



SNETP – SUSTAINABLE NUCLEAR ENERGY TECHNOLOGY PLATFORM

SNETP is one of the EU's official European Technology & Innovation Platforms established to implement the SET-Plan. SNETP and its pillars gather more than 120 European stakeholders involved in the research and innovation, deployment and operation of nuclear fission reactors and fuel cycle facilities: industry, research centres, universities, technical safety organisations, small and medium enterprises, service providers, non-governmental organisations. Despite industrial competition, SNETP has achieved efficient collaboration between its stakeholders. It has developed a common vision on the future contribution of nuclear fission energy in Europe, with the publication of a Vision Report, a Strategic Research & Innovation Agenda (two editions) and a Deployment Strategy report. It issued also a dedicated report on the R&D topics related to safety issues triggered by the Fukushima accident.

INTRODUCTION

Nuclear energy has been a reliable energy source for decades, and provides a very significant share of current electricity supply. SNETP believes that this share should be maintained in Europe, as a responsible contribution to the EU's low-carbon energy mix. This is achieved by ensuring safe and reliable operation of the current (Generation II) fleet, supported by long term operation, maintenance programmes, and by pursuing the development of new build projects of Generation III nuclear plants. Furthermore, significant improvements in terms of resources, efficiency and improvement of waste production and management will be reached with the future deployment of Generation IV nuclear systems, which relies on fast neutron technology with a closed fuel cycle. Nuclear fission technology can also deliver cogeneration of heat and power, in particular for industrial purposes where the heat market is dominated by fossil fuels with no alter-

native from renewables, thus appearing as a game-changer in reducing the carbon footprint of energy-intensive industries.

HISTORY IN BRIEF

The European Commission put forward in 2007 the principles of a new energy policy for Europe, in order to address the three major challenges that are: i) Improving the security of energy supply; ii) Reducing the emission of greenhouse gases; iii) Improving economic competitiveness through reliable, low-cost energy supply to industries and citizens. Nuclear fission energy, which provides more than a quarter of the EU's electricity, plays a major role in the development of a low carbon energy system in Europe. The Sustainable Nuclear Energy Technology Platform (SNETP) is the main tool to coordinate at the European scale research and development in this field, and deployment of R&D results up to industrial applications. R&D



Prof. Dr. HAMID AÏT ABDERRAHIM

SNETP Governing Board Chair/
SCK•CEN (BE), Deputy Director
General International Affairs/Director
MYRRHA Project/Professor at Institut de
Mécanique, Matériaux et Génie Civil –
IMMC (UCL, BE).

to maintain the safety and competitiveness of existing nuclear plants and to develop the next generation of reactors (Gen. IV) and associated fuel cycle infrastructures will require large capital investments, as well as major efforts in promoting or funding research infrastructures, education and training. Furthermore, there is a clear need to better coordinate national research policies beyond the European Euratom research framework programmes, or the participation of Euratom in international initiatives such as the Generation IV International Forum.

In the process leading to the launch event of the Sustainable Nuclear Energy Technology Platform, a first group comprising 24 utilities, vendors, and research organisations was extended to include other industrial partners, technical safety organisations, and European associations such as Foratom (representing over 800 industrial companies), the European Nuclear Society (ENS) and the European Nuclear Education Network (ENEN). This allowed broadening the support basis for a common Vision. A Vision Report was presented at the SNETP Launch Conference on 21 September 2007. The conference brought together around 300 participants representing high-level policy and decision makers from public administrations and from the industrial, financial, scientific, and educational and research communities, as well as representatives of civil society. The Vision Report and recommendations were presented, discussed and largely supported by the conference participants.

Since 2008 the SNETP members meet up regularly at General Assemblies (2010 Brussels, 2011 Warsaw, 2013 Vilnius, 2015 Brussels), to discuss and share views on fission R&D issues and the contribution of nuclear energy in the European energy mix.

