Nuclear Safeguards and Security in the European Union

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The EURATOM Safeguards System 1/3

- EURATOM: European Atomic Energy Community.
- Created in 1957 by the EURATOM Treaty.
- Art 1: "…contribute to the raising of the standard of living in the Member States (from 6 to 27 today)…speedy establishment and growth of nuclear industries."
- Supranational organisation, i.e. transfer of sovereignty by Member States
- The Commission and Supply Agency execute

The EURATOM Safeguards System 2/3

- The Supply Agency
  - enforces a common nuclear supply policy.
  - owns all material brought into the Community.
- The Commission
  - sponsors and protects nuclear research.
  - enforces nuclear safety.
  - monitors the growth of the nuclear industry.
  - controls / enforces security of nuclear material
  - signs any international agreements related to nuclear energy.

The EURATOM Safeguards System 3/3

- Unique supranational organisation, i.e. is not an international / regional organisation
- It is independent from its Member States (e.g. like the UN)
- It has strong inspection and sanction powers to control use of nuclear material (unique in the world)
- It binds 27 States (of which 2 are nuclear-weapon States). Largest nuclear industry, largest fuel cycle.
- Did the 1st international inspection in the 60's

Safeguards and Security 1/4

- In accordance with the provisions of this Chapter [VII], the Commission shall satisfy itself that, in the territories of Member States:

  a. [materials] are not diverted from their intended uses as declared by the users;

  b. the provisions relating to supply and any particular safeguarding obligations assumed by the Community […] are complied with.", Euratom Treaty Art. 77

Safeguards and Security 2/4

- It is compulsory for all Member States.
- It forbids discrimination on the grounds of use (civilian or military).
- It covers all nuclear material, cradle to grave
- It's sole exception is material being tailored for defence use.
- It empowers the Commission to act directly on nuclear operators
- It has shared competence over nuclear material security

Safeguards and Security 3/4

- Anyone operating a nuclear installation must declare it in detail.
- The Commission must approve design.
- The operator is the first layer of security;
- He must implement material control, accounting (NMAC) and ensure protection;
- And demonstrate the quality of his systems:
  - prevent and detect any losses of material
  - comply with supply safeguards restrictions
  - meet international safeguards obligations

Safeguards and Security 4/4

- The Commission adds an upper layer of controls on top of the operator's
- The Community System of Accounting for and Control of Nuclear Material
  - Community-wide nuclear material accounting
  - Accounting-based controls
  - Containment and surveillance measures
- Controls at the installations, including physical verifications during inspections
- The Commission has a supervisory role with a full inspection mandate

EURATOM and IAEA

- Euratom is perceived as a model
  - Verification agreement with unique features
  - Full inspection and sanction powers
  - Identical coverage of NWS and NNWS
- Euratom States represent the largest contribution to the IAEA ordinary budget
- Euratom provides strong support to the IAEA
  - training,
  - expertise, R&D, support programs,
  - equipment, software

The European Commission 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 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.
  - Large series of projects executed by the European Commission Joint Research Centre (JRC) with a variety of Beneficiaries + recipients

- **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 replacing the TACIS program

Indicative Programme 2009-2011	MEuro
Priorities 1 & 2	
Expert Support Facility (ESF)	**6-9***
Priority 1 — Non-proliferation of WMD	***(117+6*)123***
CBRN Regional centres of excellence	**25-30**
Fighting illicit CBRN trafficking and deceptive financial practices	**12-14**
Support to bio-safety and bio-security	14-18
Assistance and cooperation on export control on dual-use goods	6-10
Support for the retraining and alternative employment of former weapons scientists and engineers	27-33
Support for Multilateral Nuclear Assurances (MNA) initiatives	20-25
Priority 2 — Trans-regional threats	***(60+3*) 63***
Fighting organised crime on the cocaine route	18-22
Fighting organised crime on the heroin route – Phase II: Black Sea basin and the Balkans (Follow up)	5-8
Support for prevention of and fight against terrorism	10-14
Critical maritime routes	14-18
Actions to prevent, combat and control the illicit trade in small arms and light weapons (SALW)	6-10
Priority 3 — Building capacity for effective crisis response	**30-39[3]**
Activities of Non-State Actors	15-25
Activities of International Organisations/Regional Organisations	8-10
Activities of relevant EU Member States Agencies	5-6
Total	**216-225**

External EU Policy: Joint Actions

In 2003, the European Council decided to finance Joint Actions (JA) in 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).

