



*Euratom Treaty,
1957*



Euratom Research & Training Programme and EU energy/climate policy - Status 2018



Beacon annual meeting, Milos, 29-31 May 2018

HORIZON 2020

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- ❑ Energy union and climate - 2020 and 2030 targets
- ❑ Waste Directive 2011/70/Euratom
- ❑ Euratom Horizon 2020 Framework Programme – Status period 2014 – 2017
- ❑ Work Programme 2018 – Call topics in RWM and Decommissioning
- ❑ European Joint Research Programme RWM – Rationale and Preparatory steps
- ❑ R&D project on waste treatment – THERAMIN

Energy union and climate - 2020 and 2030 targets

Energy union and climate

One of the 10 Commission priorities for 2015-19

"Making energy more secure, affordable and sustainable (climate-friendly)"

Translated into 5 Policy areas

- Security, solidarity and trust
- A fully-integrated internal energy market
- Energy efficiency
- Climate action - decarbonising the economy
- Research, innovation and competitiveness



https://ec.europa.eu/commission/priorities/energy-union-and-climate_en

Research and Innovation

Research activities guided by the European Strategic Energy Technology Plan (SET-Plan)

Research domains & approx. budget under Horizon 2020 & Euratom:

- Non-nuclear energy, €5.9 billion

(Concentrated Solar Power, Photovoltaics, Wind, Ocean, Hydro, Geothermal, Bioenergy, Fuel Cells and Hydrogen, Electricity Grids, Carbon Capture and Storage, Energy Storage, Energy Efficiency, Smart Cities)

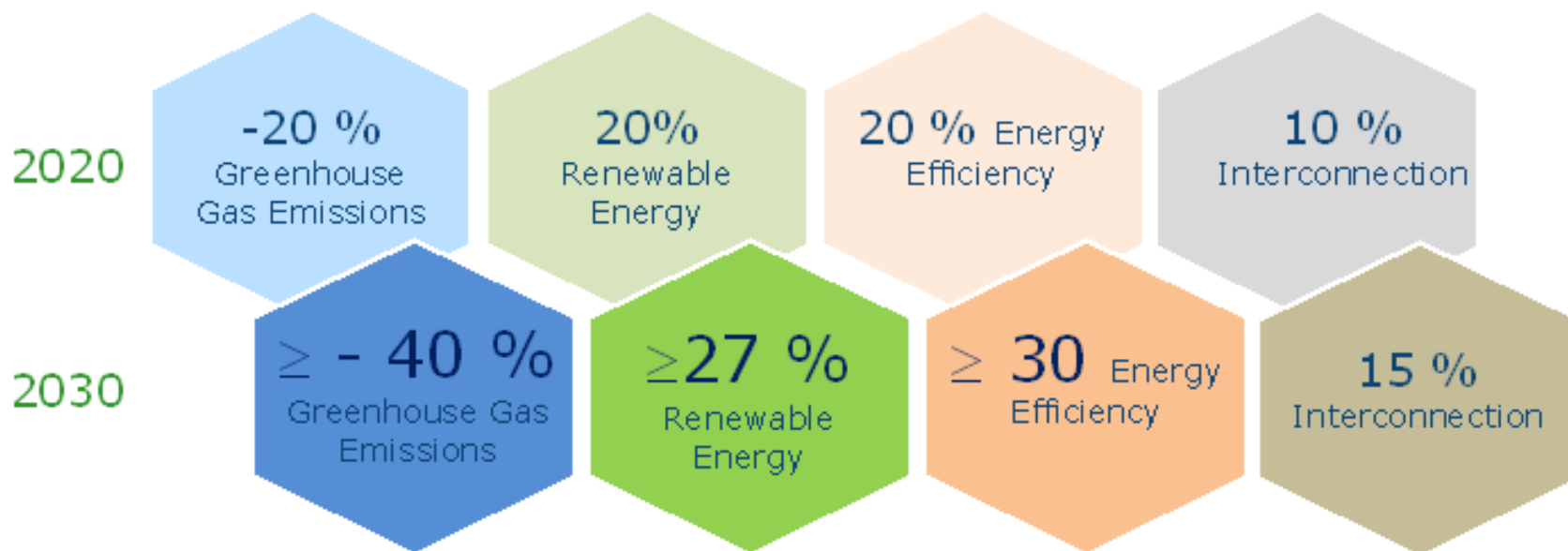
- Nuclear energy (Fission and Fusion) including administrative costs

	(2014-18)	(2019-20)
Nuclear fission by DG RTD,	€315 million	€152 million
Nuclear fission by DG JRC,	€559 million	€269 million
Fusion	€728 million	€350 million

Energy union and climate

EU Target figures

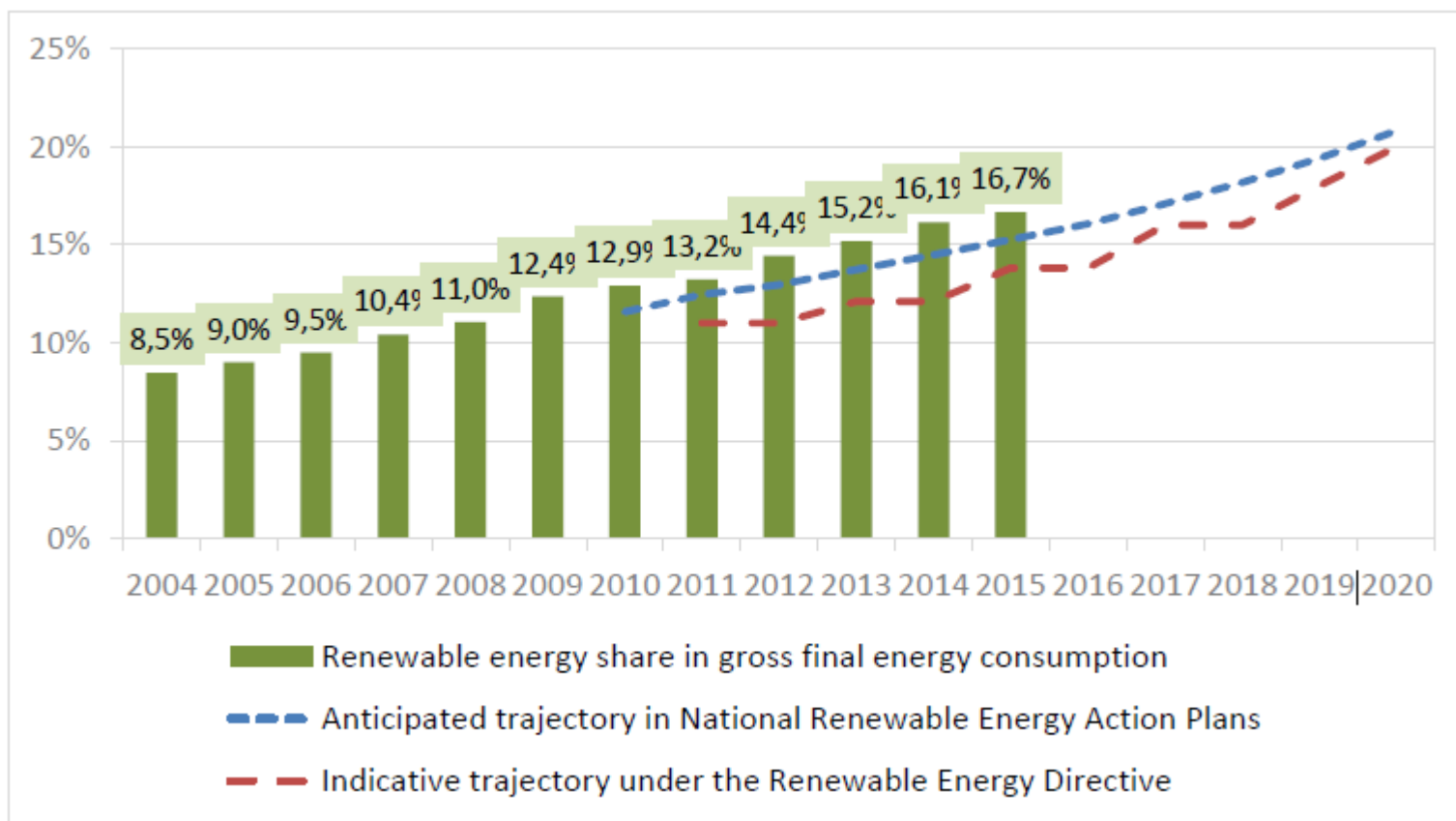
2030 Framework for Energy and Climate - Agreed headline targets



