

**Speech of Bernd Guethoff,  
Vice-Chairman of SNE-TP Governing Board,  
1<sup>st</sup> General Assembly, 26<sup>th</sup> November 2008, Brussels**

***Check against Delivery!***

Ladies and Gentlemen,

In the previous session, we heard about all the outstanding work that has been done by SNETP in the course of just one year. As SNETP Co-Chair, I would first like to thank all those who have been involved in this for the important contributions they have made. It has not been an easy task, and this work, carried out in collaboration, has been really successful – so far. “So far”, as this will be an ongoing process, and at the same time an expression of our commitment to enhancing the SNETP vision.

The key issue now is clearly how we are to implement the R&D that is recommended in the Strategic Research Agenda, in order to maintain and improve safety and competitiveness of nuclear energy.

## The SNETP vision: Sustainability

With a 30% share in the power generation sector, the existing nuclear reactors are already contributing to an economically optimised European electricity mix with their low-carbon, safe, secure and competitive production.

Nuclear absolutely must maintain its status as a relevant part of this energy mix.

Yet there is still room for additional improvement, especially regarding waste minimisation and economising on the consumption of resources; these are rationales for developing next-generation nuclear reactors.

I would like to say something about the technological content of research relating to current and future reactors.

## Technology

First, I want to stress that all reactor generations are important to nuclear sustainability. Sometimes discussions come up about the sustainability of Generation II and III reactors. But Generation II and III are providing a key contribution now, and Generation IV will do even better in some decades' time. They cannot be considered separately; they are interrelated.

One of the first priority research area is the long-term operation of Generation II reactors. Today, these reactors account for around 1,000 TWh out of a total of 3,400 TWh generated in EU27. In addition, they save 900 Mt of CO<sub>2</sub> emissions and 250 Mt of oil equivalent. That is comparable to the total emissions of Germany, or of Sweden, Belgium, Greece, Austria, and Spain all taken together.

Extending their lifetime to 60 years from the 40 years originally planned is feasible and will secure an annual supply of around 1000 TWh of safe, clean and very competitive electricity until 2040.

Some research is still necessary in this field, as was summarised by Hamid Ait Abderrahim (SRA leader) in the previous session. Processes of ageing in structures, systems and components need to be observed and monitored. We need to find out more about how to manage and mitigate ageing, and to devise measures accordingly.

This research will be useful not only for Generation II reactors but for next-generation reactors too, whether of Generation III or IV.

The coming years will see not only the operating times of Generation II reactors being extended, but also new-generation Light Water Reactors coming on stream. As their deployment will continue up to the middle of the century and their operation throughout the century, development work on them must be further pursued with a view to continuously improving the safety of their operation and their competitiveness.

According to the SET Plan for nuclear fission, at least 80 GW of new nuclear capacity could be commissioned by 2030. This represents a potential market of around €160 billion and many job opportunities in the construction and operation of the new plants.

Among the areas for research, as presented earlier, are innovative reactor cores with higher conversion ratios and higher burn-up, or plutonium recycling to make more efficient use of natural resources.

- A lot of research cuts across the boundaries between reactor generations to a greater or lesser extent: the ageing of current structures, systems and components is rooted in materials behaviour, and requires advanced modelling and simulation and arguments to justify the operational margins laid down. Innovative reactor cores will require better nuclear data, the development of

innovative fuels, better core simulations, and advanced cladding materials. The parallels between Generation II and Generation III reactors are therefore obvious.

Although Gen IV concepts are different from those of Gen II and III reactors and will require specific research, some of this research is closely related to that into light water reactors. For instance, any advance in simulation or material for light water reactors will be of use in the development of Generation IV reactors and vice versa. Each can benefit from what has been achieved in the other field in the past. Another important aspect is the wealth of operational experience accumulated with today's reactors can also be drawn upon in pursuing the efficient design of Generation IV systems.

