



Joint Research Centre

the European Commission's in-house science service



Nuclear Waste Disposal R&D from a European Perspective

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EURIDICE , Mol

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1. EURATOM Treaty
2. European Commission and Radioactive Waste Management R&D
 - a) DG RTD
 - b) DG JRC
 - c) DG ENER (Waste Directive)
3. Summing up

EURATOM Treaty: Nuclear collaboration on a European Level



25 March 1957, EEC and EURATOM Treaties

The EURATOM Treaty has been updated, but remains in force

EURATOM Treaty: R&D

Chapter 1, Promotion of Research,

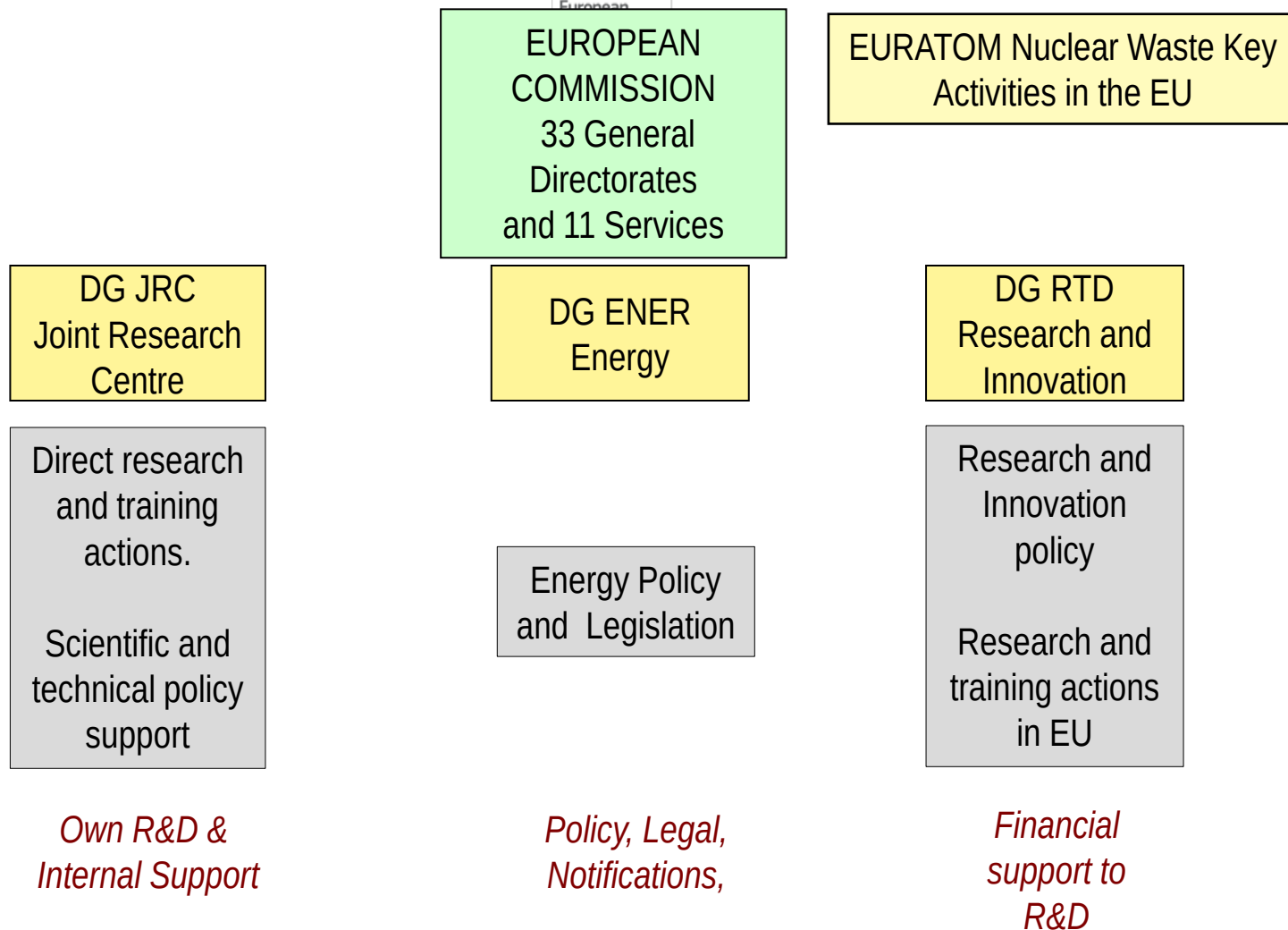
Article 4(1):

