COUNCIL DECISION 2012/699/CFSP

of 13 November 2012

on the Union support for the activities of the Preparatory Commission of the Comprehensive Nuclear-Test-Ban Treaty Organisation in order to strengthen its monitoring and verification capabilities and in the framework of the implementation of the EU Strategy against Proliferation of Weapons of Mass Destruction

THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on European Union, and in particular Article 26(2) and Article 31(1) thereof,

Having regard to the proposal from the High Representative of the Union for Foreign Affairs and Security Policy,

Whereas:

(1) On 12 December 2003, the European Council adopted the EU Strategy against Proliferation of Weapons of Mass Destruction (the Strategy), Chapter III of which contains a list of measures that need to be taken both within the Union and in third countries to combat such proliferation.

(2) The Union is actively implementing the Strategy and is giving effect to the measures listed in Chapter III thereof, in particular through releasing financial resources to support specific projects conducted by multilateral institutions, such as the Provisional Technical Secretariat of the Comprehensive Nuclear-Test-Ban Treaty Organisation (CTBTO).

(3) On 17 November 2003, the Council adopted Common Position 2003/805/CFSP on the universalisation and reinforcement of multilateral agreements in the field of non-proliferation of weapons of mass destruction and means of delivery [1]. That Common Position calls, inter alia, for the promotion of the signature and ratification of the Comprehensive Nuclear-Test-Ban Treaty (CTBT).

(4) The States Signatories of the CTBT have decided to establish a Preparatory Commission, endowed with legal capacity, and which has standing as an international organisation, for the purpose of carrying out the effective implementation of the CTBT, pending the establishment of the CTBTO.

(5) The early entry into force and universalisation of the CTBT and the strengthening of the monitoring and verification system of the Preparatory Commission of the CTBTO are important objectives of the Strategy. In this context, the nuclear tests carried out by the Democratic People's Republic of Korea in October 2006 and May 2009 further underlined the importance of the early entry into force of the CTBT and the need for an accelerated building-up and strengthening of the CTBT monitoring and verification system.

(6) The Preparatory Commission of the CTBTO is engaged in identifying how its verification regime could best be strengthened, including through the development of noble gas monitoring capabilities and efforts aimed at fully involving States Signatories of the CTBT in the implementation of the verification regime.

(7) In the framework of the implementation of the Strategy, the Council has adopted three Joint Actions and one Decision supporting the activities of the Preparatory Commission of the CTBTO, namely Joint Action 2006/243/CFSP [2] in the area of training and capacity building for verification, and Joint Action 2007/468/CFSP [3], Joint Action 2008/588/CFSP [4] and Decision 2010/461/CFSP [5] in order to strengthen the monitoring and verification capabilities of the Preparatory Commission of the CTBTO.

(8) That Union support should be continued.

(9) The technical implementation of this Decision should be entrusted to the Preparatory Commission of the CTBTO which, on the basis of its unique expertise and capabilities through the network of the International Monitoring System (comprising over 280 facilities in 85 countries) and the International Data Centre, is the sole international organisation having the ability and legitimacy to implement this Decision. The projects as supported by the Union can only be financed through an extra-budgetary contribution to the Preparatory Commission of the CTBTO,

HAS ADOPTED THIS DECISION:

Article 1

1. For the purpose of ensuring the continuous and practical implementation of certain elements of the Strategy, the Union shall support the activities of the Preparatory Commission of the CTBTO in order to further the following objectives:

(a) to strengthen the capabilities of the CTBT monitoring and verification system, including in the field of radionuclide detection;

(b) to strengthen the capabilities of the States Signatories of the CTBT to fulfil their verification responsibilities under the CTBT and to enable them to benefit fully from participation in the CTBT regime.

[1] OJ L 302, 20.11.2003, p. 34.

[2] OJ L 88, 25.3.2006, p. 68.
[3] OJ L 176, 6.7.2007, p. 31.
[4] OJ L 189, 17.7.2008, p. 28.
[5] OJ L 219, 20.8.2010, p. 7.

2. The projects to be supported by the Union shall have the following specific objectives:

(a) to provide technical assistance to countries in Eastern Europe, Latin America and the Caribbean, South-East Asia, the Pacific and the Far East, to enable them to fully participate in and contribute to the CTBT monitoring and verification system;

(b) to support the International Monitoring System in order to improve the detection of possible nuclear explosions, specifically by supporting selected auxiliary seismic stations and radioxenon background measurement and mitigation;

(c) to strengthen the verification capabilities of the Preparatory Commission of the CTBTO in the areas of ón-site inspections, specifically by supporting the preparation and conduct of the next Integrated Field Exercise;

(d) to support the promotion of the CTBT and the long-term sustainability of its verification regime through the Capacity Development Initiative, that is focused on selected training and education programmes provided worldwide, including programmes hosted by the Preparatory Commission of the CTBTO.

Those projects shall be carried out for the benefit of all States Signatories of the CTBT.

A detailed description of the projects is set out in the Annex.

Article 2

1. The High Representative of the Union for Foreign Affairs and Security Policy (the High Representative) shall be responsible for the implementation of this Decision.

2. The technical implementation of the projects referred to in Article 1(2) shall be carried out by the Preparatory Commission of the CTBTO. It shall perform this task under the control of the High Representative. For this purpose, the High Representative shall enter into the necessary arrangements with the Preparatory Commission of the CTBTO.

