

# The EU Nuclear Security Programme

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## EU Security policy framework

- The EU security Strategy adopted by the European Council on December 2003 identified the key threats: **Terrorism, Proliferation of Weapons of Mass Destruction , Regional Conflicts, State Failure, Organised Crime.**
- The EU Justice and Home Affairs Council Conclusions of 6 December 2007 "Considers that effective policies to address CBRN risks should be further developed **in close consultation with national authorities and, as appropriate, the industrial sectors concerned, academic institutions and other relevant stakeholders**, notably with a view to ensuring the viability and proportionality of measures which may be required (...)".

- Intra-EU activities**
- Activities financed by EU outside its border**
- Technical/scientific support activities (Horizontal activities)**
- International cooperation**

## EU Legal Framework

- **Development since the 1950s**
  - Euratom Treaty (1957): applies throughout the EU and includes nuclear safeguards and protection against ionising radiation
- **Comprehensive EU framework includes:**
  - EU-wide system of nuclear material accountancy and control; EU-wide inspection system; state of art measurement equipment.
- **Protection against ionising radiation**
  - control of high activity sources
  - shipment of substances within EU
  - shipments of nuclear waste
  - preparedness in case of nuclear emergencies, however caused

- **Security side has not been fully addressed at EU level.**
- **Why is there a benefit of addressing the security issue at EU level?**
  - The EU is essentially an area without internal borders; security is our common concern
  - Effective coordination and information flow
  - Strong international dimension

EU external borders

- 11,400km land border
- 75,000 km coastline
- 1,792 external border crossings



## New Policy development

- **Preparatory activities - assessing the state of play:**
  - Two EU Radiological Risk Reduction seminars have been held (2006 and 2007)
  - Study on radiological preparedness in the EU (2007/2008) (by JRC)
  - Seminar on 8 and 9 July 2008/ Recommendations (by JRC)
  - CBRN inventory of all EU regulations
- **CBRN Task Force: Compiles a list of measures to mitigate the RN risk – part of the Commission’s 2009 CBRN policy package**
  - **EC Communication on June 2009 on an on an EU CBRN Action Plan “Strengthening Chemical, Biological, Radiological and Nuclear Security in the European Union”**

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*CBRN: Chemical, Biological, Radiological and Nuclear*

## Key issues for the RN sub-group of the CBRN Task Force

- **Prevention**
  - control over radioactive sources (e.g. staff awareness; import/export of sources; security categorisation of sources)
  - exchange of information (e.g. reporting loss/theft of sources to law enforcement; early warning system)
  - physical protection of sources (e.g. security vetting of personnel; transport; dealing with insider threats)
- **Detection**
  - scenario development on the use of detection technologies
  - criminal investigations on stolen/lost sources
  - Enhancing awareness among first line officers on what to look for when searching for radioactive/nuclear sources
  - Certification, testing and trialling schemes; and standardisation
- **Response**
  - national response plans
  - nuclear forensics
  - communication and cleanup
  - exchange of information among the organisations involved/cross-border cooperation
- **Horizontal areas**
  - Training

## EU instruments

- **The Instrument for Pre-accession Assistance (IPA)**, for the candidate and potential candidate countries for EU accession **(25M€ for 2007-2009)**.
- **The Instrument for Nuclear Safety Cooperation (INSC)** replace TACIS program **(total of 217 M€ for 2007-2009; about 20 M€ for safeguards)**.
- **The Instrument for Stability (IfS)** provides the EU with funds and mechanisms to address global and trans-regional threats. **(2062 M€ for 2007-2013 in which 266M€ dedicated to non proliferation of Weapons of Mass Destruction)**.
- **The Common and Foreign Security Policy**: instrument used by the Council Secretariat; covers EU expenditure on foreign policy and security such as **The Joint Actions (23 M€)**.

## Instrument for Pre-Accession Assistance (IPA)

**The main objective:** is to help candidate and potential candidate countries to implement the reforms needed to fulfil EU requirements for European integration.

**Beneficiaries:** Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Montenegro, Serbia including Kosovo-as defined in UNSCR 1244- and Turkey).

**Projects related to nuclear security:** delivery of appropriate equipment (e.g. stationary portal monitors) and support the construction of facilities (e.g. storage facilities for sealed radioactive sources).