The **Commission** shall be **responsible for**

Art. 6: Financial Assistance
for carrying out R&D

- **promoting** and facilitating nuclear **research in the Member States**, and for
- complementing it by **carrying out** a Community **research** and training programme

Art. 8: Establish a Joint Research
Centre for carrying out R&D



1. EURATOM Treaty

2. European Commission and Radioactive Waste Management R&D

a) DG RTD

Who gets funded

b) DG JRC

What gets funded, and

Who decides?

c) DG ENER (Waste Directive)

3. Summing up



DG RTD: Financial support for carrying out R&D

1957:EURATOM treaty

1975-1979: 1st WM P

Contracts with single partners

1980-1984: 2nd WM P

1985-1989: 3rd WM P

1990-1994: 4th WM P

Contracts with consortia

1994-1998: 4th FP*

1998-2002: 5th FP

2002-2006: 6th FP

Contracts with large consortia

2007-2013: 7th FP

2014-2020: Horizon 2020**

Programme funding /
Joint Programming

*: EURATOM Framework
Programme for Nuclear Research
and Training // to EC FP

**FP, Competitiveness and Innovation Framework
Programme (CIP) and European Institute of Innovation
and Technology (EIT).



“DG RTD”: R&D Topics

“Show-stopper” in Member States with advanced programmes:

Geological Disposal of High Level Waste (including Spent Fuel if declared waste)

Scientific-Technical Topics in response to needs of the Safety Case, for example:

Actinide thermodynamics,

Colloid Formation,

Impact of Natural Organics,

Natural Analogues,

Geochemical and Safety Assessment Modelling.

Governance

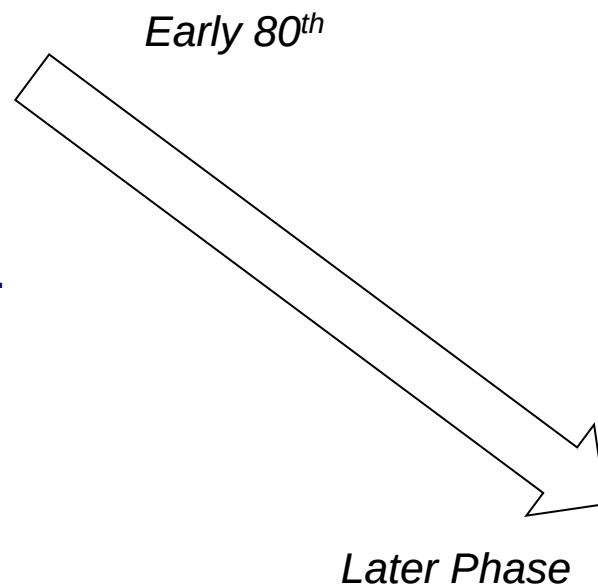
Implementation oriented RD&D:

Properties of the EDZ,

Plugs and Seals,

Emplacement Technologies,

Monitoring.





“DG RTD”: R&D Topics (cont.)

Geological Disposal approaching implementation

Waste Directive driver for advancing also less advanced programmes

Present discussion:

- Broaden the R&D scope beyond Geological Disposal
- Involve Member States with Less Advanced Programmes
- Revisit Training
- Education, Knowledge Management, Guidance and Strategic Studies



“DG RTD”: Definition of Programme

EURATOM Treaty, Art. 7:

Community research and training programme shall be

- defined by the Council,
- acting unanimously on a proposal from the Commission,
- which shall consult the Scientific and Technical Committee.

External community proposing topics

Early phase:

Research organizations

FP7:

Strategic Research Agenda by Waste Management Organizations (IGD-TP)

Horizon 2020:

Strategic Research Agenda by Technical Support Organizations (SITEX)

Strategic Research Agenda by Research Entities (under preparation)



“DG RTD”: Definition of Programme (cont.)

Horizon 2020 / Joint Programming

DG RTD defines and the Policy and monitors that it gets implemented

The three **key actors** (Waste Management Organizations, Technical Support Organizations and Research Entities)

With their respective Strategic Research Agendas

Define the R&D topics of common interest

Implement the R&D Programme

“Externalization” of Programme Implementation, including definition of specific R&D topics, providing and managing financial resources,