Article 3

1. The financial reference amount for the implementation of the projects referred to in Article 1(2) shall be EUR 5 185 028.

2. The expenditure financed by the amount stipulated in paragraph 1 shall be managed in accordance with the procedures and rules applicable to the Union budget.

3. The Commission shall supervise the proper management of the financial reference amount referred to in paragraph 1. For that purpose, it shall conclude a financing agreement with the Preparatory Commission of the CTBTO. The financing agreement shall stipulate that the Preparatory Commission of the CTBTO is to ensure visibility of the Union contribution, commensurate with its size.

4. The Commission shall endeavour to conclude the financing agreement referred to in paragraph 3 as soon as possible after the entry into force of this Decision. It shall inform the Council of any difficulties in that process and of the date of conclusion of the financing agreement.

Article 4

1. The High Representative shall report to the Council on the implementation of this Decision on the basis of regular reports prepared by the Preparatory Commission of the CTBTO. Those reports shall form the basis for the evaluation carried out by the Council.

2. The Commission shall provide information on the financial aspects of the implementation of the projects referred to in Article 1(2).

Article 5

This Decision shall enter into force on the date of its adoption.

It shall expire 24 months after the date of the conclusion of the financing agreement referred to in Article 3(3), or six months after the date of its entry into force if no financing agreement has been concluded by then.

Done at Brussels, 13 November 2012.

For the Council

The President

V. SHIARLY

ANNEX

Union support for the activities of the Preparatory Commission of the CTBTO in order to strengthen its monitoring and verification capabilities, enhance the prospects of early entry into force and support the universalisation of the CTBT and in the framework of the implementation of the EU Strategy against Proliferation of Weapons of Mass Destruction

1. INTRODUCTION

The building up of a well-functioning monitoring and verification system of the Preparatory Commission of the CTBTO (the Preparatory Commission) is a crucial element for preparing the implementation of the CTBT once it will have entered into force. The development of the capabilities of the Preparatory Commission in the area of noble gas monitoring is an important tool for assessing whether or not an observed explosion is a nuclear test. In addition, the operability and performance of the CTBT monitoring and verification system depends on the contribution of all States Signatories of the CTBT. Therefore, it is important to enable States Signatories of the CTBT to participate in and contribute fully to the CTBT monitoring and verification system. The work undertaken in implementing this Decision will also be important for enhancing the prospect of early entry into force and the universalisation of the CTBT.

The projects described in this Decision will significantly contribute to achieving the objectives of the EU Strategy against Proliferation of Weapons of Mass Destruction.

To this end, the Union will support the following six projects:

(1) to provide technical assistance and capacity building to States Signatories of the CTBT to enable them to fully participate in and contribute to the implementation of the CTBT verification regime;

(2) to develop capacity for future generations of CTBT Experts through the Capacity Development Initiative (CDI);

(3) to enhance the Atmospheric Transport Model (ATM);

(4) to characterise and mitigate radioxenon;

(5) to support the Integrated Field Exercise in 2014 (IFE14) through the development of an integrated multi-spectral array;

(6) to improve the sustainment of certified International Monitoring System (IMS) auxiliary seismic stations.

The prospects of entry into force of the CTBT have improved due to a more favourable political environment, which is also demonstrated by recent new signatures and ratifications of the CTBT, including by Indonesia, one of the States listed in Annex 2 to the CTBT. Given this positive dynamic, in the coming years an increased and urgent focus needs to be put on both completing the build-up of the CTBT verification regime and ensuring its readiness and operational capability, as well as continuing work towards the entry into force and universalisation of the CTBT. The nuclear tests carried out by the Democratic People's Republic of Korea in October 2006 and May 2009 not only demonstrated the importance of a universal ban on nuclear tests, they also underscored the need for an effective verification regime to monitor compliance with such a ban. A fully operational and credible CTBT verification regime will provide the international community with reliable and independent means to ensure that this ban is respected.

Moreover, the CTBTO data also play a crucial role in timely tsunami warning and the assessment of the dispersal of radioactive emissions after the Fukushima nuclear accident of March 2011.

Supporting those projects reinforces the objectives of the Common Foreign and Security Policy. The implementation of those complex projects will contribute significantly to improving effective multilateral responses to current security challenges. In particular, those projects will further the objectives of the EU Strategy against Proliferation of Weapons of Mass Destruction, including to further universalise and strengthen the norms contained in the CTBT as well as its verification regime. The Preparatory Commission is building an IMS to ensure that no nuclear explosion goes undetected. Based on its unique expertise through a worldwide network, comprising over 280 facilities in 85 countries, and the International Data Centre (IDC), the Preparatory Commission is the sole organisation with the capacity to implement those projects, which can only be financed through an extra-budgetary contribution to the Preparatory Commission.

In Joint Action 2006/243/CFSP, Joint Action 2007/468/CFSP, Joint Action 2008/588/CFSP and Decision 2010/461/CFSP, the Union has supported the following: the establishment of an E-learning training programme, the Integrated Field Exercise 2008 in respect of On-Site Inspections (OSI), Radio-Xenon Assessment and Measurement, technical assistance to Africa and Latin America and the Caribbean, auxiliary seismic stations,

strengthening cooperation with the scientific community and strengthening the OSI capabilities with the development of a noble gas detection system. The projects described in this Decision build upon the previous Joint Action projects and progress achieved through their implementation. The projects described in this Decision were elaborated in a manner to avoid any potential overlaps with Decision 2010/461/CFSP. Some of them contain elements that are similar to activities undertaken under previous Joint Actions, but differ in material scope or target different recipient countries or regions.

