



European Human Resources Observatory
for the Nuclear Energy Sector

Massimo FLORE

Genesis



2008

European Nuclear Energy Forum



2009

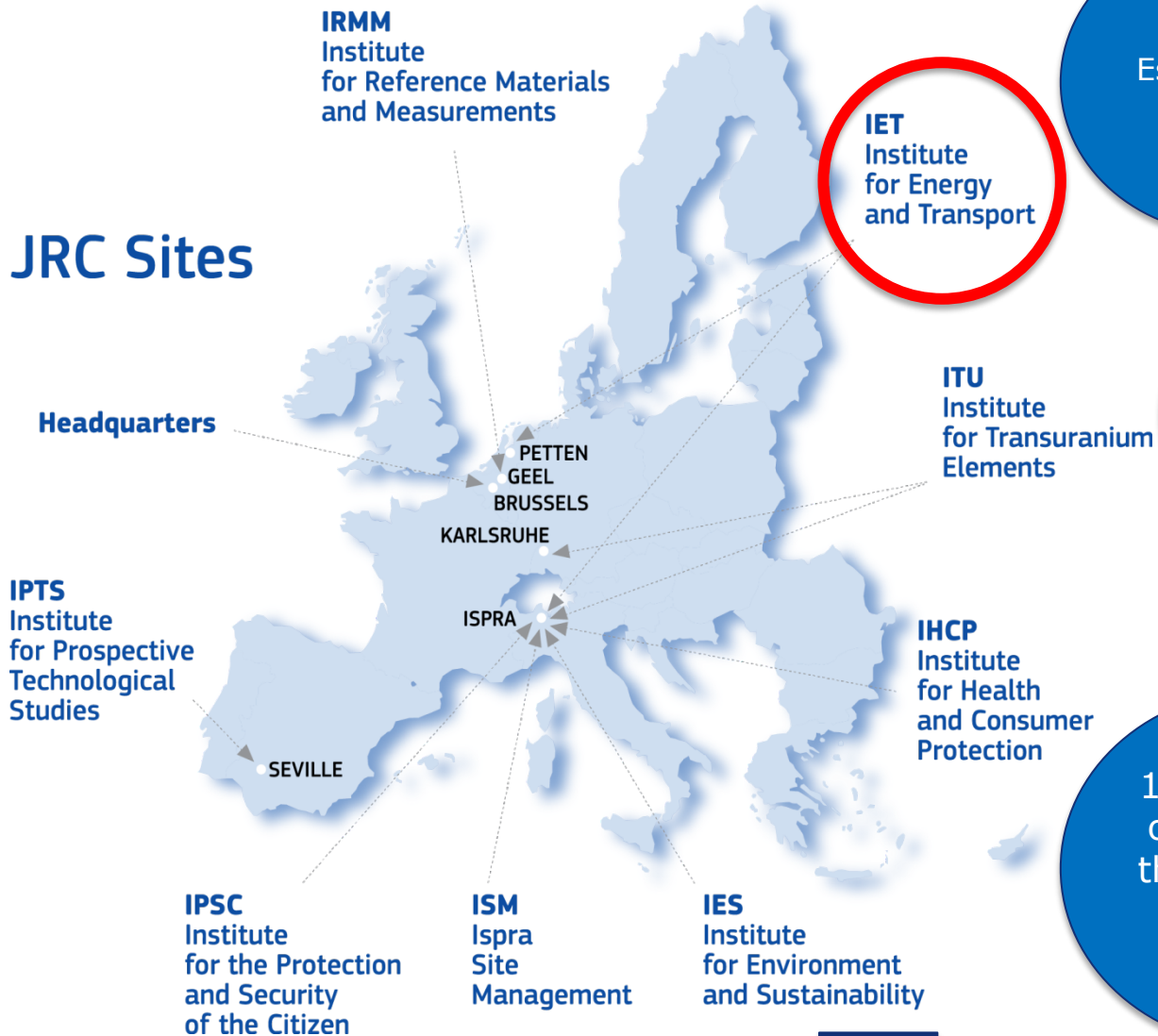
Joint Research Centre
(Operating Agent)



2011



JRC Sites



Established in
1957

7 institutes
in 5
countries

2,845
permanent
and
temporary
staff

1,398
scientific
publications
in 2010

125 instances
of support to
the EU policy-
maker
annually



**Institute for Energy
and Transport**

provides **support** to
European Union policies
and technology innovation to
ensure sustainable, safe,
secure and efficient **energy**
production, distribution and
use and to foster sustainable
and **efficient transport** in
Europe

Petten (NL)



Ispra (IT)