Energy union and climate

Status reported in the 3rd report on the State of the Energy Union,
November 2017

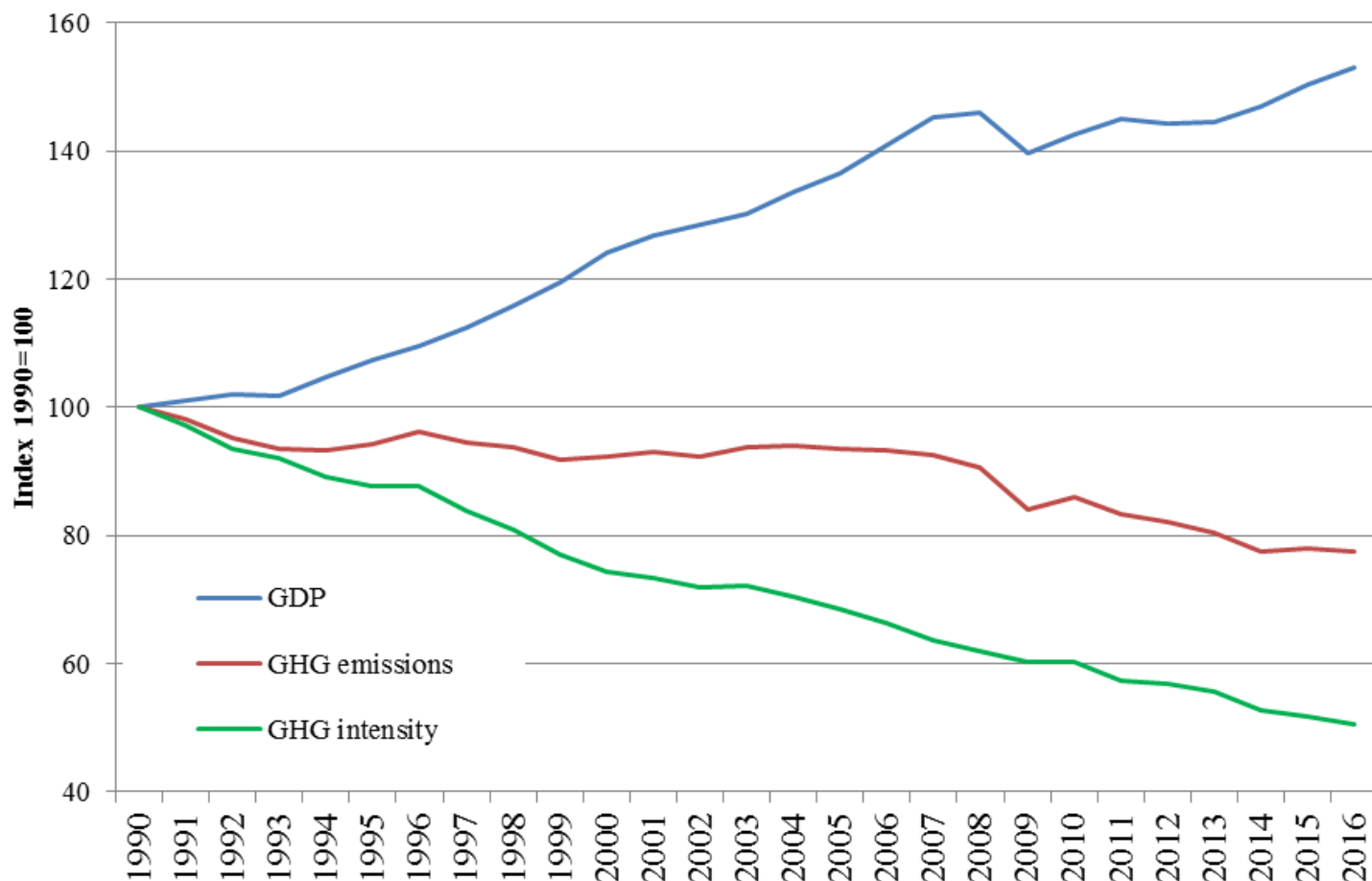
Renewable energy shares in EU gross final energy consumption



Energy union and climate

Status reported in the 3rd report on the State of the Energy Union,
November 2017

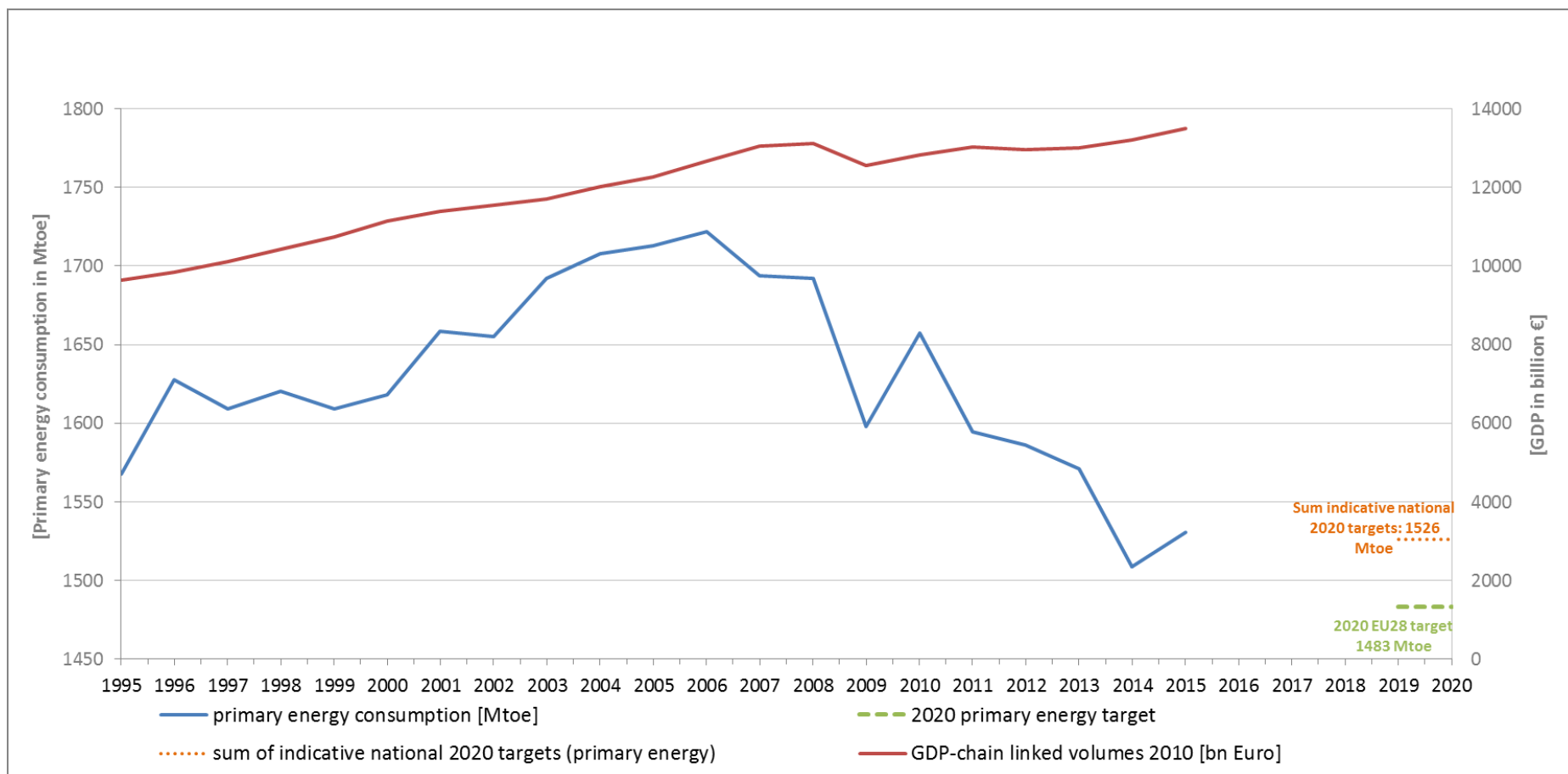
EU greenhouse gas (GHG) emissions



Energy union and climate

Status reported in the 3rd report on the State of the Energy Union,
November 2017

