

Interface with GIF partners

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Small Modular Reactor & Private Sector Field:

GIF as Gen IV reactor developer:

Steering group on this issue:

GIF Policy Group decided to make a **special group to develop relationship with private sector** under the lead of Mr. Sylvestre Pivet who is GIF PG vice chair on market opportunities and challenges in PG-51 meeting held on 21 May 2021.

This group is going to report the conclusion of discussion how to proceed this activity in PG-52 will be held in October 2021.

GIF References:

Canada, United Kingdom, and Australia have contributed to make a discussion paper whose title is “**Establishing A Collaboration Framework With Industry**”.

As of 17 June 2021, PG/EG members made comments on this paper, however additional comments are still welcome to improve this paper, and SIAP members will make comments on it. This document will be submitted to the above steering group to decide GIF future actions.

GIF Technical Director, Mr. Gilles RODRIGUEZ had a [presentation](#) in Strong Korea Forum 2021. The title of presentation is “**SMR-AMR-Micro Reactors: Global New Paradigm for Nuclear Reactors. A vision from the Generation IV International Forum (GIF)**”.

IAEA:

SMR platform:

IAEA Directory General has established **an agency-wide platform on SMR** composed of a Steering Committee and a Platform Implementation Team both led by the Nuclear Energy department (NE DDG is the chair of the SC and Division Director of NP: Mr. Dohee HAHN is the member of the SC. The chair of the PIT and SciSec of the SC is head of NP technology: Mr. Stefano MONTI).

This IAEA agency-wide platform on SMR **will be introduced in Virtual 15th GIF-IAEA Interface Meeting** will be held on 29-30 June 2021.

OECD/NEA:

SMR report:

NEA published “[Small Modular Reactors: Challenges and Opportunities](#)” on 13

April 2021. In this report, after overview of SMR technology, Techno-economic characteristics, Licensing, regulatory, Legal, and policy aspects were introduced. **Main challenges to enable large-scale deployment** of SMRs were introduced within the framework of 1) The problem of technology choice, 2) Revisiting and harmonising licensing frameworks, and other legal challenges, 3) The potential advantages of SMR FOAK demonstrators, 4) Supply chain and fuel cycle issues, 5) Public perception and engagement. Finally **recommendations as role of government support and international collaboration** for SMR deployment were introduced for 1) Public engagement, 2) Harmonisation of licensing regimes, 3) Development of manufacturing capabilities.

Small Modular Reactors: Challenges and Opportunities is based on a background note that was prepared for the “Policy Briefing on Small Modular Reactors” held at the 139th Session of the **Nuclear Energy Agency Steering Committee of Nuclear Power** on 25 October 2019.

Antonio Vaya Soler and Michel Berthélemy, from the NEA Division of Nuclear Technology Development and Economics (NTE), prepared the current report on this basis. Vladislav Sozoniuk, from the Office of the Director General (ODG), Aditi Verma (NTE), Andrew White, from the NEA Division of Nuclear Safety Technology and Regulation (SAF), and Kimberly Sexton Nick, from the NEA Office of Legal Counsel (OLC), also participated in the drafting. Management oversight and additional input was provided by the Heads of Division, Sama Bilbao y León and Gloria Kwong (NTE), Ximena Vásquez-Maignan (OLC) and Véronique Rouyer (SAF). They are all gratefully acknowledged. (From Acknowledgements of this report)

WNA:

SMR report:

WNA published “[Design Maturity and Regulatory Expectations for Small Modular Reactors](#)” on June 2021.

There is significant interest in the role small modular reactors (SMRs) can play in the clean energy systems of the future. SMRs cover a wide range of technologies but have in common their potential to decarbonize electrical grids and other applications, such as district heating, process heat for industry, hydrogen and synthetic fuels production, as well as providing electricity to remote or off-grid areas.

To help support the process of bringing SMRs to market, Design Maturity and Regulatory Expectations for SMRs describes the **relationship between licensing processes in a variety of countries and design phases of a reactor**. The report highlights key safety case development considerations, technology challenges, and licensing activities.

The report emphasizes the importance of early engagement between SMR vendors

and national regulators to clarify the degree of design maturity required to undergo the pre-licensing and licensing processes. In addition, the report recommends national regulators to collaborate through bilateral and multinational agreements on design and safety reviews, to share technical reviews, establish common positions on safety criteria, and make appropriate use of existing reference SMR design reviews to streamline SMR licensing processes.

This report has been jointly produced by the **Small Modular Reactors Task Force and the Licensing and Permitting Task Force** of World Nuclear Association's Cooperation in Reactor Design Evaluation and Licensing (**CORDEL**) Working Group.

Advanced Material & Manufacturing Engineering Field:

GIF (AMME-TF):

Based on the conclusions of [GIF Workshop on Advanced Manufacturing](#) held at the Nuclear Energy Agency in Paris in conjunction with the GIF workshop on R&D Infrastructures needs and opportunities on 18-20 February 2020, [AMME-TF](#) has developed their terms of reference (ToR) which have three main target areas; "Qualification", "Demonstration and deployment", and "Design and modelling".

Presently they launched [GIF - AMME TF Survey 2021](#) to define targets and also to make AMME community. They already started to prepare Workshop in 2021.

GIF AMME-TF members have offered information of AMME activities in their countries including qualification status as TF's common knowledge (including NUCOBAM Project: qualification of Nuclear Components Based in Additive Manufacturing, US related activities explained by Dr. Isabella J. van Rooyen).

Related activity in IAEA:

At **Virtual 15th GIF-IAEA Interface Meeting**, IAEA will introduce activity of "Codes and Standards, Design Engineering, Testing and Manufacturing of Components of Small Modular Reactors". It becomes good start point to find similar activity with same goal.

Related activity in OECD/NEA:

OECD CNRA has Working Group on Codes and Standards (WGCS), WGCS has four targets, 1) Ageing Management of Nuclear Pressure Equipment, 2) In-service Inspection, 3) Safety Classification of Pressure Boundary Components in Nuclear Power Plants (Deterministic and Risk Informed Approaches, a Regulatory Perspective), and 4) Common Expectations for Qualification of Existing and New Material Manufacturing Techniques within Codes and Standards.

Expected output of target 4 is

- The end-product from WGCS would be a Consensus Position (CP) establishing a technical consensus and defining the common expectations from the group as to the technical qualification of material manufacturing techniques used for pressure boundary.
- The CP could contain some examples of technical processes with their critical criteria and the controls on parameters associated with these critical criteria (e.g. manufacturing of large forgings).]

Therefore this WG activity is not focused on GIF-like AMME activity due to solve present ongoing problems in existing reactors.

SDO Convergence Board and WNA CORDEL are observers of this WG.

Related activity in WNA:

WNA CODEL is looking to produce **a position paper on advance manufacturing in the nuclear industry**. Their focus is mostly the LWR technology and SMRs but there are several commonalities for Gen IV reactors. **WNA would like to increase the data to address advance manufacturing right across all technologies in the nuclear sector.**

The chair of CODEL Mechanical Codes and Standards Task Force and the Vice Chair of CODEL Steering Committee is Mr. Nawal K Prinja who is GIF SIAP vice chair. This may one of exact good common collaboration goals for Gen III and Gen IV.