- ❖ Organization
- ❖ Bottom-up Approach
- ❖ Top-down Approach



**Institute for Energy
and Transport**

**Operating
Agent**

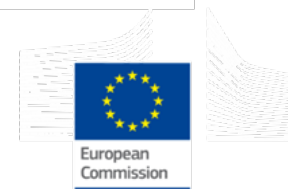


**Senior
Advisory
Group**

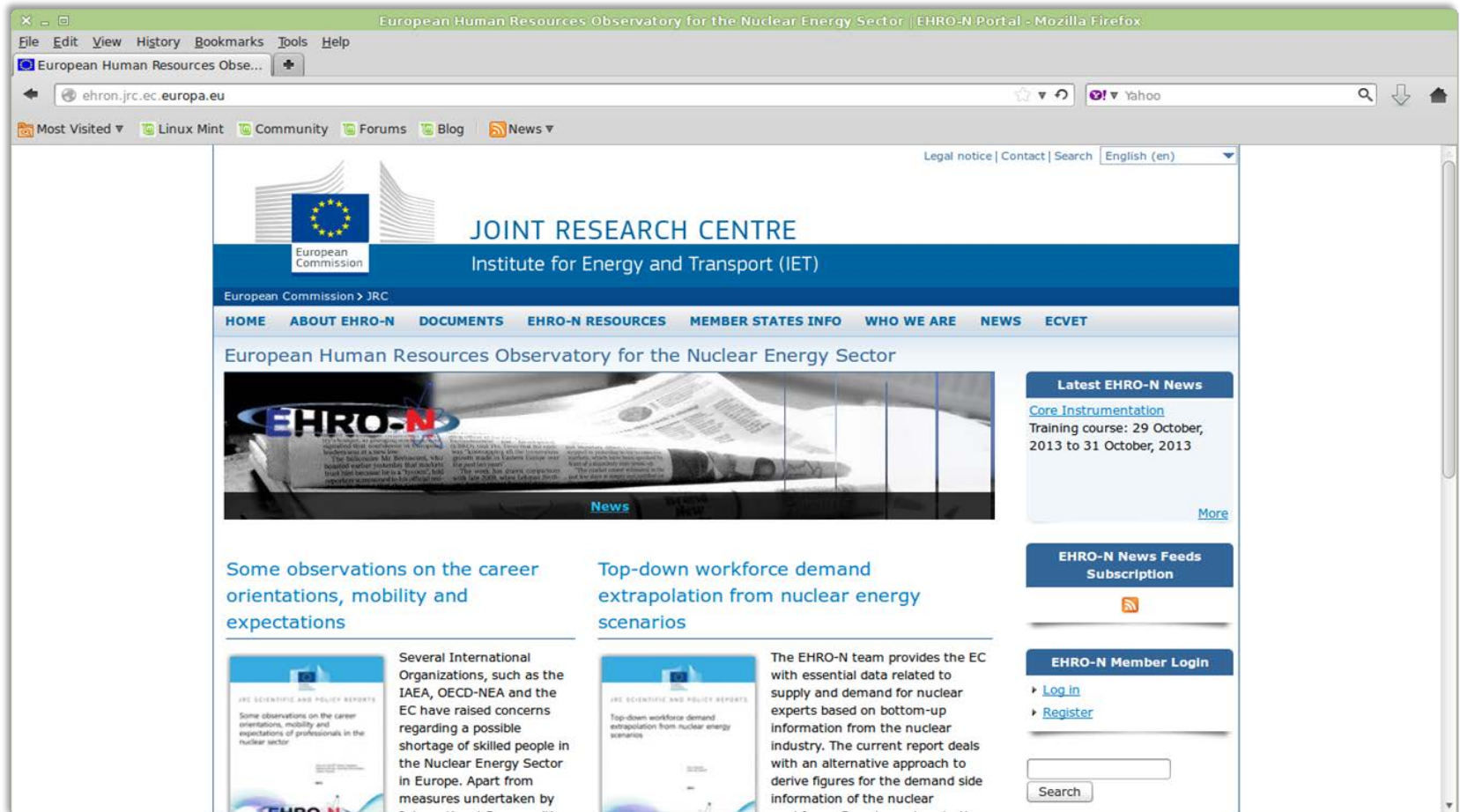
Senior Advisory Group Members



SCK•CEN ACADEMY
FOR NUCLEAR SCIENCE AND TECHNOLOGY



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JOINT RESEARCH CENTRE

Institute for Energy and Transport (IET)

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European Human Resources Observatory for the Nuclear Energy Sector



News

Some observations on the career orientations, mobility and expectations

Several International Organizations, such as the IAEA, OECD-NEA and the EC have raised concerns regarding a possible shortage of skilled people in the Nuclear Energy Sector in Europe. Apart from measures undertaken by

Top-down workforce demand extrapolation from nuclear energy scenarios

The EHRO-N team provides the EC with essential data related to supply and demand for nuclear experts based on bottom-up information from the nuclear industry. The current report deals with an alternative approach to derive figures for the demand side information of the nuclear

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[Core Instrumentation](#)

Training course: 29 October, 2013 to 31 October, 2013

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- ❖ Organization
- ❖ Bottom-up Approach
- ❖ Top-down Approach