Energy efficiency correlated to the Evolution of GDP and primary energy consumption in the EU 28



Waste Directive 2011/70/Euratom

Waste Directive 2011/70/Euratom

Directive 2011/70/EURATOM

(Responsible and Safe Management of Spent Fuel and Radioactive Waste)

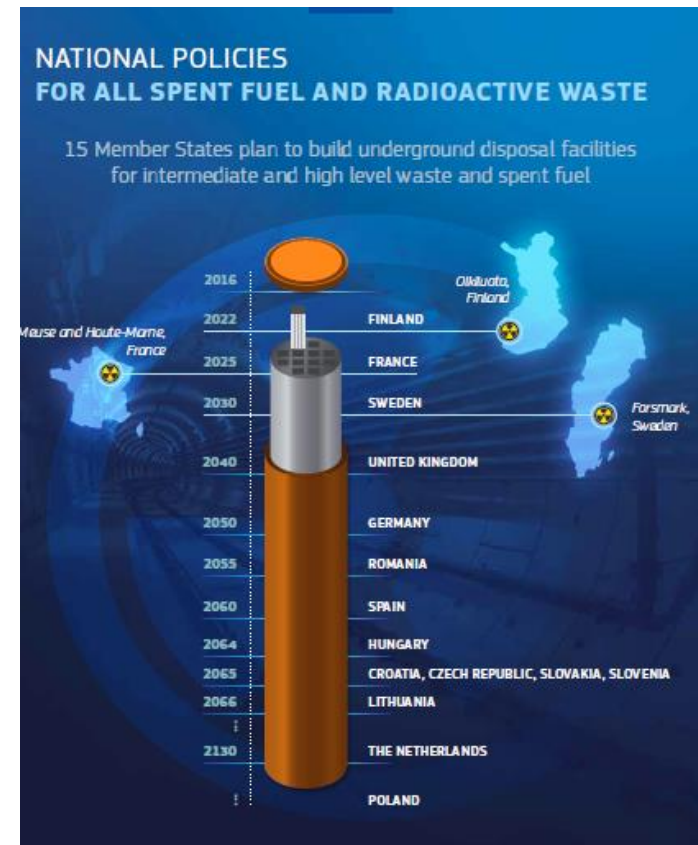
- Basic requirements on EU Member States to establish national policy, legislative, regulatory, organisational framework and a national programme to manage all types of RW from generation to disposal
- National programme consists in:
 - ✓ Implementation of the policy
 - ✓ Timeframes, Milestones
 - ✓ Classification, Inventory
 - ✓ Concepts and Plans, etc.
 - ✓ Costs and Financial schemes
 - ✓ R&D and demonstration
 - ✓ Public information and participation
 - ✓ Monitoring and Performance indicators
 - ✓ International agreements
 - ✓ Self-assessment and Peer reviews

Waste Directive 2011/70/Euratom

- Transposition into national legal framework (23 Aug. 2013)
- Notification of existence of National programmes (23 Aug. 2015)
- Reports on Implementation of Nat. Prog. (1st 23 Aug. 2015 & every three years)
- EC then reports to the European Parliament and EU Council :
1st Commission report on implementation of Council Directive 2011/70/Euratom - 15 May 2017
<https://ec.europa.eu/energy/en/topics/nuclear-energy/radioactive-waste-and-spent-fuel>
- MSs Obligation to carry out an International Peer Reviews (every 10 years)

IAEA provides its peer review service for radioactive waste and spent fuel management, decommissioning and remediation programmes, current schedule:

- Poland (October 2017)
- France (January 2018)
- Bulgaria (June 2018)
- Luxembourg (September 2018)
- Spain (October 2018)



Euratom Horizon 2020 Framework Programme

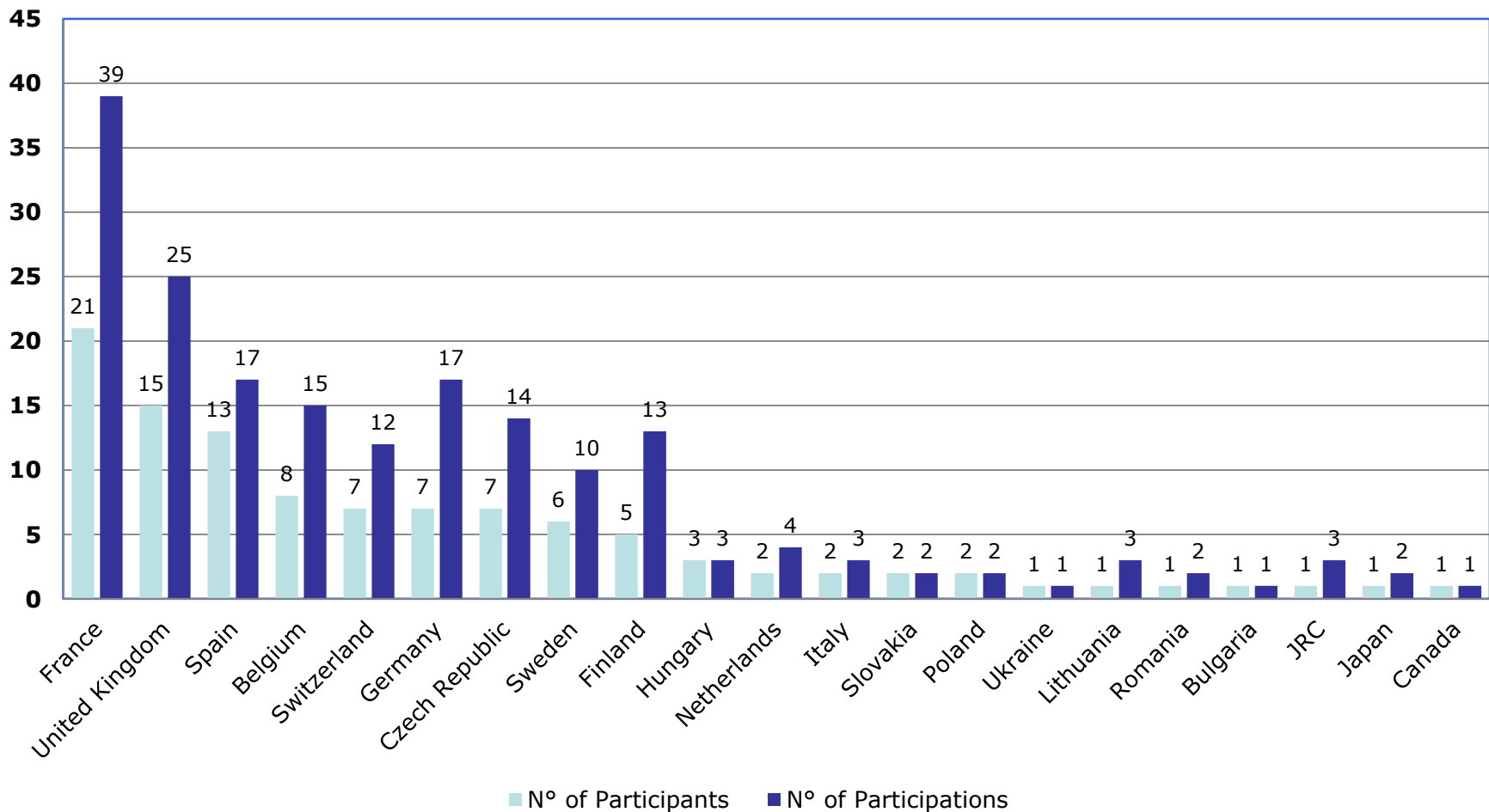
Status period 2014 – 2017

Euratom Research & Training Programme (2014 - 2018)

