

# **SNETP research agenda, activities and future projects**

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Chairman of SNETP

# About SNETP



- Platform **set up in 2007 under the auspices of the EC**, to build a common vision out of various stakeholders : industry, research centres, safety organisations, universities, NGO, SMEs, etc.
- SNETP's official **European Technology Platform label** was renewed in 2013.
- The overall goal is to **support technological development** for enhancing safe and competitive nuclear fission in a sustainable energy mix, as part of the EU's **SET-Plan**:
  - Low greenhouse gas emissions
  - Security of energy supply for Europe
  - Stable electricity prices
- R&D is necessary to **further enhance the safety and sustainability** of nuclear fission, and to **open new markets**
- SNETP has expressed its **strategic orientations** around **three technological pillars**, and launched **task forces** to implement them
- **Interactions at SNETP and pillar level with** IAEA, EERA-JPNM (MoU), OECD, Radiation protection platforms, etc.

# SNETP's main milestones

- Sept 2007: SNETP launch with Commissioners for Research and Energy, publication of *Vision Report*
- June 2009: *Strategic Research Agenda*
- May 2010: *Deployment Strategy*
- Nov 2010: Launch of ESNII
- Jan 2011: *Education & Training Strategy*
- Oct 2011: Launch of NC2I
- March 2012: Launch of NUGENIA
- Jan 2013: Publication of "*Identification of Research Areas in Response to the Fukushima Accident*"
- Feb 2013: Updated *Strategic Research & Innovation Agenda*
- 2014-2015: NUGENIA Roadmap & Global Vision
- 2015: SNETP Deployment Strategy
- Dec 2016: MoU signed with EERA JPNM
- Dec 2017: *NC2I Concept Paper*
- Feb 2018: *Celebration of the 10<sup>th</sup> Anniversary of SNETP*