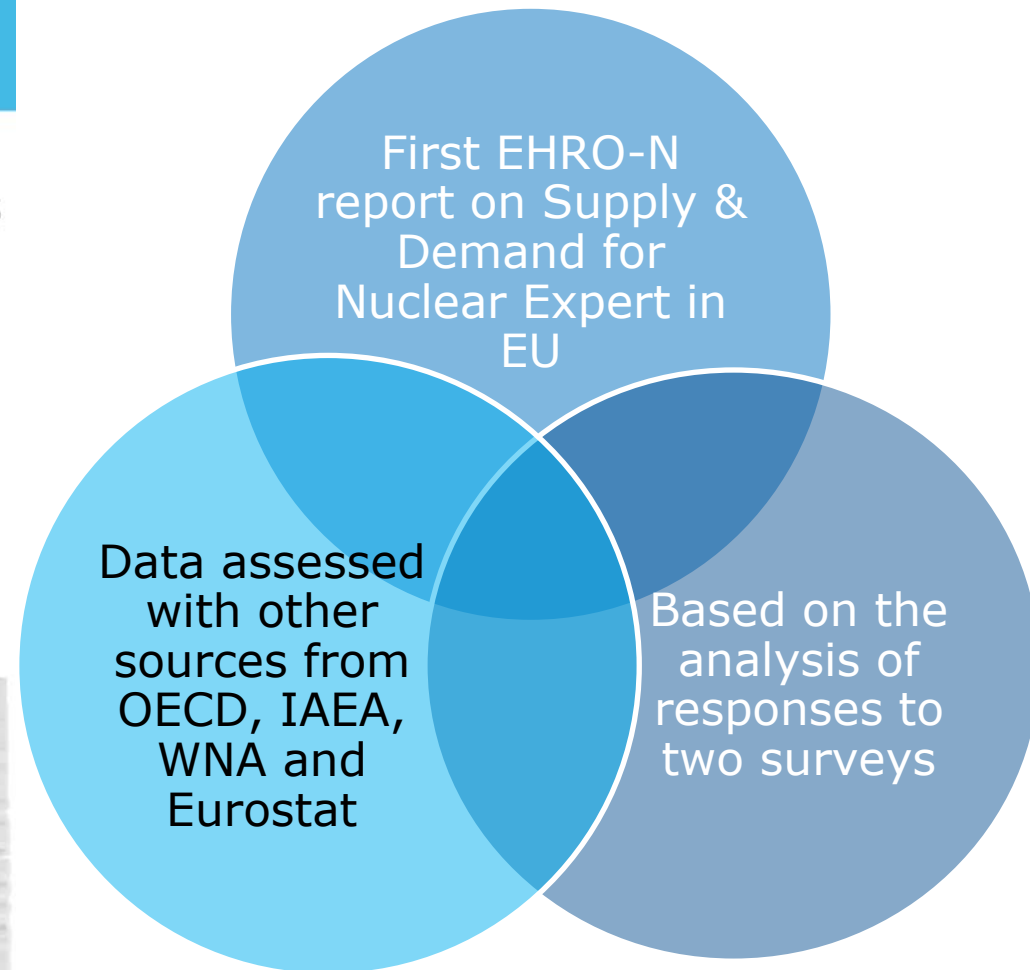
JRC SCIENTIFIC AND POLICY REPORTS

**PUTTING INTO PERSPECTIVE THE SUPPLY
OF AND DEMAND FOR NUCLEAR EXPERTS
BY 2020 WITHIN THE EU-27 NUCLEAR
ENERGY SECTOR**

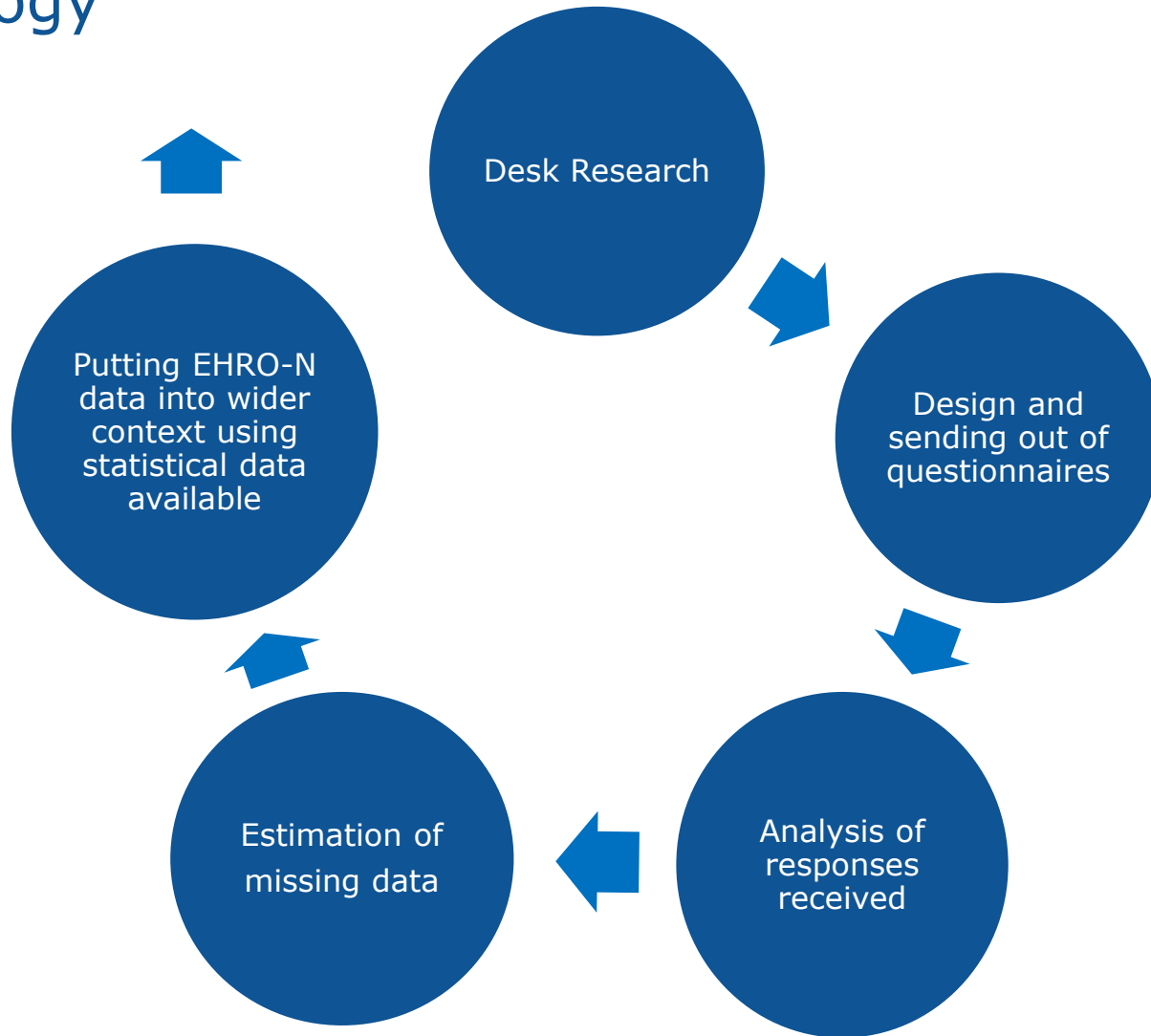
An EHRO-N report

Veronika Simonovska