The Platform is an autonomous forum, independent from the European Commission or any other organisation. It develops its own methods of working and establishes interfaces with appropriate institutions, bodies, forums and initiatives.

The operation of the Platform is based on voluntary information and effort provided by member organisations of the Platform or groups of member organisations. Running of

the platform Secretariat was supported by 2 FP7 Euratom projects – “SNETP-Office” and “SMILE” between 2010–2014. Since 2015 the membership in the platform is fee based to cover its basic operational costs. In 2015 was also launched a Euratom H2020 supporting project called “SPRINT” that supports the SNETP in promoting its activities, strengthening interactions with international stakeholders and defining new services and contributing to systematic analyses.

SNETP representing R&D nuclear fission community:

Nuclear electricity constitutes nearly 27% of the EU's electricity generation with 131 nuclear power plants; as such it is still the largest low CO₂ emitting electricity source in the EU. Maintaining high levels of safety and competitiveness for the European fleet is a primary objective for the members of SNETP and this requires the support of a large R&D programme and associated research infrastructure. Nevertheless, the nuclear energy sector does not consider this situation as granted and is aware of the evolving environment and the need to develop innovative technology for preparing the future.

Among the challenges are: the improvement of long-term sustainability (safety, waste, economics, public acceptance), the integration into a power grid with a significant content of variable renewable energy, the management of investment risks for power plant deployment, and of course the upgraded safety constraints resulting from the Fukushima accident.

In order to position nuclear energy in the European Union SET-Plan Integrated Roadmap and Action Plan, SNETP has consolidated its **Strategic Research and Innovation Agenda (SRIA)**:

- To support the safe operation of present and newly built light water reactors, and allow the development of sustainable solutions for the management of radioactive waste;
- To prepare the development and demonstration of advanced fast neutron Gen IV reactor technologies associated with a closed fuel cycle to enhance the sustainability of nuclear energy;

- To promote the use of nuclear energy beyond electricity generation namely in cogeneration of power and heat or hydrogen production or water desalination.

SNETP PILLARS

SNETP is organized around 3 technology pillars:

- NUGENIA, a non-profit association founded under Belgian legislation, was launched in December 2011 and mandated by SNETP to cover research on Gen II and III light water reactors, for both the installed fleet and newly built reactors. In 2016 it counts more than 110 members from industry, TSOs, research organisations and academia. NUGENIA has adopted a three-tier management structure comprising a general assembly, an executive committee, a secretariat and eight technical areas.
- ESNII has been recognised as an official European Industrial Initiative (EII) under the SET-plan, with an endorsement of its scope by the Belgian EU Presidency in November 2010: Gen IV fast reactors, focusing on sodium-, lead- and gas-cooled fast reactors, as well as accelerator-driven systems. Currently 27 members form ESNII with around half from industry and half from research organisations. ESNII has adopted a two-tier management structure comprising a task force and an executive committee.
- NC2I has been activated as a task force since the beginning of 2010 with the scope: nuclear cogeneration of electricity and process heat. NC2I has adopted a two-tier management structure comprising a task force and an executive committee. The Task Force has 12 members and an associated business group.

The activities of the pillars are complemented and/or supported by a number of ad hoc groups dealing with particular subjects (strategic documents drafting, Fukushima accident analysis, public/private financing monitoring, etc.).

SNETP GOVERNANCE AND MEMBERS

The SNETP is an open structure allowing the participation of all ac-



tive stakeholders who support the aims of the Platform. However, involvement in the Platform requires a level of commitment appropriate to the level of participation, so as to ensure that initiatives are taken forward in an active and dynamic manner. Participation in the working groups clearly requires a higher level of commitment. Members of SNETP must be established in a country of the European Union, or Associated Countries to the EURATOM Treaty. European subsidiaries of non-European companies may however apply. The membership in the platform is fee based.

Each member organisation of the Platform appoints one representative to the General Assembly. The General Assembly ensures shared ownership and a common vision, and allows a wide presentation of the work of the Platform and discussion on future orientations. General Assembly meetings are organised in a conference and workshop format, to create opportunities for networking and information exchange, including upon invitation for non-members of the Technology Platform as appropriate.