Radioactive Waste Management – Indirect actions

WP 2014 / 2015	WP 2016 / 2017	WP 2018	Extension WP 2019 / 2020
On-going projects	New Projects Started in June 2017	On-going call	Call planned in 2019
IGD-TP priorities	IGD-TP priorities (GD & HLW/SF)	European Joint Programme	Continue RD&D support in Pre-disposal (Treatment & Conditioning)
CEBAMA - Cement / rock & bentonite interactions	DISCO - Modern SF disso. & charact.	Deadline 27/09/2018	
Modern2020 - Repository monitoring strategy & tech	Beacon - Bentonite Mech. Evolution		
MIND - Microbiology in repositories			
TSO support	RWM & other wastes (unconventional, legacy & decom.ning)	Integrated Scope for RWM	
SITEX II - Structure TSO community for safety case reviews	CHANCE - Charact. of conditioned waste	. Geological Disposal & HLW/SF	
Preparatory phase for Joint Programme	THERAMIN - Thermal treatment for waste mini.	. Pre-disposal & other wastes	
JOPRAD - Prepare for European Joint Programme	INSIDER - Charact. for waste mini. in Decom. & Dism.	. Strategic studies	
E&T + Socio-economic aspects	E&T + Socio-economic aspects	. Knowledge Management	
ANNETTE - Euro Master & vocational E&T Prog. in Nuc. Science & Technology	MEET-CINCH - Radiochemistry teaching	Guidance on R&D, State of the Art & Training & Mobility in R&D	
HoNEST - History of factors influencing successes and failures of nuc. energy developments	ENENplus - Post academic educ. & mobility scheme	EJP start mid-2019	
BUDGET total cost €M 22,6 EU contribution €M 16,3	BUDGET total cost €M 21,1 EU contribution €M 19,2	BUDGET total cost €M 59,1 EU contri. €M 32,5	
BUDGET total cost €M 6,23 EU contribution €M 5,56	BUDGET total cost €M 5,43 EU contribution €M 5,10		

H2020 Fission - N° of participants and participations in nuclear waste



RWM and other R&I domains of the programme

Horizon 2020 - Euratom (2014 - 2018)										Euratom extension					
WP 2014 / 2015				WP 2016 / 2017						2018				2019	2020
										ca. € 68.80 million				Anticipated R&I budget ~ €151.58million	
	#	EU			#	EU		cumulative			#	EU			
	Projects	€M	%		Projects	€M	%	€M	%		pr. €m	%			
Reactor systems	11	44,6	42,34	Reactor systems	15	66,3	53,04	110,95	48,15						
Radiation Prot.	1	19,8	18,80	Radiation Prot.	1	10,0	8,00	29,82	12,94						
Radioactive WM	5	16,3	15,46	Radioactive WM	5	19,5	15,56	35,76	15,52	RWM	1	32,5	47,2		
E&T + Societal Socio-eco	6	9,4	8,89	E&T	2	5,1	4,08	14,47	6,28						
Other (JHR + GIF)	2	15,3	14,51	Other (InnovFin + GIF)	1	20,15	16,12	35,45	15,38					Horizon 2020	
	25			Fission / Fusion	2	4,0	3,20	4,00	1,74					Total ~ €450,83 million	
total		105,44		total	26	125,00	total	230,45		Total ~ € 299.25 million	net projects				

Work Programme 2018

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Call topics in RWM and Decommissioning

Topic	Budgets (EUR million)
Decommissioning and environmental remediation - NFRP-2018-5 (CSA): Development of a roadmap for decommissioning research aiming at safety improvement, environmental impact minimisation and cost reduction	1.40
Radioactive waste management - NFRP-2018-6 (COFUND-EJP): European Joint Research Programme in the management and disposal of radioactive waste	32.50
Education and Training - NFRP-2018-7 (CSA): Availability and use of research infrastructures for education, training and competence building	4.00
Innovation - NFRP-2018-10 (IA): Encouraging innovation in nuclear safety for the benefit of European citizen	4.50

Euratom Work Programme 2018:

http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/euratom/h2020-wp1820-euratom_en.pdf

Work Programme 2018 – Call for proposal schedule

Event	Date
Call publication	27/10/2017
Opening of submission	15/05/2018
Call deadline	27/09/2018
Evaluation	Oct.18 – Jan.2019
Information to applicants	Feb. 2019
Grant preparations	Feb. – May 2019
Projects launch	June – July 2019

Topic NFRP-2018-6:

European Joint Research Programme in the management and disposal of radioactive waste

EC contribution up to EUR 32.5 million reimbursed at 55% of the total eligible costs

http://ec.europa.eu/research/participants/portal/desktop/en/funding/reference_docs.html#h2020-work-programmes-2018-20

Euratom Work Programme

Research and Innovation



European Joint Research Programme in the management and disposal of radioactive waste

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Rationale & Preparatory steps

Overview of the Euratom Programme in RWM

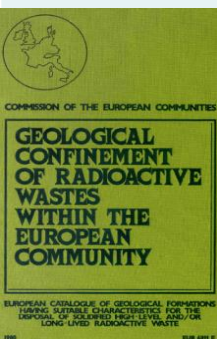


1975 WM1 1 st prog.	1980 WM2 2 nd prog.	1985 WM3 3 rd prog.	1990/94 WM4 4 th prog.	1994/98 FP4 5 th prog.	1998/2002 FP5 6 th prog.	2002/06 FP6 7 th prog.	2007/13 FP7 8 th prog.	2014 Horizon 2020 9 th prog.	Total €m
€ 19m EC funding	€ 43m	€62m	€ 73.5m	€ 33.5m	€ 32m	€ 47.1m	€ 64.6m	2014/17 = 35.76m 2018 = 32.5m	€443
contracts / projects & avg./ct		>400 180k€/ct	>100 430k€/ct	41 820k€/ct	43 745k€/ct	24 €1,96m	26 €2,48m	10 (2014-17) €3.57m	

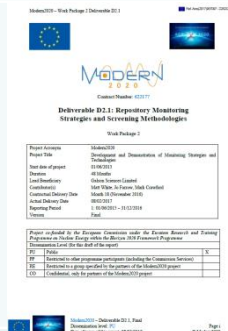
Waste management strategies & system studies
Waste Characterisation, QA/QC, Treatment & Conditioning
Disposal (basic phenomena, Natural Analogues, Modelling & Safety Ass.t)
Repository design, URL construction, EBS, Backfilling/sealing, THMC,
Geochemistry, in situ exp.ts & demonstrations)

reports > 1000

http://cordis.europa.eu/fp7/euratom-fission/funded-reports_en.html
<http://cordis.europa.eu/fp6-euratom/lib-projects.htm>
http://cordis.europa.eu/fp5-euratom/src/lib_finalreports.htm
 Lists of publications 1975-2000 http://cordis.europa.eu/fp5-euratom/src/lib_docs.htm