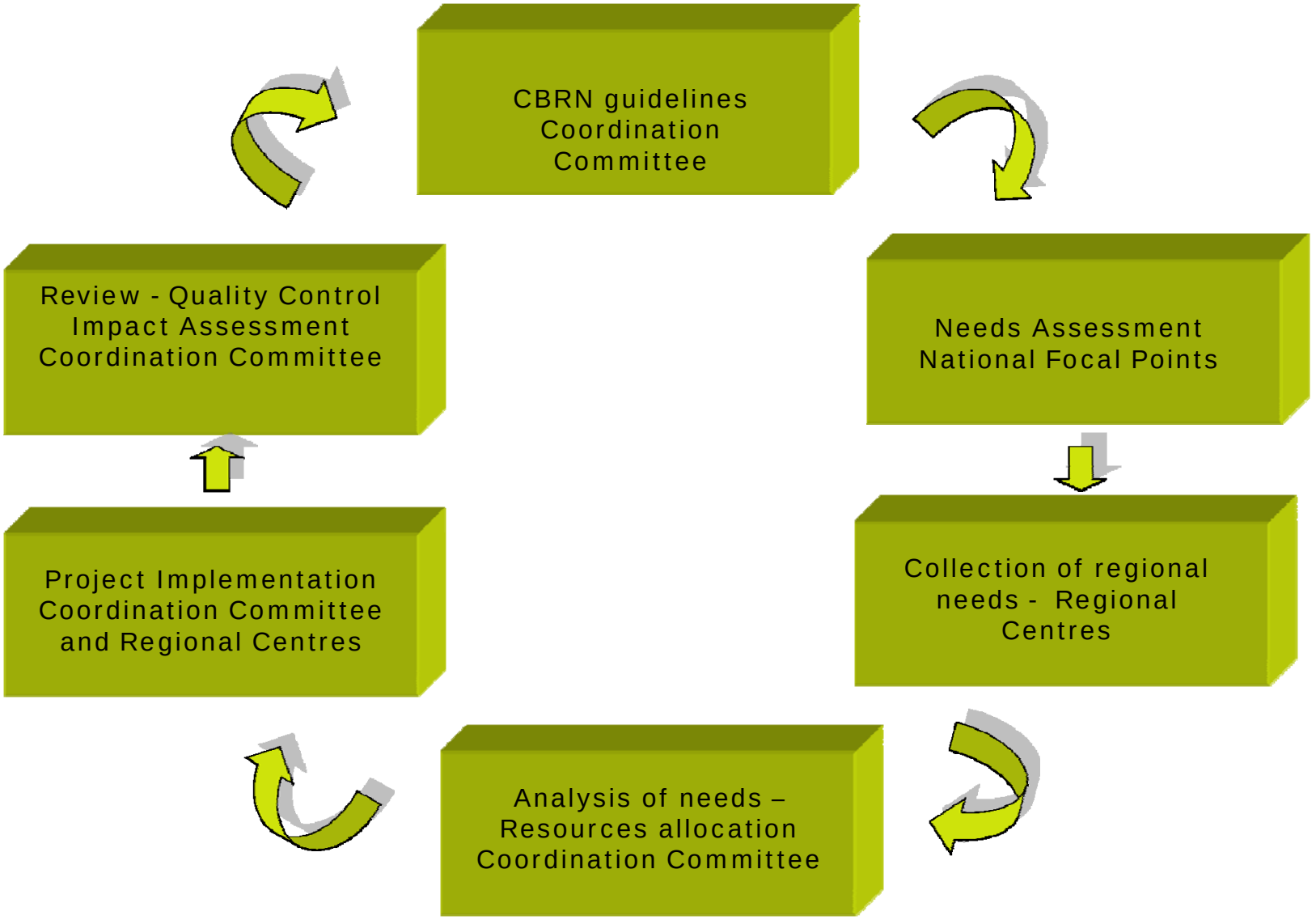
CBRN Centres of Excellence

- **Coherence and visibility in EU action** **Cooperation with the international donors**
- **Increased local ownership** **Long term sustainability**

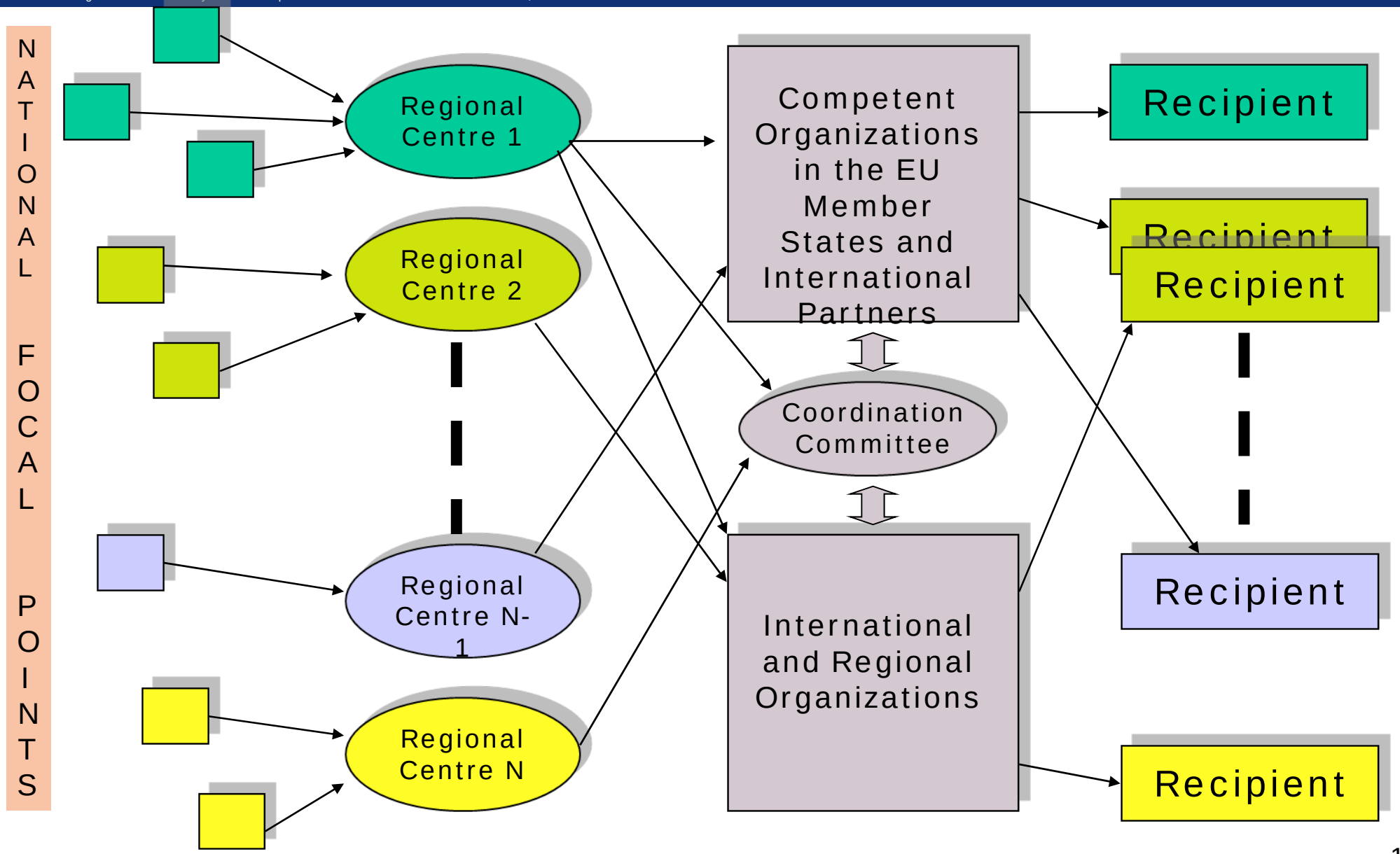
- **CoE = 3 levels to build and keep the capabilities within the countries**
  - National level (focal points): one or more contact points for needs identification
  - Regional level (regional centres): group of individuals including highly specialized experts (Border Control, Illicit Trafficking, Non Proliferation, Bio Safety & Security)
  - Existing capacities at international level