# On Feb.22, 2018

- Celebration of the 10th anniversary of SNETP

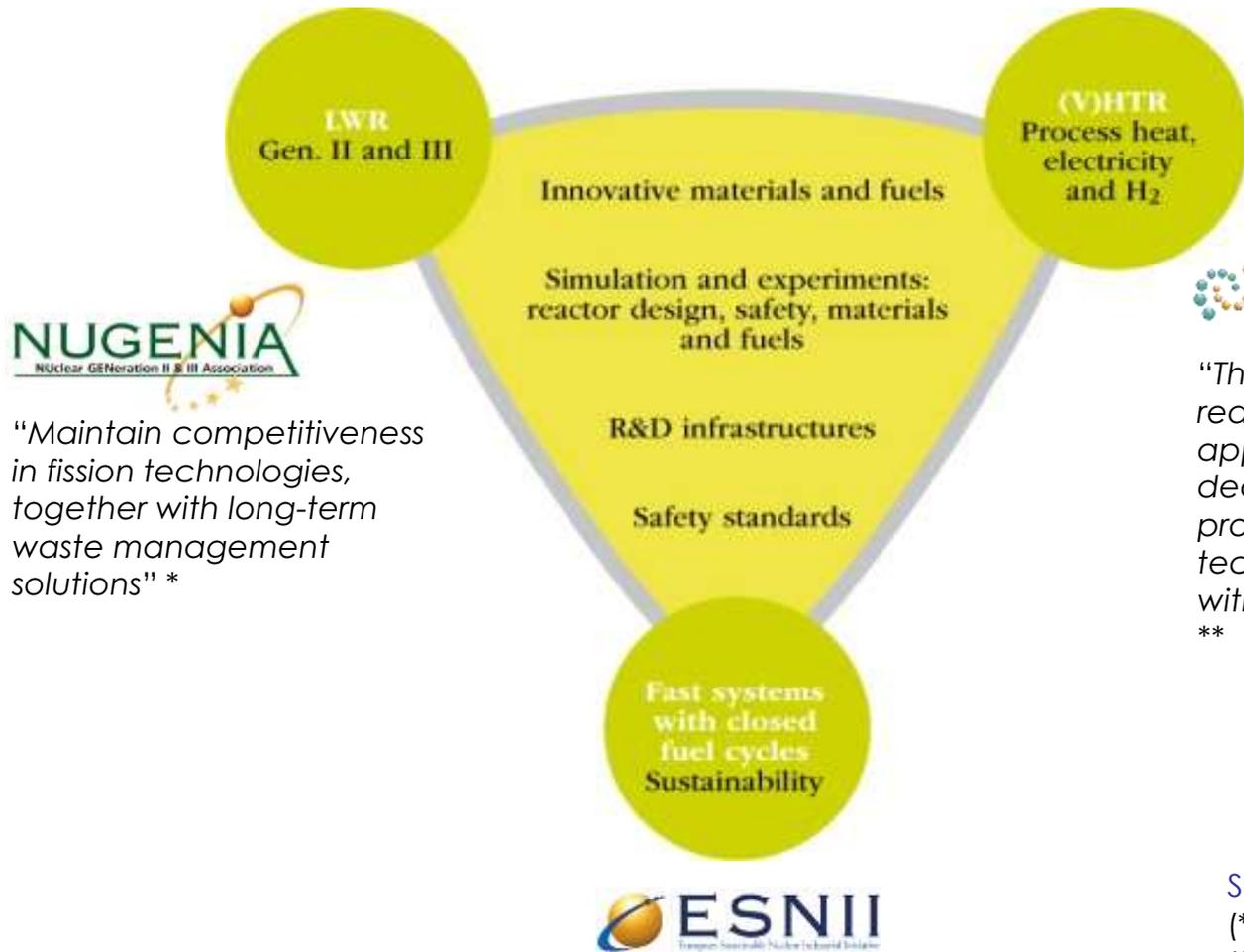


## Thank you for all members for their continuous support

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# Vision: 3 strategic pillars matching SET-Plan priorities



*"Maintain competitiveness in fission technologies, together with long-term waste management solutions" \**

*"The first cogeneration reactors could (...) appear within the next decade as demonstration projects to test the technology for coupling with industrial processes" \*\**

*"Complete the preparations for the demonstration of a new generation (Gen-IV) of fission reactors for increased sustainability"\**

SET Plan Objectives

(\*) [COM/2007/0723 final]

(\*\*) [COM/2009/0519 final]

# NUGENIA Association



## DEDICATED TO SAFE AND EFFICIENT NUCLEAR

- **What is NUGENIA?** an international non-profit association founded under Belgian law in November 2011 and launched in March 2012.
- **Mission:** be an integrated framework for safe, reliable and competitive Gen II & III fission technologies, which:
  - Fosters collaboration between industry, SMEs, RTOs, academia and technical safety organisations
  - Builds knowledge and expertise
  - Generates results with added value
- **Projects**
  - 13 Euratom projects ongoing under H2020 & 5 in-kind projects
- **Membership:** 103 full members and 7 honorary members from 24 countries (as of February 2017)



## TECHNICAL SCOPE



## WHAT WE PROVIDE



### A unique pool of expertise & competences to:

- Foster applied R&D and innovation
- Access and share exclusive technical knowledge & data
- Produce results with added value to end-users by initiating R&D projects



### A multidisciplinary community, enabling:

- Privileged dialogue with peers and experts
- Support to joint training activities
- Access to research infrastructures and facilities