The six projects in support of the activities of the Preparatory Commission mentioned above will be implemented and managed by its Provisional Technical Secretariat (PTS).

2. DESCRIPTION OF THE PROJECTS

2.1. *Project 1: Technical Assistance and Capacity Building*

2.1.1. Background

One of the unique features of the CTBT verification regime within the non-proliferation and disarmament regime is the real-time provision of compliance-relevant information directly to States Signatories of the CTBT. In addition to the primary verification purpose of the CTBT monitoring and verification system, the technologies and the data of the IMS are of considerable use to civilian and government agencies in their analyses of (for example) earthquakes, volcanic eruptions, underwater explosions, climate change and tsunamis.

While interest among developing countries in the establishment of National Data Centres (NDCs) has grown significantly over the past years — there has been an increase of approximately 36 subscribers to the IDC since 2008 — many developing countries still do not yet have full access to the CTBT monitoring and verification system.

Therefore, additional efforts are being made by the Preparatory Commission to increase the number of established NDCs, the number of Secure Signatory Accounts and the number of authorised users. In particular, the 62 remaining States Signatories of the CTBT that do not yet have access to IMS Data and IDC products are targeted (25 in Africa, 9 in Latin America, 6 in the Middle East and South Asia, 12 in South-East Asia, the Pacific and the Far East, 3 in Eastern Europe and 7 in North America and Western Europe). These efforts are directed towards those who need technical support in order to increase their use of these data and products.

To sustain the activities of the NDCs, the necessary resources for the operation of the facility must be provided by the recipient countries. The commitment of the recipient countries is regarded as a prerequisite for the success of this project.

This project consists of four complementary components which will enhance the scope and reach of the existing capacity building capabilities of the Preparatory Commission. This project builds upon the existing framework of providing capacity building training and equipment to developing countries by including countries and regions that have not yet benefitted from such support, and by enlarging the scope to also include training on radionuclide monitoring and ATM. Software will be developed and promoted to process waveform data from seismic, hydroacoustic and infrasound data in real time. A new fellowship programme will foster State-to-State knowledge exchange and collaboration, while scientific research and collaboration will be supported by the virtual Data Exploitation Centre (vDEC).

2.1.2. Project Scope

This project consists of the following four components that will be conducted in an integrated manner in order to reinforce each other:

1. Component 1:

   Integrating States Signatories of the CTBT in Eastern Europe, Latin America and the Caribbean, South-East Asia, the Pacific and the Far East, to enable them to fully participate in and contribute to the implementation of the CTBT verification regime and disaster and emergency response, as well as to related scientific development.

2. Component 2:

   Develop and promote the software package Seiscomp 3 (SC3) for NDCs to process all types of waveform data in real time.

3. Component 3:

   Develop and promote a fellowship programme to broaden the knowledge base and understanding of the Preparatory Commission by utilising the knowledge and expertise developed by staff at NDCs and Station Operators, and assist in fostering State-to-State knowledge exchange and collaboration, where the PTS acts as a coordinator.

4. Component 4:

Sustain and promote the vDEC, which is a platform for scientific research and collaboration using IMS data and IDC products.

Component 1:

This component is a follow-up of the technical assistance programmes of the Preparatory Commission and will extend the technical assistance to other countries in Latin America and the Caribbean, and to two other regions (Eastern Europe and South-East Asia, the Pacific and the Far East).

The PTS will identify and provide technical experts as consultants who will coordinate all their activities in consultation with, and under approval of, IDC management. This component will comprise the following three elements:

Element 1: Comprehensive evaluation: An evaluation will be carried out in potential recipient countries with the objective of assessing awareness and usage of PTS data and products. This will involve desk evaluation and, where necessary, visits to recipient countries, in order to understand the current needs and perceptions, and to increase the awareness of PTS data and products, including their potential use for civil and scientific purposes. In addition, contacts will be established with other relevant institutes in each country that may benefit from utilising PTS data and products. Networking will be facilitated between the National Authority and relevant institutes, where appropriate. In cases where an NDC exists, the status of each NDC in terms of personnel and infrastructure (including computer and internet infrastructure) will be assessed, in order to formulate priority activities. In order to facilitate the optimum impact of component 2, special attention will be given to the current spread and usage of SC3.

Where appropriate, the above-mentioned evaluation will be complemented by regional workshops. Such workshops will provide an opportunity to explain the role and functions of NDCs within the CTBT's framework, and to assess the level of knowledge and needs in the participating countries.

Element 2: Training and technical support: Regional training sessions will be held, which will bring together participants from the institutions identified under element 1. This training will provide technical instruction on PTS data and products. During this training, participants will work with PTS software developed for NDCs, which can be used to access and analyse PTS data and products.

The scope will be expanded to cover radionuclide and ATM technologies. In addition, some countries will be part of the pilot project of SC3 (as described in component 2). This training will also provide an opportunity to foster cooperation among technical staff at relevant institutes in the region.