- **CoE = a network of capabilities**
  - A virtual network (no « new building »)
  - Projects might be funded at the regional, even at the national level …
  - Taking into account existing projects and experiences from other donors

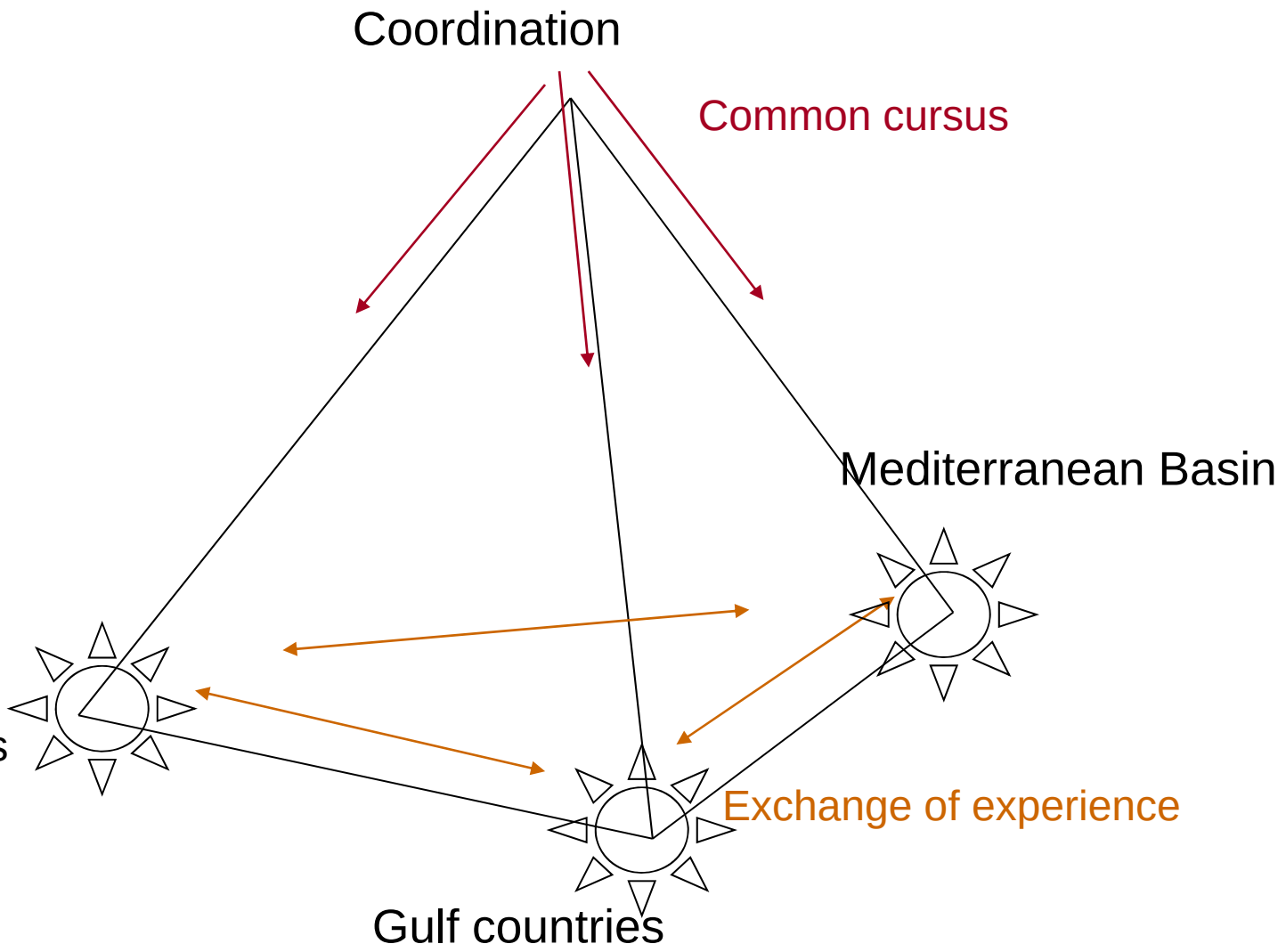
CBRN Centres of Excellence : mechanism