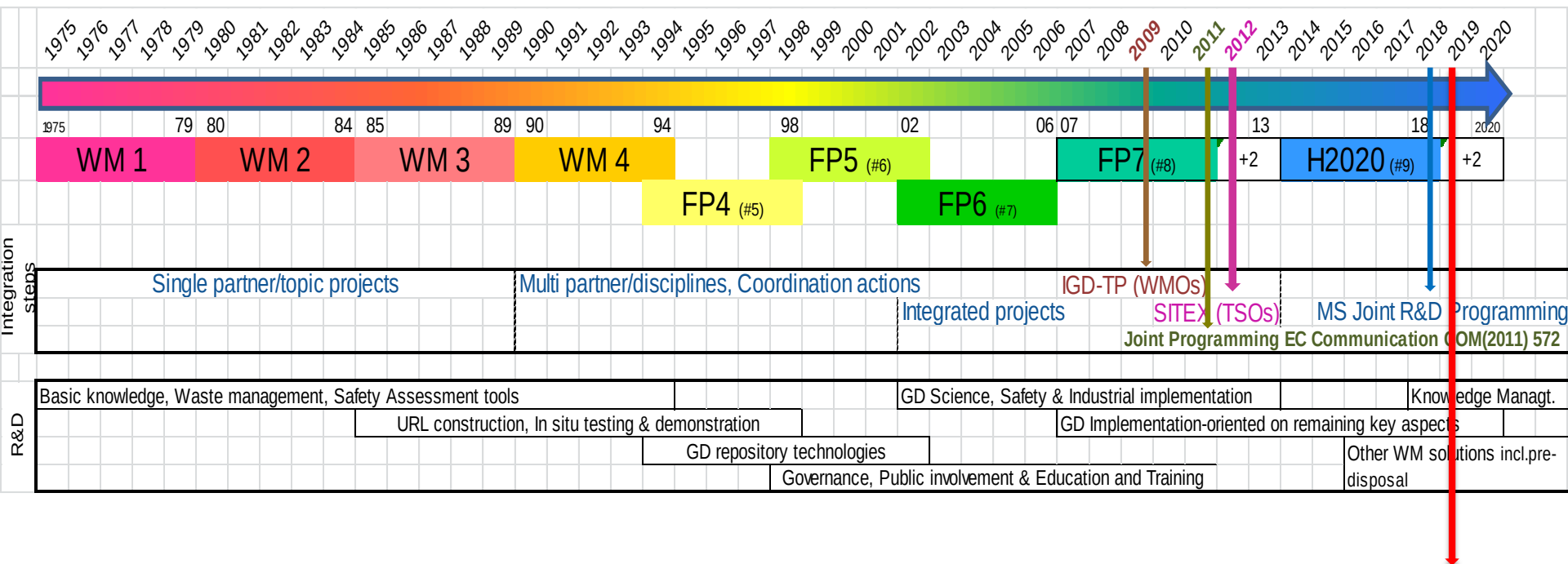
MIRAGE, CoCo, PAGIS, PACOMA, EVEREST, SPA, SFS, BENIPA, CHEMVAL,
Interclay, PEGASUS, MEGAS,
HADES, ASSE salt mine, KONRAD, AMELIE, TOURNEMIRE, GRIMSEL, Mont Terry,
AESPOE, ONKALO, Bure, Josef URC
NAWG (OKLO, Palmottu, El Berocal, Dunaroba...)
Governance (RISCOM, COWAM,...) COMPAS, SAPIERR, CATT
Education & Training (CETRAD, PETRUS, ...)



EURADWASTE '19, 9th conference, in Romania, June 2019, during the Romanian EU Presidency

	1980	1985	1990	1996	1999	2004	2008	2013	2019 /06
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Euratom R&T in RWM: 44 years of continuous development since 1975



EURADWASTE '19,
9th conference, on the management of radioactive waste,
in Romania, June 2019 during the Romanian EU Presidency

Participating Member States

► 22 European countries

- 20 Member-States
- 2 Associated countries (Switzerland & Ukraine)

► 48 organisations

- 18 WMOs
- 12 TSOs
- 18 REs

Country	Mandated Actors	WMO	TSO	RE
Austria	NES	x		
Belgium	Bel V		x	
Belgium	ONDRAF/NIRAS	x		
Belgium	SCK-CEN			x
Bulgaria	TUS-R&DS			x
Cyprus	University of Cyprus			x
Czech Republic	SURO		x	
Czech Republic	SURAO	x		
Denmark	Dekom	x		
Finland	Posiva	x		
Finland	VTT		x	
Finland	University of Helsinki			x
France	Andra	x		
France	IRSN		x	
France	CNRS			x
France	CEA			x
Germany	BGE	x		
Germany	GRS		x	
Germany	HGF (FZJ; HZDR ; UFZ)			x
Germany	KIT-PTKA			x
Greece	EEAE	x	x	
Greece	NCSR Demokritos		x	x

Country	Mandated Actors	WMO	TSO	RE
Hungary	PURAM	x		
Hungary	TS Enercon		x	
Hungary	MTA EK			x
Lithuania	SE INPP	X		
Lithuania	CPST		x	
Lithuania	LEI			x
Netherlands	COVRA	x		
Netherlands	NRG		x	
Netherlands	TNO			x
Poland	RWMP	x		
Poland	INCT		x	
Portugal	IST	x	x	x
Romania	RATEN ICN			x
Slovenia	JSI		x	x
Slovenia	ARAO	x		
Spain	ENRESA	x		
Spain	CIEMAT		x	
Sweden	SKB	x		
UK	RWM	x		
UK	BGS/NERC			x
Switzerland	NAGRA	x		
Switzerland	PSI		x	x
Ukraine	ChRDI	x		x
Ukraine	SSTC NRS		x	
Ukraine	SSE "Ecocentre"			x
EC	JRC			x

Strategic Research Agenda (SRA), Strategic Studies and Knowledge management

(SRA) 7 themes (detailed in sub-themes)

1. Managing implementation of a RWMD programme
2. Radioactive waste characterisation, treatment, packaging and storage (Pre-disposal activities), and source term understanding for disposal.
3. Engineered barrier system properties, function and long-term performance
4. Geoscience to understand rock properties, radionuclide transport and long-term geological evolution
5. Geological Disposal facility design and the practicalities of implementation (incl. monitoring)
6. Siting and licensing
7. Performance assessment, safety case development and safety analyses

Research and Innovation

(Strategic Studies) 2 topics to begin with

1. Understanding of uncertainty, risk and safety;
2. Waste management routes in Europe from cradle to grave

(Knowledge Management)