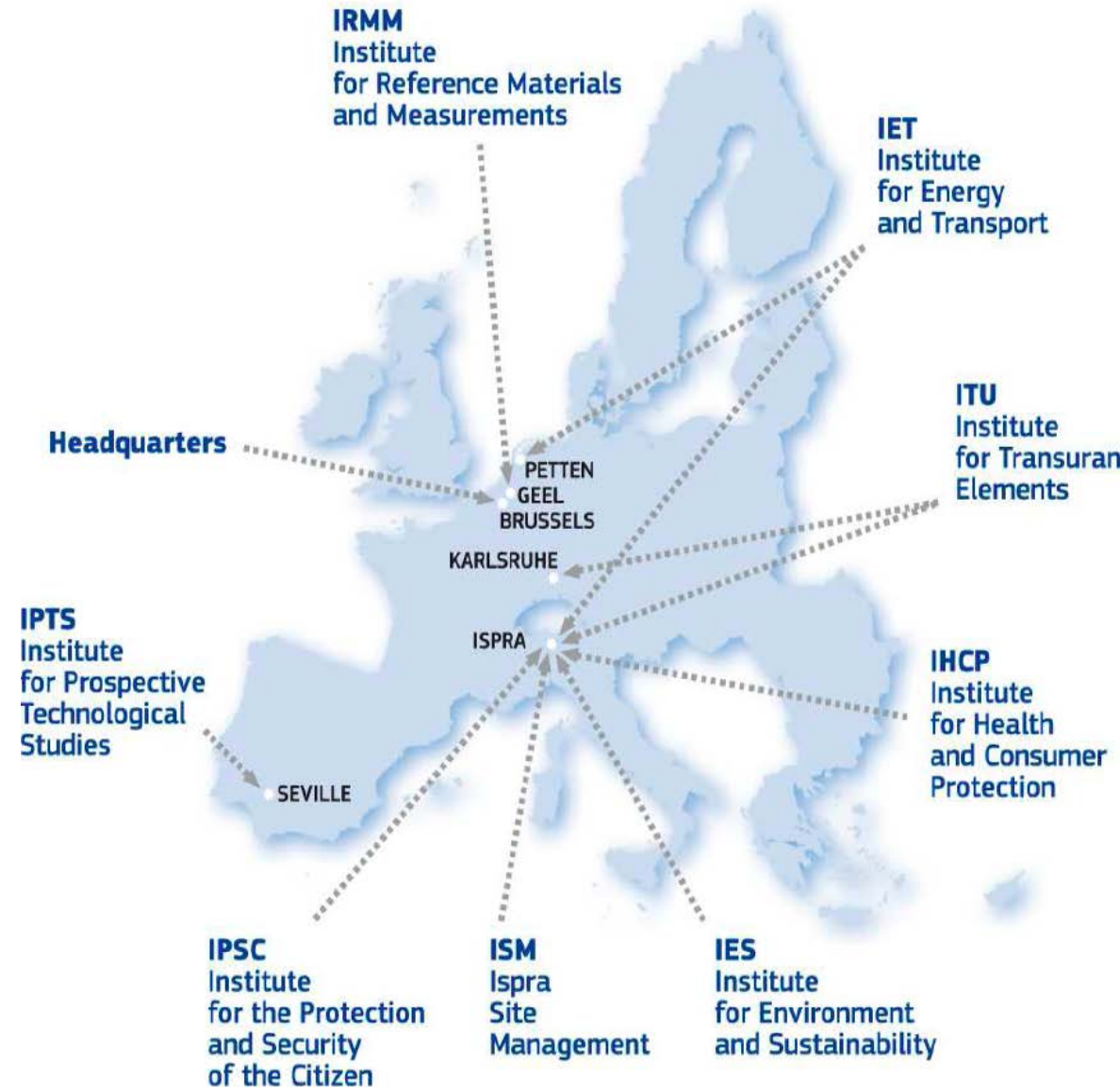


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R&D at JRC

- EC's in-house science service
- Supporting EU policies with independent, evidence-based scientific and technical support
- 7 Institutes (+ 3 other Directorates) in 6 locations
- ~ 3.000 staff (2015)
- ~ 20% nuclear activities

- Agriculture and food security
- Economic and monetary union
- Energy and transport
- Environment and climate change
- Health and consumer protection
- Information Society
- Innovation and growth
- **Nuclear safety and security**
- Safety and security
- Standards





R&D at DG JRC

Nuclear waste management R&D (JRC-ITU)

Focus on topics benefiting from the unique infrastructure allowing for handling of large quantities of

- Spent Fuel (inc)

Cooperation with organizations across the EU

-> Agreements with Member States

But also

- Exotic spent fuel,
- HLW glass
- High-level debris from

Contributing to “RTD” R&D programme

Participating in R&D projects

Supporting Member States in establishing forthcoming
Joint Programme implementation strategies

Spent Fuel topics:

- Long-term stability (Extended Storage & R&R)
- Instant Release
- Matrix dissolution

Programme:

