The IFNEC Contribution to Innovative Institutional Initiatives Related to the Back-End of the Nuclear Fuel Cycle

Working Group Co-Chairs

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International Framework for Nuclear Energy Cooperation

• Mission: to provide a forum for cooperation among participating states to explore mutually beneficial approaches to ensure the use of nuclear energy for peaceful purposes proceeds in a manner that is efficient and meets the highest standards of safety, security and non-proliferation.

• 65 Member Countries

• 5 Observer Organisations: IAEA, NEA OECD, WNA, GIF, EURATOM

• 3 Working Groups: Reliable Nuclear Fuel Services, Infrastructure Development, Supplier and Customer Country Engagement

• Actively supports the Nuclear Innovation: Clear Energy Future (NICE Future) international initiative of the Clean Energy Ministerial that leads the global conversation on the roles nuclear energy can play in clean energy systems of the future.
IFNEC as an Institutional Innovation

• IFNEC provides a forum for cooperation among participating states to explore mutually beneficial approaches to ensure the use of nuclear energy for peaceful purposes proceeds in a manner that is efficient and meets the highest standards of safety, security and non-proliferation.

• In many forums international discussions are limited or “blocked” because of a lack of “public acceptance” for nuclear in one or another country.

• Through the use of Chatham house rule in IFNEC discussions, experts can talk without the “burden” of how statements made might affect their position “at home.”

• By functioning in this way, IFNEC provides an institutional innovation that serves to overcome limitations on free and open international discussions about nuclear.
Reliable Nuclear Fuel Services Working Group

• As one of the three IFNEC Working Groups, the Reliable Nuclear Fuel Services Working Group, focusses on the challenges presented by the back-end of the fuel cycle (reuse and waste management) and the discussion of cooperative approaches to addressing those challenges.

• A consistent issue whenever nuclear energy is debated is the assertion that “there is no solution for the wastes produced.” The argument is that the wastes are accumulating and being left for future generations. It is a powerful argument. Waste management continues to represent a significant obstacle to securing public acceptance of nuclear energy.

• Public acceptance of nuclear energy will require an understanding that,
  • wastes are being managed (stored) safely now and in the future,
  • the technologies (capabilities) exist to manages those wastes through to final disposal, and
  • there is a commitment today to pursuing that final disposal.

• As an institutional innovation, the Working Group has spent the last 6 years conducting an array of activities that have contributed to a better understanding of these issues. The activities have provided information to those involved in communicating with the public: senior national policy makers, representatives of key nuclear industries, experts, and interested organizations.
Working Group Activities

Promoting progress through cooperation: Multinational Repositories

• With countries facing similar challenges and obstacles associated with developing disposal capability, the multinational repository concept provides an opportunity to explore cooperation and thus a potential way to move forward.

• There has been significant work on this concept in the past. The Working Group highlighted those previous efforts and sponsored numerous activities directed at both understanding the concept and supporting efforts by countries to consider participation in multilateral efforts.

• Notably the Working Group supported consideration by countries of the “Dual Track Approach,” that included publication of a paper. This approach supports a country’s robust commitment to developing disposal capability through pursuing a national repository program, while also conducting parallel cooperative efforts with other countries directed at developing a multinational repository.
Paper on the “Dual Track Approach”

• The Working Group developed and published a paper, “Practical Considerations to Begin Resolving the Final Spent Fuel Disposal Pathway for Countries with Small Nuclear Programs.”

• The paper promotes a better understanding of the Dual Track Approach currently being followed by a number of countries, and identifies practical activities for policy makers to consider to support cooperation on the challenges presented by the back end.

Working Group Activities (continued)

Promoting an understanding of the progress of repository development projects

• The Working group sponsored a tour of the repository project in France and a presentation on the status of the project in Finland.

• The repository projects in France and Finland provide the bases for understanding not only that the development of a deep geologic repository is possible, but also that there are national commitments and investments in place today to achieve final disposal.

• The repository project in Finland will soon be the first to operate and demonstrate the disposal of spent fuel.

• This is a significant milestone, both in the use of disposal technologies and the recognition by the public that disposal is achievable. The repository projects in other countries will continue to progress.

• These ongoing activities, and others directed at responsible waste management, need to be better understood by the public. When that happens, public acceptance will change.
Working Group Activities (continued)

**Promoting an understanding of long term storage**

- Storage, and potentially long term storage, is the common approach to managing discharged fuel prior to disposal.

- Experts have always explained “storage is a temporary solution - the repository is the final solution”. This has led to the impression that spent fuel is stored in some temporary condition.

- Storage today is not “temporary” as the term might infer, it is designed for perhaps a 100 years or more. The understanding of long term storage, and the safety of long term storage, is critical to the future of nuclear energy.

- The Working Group has highlighted the focus of the IAEA on this topic along with the ongoing work being done to understand the safety of long term storage.

- Much remains to be done to communicate the bases for confidence in long term storage to the public.
Promoting an understanding of advanced fuel cycles

• Up to 96% of SNF from PWR can be recycled.

• Much work is being done today on the development of technologies that can significantly reduce or eliminate the current challenges of managing spent fuel.

• These technologies involve emerging reactor and reprocessing technologies and are referred to as advanced fuel cycles. They are in various stages of development and demonstration and have the potential to recycle spent fuel, resulting in a zero, or near zero-waste technology.

• The Working Group has sponsored activities discussing the status and promise of these technologies.
A Different Way to Think about the Back End

- INPRO is to be complemented for addressing this topic for which dialogue is needed.
- Along with construction cost and schedule, public acceptance is one of the most important challenges for the future of nuclear energy. The back end of the fuel cycle is consistently treated as a liability, “there is no solution to spent fuel and wastes.” But this is wrong.
- The facts are that spent fuel and wastes are being managed safely, with proven technologies. This is being done with full transparency: they pose no threat - in the past, in the present, or in the future.
- Progress on final disposal (that is to last forever) should necessarily be measured and deliberate. There can be no confidence in quick solutions to long term issues.
- The Working Group has shown that such progress has indeed been measured (disposal technologies that provide confidence have been developed) and deliberate (a repository in Finland will operate soon, and advanced fuel cycles are being actively developed).
- In working toward public acceptance perhaps we should begin discussing the back end as being well managed, safe, and indeed an asset for the future of nuclear energy.