### Example of actions:

- Repatriation of irradiated fuel elements from the Vinca nuclear research reactor to the Russian Federation (about €4.5 million).
- Conditioning and secure storage of disused sealed radioactive sources in Serbia (about €0.6 million)

## The Instrument for Nuclear Safety Cooperation (INSC)

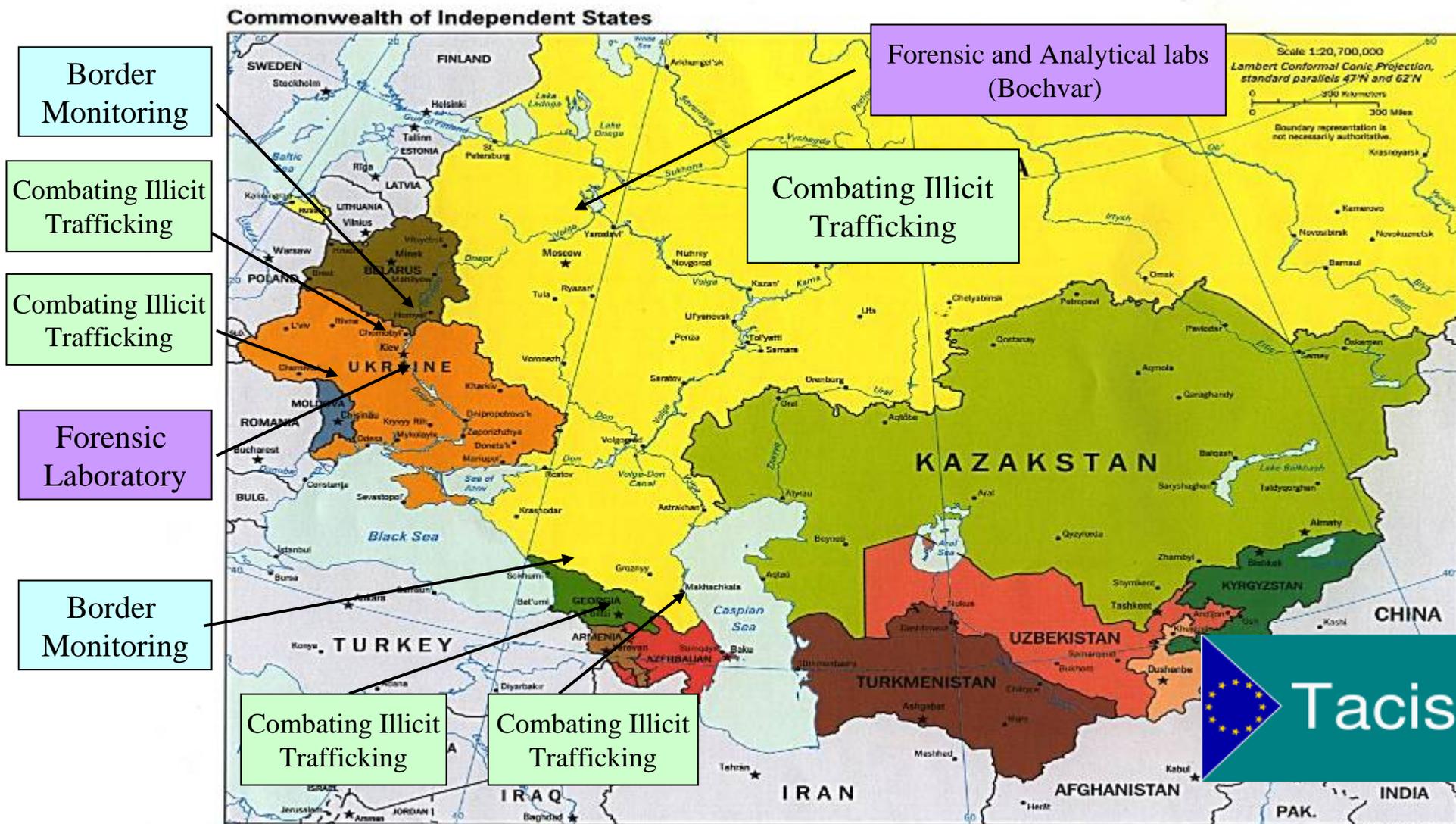
### - TACIS program 2005, 2006

- The new series of projects continues dealing with **safeguards issues, tracking the nuclear material** by improving the NMAC of fuel cycle to avoid diversion.