### Dedicated support for project result dissemination:

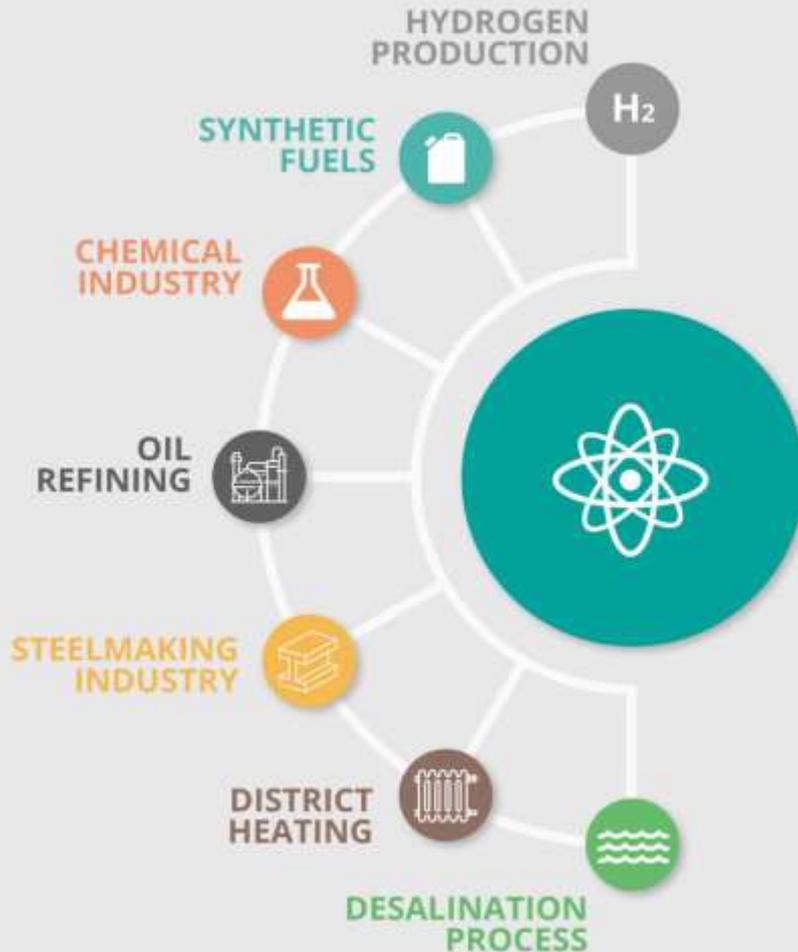
- Acting as a communication channel for your project
- Keeping track of international events, calls, funding...
- Promoting our members' particular expertise
- Facilitating the implementation of R&D results within the nuclear industry



### An Open Innovation approach, an opportunity to:

- Suggest new project ideas to the community
- Build projects in close relation with end users
- Find partners/join emerging collaborative projects
- Receive the NUGENIA label, recognising the excellence of your project

# NC2I : Nuclear cogeneration Industrial Initiative



***Contribute to clean and competitive energy beyond electricity by facilitating deployment of nuclear cogeneration plants***

# NC2I vision

- **Scope:** low and high temperature applications
- **LTR** : willingness to couple it with existing LWR
  - so far limited deployment but with very positive records
  - Objectives of NC2I:
    - Identifying conditions for larger deployment
    - Supporting initiatives that will facilitate the growth of LT nuclear cogeneration in particular application to cogeneration of LWR SMRs
- **HTR**
  - **Key target for 2030:** Commissioning in Europe the first High Temperature Gas-cooled Reactor (HTGR) as heat source for industrial plant
  - **Actions:** Cooperate with EC & authorities in target countries to facilitate:
    - *preparing an appropriate licensing framework*
    - *defining the most suitable technical options*
    - *selecting an appropriate site*
    - *developing a robust business model*
  - **One H2020 project:** GEMINI + (2017 – 2020)
    - **Purpose:** Provide a conceptual design for a HT nuclear cogeneration system for supply of process steam to industry