Ulrik von Estorff

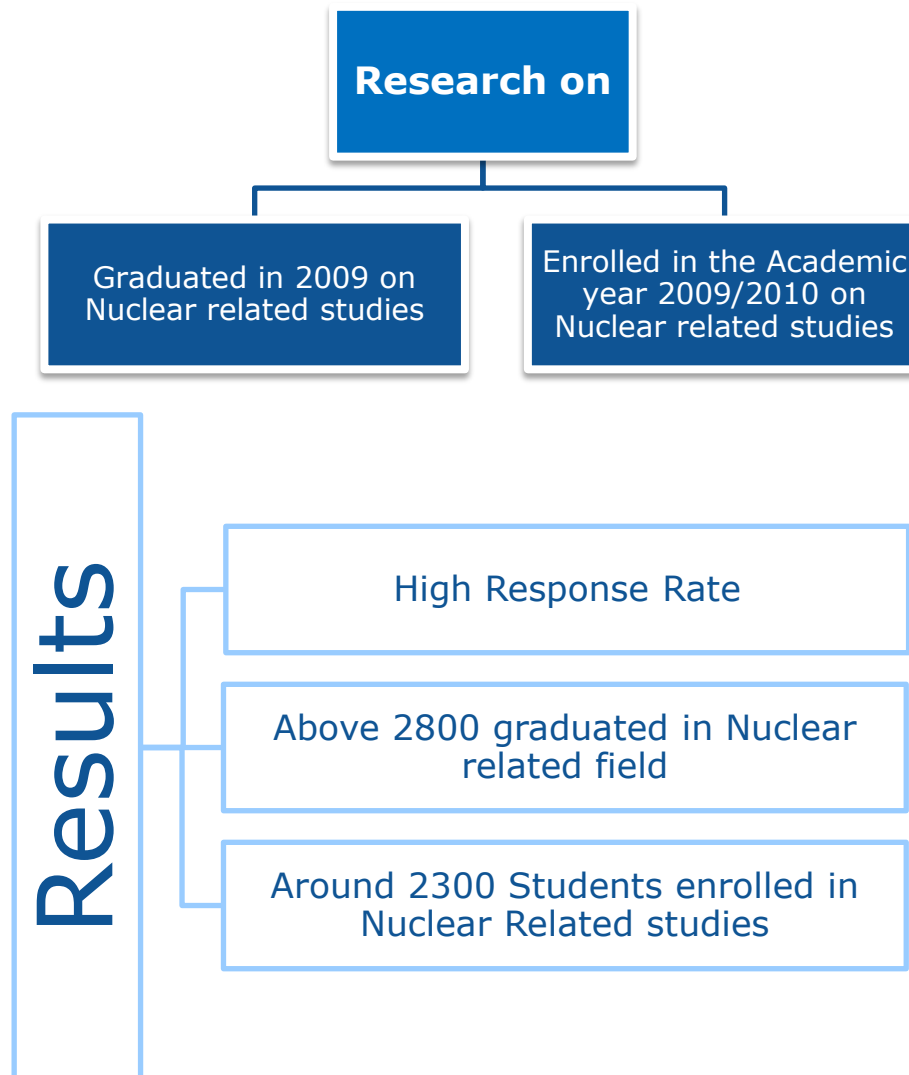
2012



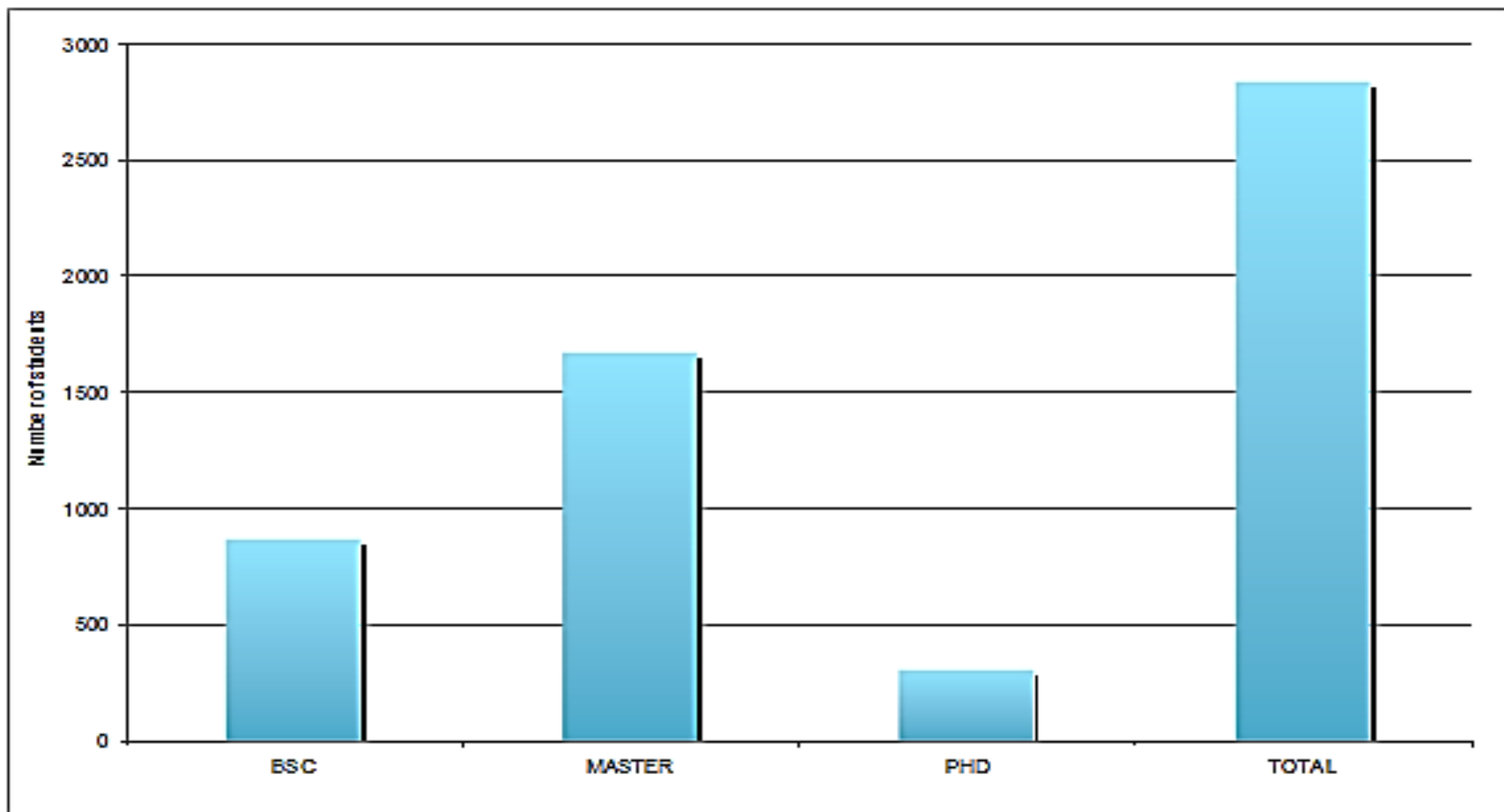
Methodology



Supply Side



Number of BSc, MSc, PhD graduated in 2009 on nuclear related subjects



Status Demand Side Survey 2014 (Universities)