Subsequently, extended technical support will be provided to selected NDCs to help apply the lessons learned from the regional training to specific NDCs. This support will be customised, based on the needs of the NDC, the skill set of the NDC staff and taking into account other specificities (application fields of data and products, languages, etc.). Participants will install and configure NDC software with the assistance of the technical expert and establish a routine data acquisition, processing, analysis and reporting regime according to the needs of the National Authority. In addition, NDC basic equipment including computer hardware and peripherals will be provided to certain countries, based on their assessed needs. If equipment is provided, training on the installation, maintenance and operation of that equipment will also be provided by the technical expert.

Element 3: Follow up: In order to consolidate the acquired skills and/or to close remaining gaps, follow-up visits to the recipient countries will be made to assess how the participants are making use of what was learned at the training sessions under Element 2. The objective of these follow-up visits is to ensure that the local technical staff can routinely use PTS data and products.

The visits will be customised, based on local needs and skills, with a view to sustainability, so that the activities continue even after the conclusion of this project. A concluding comprehensive report for each recipient country will form the basis for further follow-up activities in each country.

As in Decision 2010/461/CFSP, this project will involve the provision of regional group training on the processing of IMS data and analysis of IDC products, as well as the provision of basic equipment where needed. If feasible, tailored training and capacity-building activities will be devised for recipient countries in which particular needs regarding NDC establishment and Secure Signatory Accounts, as well as civil and scientific benefits, have been identified and assessed.

All activities in recipient countries will be carried out in close coordination with, and with support from, the PTS to ensure efficiency and sustainability of training and other capacity-building efforts undertaken within this project. In addition, this will ensure adequate harmonisation with the activities undertaken in previous Council Decisions/Joint Actions and within the framework of the Preparatory Commission's mandate.

Applying the above-mentioned criteria, the PTS foresees activities in as many of the following states as possible, subject to a prior assessment of feasibility by the PTS given local conditions prevailing at that time:

(i) in Latin America and the Caribbean: States listed, but not selected for Decision 2010/461/CFSP (Antigua and Barbuda, Barbados, Bahamas, Belize, Bolivia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Panama, Paraguay, Suriname and Uruguay); as well as Brazil, Chile, Colombia, Cuba, Dominica, Mexico, Nicaragua, Peru, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, and Venezuela;

(ii) in Eastern Europe: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Estonia, Georgia, Hungary, Latvia, Lithuania, Montenegro, Poland, Republic of Moldova, Romania, Serbia, Slovakia and the former Yugoslav Republic of Macedonia;

(iii) in South-East Asia, the Pacific and the Far East: Brunei Darussalam, Burma/Myanmar, Cambodia, Cook Islands, Fiji, Kiribati, Lao People's Democratic Republic, Marshall Islands, Federated States of Micronesia, Mongolia, Nauru, Niue, Palau, Papua New Guinea, Philippines, Samoa, Singapore, Solomon Islands, Thailand, Timor-Leste, Tonga, Tuvalu, Vanuatu and Vietnam.

Component 2: SC3 software package

This component offers a user-friendly, open, integrated platform using SC3, a software already widely used in seismology and tsunami warning for disaster and emergency response together with specific software for array processing (PMCC, Fk) and interactive review tools (geotool, Jade). This software is well suited to the needs of NDCs in terms of automatic reception and processing of waveform data, array processing, automatic bulletin production and interactive data review.

As for capacity development, there already exists a broad community of SC3 users among NDCs and other institutions. This integrated platform, when broadly implemented, will attract the community of emerging NDCs and speed up the capacity development among them. Also, SC3 allows easy exchange of data between NDCs. The format is widely used in the international community and its use amongst NDCs and the IDC would greatly enhance and simplify the data exchanges, and in real time as well (which is not featured today with 'NDC in a box').

It has been mentioned many times that there is a strong link between an active NDC and well-operating stations. Therefore, developing the SC3 software package should provide significant help in supporting auxiliary seismic stations. In the long term, the implementation of SC3 will allow developing NDCs to efficiently use their station data and to observe the operational status on a permanent basis.

This component focuses on the software development and implementation, including deployment and training.

A few pilot countries with institutions that have demonstrated sufficient technical capability and interest to participate will be selected for deployment and training for the beginning of the project (e.g. in Africa, Eastern Europe, Latin America, and South-East Asia, the Pacific and the Far East).

Component 3: Fellowship programme

The goals of the fellowship programme are to develop the next generation of scientific talent in the field of nuclear explosion monitoring, to support their national establishments and at the same time to address scientific research needs that are vital to improving the current CTBT verification capabilities and applications in disaster mitigation and earth science.

In the initial phase of the fellowship programme potential partners who will host the visiting fellows will be identified. The PTS will do this by announcing the fellowship programme, and soliciting NDCs, universities, and other potential partners to identify areas of competence which they can offer to host fellows. Institutes that have previously benefited from Joint Action 2008/588/CFSP and Decision 2010/461/CFSP as well as other IMS/IDC activities such as technical meetings, experts meetings and workshops, and have developed expertise, will be encouraged to apply as hosting institutions.

