



# The NEA Nuclear Education, Skills and Technology (NEST) Framework

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### NEA Nuclear Education, Skills and Technology (NEST)

A multinational framework to maintain & build skills and to nurture the next generation of nuclear subject matter experts through transfer of practical experience and knowledge

- The current **NEST Countries** are Belgium, Canada, France, Germany, Italy, Japan, Korea, Russia, Switzerland and USA.
- International cooperation allows access to a critical mass of capacities (infrastructures, construction projects, decommissioning activities) available within the NEST membership to NEST Fellows



### Aims and benefits:

- Develop *skills and competences* and *transfer knowledge* specific for the nuclear sector through hands-on training activities related to challenging nuclear projects and activities.
- Foster *human capacity- building networks* where the next generation of nuclear leaders and professionals could flourish.
- Create added-value for each country by promoting the creation of *new ideas and technologies* and *addressing common challenges.*
- Build a *talent pipeline* from universities, to industries, to regulators and technical safety organisations (TSO)





### **NEST: How it works**

### The NEST Fellows will:







### **NEST Fellowships**



Share and create new knowledge

*Phase 1.* NEST Fellows from the Participating organisation will carry out a 1-6 months Fellowship in the Leading/Participating Organisation to transfer and acquire the knowledge from the NEST Mentors

Phase 2. Back in the home organisation, the NEST Fellow will share and create new knowledge.



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## Nuclear Energy Agency



### **NEST Status and Projects**

- Launched in February 2019
- > 2 Management Board meetings, March 2019 and September 2019
- Next Management Board meeting, 16-18 September 2020

✓ Multinational - include at least 3 NEST countries
✓ Address concrete and multidisciplinary challenges in the field of nuclear science, technology and applications
✓ Offer hands-on training opportunities in the field of nuclear science, technology and applications to NEST fellows

• Four Projects approved:







### **Universities and organisations in NEST projects**

#### **HYMERES (22 Fellows)**

- PSI, Switzerland
- University of Stuttgart, Germany
- Oregon State University, USA
- Texas A&M University, USA (4)
- University of Calgary, Canada (1)
- Seoul National University, Korea
- Swiss Federal Institute of Technology Zurich (ETH), Switzerland. (1)
- CNRS Orleans, France
- Royal Institute of Technology (KTH), Sweden (non-NEST Country)
- Universidad Politécnica de Madrid, Spain (non-NEST Country) (1)

#### **ARTERD (21 Fellows)**

- JAEA CLADS, Japan
- The University of Tokyo, Japan
- The University of Tennessee, USA
- The University of California, Berkley, USA
- McMaster University, Canada
- Technical University of Munich, Germany
- Pohang University of Science and Technology, Korea
- The University of Manchester, UK (non-NEST Country)
- The University of Bristol, UK (non-NEST Country)

#### **BEAST (24 Fellows)**

- Aachen Institute for Nuclear Training (AiNT)
- CEA, Framce
- Forschungszentrum Jülich FZJ, Germany
- SCK-CEN, Belgium
- TU Munich
- University of Glasgow, UK (non-NEST Country)

#### SMRs (69 Fellows)

- McMaster University, Canada
- University of Saskatchewan, Canada
- University of Regina, Canada
- Texas A&M University
- University of California-Berkeley
- University of Wisconsin-Madison
- EPFL, Switzerland
- CNRS Grenoble, France
- SCK-CEN, Belgium

#### i-graphite RWM (45 Fellows)

- National Research Tomsk Polytechnic University (TPU), Russia
- ROSATOM Pilot and Demonstration Center for Decommissioning of Uranium-Graphite Nuclear Reactors ("PDC UGR" JSC)
- The Seversk Technological Institute/MEPhI branch, Russia
- National Research Nuclear University MEPhi, Russia
- Faculty of Chemistry, Lomonosov Moscow State University (MSU), Russia
- CEA, France
- EDF, France
- CIRTEN, Italy
- Sogin, Italy
- KIT, Germany
- TU Dresden, Germany
- Jülich Research Center (FZJ), Germany
- University of Koeln, Germany

#### **MANTRAS (15 Fellows)**

- National Institute of Nuclear Physics (INFN), Italy
- University of Milan, Italy
- Laboratory for Applied Nuclear Energy-LENA, University of Pavia, Italy
- Laboratoire de Physique Subatomique et Cosmologie Grenoble-Alpes University, France
- Agency for Energy, New Technologies and Sustainable Economic Development (ENEA), Italy
- Health Canada, Canada
- Institute of Radioprotection and Nuclear Safety (IRSN), France
- National Institute of Health (ISS), Italy),
- National Institute of Nuclear Physics and Particle Physics (IN2P3), France.
- National Centre for Oncological Hadrontherapy (CNAO), Italy.





### **NEST Fellows and Activities**

### HYMERES - 2019-2020 Fellows



> ARTERD - 2019 Fellows



- SMR Hackaton, 17-21 August 2020
- 32 NEST Fellows (8 x 4 groups)
- Virtual classrooms and case-studies



Final presentations examining nuclear energy and deployment of SMRs through various lenses – from traditional science and engineering, to considering the social, economic and political impacts.





## What's in it for universities?

- Universities are the first stop to nurture the next generation of nuclear leaders and professionals. They provide the "Know-Why", which is the knowledge to understand why something should be done in a certain way and why certain tools and techniques should be used. Industry instead tends to be more interested in the "Know-How".
- By establishing links between universities and industry, the benefits for universities are to:
  - Strengthen university education programmes;
  - Foster the dynamics for a shared understanding of the issues at stake by involving all actors, from universities to industries to regulators and research organisations.
  - Support both academia and the nuclear industry by bridging the gaps between the "know-why" and "know-how";
  - Test research results and discoveries in real-world environments





# **Summary and Recommendations**

- The importance of NEST was recognised by NEA member countries to transfer knowledge and training of the young generation.
- NEST will be beneficial to countries as it allows through international cooperation to maintain competences and enhance human resources development and capacity building in the nuclear sector.
- Equip the next generation of the nuclear workforce with technical and non-technical skills and expertise in multinational and multidisciplinary contexts necessary to build successful careers in the nuclear field and to address long-term nuclear-challenges to help meet the world's energy needs.





# Thank you for your attention



### For more information about NEST: visit: <u>www.oecd-nea.org/nest</u> contact: <u>antonella.ditrapani@oecd-nea.org</u> or <u>nest@oecd-nea.org</u>