Contacted

174

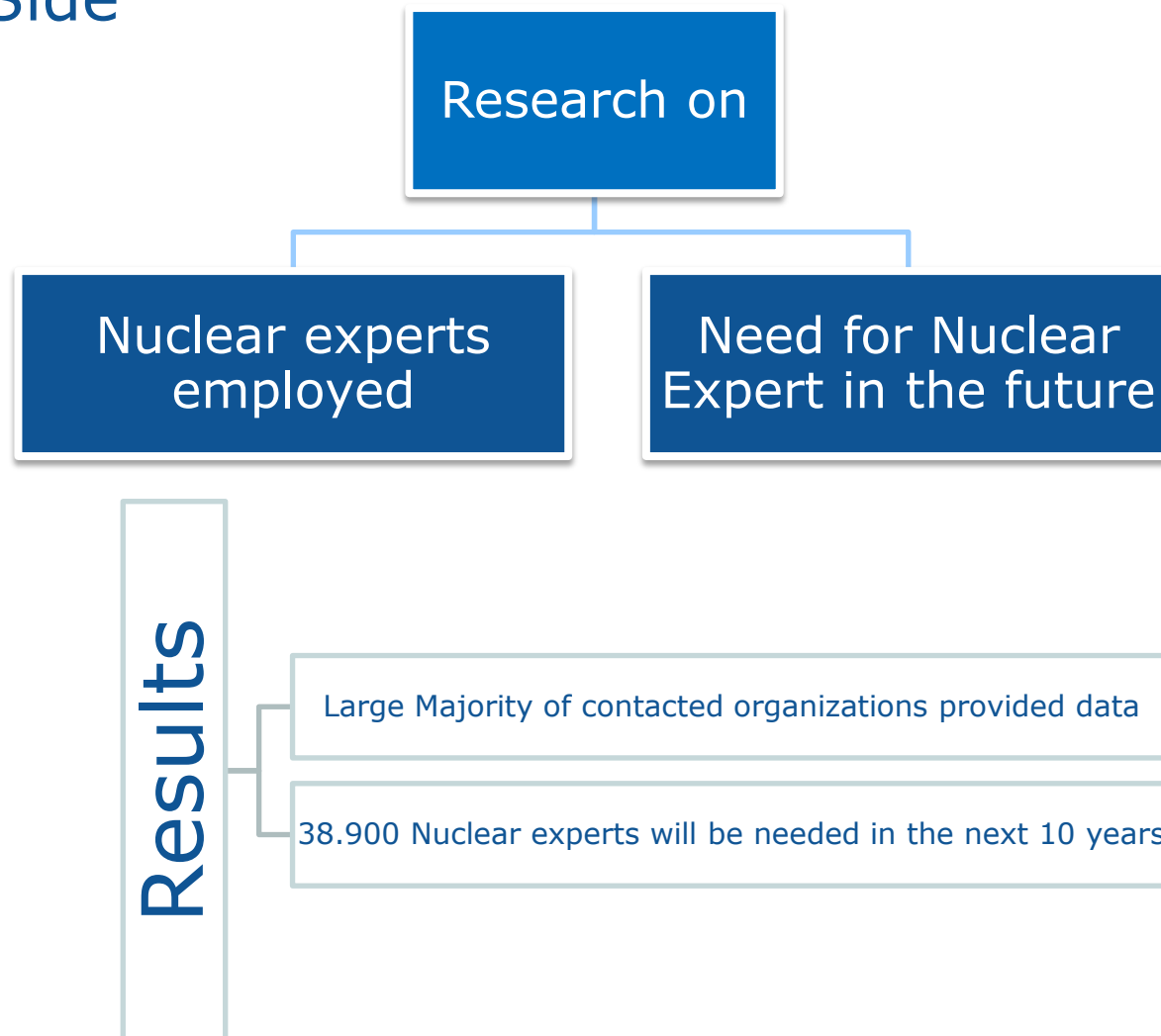
Responses

30

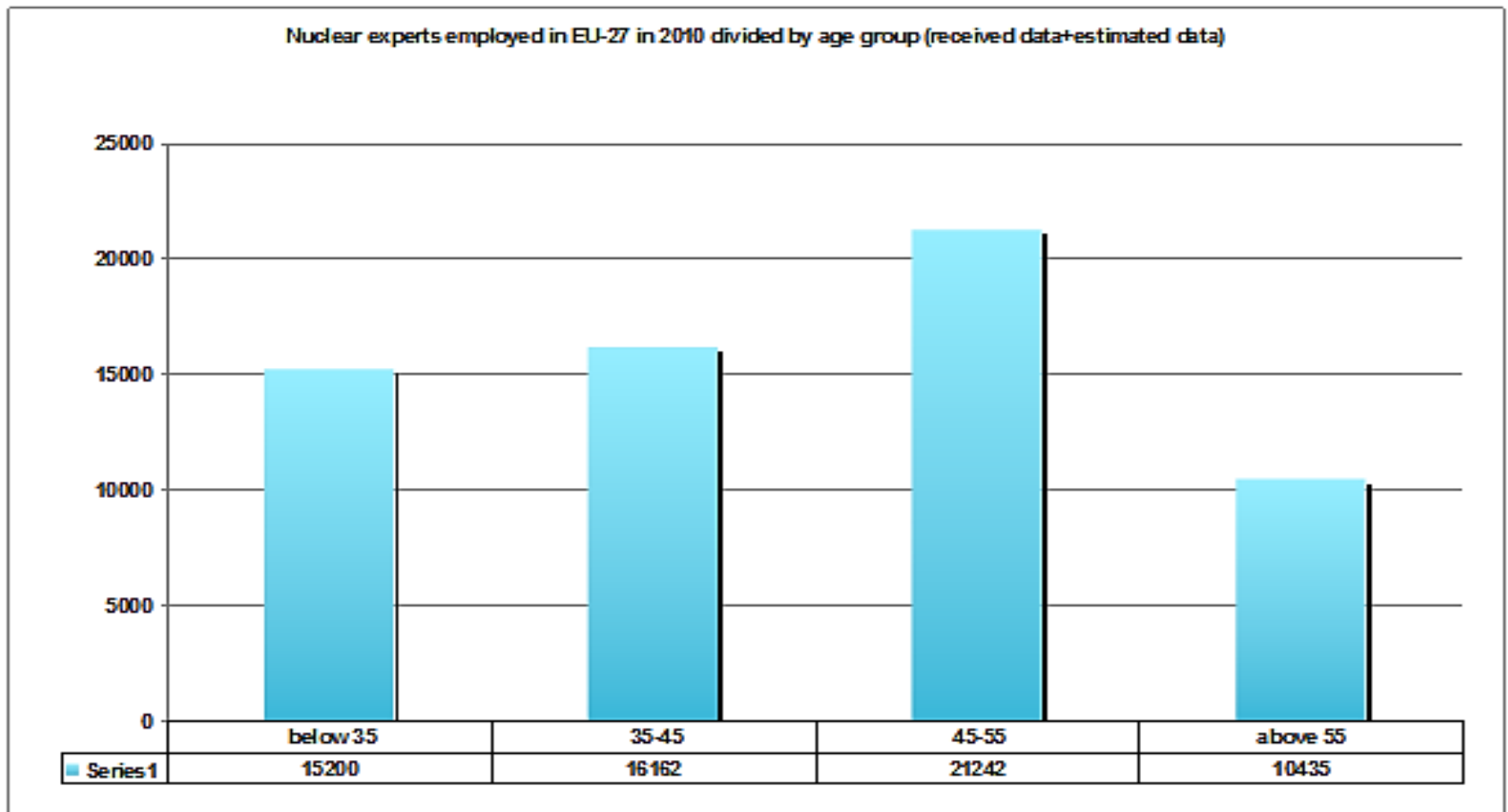
Response Rate

17%

Demand Side

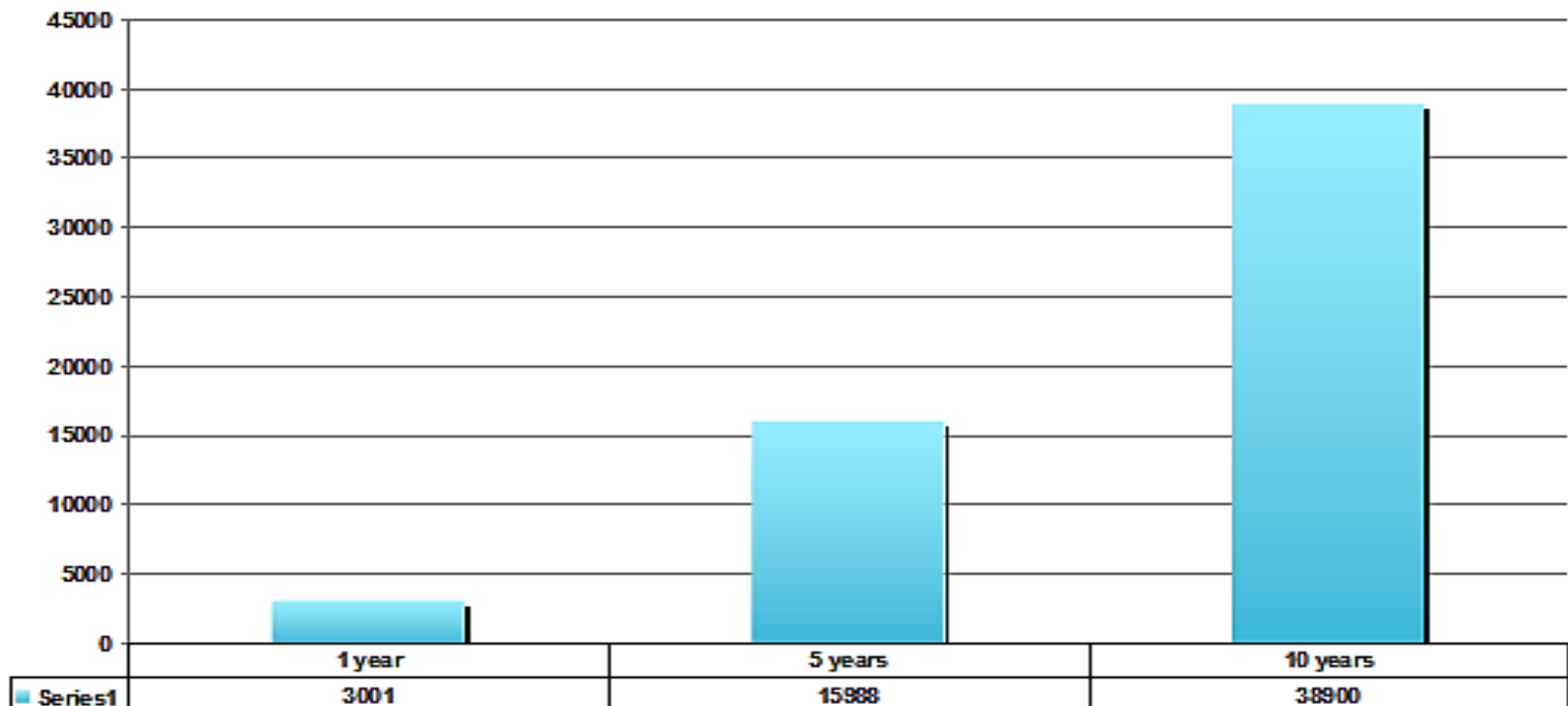


Total number of nuclear experts employed in in 2010



Need for nuclear experts in the future

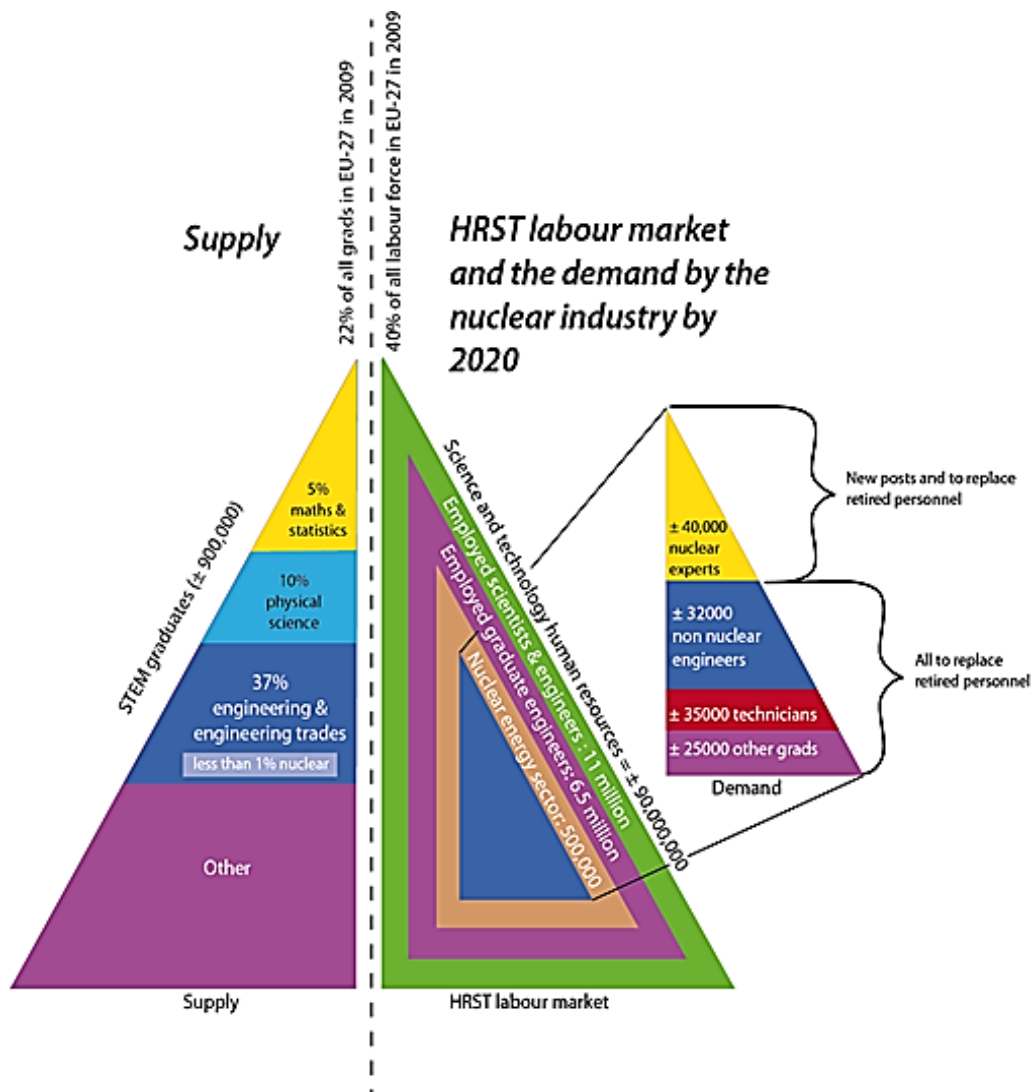
Need for nuclear experts in EU-27 in the future (received data+estimated data)



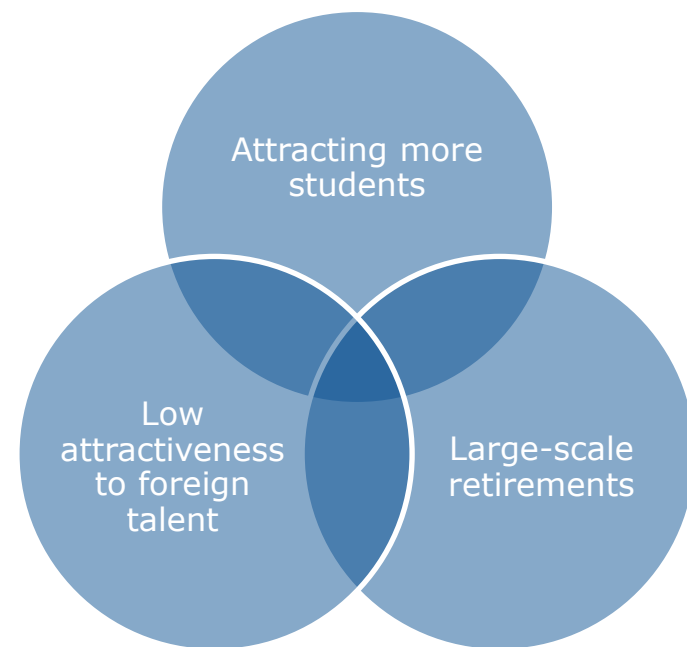
Status Supply Side Survey 2014

	Contacted	Responses	Response rate
Utilities	36	9	25%