The fellowship opportunities will be advertised by the PTS, including the areas of competence supported by the hosting institutions. The candidates will be asked, in their applications, to describe their project, and how it interfaces with the advertised competencies. The candidates and proposals will be evaluated and selected by the PTS, possibly with modifications according to the PTS' needs. Each fellow will provide regular reports to the PTS concerning achievements and feedback. Expert meetings, the 'CTBTO Science, Technology and Innovation 2013 Conference' and similar gatherings will be used to promote this project, to solicit participation, and to provide venues for the fellows to show their results. This project is designed to leverage external expertise as a force multiplier, bearing in mind the available PTS staff resources.

Component 4: vDEC

The vDEC development platform (hardware and software) provides a platform for scientific exchange by providing access to a large archive of parametric, waveform and radionuclide data to researchers working on improving the processing at the IDC. vDEC also provides access to software and access to test versions of the processing pipelines to be able to insert and test alternate modules.

In particular, SC3 will be implemented in vDEC during its development and testing phase. vDEC also provides a platform for integrating additional data with IMS data to investigate improvements resulting from this addition. Special emphasis will be put on making vDEC available to fellows selected under component 3, as required.

Funding will be used to contract expert services to provide assistance to researchers using vDEC, and to ensure that the system is working properly.

2.1.3. Benefits and Outcome

More developing countries will be enabled to fulfil their verification responsibilities under the CTBT and make use of IMS data and IDC products. The technical assistance and training will be expanded to further countries in Latin America and the Caribbean, and to two other regions (Eastern Europe and South-East Asia, the Pacific and the Far East).

The scope of data applications for capacity building will be broadened by developing and promoting an integrated software platform around SC3. That software will be extended to the processing of hydroacoustic and infrasound data. Since SC3 is already widely used and facilitates easy data exchange, it will be a vehicle to reach out to many more NDCs and other establishments than before.

A fellowship programme will be started for the next generation of scientific talent in nuclear explosion monitoring, to support their national establishments and at the same time to address scientific research needs vital for CTBT verification as well as civil and scientific applications.

The vDEC platform, that provides a platform for scientific exchange, will be maintained and expanded to include the SC3 platform.

2.2. *Project 2: Developing Capacity for Future Generations of CTBT Experts – the Capacity Development Initiative (CDI)*

2.2.1. Background

The CDI, established in 2010, forms a key part of the Preparatory Commission's training and education activities aimed at building and maintaining the necessary capacity in the technical, scientific, legal and political aspects of the CTBT and its verification regime. It is based on the recognition that the entry into force and universalisation of the CTBT and the strengthening of the verification regime is dependent on the active and informed involvement of future generations of policy, legal and technical experts, particularly from the developing world.

2.2.2. Project Scope

In view of the continued delay in entry into force of the CTBT, it is of vital importance to maintain both political support for and technical expertise in all aspects of the CTBT. By expanding the pool of expertise beyond the traditional stakeholders, the CDI will enhance opportunities for the wider community to participate in strengthening and effectively implementing the CTBT's multilaterally established verification regime.

The project consists of three components:

1. Component 1:

   Participation in 'Train the Trainers' Seminars in 2013 & 2014.

2. Component 2:

   Participation of Experts from Developing Countries in CDI Training Courses and Support for Joint Research Projects.

3. Component 3:

   Enhancing CDI e-learning Platform and Multimedia Educational Tools.

Component 1: Participation in 'Train the Trainers' Seminars in 2013 & 2014

Through the 'Train the Trainers' seminars, the Preparatory Commission will provide methodological guidance for academics and research institutions involved in the CTBT related fields, thereby increasing awareness and understanding of the CTBT in the academic community and among policy practitioners. Funding provided will

contribute to the participation of representatives from academia and research institutions – with an emphasis on universities and research institutions in Europe and the developing world – who will teach courses and offer training programmes on the CTBT, particularly on its scientific and technical aspects.

The seminars, to be held in 2013 and 2014, will welcome professors and researchers from all corners of the world, including those from the States listed in Annex 2 to the CTBT, who will share best practices on teaching CTBT-related issues and receive training on how to integrate CDI course materials into their curricula. The seminars will also explore modalities to increase the amount of CTBT-related research projects within target universities, and encourage participants to nominate students to participate in CDI courses.

Component 2: Participation of Experts from Developing Countries in CDI Training Courses and Support for Joint Research Projects

— Participation in CDI Training Courses

In line with the unparalleled success of the 2011 Advanced Science Course, which trained hundreds of individuals including Station Operators, NDC analysts, diplomats, students and members of civil society, the Preparatory Commission will continue to offer annual science-based CTBT courses. The Preparatory Commission will convene a two-week intensive science and technology based course during November 2012 and a similar course in late 2013. These courses will be offered in Vienna and utilise a specially tailored online learning environment, including live streaming lectures for those participating from all around the world.

Funding provided will contribute to the participation of approximately 15 experts per year – with an emphasis on women and developing countries – in CDI scientific and technical training courses.

— Joint Research Projects

Funding will contribute to supporting joint research projects on the CTBT verification regime, through merit-based research scholarships to PhD and post-doctoral candidates from Europe and developing countries. This research will be linked to existing projects of the Preparatory Commission.

Component 3: Enhancing CDI e-learning Platform and Multimedia Educational Tools

— Technical Development of the e-learning Platform

Funding will contribute to the further enhancement of the e-learning Platform, as well as the design and development of additional multimedia tools that will assist the objectives of the CDI – including implementing strategies to increase the availability of CDI resources in the developing world. In particular, the consultant will explore opportunities to further enhance CDI resources for mobile learning platforms, and other additional educational multimedia tools and promotional materials.