The Governing Board provides guidance on how to initiate and push forward the Platform's work programme. It stimulates initiatives, monitors progress and when required, takes decisions. It gets input from and provides guidance to the different working groups established in the frame of the Platform. It takes forward and consolidates the recommendations of the endorers and contributors of the SNETP Vision Report, and facilitates the smooth and efficient running of the Sustainable Nuclear Energy Technology Platform, ensuring its strategic relevance within the global context and in consistency with European Union policies.

The Executive Committee is a smaller group, appointed by the Governing Board. Its mission is to support the Governing Board, to monitor and steer on a day-to-day basis the activities of the different working groups of the Platform, and to ensure that the deliverables are delivered on time. It liaises closely with the Secretariat and working groups, to ensure the implementa-

tion of activities recommended by the Governing Board.

The Secretariat is provided by a limited number of member organisations and ensures the day-to-day running of the platform issues and interactions. The Secretariat includes a liaison person from the European Commission.

RECENT ACHIEVEMENTS AND VISION

The years 2015 and 2016 represent for SNETP a period of consolidation and strengthening of existing and new interactions.

In March 2015 the Platform renewed its mandate with the NUGENIA Association to represent the pillar on nuclear technologies of the II and III generation.

In September 2015, representatives of NUGENIA accompanied by the SNETP representatives signed a Practical Agreement on cooperation with the International Atomic Energy Agency (IAEA).

In 2016, SNETP expressed its position on the European Innovation Council to ensure that nuclear fission is included in its technological scope. Furthermore SNETP contributed actively to the European Commission 'Issues Paper' for the integrated SET-Plan and in particular on the Action 10 on 'Nuclear Fission'.

Interactions take place between SNETP pillar ESNII and the Joint Programme on Nuclear Materials, a sub-programme of the European Energy Research Alliance (EERA). A Memorandum of Understanding is being drafted to extend this cooperation at the level of SNETP.

The next SNETP General Assembly will take place during the upcoming SET Plan conference organized under the Slovak Presidency in Bratislava at the end of November 2016.

REFERENCE DOCUMENTS:

The vision and objectives of SNETP are detailed in a number of strategic documents, all publicly available online:

• SNETP Strategic Research & Innovation Agenda 2013

Download here: http://www.snetp.eu/wp-content/uploads/2014/05/sria2013_web.pdf

Updated from SNETP's initial SRA 2009, the SRIA 2013 addresses the short-, mid- and long-term challenges with respect to fission technologies, in line with the SET-Plan's objectives and long-term vision. The R&I objectives are structured along SNETP's technology pillars (NUGENIA, ESNII, NC2I) as well as cross-cutting topics.

• SNETP's Deployment Strategy 2015

Download here: <http://www.snetp.eu/wp-content/uploads/2016/01/SNETP-DEPLOYMENT-STRATEGY-2015-WEB.pdf>

The Deployment Strategy complements the SRIA, and aims to prioritise the SNETP programme over the coming decades to make it fully aligned with the general context of energy generation in Europe, which includes different sources, different national energy policies and societal challenges. Planning assumptions for the nuclear energy systems define the technical milestones to be reached.

- The priorities set out in the above documents are also aligned with the EC's SET-Plan Integrated Roadmap, specifically its Heading 5 on "Supporting Safe Operation of Nuclear Systems and Development of Sustainable Solutions for the Management of Radioactive Waste".
- NUGENIA issued in 2014 the NUGENIA Roadmap and a Global Vision document in 2015.■

SNETP is happy to provide any clarification or additional information. Questions may be channelled to:

Prof. Dr. Hamid Aït Abderrahim, SNETP Chairman [hamid.ait.abderrahim@sckcen.be] with copy to the SNETP Secretariat [secretariat@snetp.eu]

CONTACT