CBRN Centres of Excellence

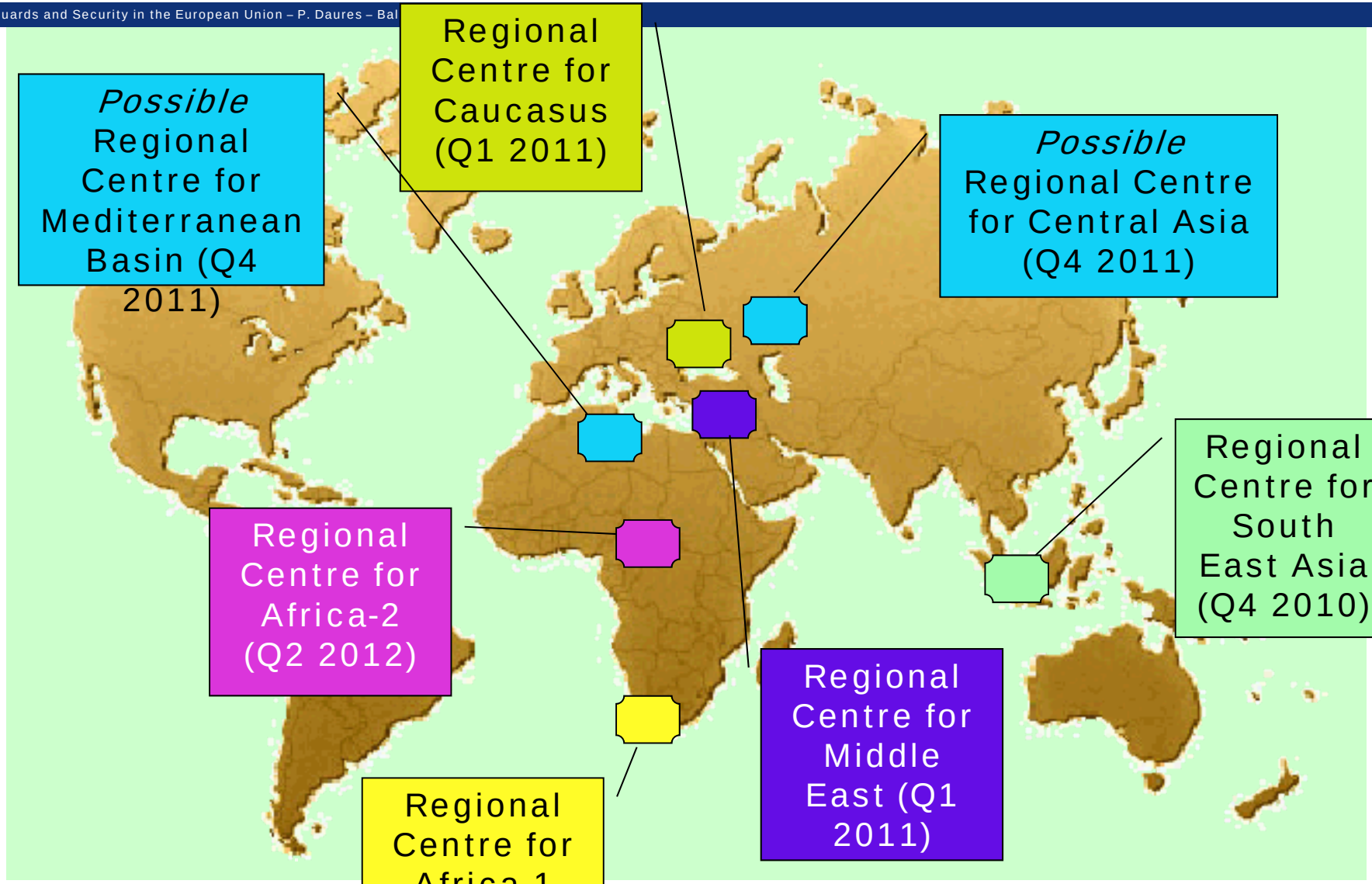


CBRN Centres of Excellence



and other countries (Africa, South America)

CBRN Centres of Excellence



Strengthened Safeguards: Particle Analysis

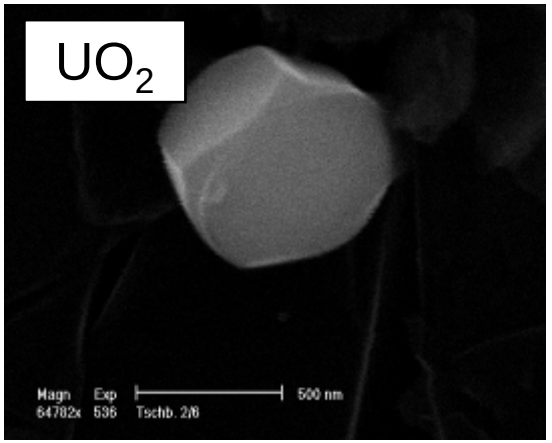
Analysis of uranium and plutonium in particles sampled in a broad range of nuclear safeguards contexts (env'tl sampling).

