The importance of education and training for the future of the nuclear industry

15th Anniversary of the European Nuclear Education Network (ENEN)

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What does nuclear contribute to Europe's economy?

- **127** nuclear reactors in operation in the EU
- **€ 70 billion/year**
- **800,000 jobs**
- **27% electricity production**
Nuclear energy in the EU

127 Operational nuclear reactors in the EU

Nuclear share of electricity

- 72% France
  - 58 reactors - 63,130 MW
- 54% Slovakia
  - 4 reactors - 1,814 MW
- 52% Belgium
  - 7 reactors - 5,913 MW
- 51% Hungary
  - 4 reactors - 1,889 MW
- 40% Sweden
  - 8 reactors - 8,629 MW
- 35% Bulgaria
  - 2 reactors - 1,926 MW
- 35% Slovenia
  - 1 reactor - 688 MW
- 34% Finland
  - 4 reactors - 2,764 MW
- 29% Czech Republic
  - 6 reactors - 3,930 MW
- 21% Spain
  - 7 reactors - 7,121 MW
- 19% UK
  - 15 reactors - 8,918 MW
- 17% Romania
  - 2 reactors - 1,300 MW
- 13% Germany
  - 7 reactors - 9,515 MW
- 3% Netherlands
  - 1 reactor - 482 MW

Nuclear power plants under construction

- Finland
  - 1 reactor - 1,600 MW
- France
  - 1 reactor - 1,630 MW
- Hungary
  - 2 reactors - 2,400 MW
- Slovakia
  - 2 reactors - 800 MW
- UK
  - 2 reactors - 3,200 MW

Source: www.iaea.org/pris, 2016
Examples of cooperation between the industry and universities

Spain
- Launching a number of Post-Graduate and Master’s degrees by the best Spanish universities together with the industry & R&D institutes
- Exemplary courses:
  - European Master of Science in Nuclear Fusion and Engineering Physics (Universidad Complutense de Madrid)
  - Master Course in Nuclear Engineering and Applications (Universidad Autónoma de Madrid)
  - Master’s Degree in Nuclear Technology and Instrumentation (Universidad de Huelva)
  - Master’s Degree in Sustainable Energy Engineering (Universidad Politécnica del País Vasco)
  - Master’s Degree in Nuclear Engineering (Universidad Politécnica de Cataluña)

France
- 2-year Master’s degree programme created by Paris Sud University, Paris-tech, Centrale-Supelec & National Institute for Nuclear Science and Technology and supported by the industry (e.g. EDF, Orano) & CEA
- Covered topics:
  - Nuclear Reactors Physics & Engineering
  - Nuclear plant design
  - Operations
  - Fuel cycle
  - Decommissioning & Waste Management
Education, Training & Knowledge Management Working Group

Tasks:
- Strengthening the link between the industry, research institutes and education and training stakeholders
- Providing a platform for the exchange of information on the current and future needs and the best examples of collaboration between the industry, universities and research institutes
- A gateway for representatives from both industry and research organisations to provide input to various EU institutions

External partners:
- IAEA Nuclear Knowledge Management division
- JRC
- ENEN
- SNETP
FORATOM involvement in selected European initiatives

**EHRO-N**
European Human Resource Observatory in Nuclear
Goal: to analyse and provide information on HR demand and supply in the nuclear sector

**ANNETTE**
Advanced Networking for Nuclear Education, Training and Transfer of Expertise
Goal: to promote a better coordination of academic learning initiatives in nuclear

**ELINDER**
European Learning Initiatives for Nuclear Decommissioning and Environment Remediation
Goal: to create a commonly qualified training programme in nuclear decommissioning

**ENEN+**
European Nuclear Education Network Plus
Goal: to attract develop and retain new talents in the nuclear professions
Key challenges facing the nuclear industry (education & training)

1. Maintaining knowledge
   - Promote best practices
   - Facilitate the transfer of knowledge and expertise

2. Meeting changing expectations of the young generation
   - Set out a long-term vision
   - Make nuclear more attractive
   - Show the role nuclear energy can play in the EU energy transition

3. Putting forward good arguments
   - Emphasise career opportunities, mobility, innovative projects and a decent salary
Thank you