# ESNII – European Sustainable Nuclear Industrial Initiative



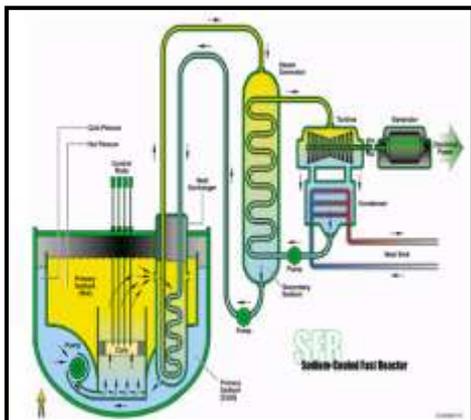
- **Framework**
  - European Industrial Initiatives (EIs) are key elements of the **SET-Plan**.
  - ESNII formally launched in Brussels on 15 November 2010
- **Purpose and scope**
  - ESNII addresses the need for demonstration of **Gen-IV Fast Neutron Reactor technologies**. The main goal of ESNII is to design, license, construct, commission and put into operation in 2025-2030.
    - the Sodium Fast Reactor Prototype reactor called **ASTRID &**
    - the flexible fast spectrum irradiation facility MYRRHAwhile investigating the feasibility & deployment of ALFRED (LFR demonstrator) and ALLEGRO (GFR demonstrator)
- **A mature initiative of 24 Members**
- **One H2020 project** related to ESNII: INSPYRE (2017-2021)
  - Investigations Supporting MOX Fuel Licensing in ESNII Prototype Reactors