Vendors & Suppliers	16	5	31%
Fuel providers	13	3	23%
RWM & Decommissioning	41	11	27%
Design	72	12	17%
Consultancies	27	8	30%
Regulators	26	8	31%
R&D	57	22	39%
Total	288	78	27%

Total	288	78	27%
R&D	57	22	39%



Main Challenges





- ❖ Organization
- ❖ Bottom-up Approach
- ❖ Top-down Approach



European Commission
Energy Roadmap 2050



OECD/IEA
Technology Roadmap
Nuclear Energy



JRC SCIENTIFIC AND POLICY REPORTS

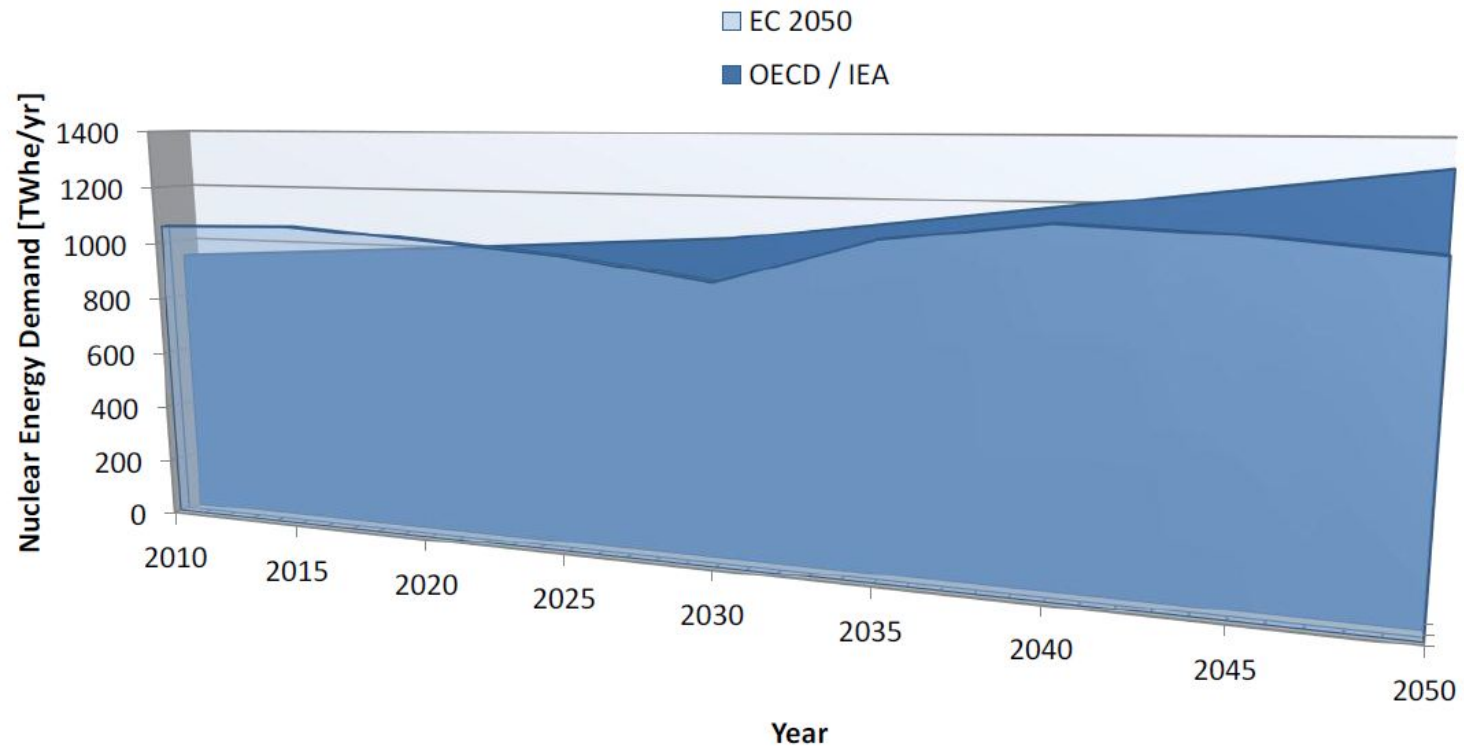
Top-down workforce demand
extrapolation from nuclear energy
scenarios