Safeguards objectives

- Enrichment plants

  - no enrichments higher than declared!
  - no undeclared material!

- Hot cells, reprocessing plants



Scanning Electron Microscopy (SEM)

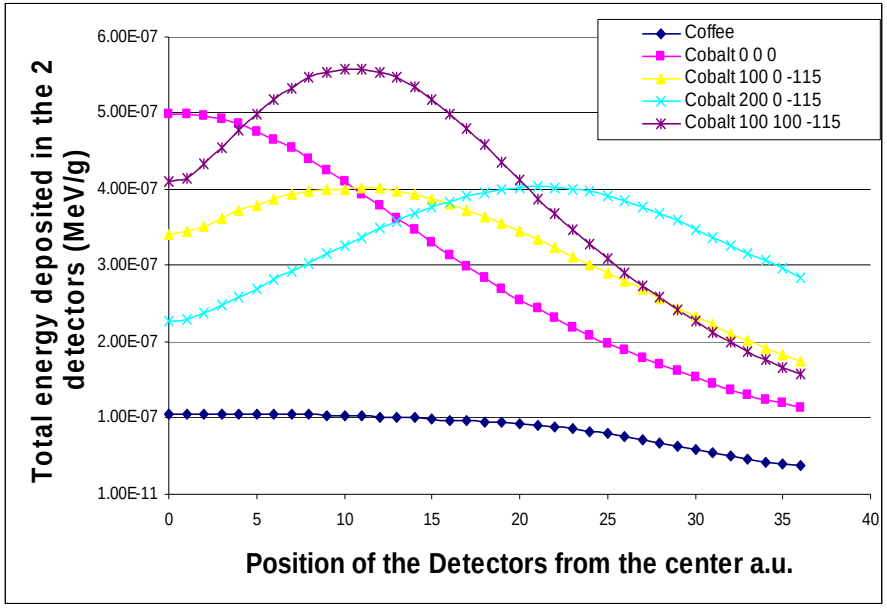
Nuclear Forensics → swipe samples from equipments or buildings