### - The INSC 2007-2013

Finances measures to support the promotion of a high level of nuclear safety, radiation protection and **the application of efficient and effective safeguards of nuclear material in third countries** and it is planned to replace the TACIS program dealing with that issues.

## TACIS Nuclear Security projects



## The Instrument for Stability (IfS)

- To support international efforts to address the proliferation of weapons of mass destruction, in particular through effective control of chemical, biological, radiological and nuclear materials and agents, control of dual-use goods, and the redirection of weapons scientists' knowledge towards peaceful activities.

**To achieve these objectives, an Expert Support Facility (ESF) has been created under the IfS. The ESF have the following tasks:**

- Identification of key areas of intervention (thematic and geographic).
- Assessment of risk situations with recommendations for action.
- Immediate support to beneficiaries for actions related to the trans-regional threats (training, technical support...).
- Consistency with national/regional programs

## The Instrument for Stability (IfS)

### *Indicative Programme 2009-2011*

- Regional centres of excellence on CBRN
- Fighting illicit CBRN trafficking and deceptive financial practices
- Assistance and cooperation on export controls on dual-use goods
- Support for the retraining and alternative employment of former weapons scientists and engineers
- Support for Multilateral Nuclear Assurance (MNA) initiatives ( 20 to 25 M€)

**In addition to CIS countries, new regions are being covered by the IfS: Middle East, South East Asia, North Africa, Africa.**

## External EU Policy: Joint Actions

In 2003, the European Council decided to finance Joint Actions (JA) the field of nuclear security to be implemented by the International Atomic Energy Agency (IAEA).

- 2004 - The first JA targeted the Balkans, Central Asia and Caucasus.
- 2005 - The second JA focused on Middle East and North Africa.
- 2006 - A third JA extend action to South Africa.
- 2008 - The fourth JA is dealing with South-East Asia.

**The financial contributions provided in these Joint Actions have made the EU a major donor to the IAEA nuclear security programme (23 M€).**

Besides, as a “crash programme”, a specific JA dedicated to support IAEA Safeguards activities in North Korea in the framework of the “six parties” agreement (2008).

## FP7 Security Research programme (2007 -2013): 1400 M€

The European Security Research and Advisory Board (ESRAB) recommends that “multi-disciplinary **mission-oriented research** should be undertaken covering capability development, system development and systems of systems demonstration.”

4 main missions have been identified

- Border security
- Protection against terrorism and organized crime
- Critical infrastructure protection
- Restoring security in case of crises

Source: Meeting the challenge - the European Security Research Agenda : A report from the European Security Research Advisory Board September 2006

## The JRC Security Research Programme

### **‘Security’ 403 M€(2007-20013) :**

Natural Disasters, Internal /External Security, Food Chain

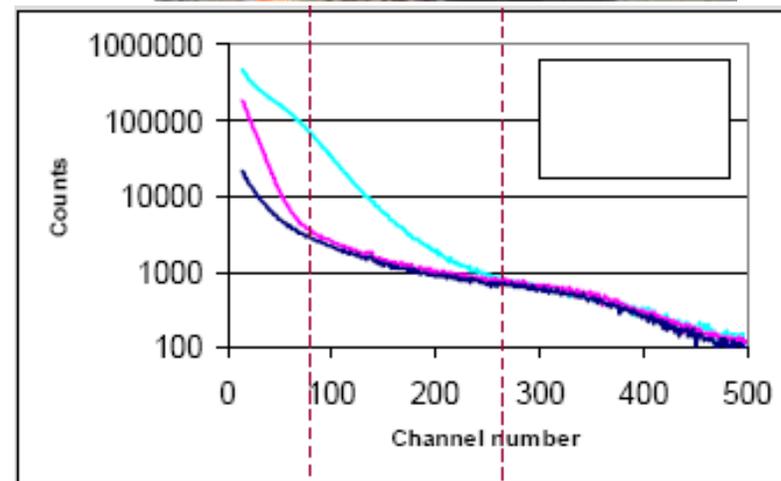
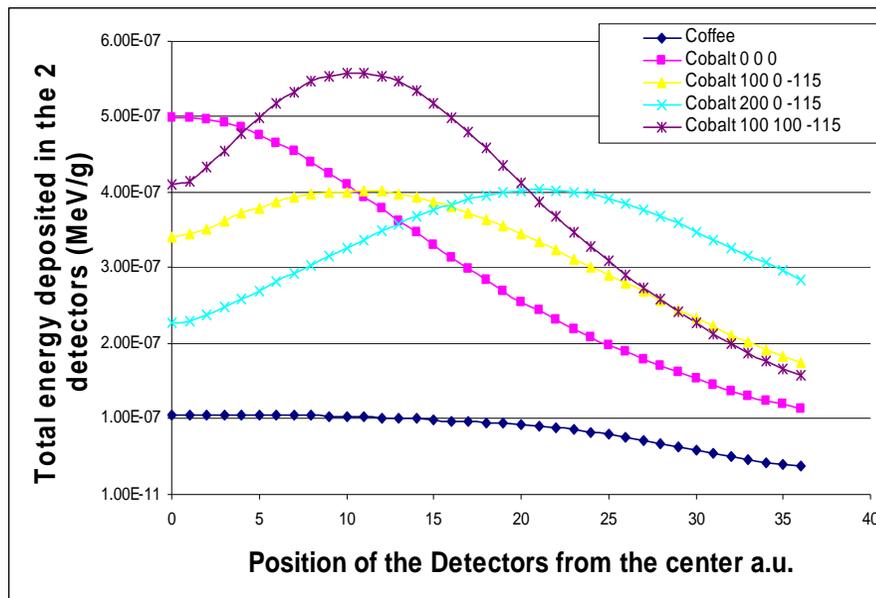
### **‘Nuclear Security’ 155 M€(2007-2011)**