— Content Creation for CDI Resources

Funding will contribute to the development of CDI educational and training content that will be used to populate the e-learning Platform, and for the creation of other CDI multimedia tools. This approach will also focus on the integration of CDI materials into new media, and the utilisation of mass social networks for the promotion of the CTBT and its verification regime.

2.2.3. Benefits and Outcome

The CDI experience has demonstrated that with relatively minimal investment, coupled with a strategic vision, maximum returns for the Union could be achieved. With a CDI infrastructure already in place and the approach institutionalised within the Preparatory Commission's work, additional funding will enable the Preparatory Commission to further enhance ongoing projects and develop more innovative ways of providing training and education in CTBT related issues to the broadest possible target group.

This initiative also furthers actions outlined in the EU strategy against Proliferation of Weapons of Mass Destruction (WMD). Specifically, CDI courses and training activities bolster efforts to develop and sustain multilateralism as the cornerstone for an effective WMD non-proliferation strategy, by developing capacity in the legal, political, scientific and technical fields. Moreover, engaging with a broader community of stakeholders in the international community on CTBT-related issues raises awareness of the CTBT and furthers efforts to achieve its universality and entry into force.

2.3. *Project 3: Enhancing the Atmospheric Transport Model (ATM)*

2.3.1 Background

The ATM deployed and used by the Preparatory Commission has demonstrated its considerable usefulness for civilian applications, for example by providing forecasts of the dispersion of radionuclides emitted from the Daiichi nuclear power plant in 2011.

The current ATM system has now reached a certain maturity, and any further enhancement requires an investment in terms of computational resources and expert knowledge. Therefore, the voluntary contribution of Japan to support the acquisition of the new ATM hardware which shall host the future ATM system has been noted with great interest. In order to assist the Preparatory Commission in accelerating the process of drawing benefits from this additional computational power, this project will enable the Preparatory Commission to contract expert ATM services to supplement the limited staffing of the ATM team at the IDC (the ATM expert).

2.3.2. Project Scope

The ATM expert shall focus on enhancing the ATM capacities. The tasks assigned to the ATM expert will focus on making the most effective use of the additional computational power funded by the Japanese contribution, to ensure the most accurate possible modelling of dispersion of radionuclides in special cases. These tasks shall be aligned with the Preparatory Commission's mission.

The tasks shall comprise but will not be limited to:

(a) acquisition of the high quality meteorological fields at high resolution in collaboration with the World Meteorological Organization (WMO) and the specialised institutes of its member states;

(b) enhancement of the radionuclide-relevant modules and specification of an optimal configuration of an atmospheric transport model(s);

(c) identification of the needs in terms of the ATM support to civilian applications through interactions with external experts, including collaboration with the International Atomic Energy Agency (IAEA);

(d) incorporation of these developments into the enhancement of the ATM support to the CTBT-relevant events.

The ATM expert shall therefore have a strong background in understanding the atmospheric processes and the phenomenon of transport of radionuclides in particular, expert knowledge of numerical weather prediction and dispersion, technical capacities of coding and scripting as well as inter-personal skills necessary to ensure smooth and strengthened co-operation between the CTBTO, WMO, IAEA and the Inter-Agency Committee for Response to Nuclear Emergencies (IACRNE).

2.3.3. Benefits and Outcome

An outcome of this project shall be a cutting-edge ATM capacity to support both the Preparatory Commission's mission and pertinent civilian application. It shall also facilitate a better co-ordination of the ATM resources between international organisations and facilitate communication and information exchange.

2.4. *Project 4: Characterisation and Mitigation of Radioxenon*

2.4.1. Background

Radioxenon is a key indicator to determine whether a nuclear explosion has occurred. In the past 10-15 years, the measuring technologies of the IMS have improved significantly. The sensitivity of IMS' noble gas network is, as a result, increasingly influenced by the global radioxenon background emitted from civil nuclear applications (such as medical isotope production facilities). This project builds on the actions supported through Joint Action 2008/588/CFSP.

2.4.2. Project Scope

This project consists of two components:

1. Component 1: Characterisation of radioxenon background.

2. Component 2: Mitigation of radioxenon.

Component 1:

The Preparatory Commission measures radioxenon in the environment with very sensitive systems as an important part of the CTBT verification regime. With the contribution received from the Union within the framework of Joint Action 2008/588/CFSP, the Preparatory Commission has purchased two transportable systems for measuring the radioisotopes ^{133}Xe, ^{135}Xe, ^{133m}Xe and ^{131m}Xe. The systems will be used to measure the radioxenon background in Indonesia and Kuwait. For this purpose co-operation agreements with partner institutes (BATAN, Indonesia and KISR, Kuwait) have been established.

Since both locations provide considerable information on the characterisation of the global radioxenon background, the purpose of this project is, firstly, to extend the measurement campaigns in Indonesia and Kuwait by an additional six to 12 months. The extension of the measurement campaigns would allow characterisation of these two locations throughout the whole 12 month cycle, covering all seasonal conditions.

Secondly, after the end of these campaigns, the PTS is planning to perform additional measurements in areas where the global radioxenon background is not fully known and its effects on the IMS are unknown. The Persian Gulf and South America are considered as the next locations.