# Generation IV – SNETP Vision

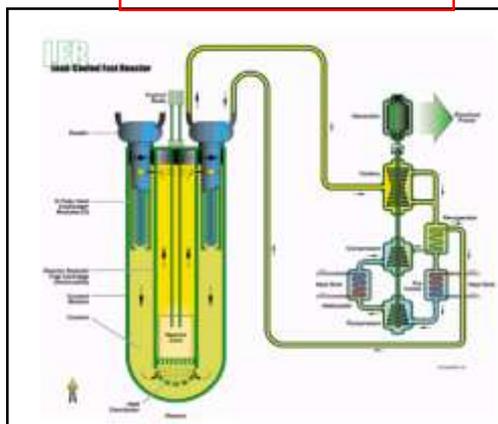
**ESNII**

*Sodium Fast Reactor*



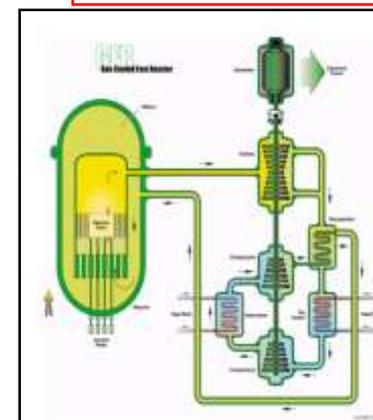
**ESNII**

*Lead Fast Reactor*



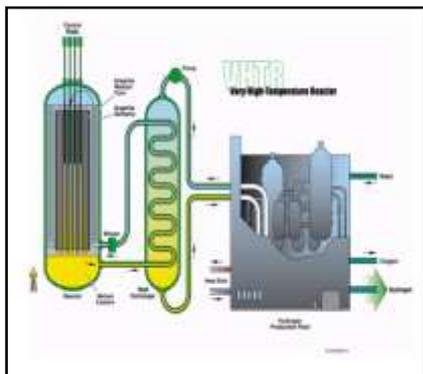
**ESNII**

*Gas Fast Reactor*



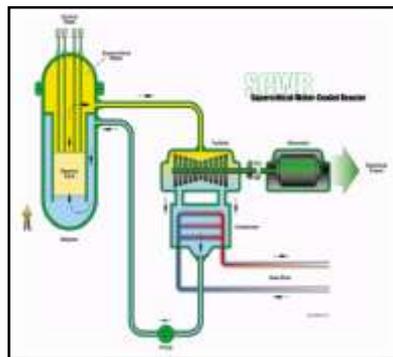
**NC2I**

*Very High Temperature Reactor*



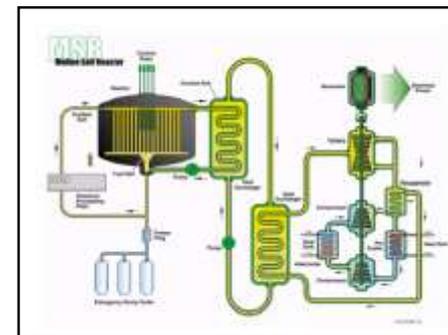
**Long Term option  
“NUGENIA”**

*Supercritical Water-cooled Reactor*



**Long Term option  
SNETP**

*Molten Salt Reactor*



## Recent activity & Next Steps

- **Nuclear Days**

- 10-12 April 2018 in Prague
- 3 pillars of SNETP gathered & EERA-JPNM
- 6 Technical Sessions and 2 plenary Sessions to identify the lessons learned from the newly finished and ongoing projects



- **SNETP Evolution towards legal entity**

- Future entity foreseen for early 2019

- **Timeline since November 2016**

- March 2017 : Establishment of the Task Force on SNETP Evolution during GB n°20 (based on mandate given by GA#6 of Bratislava 33.11.2016)
- October 2017: Working documents (statutes, internal rules) circulated to the pillars
- 2017 – 2018 :Discussions with NUGENIA TF and NC2I, ESNII
- January 2018: NUGENIA formal feedback
- 24 January 2018: progress during ExCom / GB joint session

- **Next steps**

- Report and green light to follow the evolution by SNETP GA (February 2018) ✓
- Early March 2018: Meeting with the chairs of the three pillars + SNETP GB Chair to conclude on open issues ✓
- Early April 2018: Agreement of NUGENIA GA on the **formal** evolution of the AISBL (change of scope, membership categorisation, governance, etc.) ✓
- Second half of 2018 – **practical** preparatory work for legal evolution and restructuring (with lawyers and Belgian authorities)

## **SNETP Evolution (2/2)**

- **Rationale for the evolution as stated during the GB n°20 (01.2018)**
  - One single and strong organisation
  - Greater coherence and visibility at the international level
  - Avoid duplication of fees for members and competition for membership

# Update of the SRIA in 2018 (1)

- **Introduction**
- **The Future of Nuclear Energy in Europe**
  - Latest Outlooks (EC/EU MS, IEA, WNA, IAEA, OECD)
  - Benefits and potentials of nuclear energy
  - Deployment Strategy
- **High level objectives**
  - Safety of NPPs
  - Development of Fuel and the Fuel Cycle
  - Spent Fuel Management and Dismantling & Decommissioning
  - Social, environmental and economic aspects for Research, production and use of Nuclear Energy
- **Reactor technology**
  - Operation and Construction
    - Improved operation and construction
    - Long Term Operation
  - In-Service Inspection, Inspection Qualification and Non-Destructive Examination
  - Advanced Reactors and the next Generation
  - SMR

# Update of the SRIA in 2018 (2)

- ***Cross-cutting aspects***
  - Research Infrastructures
  - Digitalisation - Modeling and Simulation
  - Harmonization
  - Education, Training and Knowledge Management
- ***Conclusions and Way Forward***

## SNETP key priorities for FP9

1. Secure dedicated EU funding for the SET-Plan key action 10
2. Align nuclear fission RD&D funding with SET-Plan objectives & vision
3. Make available EU grants amounting to 2.75 b€ for the European Sustainable Nuclear Industrial Initiative (ESNII)
4. Include the Nuclear Cogeneration Industrial Initiative (NC2I) as a SET-Plan EII with available EU grants amounting to 1 b€
5. Ensure that all financial instruments under the FP9 are open to nuclear fission research & innovation,
6. Maintain continued support for research in safety and competitiveness of generation II and III plants, radiation protection and waste management through GD and P&T
7. Facilitate European consortium building by ensuring that relevant legal structures (ERIC, Euratom JU...) are made available for nuclear prototypes or demonstrators consortia

# Thank you for attention

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