- Development/support to TREN/IAEA  
(evolution of verification technology, services, training)
- Additional protocol (information analysis, Environmental sample analysis)
- Illicit trafficking/forensic analysis
- Open source Information collection on Nuclear Non Proliferation
- Reference materials and quality assurance
- Risk assessment methodology (enhanced proliferation resistance of Gen IV nuclear reactors)

## Radiation Portals : problem of NORMs Naturally Occurring Radioactive Materials

NORMs (rocks, minerals, metals processed, Scrap, fertilizers, ceramics,..) can trigger innocent alarms. Require extensive investigations by the front line officer

**1- The space profile of the portal response can be used for discrimination**



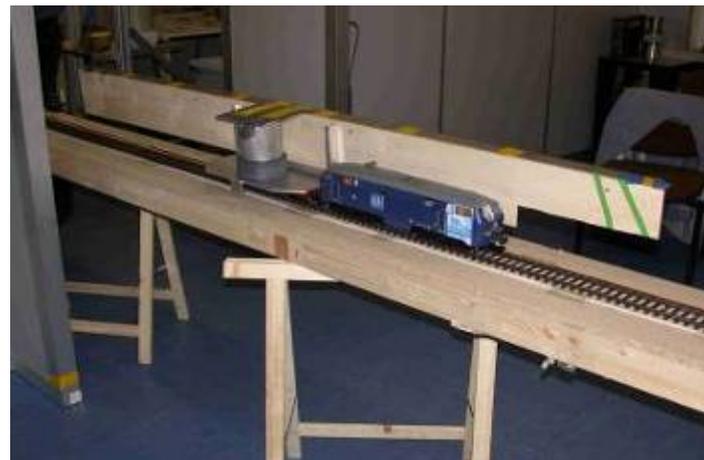
**2- Broad Energy Windowing (BEW): SNM will only trigger an alarm in the low energy window**

## Testing and qualifying equipment

### Illicit Trafficking Assessment Programme (ITRAP)

**Project will start on 2009; Requested and funded by DG-JLS**

- Evaluation of performance and limits of the equipment used for the detection and identification of Radioactive Materials (about 60 type of equipment will be tested)
- Recommendations on new R&D projects in support to an effective and friendly use of these equipment by the Custom officers
- Results will be shared with IAEA and Member States.