As you can see, it is difficult to totally separate research relating to reactors of different generations, and it would not be sensible to do so. Research on one reactor type is not absolutely independent of the others, and transfers between them should be encouraged.

### Implementation

Now how are we to implement this research, this work we have to do as a European Community?

There are some very interesting but unconnected initiatives already taking place, which are going to be, or would like to be, integrated into SNETP.

The Network of Excellence NULIFE is going to set up an institute to facilitate R&D on the long-term operation of Generation II reactors. The European Industrial Initiative to be presented by the next speaker is to focus on Generation IV reactors. However, no common initiative for Generation III yet exists.

From the technological point of view, there are many good reasons for combining some of the research relating to different reactor generations. From an organisational point of view it makes sense for the partly fragmented European research landscape to be interconnected in such a way that it is equipped to the best possible extent to meet the long term challenges.

If we want Europe to remain the world leader in nuclear technology, we cannot merely support system-related or even national clusters. We need structuring, more integration and collaboration.

This is the very reason why SNETP was established: to bring the stakeholders together, the technology users and the developers, to perform research together, taking full advantage of each other's various competences, infrastructures and experience and coordinating efforts in Europe efficiently.

That is why SNETP has to consider to adapt their structure to the approach recommended in the SRA and DS in an efficient and coordinated way.

It is obvious that this research will be supported by all stakeholders, of course in appropriate ways with regard to the level and type of input; e. g.

- research relating to Generation II reactors may tend to be mainly supported by operators,
- that relating to Generation III by operators and vendors, and
- that relating to Generation IV by research centres.

Steering groups involving the various stakeholders and their particular inputs on a specific generation of reactors would therefore be necessary. Members would agree on what was to be done next. Collaborative research projects could be performed under their guidance, each with its own agreement.

The same should be relevant to overlapping topics such as Materials, Safety, Modelling and Simulation or Fuel Research.

An “Overall Steering Council”, with senior technical experts, could provide the necessary forum in which to discuss those research topics where it would be advantageous to do research on several systems together.

To support this work, a Utilities Network as customers and operators should set out criteria it believes to be critical, especially for Generation IV reactors. It is a strength of European Technology Platforms that they take future users of the technology concerned on board at an early stage in order to ensure that the research performed is directed towards efficient deployment by industry.

The future Member State Mirror Group and Working Group on Funding Mechanisms will support SNETP's research by providing vital input from national programmes and financiers, in order to efficiently align European research in a single direction and to ensure it receives proper funding.

I think that such a reorganisation is essential if we want to harvest the fruits of the work we have done in SNETP so far.

## Some remarks on other requirements

By taking up the challenge of restructuring, SNETP will demonstrate that it is fulfilling its mission. Its stakeholders – the industry, research centres, the vendors, the universities and others - can then all make their contributions to creating an efficient European Research Area.

This will in turn be an admonition to other stakeholders, especially Member States and the European Union itself, to give SNETP the necessary political support and unlock funding for its research.

With regard to waste management, it must also be made clear that technologies do exist for the safe final disposal of nuclear waste. What we need here is first and foremost for political decisions to be taken to implement the existing technical solutions.

Finally, I would like to draw your attention to the key issue of education and training. Industry and research centres need and will continue to need skilled new employees for the industry's

current operations and for the implementation of the Strategic Research Agenda. This is a critical question and I do indeed greatly support the efforts of SNETP's dedicated working group.

### Conclusion

**Ladies and gentlemen,** SNETP has done some excellent work in its first 12 months and I am sure that the platform will be a key actor in the European nuclear research landscape. It may need to adopt a new organisational structure in order to efficiently carry out its mission.

Political support from Member States and the European Union and also secure funding will nonetheless be crucial in making SNETP a success.

The energy and climate challenges highlight all the advantages of nuclear technology in achieving a sustainable energy mix. I hope that all of us will fully support SNETP's endeavour.