To continue these measurement campaigns, funds are required for the shipment of the mobile Noble Gas systems to new locations, and for the operation of both systems for a period of preferably at least 12 months in each location, including periodic maintenance.

After these measurement campaigns, the systems will be available for use by the PTS for follow-up studies of the radioxenon background and/or as training systems.

Component 2:

This component entails a pilot study that examines the possibilities for absorbing radioxenon isotopes by different materials and methods and develops a filtration system. It aims at improving the detection capability of IMS and the reliability and quality of the data of the IDC.

This component aims at developing a small sized and versatile system, which can be easily deployed in different steps of the production process in order to determine the optimum location of the reduction system within the set-up of a facility. The versatility of the reduction system will also facilitate deployment in other isotope production facilities.

While past activities supported by the Union have allowed the issue of noble gas emissions to be mapped, this pilot study goes a step further and works out concrete solutions to remedy the problem. This component will build upon a preliminary study that has been conducted by the Belgian Nuclear Research Centre (SCK•CEN, Belgium) and the Pacific Northwest National Laboratory (USA).

This component consists of three elements:

Element 1: radioxenon absorption experiments: construction of an experimental set-up and testing of various absorption materials (silver-zeolite, carbon molecular sieve) under different conditions (temperature, flow, carrier gas).

Element 2: design of a portable filtration system based on the analysis of the absorption experiments conducted in phase 1.

Element 3: construction of an optimised portable filtration system and testing at the laboratory scale. After this step, the portable filtration system will be ready to be tested at the radiopharmaceutical production facilities at the Belgian National Institute for Radio elements (IRE, Belgium). The system will include radiation detection instruments to determine the radioxenon reduction factor obtained in the field.

After each step all knowledge acquired will be collected in a detailed report.

The implementation work of this component will be carried out by contractors. The Preparatory Commission will provide its expertise on xenon trapping as necessary.

The Preparatory Commission will also continue to monitor the radioxenon emissions as detected by the close-by stations. The reduction of the emissions should have an imminent effect on the levels of radioxenon detected. The use of emission measurements at the facility in Belgium (i.e. stack monitoring) can also provide information on the success of the reduction, and the Preparatory Commission can assist in the analysis of this data.

2.4.3. Benefits and Outcome

In line with Union non-proliferation objectives, this project will contribute to making the CTBT monitoring and verification system more robust, and strengthening the Preparatory Commission's capacities to more accurately monitor radioxenon. By mitigating the radioxenon emissions from civilian applications, future emissions – which remain a key indicator to monitor and verify nuclear activity – would be more reliably attributed to nuclear explosions.

The building and maintaining of a robust verification regime reinforces the capacities and the credibility of the CTBT, which in turn contributes to strengthening the arguments in favour of its entry into force and universalisation.

While past activities in the framework of Joint Action 2008/588/CFSP and Decision 2010/461/CFSP have allowed the problem of noble gas emissions to be mapped, additional funding would complement previous Union funding and allow the remedying of the problem of noble gas emissions to begin. Close cooperation between the Preparatory Commission and the assigned institutions (SCK•CEN and IRE) would assure continuity in the work that has been done, and optimise the pool of existing knowledge and expertise.

2.5. *Project 5: Support to the Integrated Field Exercise 2014 (IFE14): Development of an Integrated Multispectral Array*

2.5.1. Background

This project aims at supporting the IFE14 through the development of an integrated multispectral array using purchased equipment and contribution in kind.

The Preparatory Commission is mandated to continue its activities related to Multispectra and Infrared (MSIR) technology in order to determine the specification of equipment and operation procedures for an OSI.

Decision 2010/461/CFSP funded the Expert Meeting on Multi-spectral Imaging and Infrared for Ón-Site Inspections (MSEM-11) held between 30 March and 1 April 2011 in Rome, Italy, which concluded that Commercial Off-The-Shelf (COTS) instruments should be considered for OSI use since they represent the most cost-effective option for this technology. The value of MSIR technology for OSI was reinforced during the MSIR test in Hungary in September 2011.

OSI-relevant features were identified using an integrated MSIR sensor array. Hungary has offered as a contribution in kind the use of two airborne sensors, detecting in the visible/near infrared (VNIR) and short wave infrared (SWIR). Airborne remote sensing using MSIR technology offers considerable opportunities for an OSI but different systems are currently comprised of several, individual sensors with individual, discrete processing routines using different bespoke software packages. As such, few integrated MSIR systems capable of acquiring simultaneous data across the spectral range of interest to OSI exist.

2.5.2. Project Scope

To optimise the application of MSIR airborne remote sensing technology within an OSI, this project seeks to assemble a system that would comprise of a compact array of selected OSI-relevant sensors with a pre-defined post-processing chain using OSI specific software routines that would ease quantitative analysis of data and expedite the availability of outputs to the Inspection Team.

This one box/one software approach has the potential to greatly enhance the work of the Inspection Team.

The MSIR system can be considered to be modular, with the possibility of adding additional sensors to the array when funds permit.