Ferry Roelofs
Ulrik von Estorff

2013



The EC Energy Roadmap 2050 and the OECD/IEA Technology Roadmap based nuclear energy demand scenarios



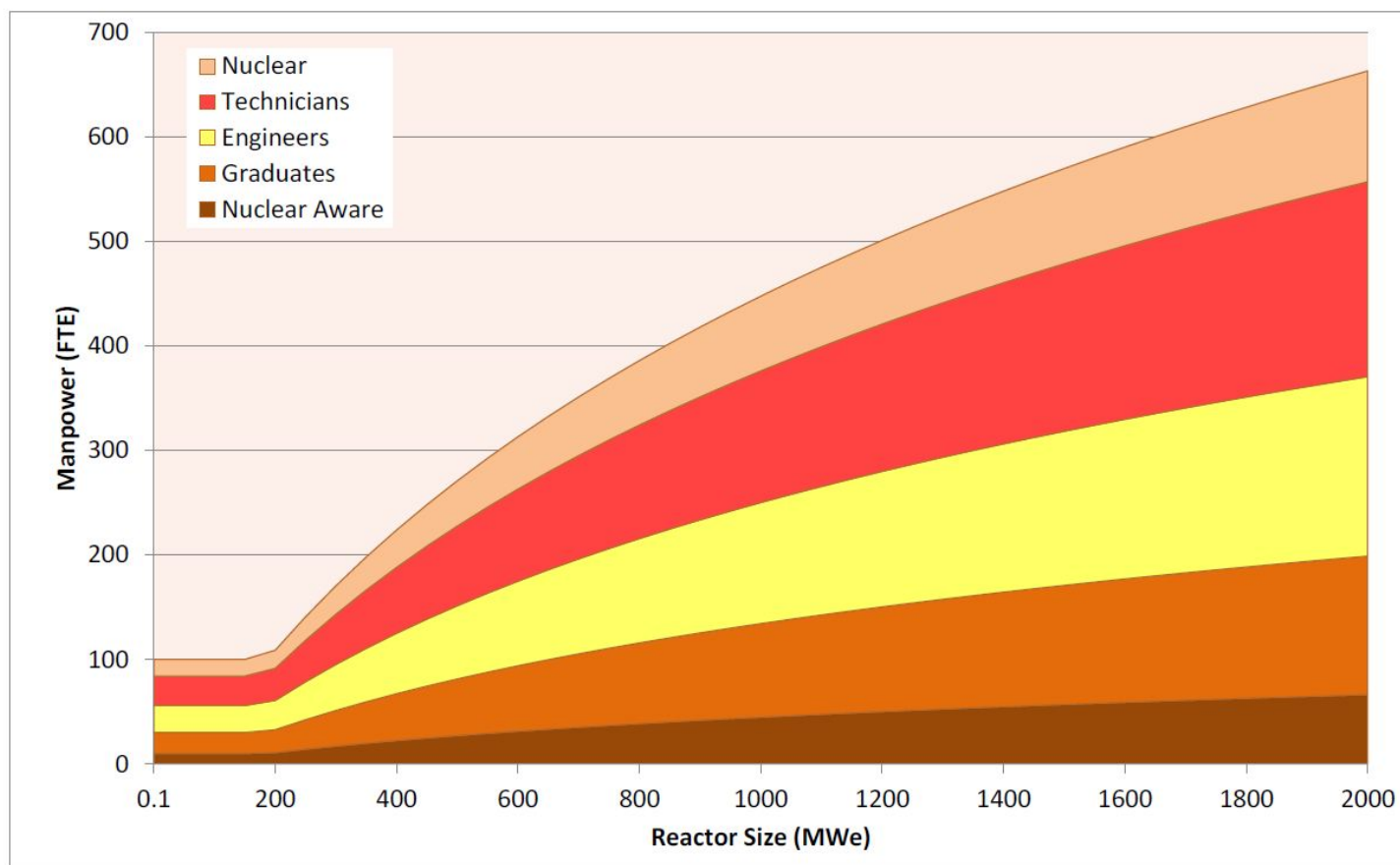
Building New Reactors

Two different generic third generation nuclear reactors are assumed to be constructed in order to fulfil the energy demand



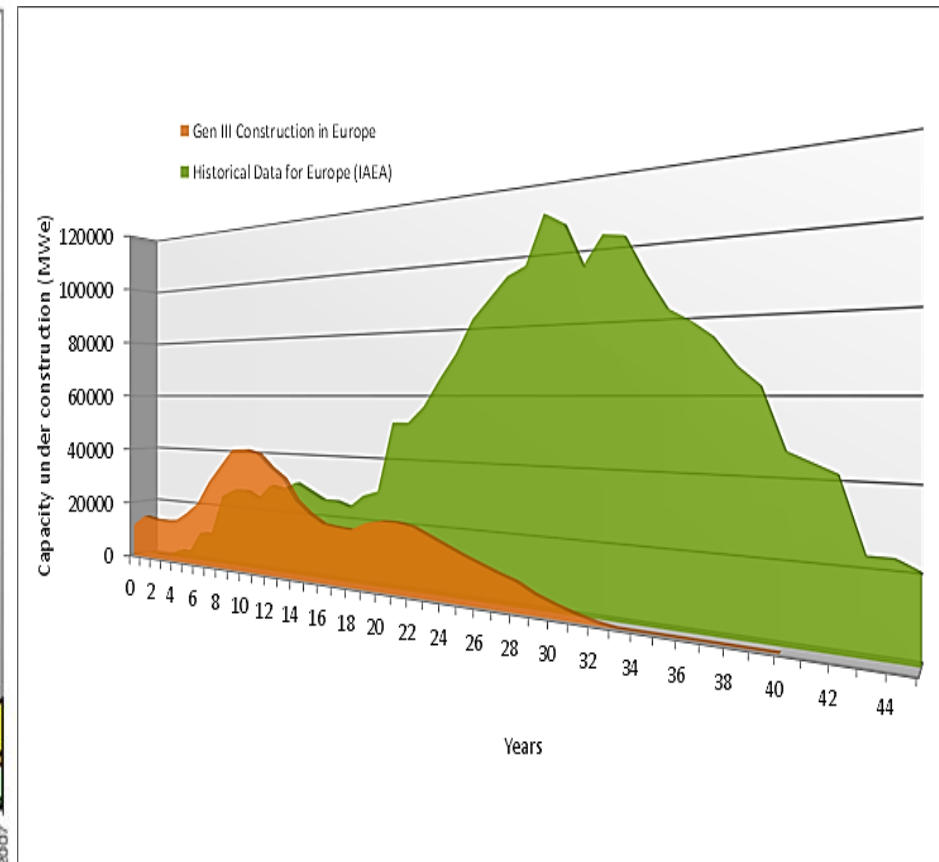
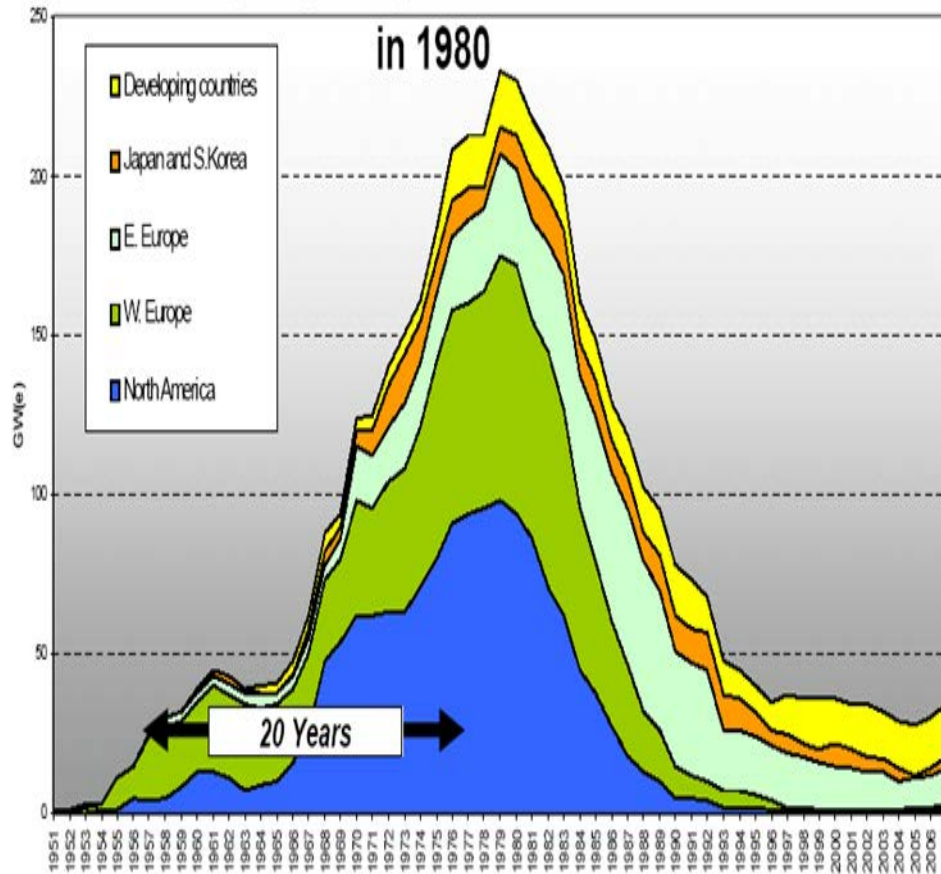
Reactor	Power [MWe]	Efficiency [%]	Load Factor [%]	Lifetime [Years]
Gen III LWR	1400	36	80	60
Gen III LWR	1000	36	80	60