1. Establishing State-of-Knowledge in the field of RWMD;
2. Guidance on RD&D;
3. Training and Mobility.

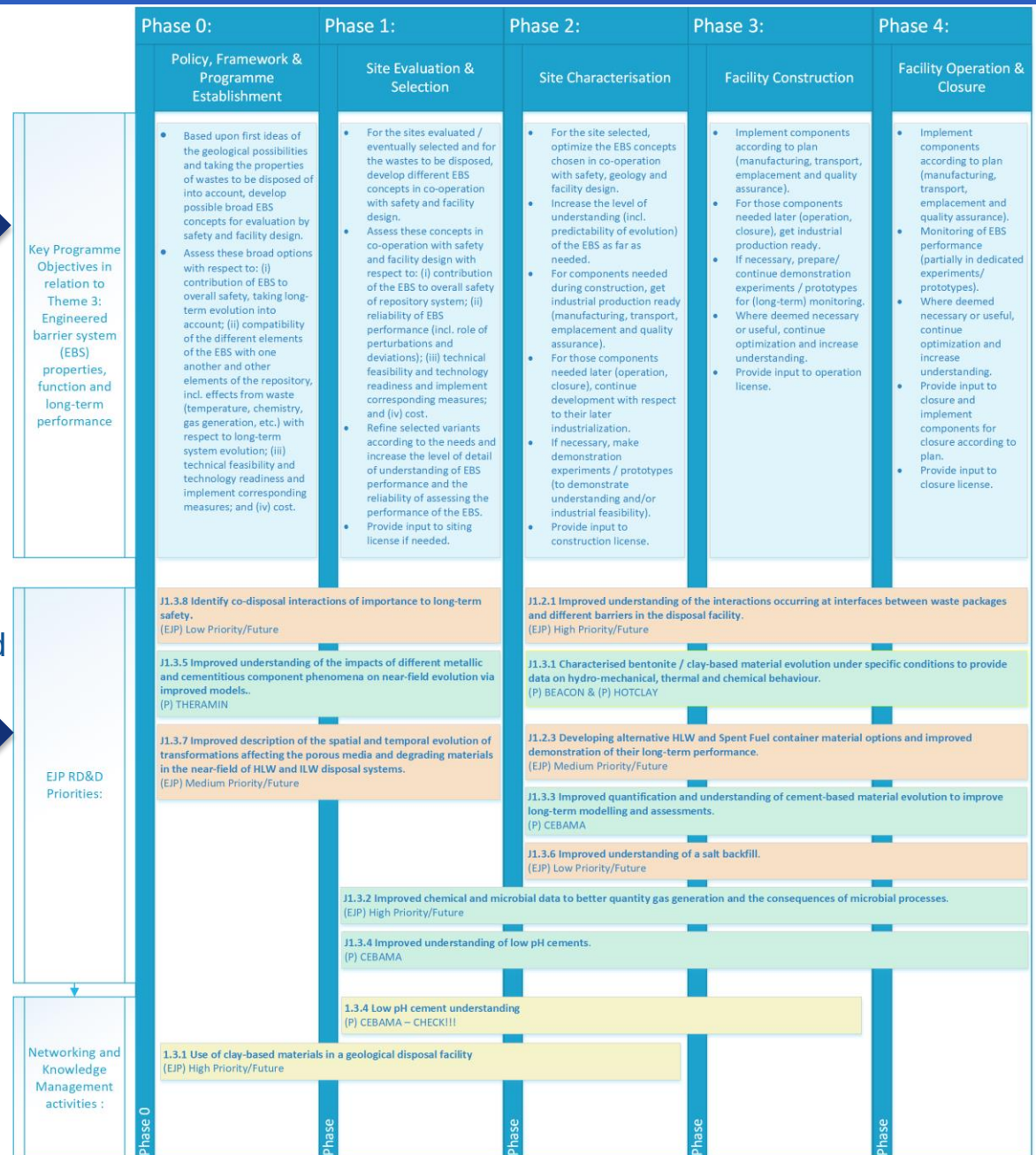
Joint Programme Roadmap

Each SRA theme is delineated against the typical phases of a RWMD programme

- ▶ Phase 0: Policy, framework and programme establishment;
- ▶ Phase 1: Site evaluation and site selection;
- ▶ Phase 2: Site characterisation;
- ▶ Phase 3: Facility construction ;
- ▶ Phase 4: Facility operation (and in parallel, ongoing construction) and closure

The sub-themes are used to prioritise and develop RD&D activities over time

Supported by Strategic studies and knowledge management activities



Further steps

If selected after submission to the Euratom programme end of September 2018 and evaluation

The EJP is expected to be launched in mid-2019 for a five year duration

The EJP is also expected to become the main instrument for Euratom funding of Research and Training in the field of management and disposal of radioactive waste covering pre-disposal to disposal

R&D project on waste treatment – THERAMIN

THERAMIN (Thermal treatment of waste)

Overall objective:

- Investigate suitability of thermal treatment for various intermediate-level and low-level wastes (ILW & LLW)

Twelve project partners (7 countries):

Andra (Agence nationale pour la gestion des déchets radioactifs) – France

CEA (Commissariat à l'énergie atomique et aux énergies alternatives) – France

GSL (Galson Sciences Limited) – UK

FZJ (Forschungszentrum Juelich GmbH) – Germany

LEI (Lithuanian Energy Institute) – Lithuania

NNL (National Nuclear Laboratory) – UK

ONDRAF/NIRAS (Organisme National des Déchets RADIOactifs et des matières Fissiles Enrichies) – Belgium

ORANO (formerly AREVA) – France

SCK•CEN (The Belgian Nuclear Research Centre) – Belgium

USFD (University of Sheffield) – UK

VTT Teknologian Tutkimuskeskus VTT Oy (VTT Technical Research Centre of Finland Ltd) (Coordinator)

VUJE (VUJE a.s.) – Slovakia

Ten end-user group members:

Andra (Agence nationale pour la gestion des déchets radioactifs) – France

CEA (Commissariat à l'énergie atomique et aux énergies alternatives) – France

EDF (Electricité de France) – France

Fortum (Fortum Oyj) – Finland

Nagra (Nationale Genossenschaft für die Lagerung Radioaktiver Abfälle) – Switzerland

ONDRAF/NIRAS (Organisme National des Déchets RADIOactifs et des matières Fissiles enrichies) – Belgium

RWM (Radioactive Waste Management Ltd) – UK

Sellafield (Sellafield Ltd) – UK

TVO (Teollisuuden Voima Oyj) – Finland

AWE (Atomic Weapon Establishment) – UK

Project duration : 36 months (June 2017 – May 2020)

www.theramin-h2020.eu

Main tasks:

- ☐ 1. Collect and analyse a European-wide inventory on radioactive waste streams,
- ☐ 2. Carry out a strategic analysis on the benefits and disadvantages of thermal treatment of waste groups,
- ☐ 3. Develop a Viability Matrix of Waste Streams and Treatment Processes in Europe,
- ☐ 4. Test thermal treatment technologies on selected waste groups,
- ☐ Perform a value assessment of the strengths and weaknesses of selected waste group/thermal treatment combinations,
- ☐ Review Waste Acceptance Criteria and behaviour, performance & characterisation requirements for disposability of thermally treated waste products,
- ☐ Characterise treated waste products and secondary waste,
- ☐ Evaluate the disposability of resulting treated waste and secondary products and analyse the safety case implications.

Highlight of work performed so far:

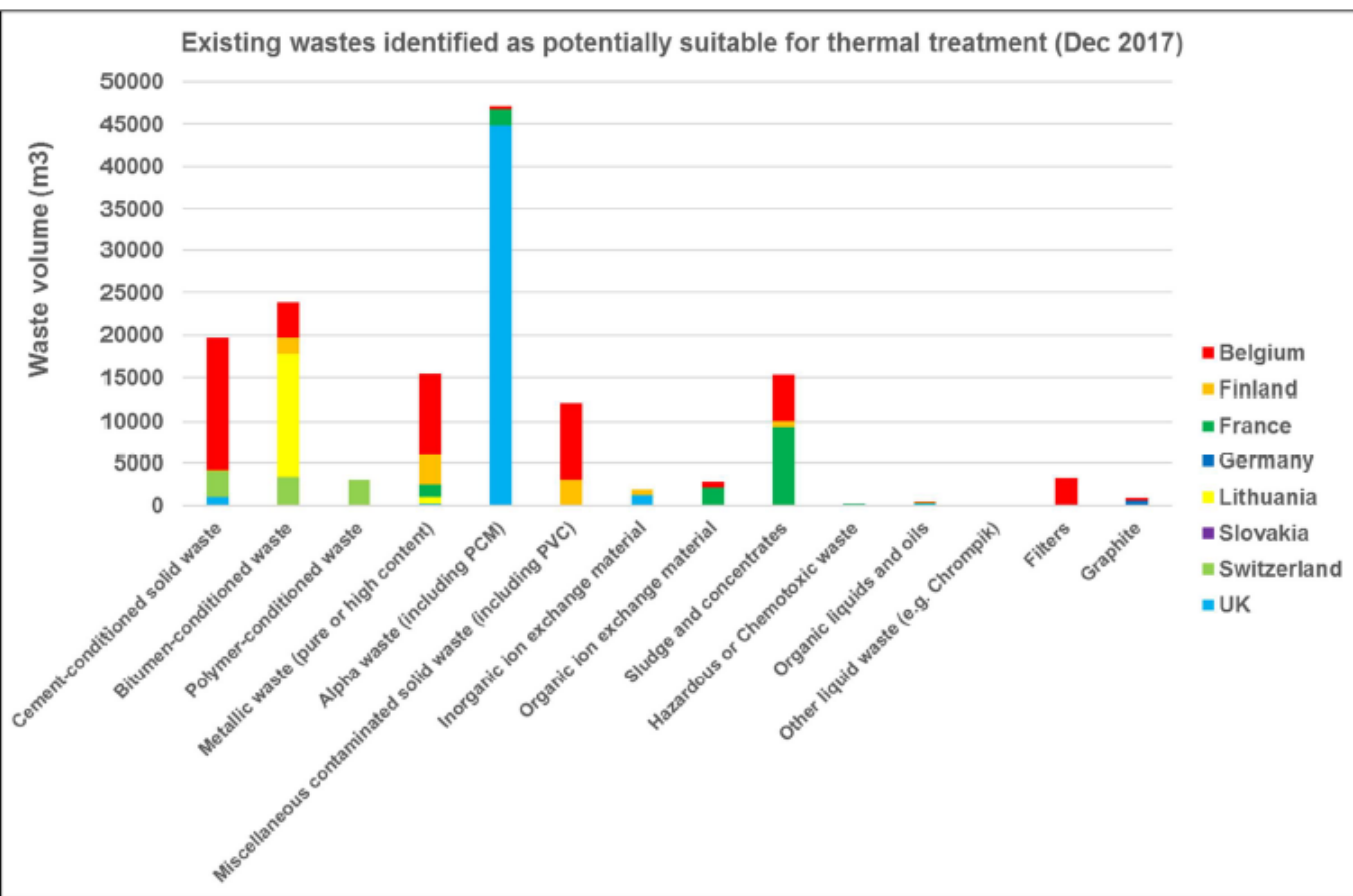
Task 1: Database collected from 7 country participants and Ukraine