Proposal by the Commission,

Consulting Scientific and Technical Committee

Decision by the Council,



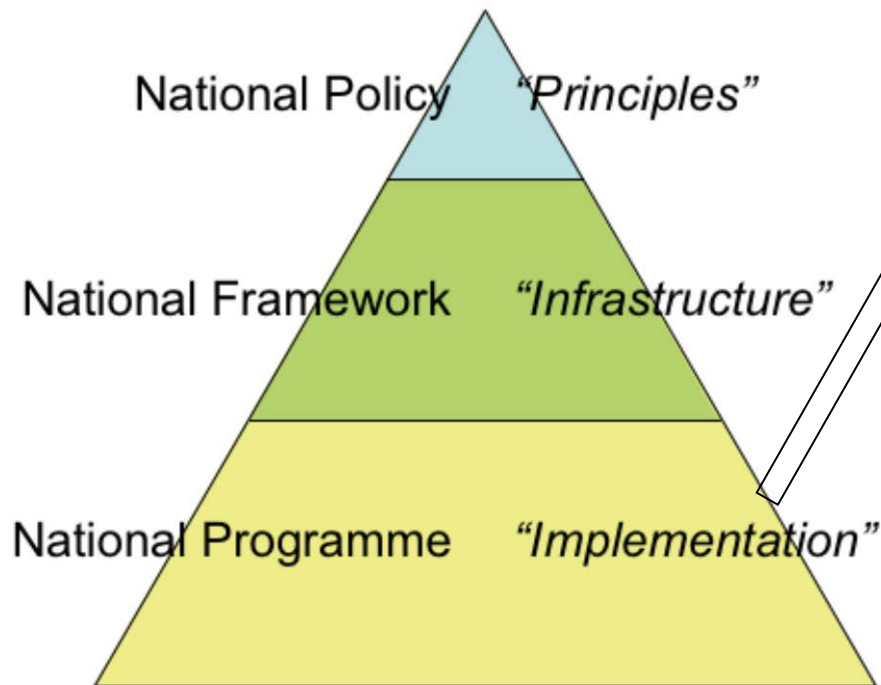
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Council Directive 2011/70/EURATOM, of 19 July 2011

Establishing a Community Framework for the Responsible and Safe Management of Spent Fuel and Radioactive Waste

- Directive: Legislative act of the European Union requiring Member States to achieve a particular result without being very prescriptive. It in particular defines the objectives but very much leaves it to the Member States how to achieve those objectives.
- Proposed by the European Commission
- Negotiated by the “Atomic Questions Group”
- Adopted by the European Council
- The Directive requirements are transposed into National Law where the particular way of achieving the objectives in a given Member State becomes defined by the MS.

Waste Directive: R&D



Article 12.1(f)

Contents of National Programmes

1. The national programmes shall and shall include all of the following:
 - (f) the **research, development and demonstration activities** that are needed in order to implement solutions for the management of spent fuel and radioactive waste;

R&D by the Member States

Through the Waste Directive: Member States implementing the necessary R&D becomes legal requirement

DG ENER, DG-RTD and DG-JRC take action to support the Member States for them to meet **their obligations**:

- Workshops
- R&D Work Programme
- Guidance
-



EUROPEAN
COMMISSION

Community research



Sed GD2 Project

(Contract Number: 323260)

RD&D Planning Towards Geological Disposal of Radioactive Waste DELIVERABLE (D-N°: 2.3) Guidance for less-advanced Programmes

Author(s): T. Beattie, R. Kowe, J. Delay, G. Buckau, D. Diaconu

Reporting period: e.g. 01/01/2013 – 30/06/2015

Date of issue of this report: **DRAFT V0.4 (27th February 2015)**

Start date of project: 01/01/2013

Duration: 36 Months

Project co-funded by the European Commission under the Seventh Euratom Framework Programme for Nuclear Research & Training Activities (2007-2011)

Dissemination Level

PP

Restricted to other programme participants (IGD-TP participants by ProjectPlace) including the Commission Services

European
Commission

RD&D Planning Towards
Geological Disposal of
Radioactive Waste
Guidance for less advanced
Programmes

IGD-TP
Adopted 23 June 2015



Summing up

R&D is implemented by the Member States, by DG-JRC and through DG-RTD

The EURATOM Treaty defines the roles and responsibilities of the Commission

The Waste Directive makes R&D by the Member States a legal requirement

The Commission takes actions in support to the Member States in meeting their obligations

New forms of engaging the Member States and involving their actors are on the way (“Joint Programming”) -> Transferring more responsibility to the Member States for definition and implementation of R&D on a European level



Questions?