Graphical representation of the manpower required for different sizes of nuclear reactors

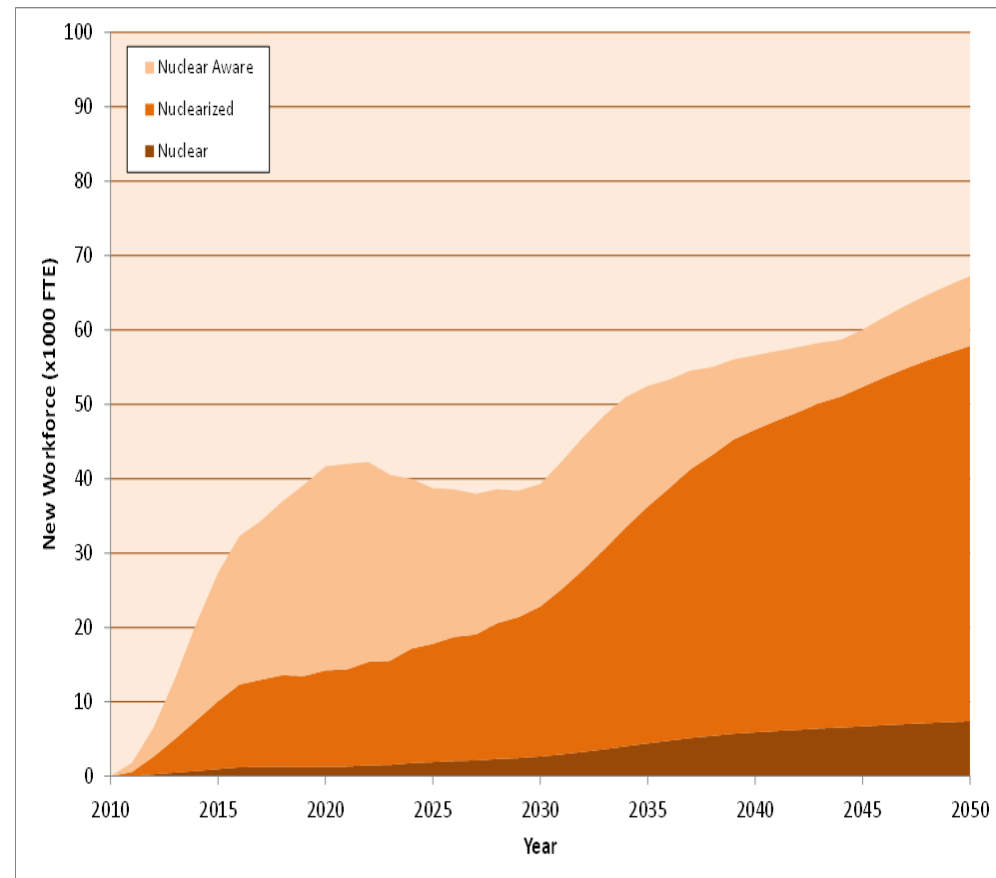
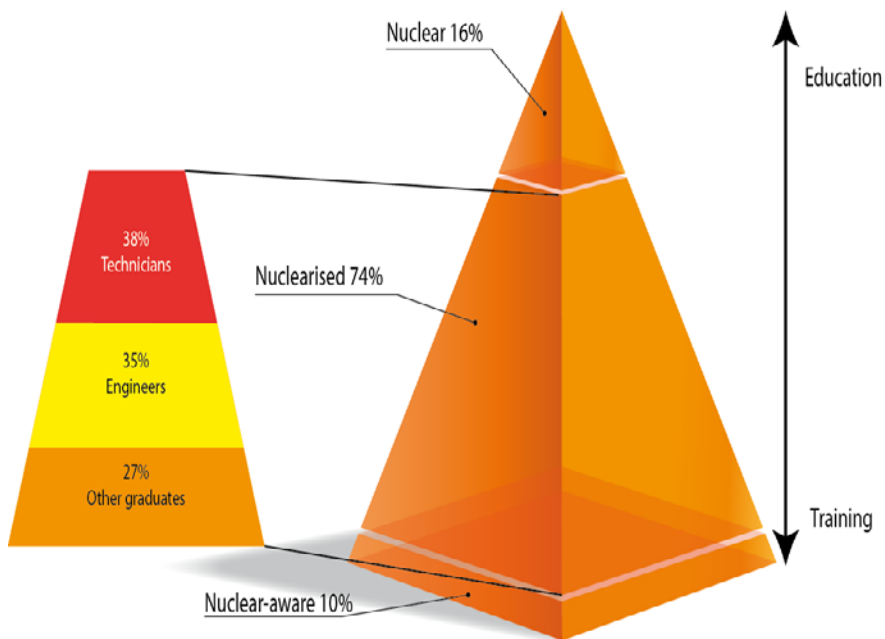


Comparison with past experience

Capacity being installed at the same time



Nuclear Energy Sector Skills





European
Commission



Massimo FLORE

Scientific Officer

Institute for Energy and Transport

Joint Research Centre

European Commission

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Thank
you!