: enhancing understanding and implementation of the Treaty among 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 their national implementation of verification measures and in gaining benefits from the peaceful applications of the verification technologies; and assisting in promoting the participation of States Signatories in the work of the Commission.
65. Most of the interaction with States to raise awareness about the Treaty and promote signature and ratification takes place in the context of bilateral consultations and correspondence. While special emphasis has been placed on those States listed in Annex 2 to the Treaty and those hosting IMS facilities, virtually all States have been approached by the PTS in its outreach efforts since September 2011. In addition to regular dialogue with Permanent Missions in Vienna and those representations based in Berlin, Geneva and New York, visits by PTS staff were conducted in a number of capitals. Consultations were also held, at all levels, on the margins of global, regional and subregional conferences and other gatherings.
66. A number of events and activities are organized by the PTS which allow for bilateral consultations with participants from both signatory and non-signatory States. In November 2011, for example, the PTS held a cross-regional workshop in Istanbul. In addition to promoting entry into force and universality of the Treaty, the workshop helped enhance State authorities' understanding of the Treaty and stressed the importance of national implementation measures. Similar objectives guided the information visits that were held in Vienna in April 2012, when a representative from the Congo was briefed about the Treaty and the work of the Commission; in July 2012, when a high-level delegation from China was briefed on capacity development and capacity building, with the delegation also attending the CDI Intensive Policy Course; and in November 2012, when representatives from three non-ratifying States

(Swaziland, Thailand and Yemen) were briefed on the political, legal and technical aspects of the CTBT.

67. Participation by the Executive Secretary in major events and high-level bilateral talks constitutes a key element of PTS outreach efforts. Since September 2011, such events have included the World Economic Forum Summit on the Global Agenda (Abu Dhabi, October 2011); the Astana International Forum for a Nuclear-Weapon-Free-World (Astana, October 2011); the Tenth United Nations–Republic of Korea Joint Conference on Disarmament and Non-Proliferation Issues (Jeju, November 2011); the commemorative event for the 45th anniversary of the Treaty of Tlatelolco (February 2012); the Ministerial Meeting of the Non-Aligned Movement Coordinating Bureau (Sharm El Sheikh, May 2012); the First Session of the Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) (Vienna, May 2012); the sixth Ministerial Meeting to promote the entry into force of the CTBT (New York, September 2012); the sixty-seventh session of the United Nations General Assembly (New York, September 2012); the World Economic Forum Summit on the Global Agenda (Dubai, November 2012); the 19th Meeting of the Ministerial Council of the Organization for Security and Co-operation in Europe (Dublin, December 2012); the World Economic Forum Annual Meeting (Davos–Klosters, January 2013); and the Second Session of the Preparatory Committee for the 2015 NPT Review Conference (Geneva, April-May 2013).
68. The Executive Secretary held bilateral discussions with several high-level officials, including United Nations Secretary-General Ban Ki-moon (November 2012) and a number of Foreign Ministers, on the margins of each of the aforementioned events and during other seminars, workshops, briefings and visits. He also attended events related to nuclear non-proliferation and disarmament convened by individual governments. With a view to strengthening bilateral interactions with the Commission and raising awareness about the Treaty, the Executive Secretary has visited 22 States since September 2011.
69. The PTS has continued to promote preparations for national implementation of the CTBT through its programme of legislative assistance to States on the measures to be taken in accordance with Article III of the CTBT. The PTS model legislation and commentary have been widely distributed and are available on the public website.
70. A significant portion of the outreach activities of the Commission is carried out using voluntary contributions provided by States Signatories. Among the activities conducted by the PTS on the basis of such contributions were the project facilitating the participation of experts from developing countries in technical meetings of the Commission as well as the information visits held in November 2011 and April, July and November 2012. Voluntary contributions have also been provided to build capacity in developing countries and to enhance States' understanding of the work of the Commission, applications of the CTBT verification technologies and the benefits accruing from membership of the Commission, including the potential benefits derived from the civil and scientific applications of the verification technologies.
71. The PTS has continued to promote the Treaty and its verification regime through interaction with States, media, civil society, educational and scientific institutions, think

tanks and the general public. Using a proactive and targeted approach, public information activities have covered all relevant events, such as the 15th birthday of the organization, celebrated in February 2012 with the United Nations Secretary-General, the 2012 Ministerial Meeting, the nuclear test announced by the Democratic People's Republic of Korea in February 2013 and the 2013 "Science and Technology" conference. Audiovisual reports, interactive features and animations have become notable characteristics of outreach activities. Systematic use of social networking tools has further intensified and the public website ([www.ctbto.org](http://www.ctbto.org)) was revamped for compatibility with mobile devices and embedding of social media functions and video–audio content. All this has led to increased visibility for the Treaty and its verification regime in print, online and broadcast media worldwide, notably in Asia and the Middle East. Media outreach and other public information activities have continued in the form of articles, interviews, electronic newsletters, press releases, briefings, publications such as the magazine *CTBTO Spectrum*, exhibitions and presentations.

## **CIVIL AND SCIENTIFIC BENEFITS OF THE TREATY**

72. There is a range of civil and scientific applications for the verification technologies of the Treaty that can benefit States Signatories. The abundance of data and products available to States Signatories can facilitate their civil and scientific activities, including, for example, natural disaster warning and preparedness, sustainable development, knowledge expansion and human welfare.
73. As an example of the civil and scientific applications of the verification technologies, the Commission has agreed on terms under which IMS seismic and hydroacoustic data can be made available to recognized tsunami warning organizations. Eleven such agreements or arrangements are currently in place for which data from 101 IMS stations are being sent. Tsunami warning organizations have confirmed that the use of IMS data, which are more timely and reliable than from other sources, increases their ability to identify potentially tsunamigenic earthquakes and to give more rapid warnings.

## **CONCLUSIONS**

74. Since the 2011 Article XIV conference, considerable progress has been achieved in the promotion of the Treaty and the advancement of its verification regime. The call for early entry into force has continued to feature prominently in the agenda of the international campaign for nuclear non-proliferation and disarmament.
75. The verification regime of the Treaty has moved closer to completion, further improving its operational readiness. Of significance is the introduction of infrasound and noble gas data into IDC operations. These developments have in turn increased the reliability of the system and the confidence in its capability to detect any nuclear explosion test in any environment. The advanced stage of development of the verification system was amply demonstrated by the response to the announced nuclear test by the Democratic People's Republic of Korea in February 2013.
76. The Commission has succeeded in reaching a high level of transparency and accountability. The States Signatories enjoy constant access to real time data, data products and information on its performance.