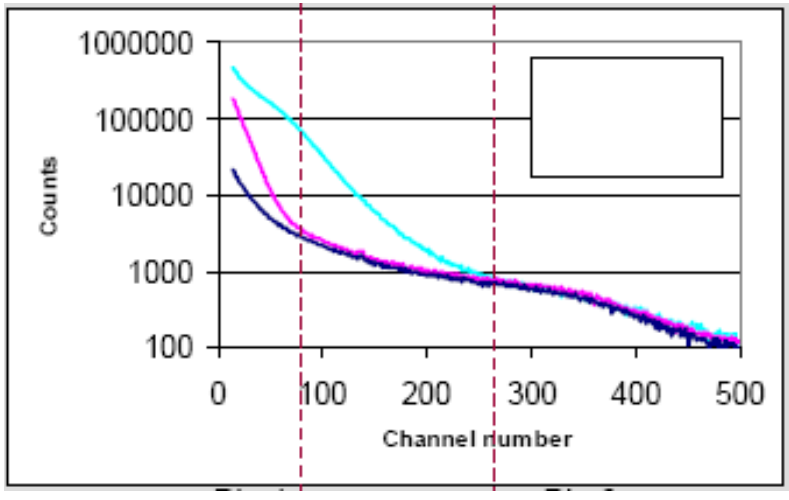
JRC Technical/scientific support activities 2/6

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

JRC Technical/scientific support activities 3/6

Testing and qualifying equipment

Illicit Trafficking Assessment Programme (ITRAP+10)

Project started in 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.
- Collaboration with US-DHS
- Others welcome