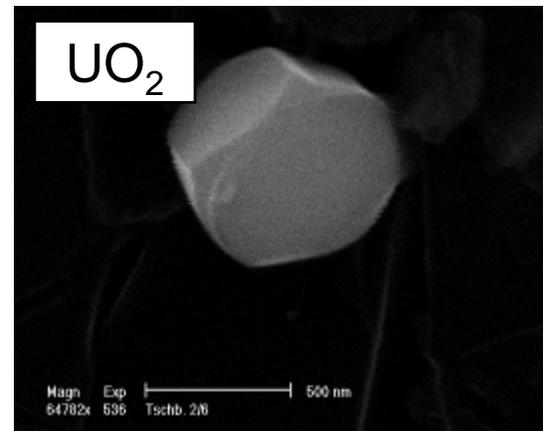


## Strengthened Safeguards: Particle Analysis

Analysis of uranium and plutonium in particles sampled in a broad range of nuclear safeguards contexts (env'tl sampling).

### Safeguards objectives

- Enrichment plants
  - no enrichments higher than declared!
  - no undeclared material!
- Hot cells, reprocessing plants



Scanning Electron Microscopy (SEM)

Nuclear Forensics → swipe samples from equipments or buildings

## Nuclear forensics

**Recent Example from Germany (2007 )**  
Low Enrichment U pellets seized in Lauenförde

Material attribution:

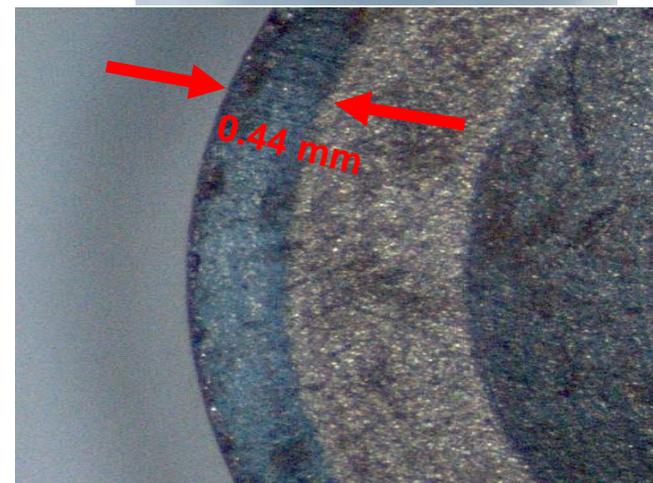
Chamber width –

exp'tl.: 0.44 mm

Plant 1: 0.40 mm (RBU Hanau)

Plant 2: 0.61 mm

Production date was determined:  
Nov./Dec. 1990, one year before  
physical protection was  
strengthened



## 2009+: Towards an EU Security Training Centre at JRC

- Requested by MS and DG-JLS, the centre will focus on training on nuclear security. It may later broaden its scope to include training on Dual use and export control. The JRC will involve the MS expertise in these domains.
- The Centre will be open to beneficiary countries of TACIS and Instrument of stability programmes.



- **IAEA**: 27 projects under EC Support program
- **US DOE – EURATOM agreement**: 16 running tasks and 5 new task sheets under preparation Agreement under revision to open up towards **nuclear security** and **more info sharing with IAEA**
- **US DOE NNSA incl. IAEA**: request for **integrated training for Second Line of Defence Activities**
- **CANADA incl. DG TREN**: very active in the Proliferation Resistant and Physical Protection, **PR&PP** (GIF Expert Group) and safeguards of CANDU
- **Europol, Interpol**: Exchange information
- **ITWG**: ITU-JRC is EU's leading laboratory for nuclear forensics
- **RF and CIS**: important **TACIS projects** running (30 Meuro / 5 years) in area of Nuclear safeguards, non-proliferation and nuclear security (e.g. Multicountry project on illicit traffic)
- **Middle East and Asia**: New project under the Instrument for Stability (equipments, training,...)
- **IAEA and US DoE**: BMWG (**Border Monitoring Working Group**) - Coordination for procurement of equipment (technical specifications, training, maintenance...) for Border Monitoring

- **The CBRN Policy package will lead to increased collaboration and coordination of security policies within EU.**
  
- **Security has an international dimension.**
  - EU instruments (IfS, INSC and Joint Actions): new regions are targeted.
  - EU Support integrate the regional dimension as well as national.
  - Enhancing international collaboration in the field of security
  
- **EU Security Research and Development:**
  - link between research, development and operational use, coordination between the numerous research programmes.
  - standards for technologies, procedures, methods and processes,.
    - Toward an EU security label (takes into account human, societal and legal aspects)
    - Reinforcing European industry's potential for leadership
  
- **Training: Huge demand for training inside and outside EU**
  - EU Security Training centre, Networking the EU MS training centres