Ideally, the system would comprise of:

(a) a multi/hyperspectral sensor detecting in the VNIR to identify features such as anthropogenic surfaces, vegetation patterns and stress;

(b) a multi/hyperspectral sensor detecting in the SWIR to identify moisture content patterns and changes in the distribution of different inorganic materials;

(c) an RGB digital camera (used in combination with the LIDAR) to generate an orthophoto of the inspection area to enable orientation of field teams and to provide contextual information;

(d) a LIDAR instrument to enable the generation of a topographic model for orthorectification of the imagery and used as a means of detecting features under canopy;

(e) a thermal digital camera to enable the detection of thermal patterns caused by vehicle movements and warm or cool water at or near the surface;

(f) a downward looking video, which will provide a fly-through of the inspection area for the information technologies (IT);

(g) a GPS and all ancillary equipment including monitors and certified instrument housing for the simultaneous operation of the sensors.

Items (a), (b) and part of (g) are offered as contribution in kind from Hungary, which would form the core of the MSIR system. Additional sensors and ancillary items should be added to the system based on the following hierarchy and according to the availability of funds: (c), (e), (d) and (f).

In the first phase of development the purchase of items (c), (e) and (d) would be desirable since these have the potential of offering the greatest insight to the Inspection Team.

In addition to hardware, the development of a software platform would provide an optimised, pre-defined post-processing chain using OSI specific routines to ease quantitative analysis of airborne remotely sensed data.

2.5.3. Benefits and Outcome

This project ties in with the objectives of and promotes the Union non-proliferation policy and would enhance the Preparatory Commission's detection and verification capabilities. This project would also create an element of innovation and developmental work.

2.6. *Project 6: Sustainment of Certified IMS Auxiliary Seismic Stations*

2.6.1. Background

This project aims to build on progress achieved through implementation of Decision 2010/461/CFSP. The main focus of that Decision was to address failed stations which needed urgent maintenance action, to address obsolete equipment and to improve equipment sparing levels at selected stations.

The purpose of this project is to build on lessons learnt and focus on strengthening the sustainment structures for these stations to enable them to benefit in the long run, by establishing 'zero/low' budget sustainment enabling contracts with the Station Operators. This project also has a component of supplying/replacing a required means of transportation which is necessary for the Station Operators to perform their tasks in an efficient and timely manner.

2.6.2. Project Scope

This project aims at implementing a 'zero value/low value' sustainment enabling contract with the nominated Station Operator institution of host countries that have demonstrated their willingness to implement the required support structure in their country for their stations, in order to facilitate PTS contracting work at these stations.

Until a proper level of sustainment is secured for the targeted stations, an annual technical assistance visit from the PTS to ensure the maintenance level of the station is acceptable could be required. The purchase of vehicles (or suitable means of transportation) for the sustainment at technically evaluated locations may be required. As part of the establishment of several auxiliary seismic stations, vehicles for Station Operators were provided to allow prompt reaction in case of failures and to ensure transportation means for routine operation and maintenance. Many of these vehicles have now reached their end-of-life and are due for replacement. Many Station Operators and host countries, however, do not have the necessary resources for such planned replacement. Funds will also be used to contract experts' services.

The Preparatory Commission foresees activities in support of as many stations as possible to also include countries pertaining to the following regions: Eastern Europe, South Asia, Pacific, Latin America and the Caribbean and the Middle East. The determination of benefitting stations will be subject to prior assessment of feasibility by the Preparatory Commission given local conditions prevailing at that time.

2.6.3. Benefits and Outcome

As lasting results of this project depend heavily on the participation of the host countries of targeted certified IMS auxiliary seismic stations facilities, current experience demonstrates that their level of response is often slow and considerable effort is needed in terms of information, training and education. This project would support those efforts and enhance understanding as to what is required to be put into place and to sustain such stations.

This project should emphasise the role of the host country, their respective National Authorities and Permanent Missions and the need to establish a facility agreement and nominate a Station Operator in order to eventually reach a level of acceptable data availability for these stations.

This project will contribute to an increase of data availability of the auxiliary seismic stations network as a result of better trained Station Operators, strengthened sustainment structures, increased sparing and increased visibility for the Union.

3. DURATION

The total estimated duration of the implementation of the projects is 24 months.

4. BENEFICIARIES

The beneficiaries of the projects to be supported pursuant to this Decision are all the States Signatories of the CTBT, as well as the Preparatory Commission.

5. IMPLEMENTING ENTITY

The Preparatory Commission will be entrusted with the technical implementation of the projects. The projects will be implemented directly by staff of the Preparatory Commission, experts from the States Signatories of the CTBT and contractors.

It is envisaged that funding will be used to contract a project management consultant who will be responsible for assisting the Preparatory Commission in the implementation of this Decision; for the reporting obligations during the entire implementation period, including the final narrative report and the final financial report; for maintaining an archive of all documents related to this Decision, especially in view of possible verification missions; for ensuring the Union visibility in all its aspects; for ensuring that all activities involving finance, legal and procurement are in compliance with the Financial and Administrative Framework Agreement (FAFA) and for ensuring that all information, including budgetary information, is complete, accurate and provided in a timely manner.

The implementation of the projects will be in accordance with the FAFA and the financing agreement to be concluded between the Commission and the Preparatory Commission.

6. THIRD PARTY PARTICIPANTS

The projects will be financed in their entirety by this Decision. Experts from the Preparatory Commission and from the States Signatories of the CTBT may be considered as third-party participants. They will work under the standard rules of operation for experts of the Preparatory Commission.