- Quantity and volumes;
- Heterogeneity/homogeneity;
- Current state and location;
- Physical and chemical characteristics;
- Radiological inventory;
- The current strategy for dealing with the wastes and associated key dates;
- The constraints / operational limitations / barriers and risks to processing them;
- The benefits that thermal treatment could bring for the wastes.

Results of task 1:

❑ Collect and analyse a European-wide inventory on radioactive waste streams,

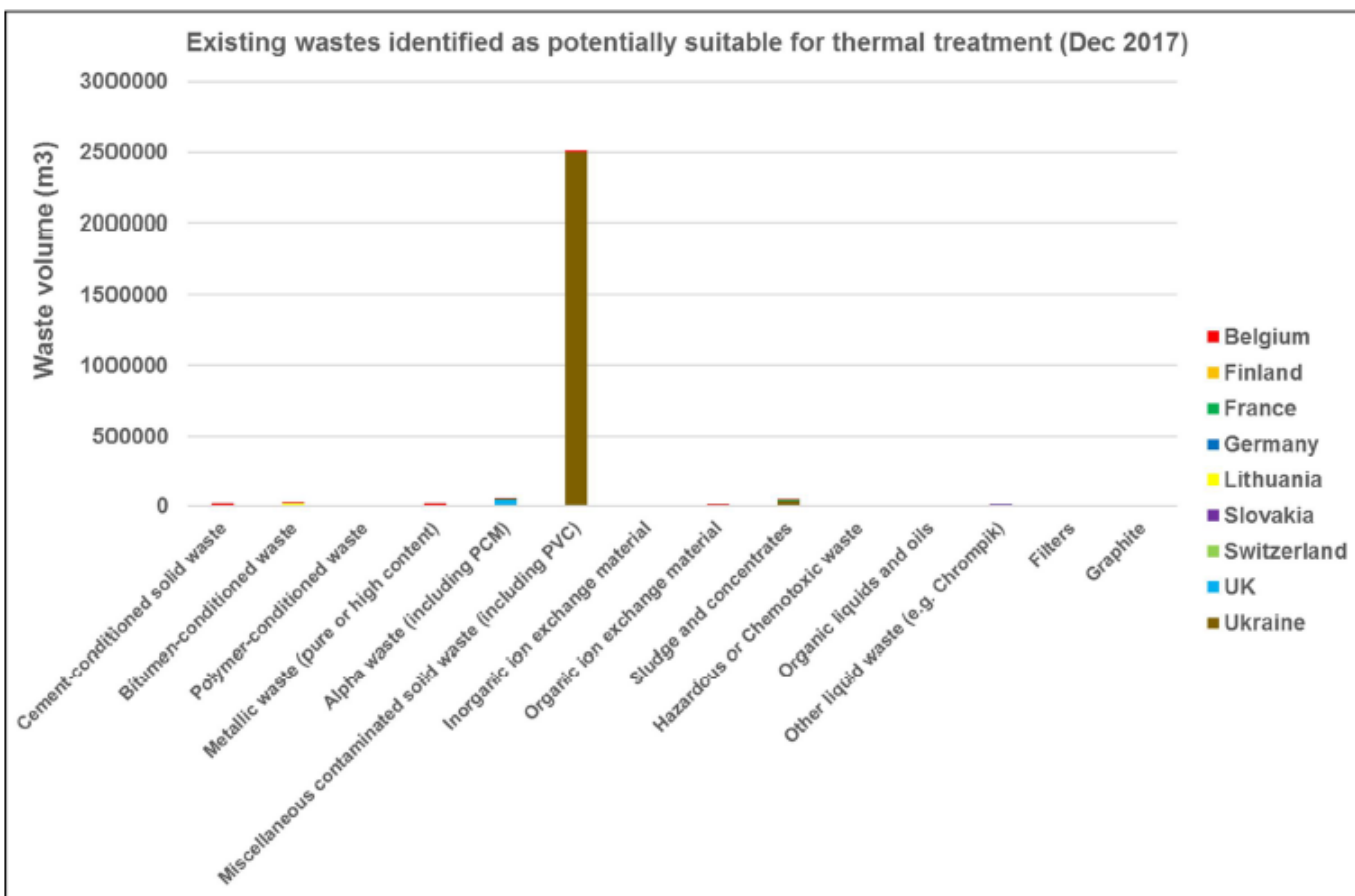
➤ 190 waste streams identified and categorised into 14 different generic waste groups – Figure of waste volumes by generic waste group per country



Results of task 1:

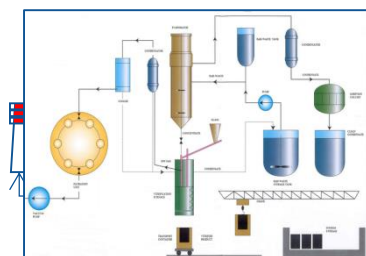
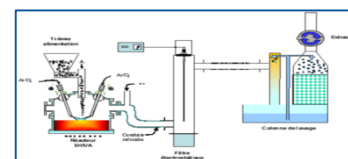
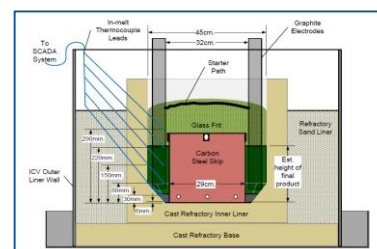
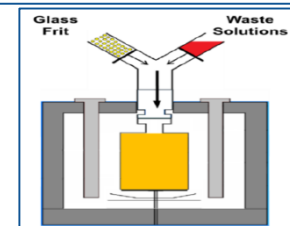
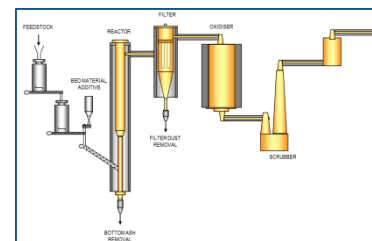
❑ Collect and analyse a European-wide inventory on radioactive waste streams,

➤ Data including Ukraine



Task 4: Testing of six thermal treatment technologies on selected waste groups, in 2018