JRC Technical/scientific support activities 4/6

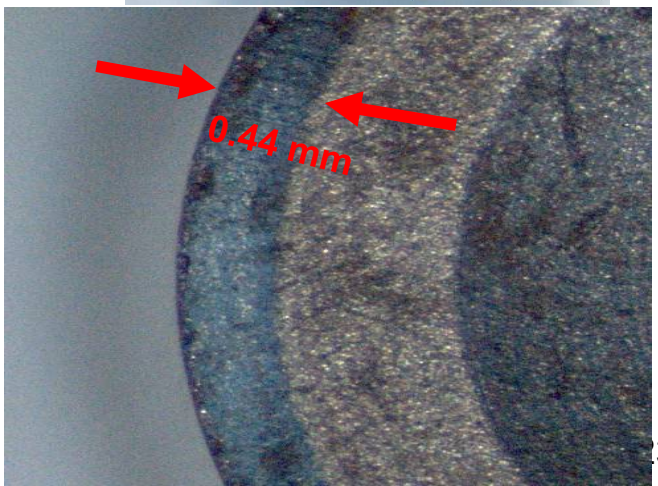
Nuclear forensics

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



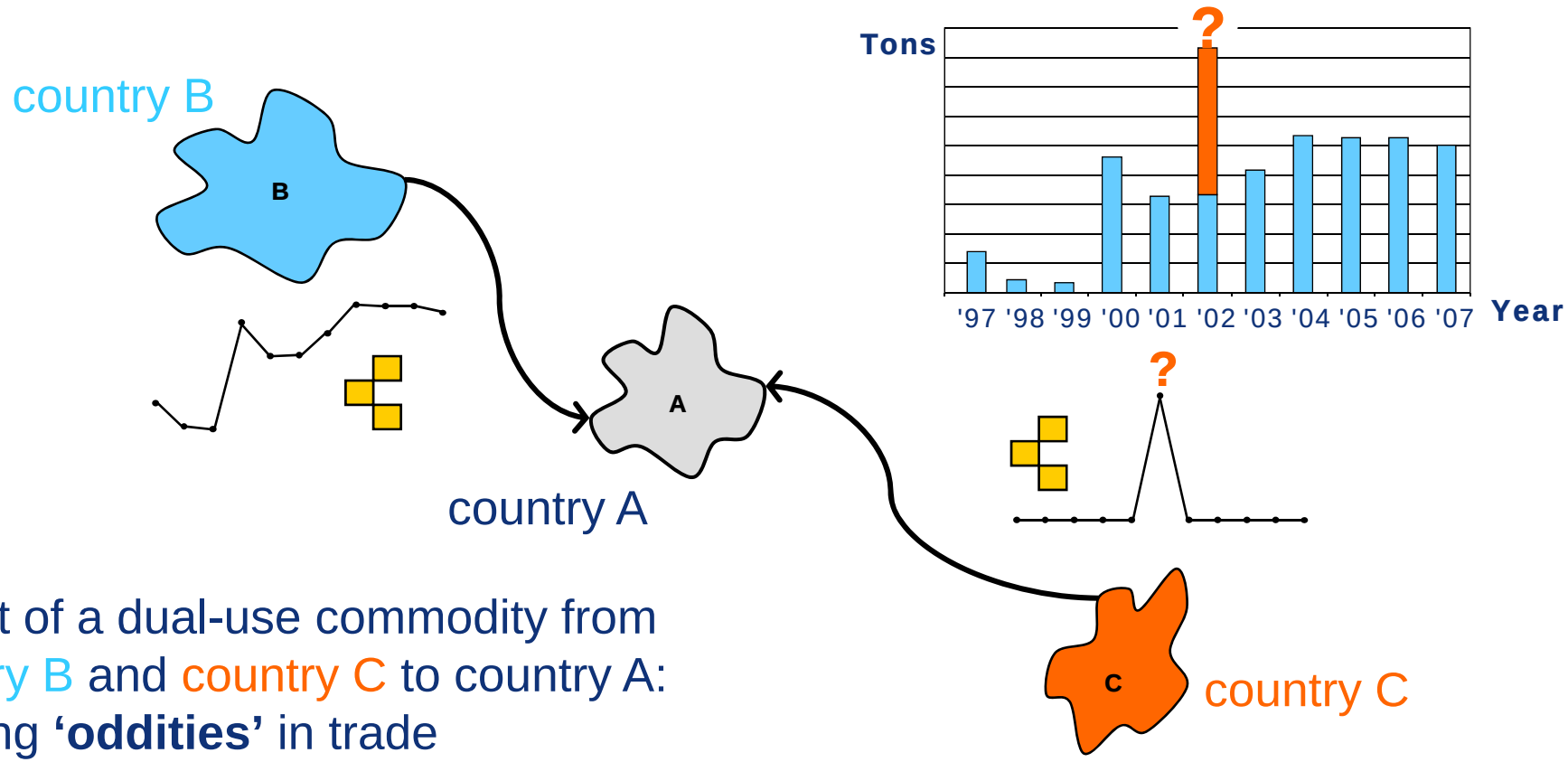
JRC Technical/scientific support activities 5/6

2010+: 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.

Trade analysis for non-proliferation studies



Export of a dual-use commodity from country B and country C to country A: spotting **'oddities'** in trade

legend

country

the traded dual-use commodity

trade direction

time series of traded quantity

UN comtrade

Thank you for your attention
Please contact me for further information

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