Demonstrators / European Facilities	Technology	Waste stream	High-level process and product
Gasification (VTT, FIN)	Fluidised bed gasification	Organic ion exchange material	Pre-treatment steps for volume reduction, passivation, etc. (requires further processing for disposal)
In-Can Melter - metallic inner wall (CEA/ORANO, FR)	Joule-Heated In-Can Vitrification	Sludges	Immobilisation in glass
Geomelt - ceramic inner wall (NNL, UK)		Conditioned cementitious wastes and Heterogeneous sludges	
VICHR (VUJE, SL)	Indirect induction (metallic wall - hot metal pot)	Chrompik liquid waste (Inorganic coolant liquid, solution of $K_2Cr_2O_7$ or K_2CrO_4)	
SHIVA (CEA/ORANO, FR)	Coupled cold wall glass induction melting and plasma burner	Organic ion exchange material	
HIP (NNL, UK)	Hot Isostatic Pressing	Uranium contaminated material	Immobilisation in ceramic/crystalline or ceramic/glass
HIP (USFD Univ. Sheffield, UK)		Uranium surrogate containing feed	



Dissemination and training activities

- ❑ Technical training school on thermal treatment methods and product disposability in 2019,
- ❑ Scientific conference in 2020
- ❑ Training mobility secondments scheme
 - Call for applications, 1st deadline end of April 2018 – duration one to three weeks

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THANK YOU
for your attention

Radioactive Waste Management & Geological Disposal: Projects from WP 2014-15

Project acronym and title	Key technical activities	Coordinator / no. partners	Start date & duration	Total cost / EU funding
JOPRAD – Towards a Joint Programming (JP) on Radioactive Waste Disposal	To study options for Joint Programming between national research programmes.	<u>ANDRA (FR)</u> 10 partners (5 countries)	June 2015 30 months	€1,78M / €1.1M CSA
SITEX-II – Sustainable network for Independent Technical Expertise for radioactive waste disposal – Interactions and implementation	To develop own strategic research agenda incl. civil society view, contribute to JP development , guidance & training on safety case review and prepare framework for sustainable network	<u>IRSN (FR)</u> 18 partners (11 countries + Canada)	June 2015 30 months	€1.48M / €1.17M CSA
CEBAMA – Cement-based materials, properties, evolution, barrier functions	To study processes at interface cement materials, bentonite and host rocks and impact on radionuclide transport and retention properties	<u>KIT (DE)</u> 27 partners (10 countries + Japan)	June 2015 48 months	€5,95/ €3.86M RIA (R&D)
MIND – Development of the safety case knowledge base about the influence of microbial processes on geological disposal of radioactive wastes	To study the behaviour of ILW-LL waste containing organics and the impact of microbial processes on the performance of HLW & SF in GD; Propose guidelines to communicate geomicrobiological risk	<u>SKB (SE)</u> 15 partners (8 countries)	June 2015 48 months	€4,71/ €4.16M RIA (R&D)
Modern2020 – Development and Demonstration of monitoring strategies & technologies for geological disposal	To develop framework, strategies, tech,gies & methods incl. civil society view for what should be monitored and how results & information can be used in decion-making and responded to	<u>ANDRA (FR)</u> 28 partners (12 countries + Japan)	June 2015 48 months	€8,66/ €5.99M RIA (R&D)

Competence development & Socio-economic aspects: Projects from WP 2014-15

European
Commission

Project acronym and title	Key technical activities	<u>Coordinator /</u> no. partners	Start date & duration	Total cost / EU funding
ANNETTE – Advanced Networking for Nuclear Education and Training and Transfer of Expertise	European Master Programme in Nuclear Science & Technology, Vocational E&T, applying ECTS, ECVET in all nuclear fields (links with SNE-TP, IGD-TP, MELODI, EHRO-N, NUGENIA, EUTERP, HERCA and IAEA)	<u>ENEN Association (FR)</u> 27 partners (12 countries)	Jan.2016 48 months	€3.18M / €2.51M CSA
HoNEST – History of Nuclear Energy and Society	To analyse, document & improve knowledge & understanding of factors which influenced successes and failures of developments of nuclear energy & other applications including the mechanisms of societal engagement with nuclear energy	UNIV. POMPEU FABRA (ES) 24 partners (12 countries)	Sept. 2015 36 months	€3.05M / €3.05M RIA (R&D)

Radioactive Waste Management

& Geological Disposal:

Projects from WP 2016-17

Project	Technical scope	Coordinator & partners	Start / Duration / End	Total cost / EU funding
DISCO – Modern Spent Fuel Dissolution and Chemistry in Failed Container Conditions	Spent fuel dissolution in realistic environment. Interactions with the surrounding materials. Behaviour of novel types of fuel: MOX, doped.	SKB (SE) 16 partners, 8 countries (SE, ES, UK, FI, DE, BE, FR & CH)	June 2017 48 months May 2021	€ 4.69 M / € 3.99 M RIA (R&D)
BEACON – Bentonite Mechanical Evolution	Develop and test the tools necessary for the assessment of the mechanical evolution of an installed bentonite barrier and the resulting performance of the barrier.	SKB (SE) 25 partners, 10 countries (SE, CZ, FI, FR, CH, ES, UK, DE, BE & LI)	June 2017 48 months May 2021	€ 4.05 M / € 3.80 M RIA (R&D)
CHANCE – Characterization of conditioned nuclear waste for its safe disposal in Europe	Identify current shortcomings of the state of the art on characterisation technics for radioactive waste. Carry out R&D on specific characterisation technologies: calorimetry, muon tomography, cavity ring down spectroscopy.	ANDRA (FR) 12 partners, 8 countries (FR, IT, DE, BE, UK, FI, RO & PL)	June 2017 48 months May 2021	€ 4.25 M / € 3.98 M RIA (R&D)
INSIDER – Improved Nuclear Site characterisation for waste minimization in D&D operations under constrained Environments	Define the best sampling strategy for waste production optimization. Assess performance of available measurement techniques (methods & tools) to establish a science base for decision-making. Establish common methodologies in view of deploying reference guidelines for selected use cases.	CEA (FR) 18 partners, 9 countries (FR, BE, UK, UA, ES, HU, DE, CH & CZ)	June 2017 48 months May 2021	€ 4.17 M / € 3.78 M RIA (R&D)
THERAMIN – Thermal treatment for radioactive waste minimisation and hazard reduction	Identify treatment processes for the different type of waste. Demonstration of treatment for selected waste stream. Disposability of waste products (including long term behaviour).	VTT (FI) 12 partners, 7 countries (FI, FR, UK, DE, LI, BE & SK)	June 2017 36 months May 2020	€ 3.97 M / € 3.90 M RIA (R&D)
Total WP 2016-17				€ 21.13 M / € 19.45 M

Competence development & Socio-economic aspects: Projects from WP 2016-17

European
Commission

Project acronym and title	Key technical activities	<u>Coordinator /</u> no. partners	Start date & duration	Total cost / EU funding
MEET-CINCH – A Modular European Education and Training Concept In Nuclear and RadioChemistry	Development of a teaching package for high schools and a MOOC on Nuclear and Radio-Chemistry (NRC) for public use Development of new education and training approaches based on remote teaching and the flipped classroom concept Provide ECVET course modules adapted to end-users needs	<u>LUH (DE)</u> 12 partners 9 countries (DE, CZ, SE, FI, CY, SL, UK, It & FR)	June 2017 36 months	€ 2.16 M / € 2.11 M CSA
ENENplus – Attract, Retain and Develop New Nuclear Talents Beyond Academic Curricula	Revival of the young generations' interest in nuclear sector careers Establishment of a mobility fund for European students researchers and learners	<u>ENEN (FR)</u> 22 partners 10 countries (FR, FI, BE, HU, ES, CZ, SL, IT, RO & UK)	October 2017 36 months	€ 3.27 M / € 2.99 M CSA