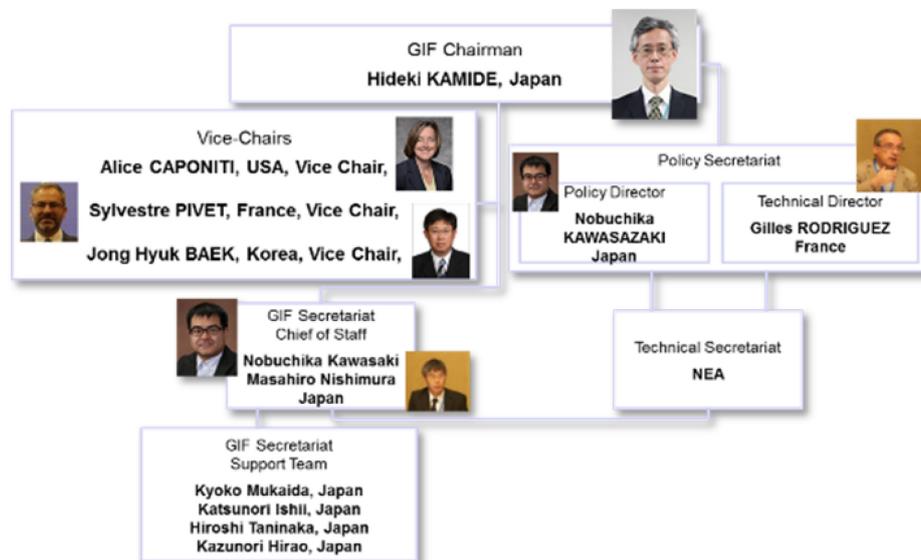


## Chapter 2. Highlights from the year

### General overview

In 2019, Generation IV International Forum has completely renewed its Board with new key members in all the governance position. This **new governance** was completed and accepted in May 2019 during the 47<sup>th</sup> Policy Group meeting in Vancouver (Canada).

Figure 4. GIF Leadership (2019)



For the first time in the GIF Organization, each Vice Chair was assigned a three-year mission to assist the GIF Chairman to better understand the drivers, opportunities, and constraints related to three key cross-cutting topics related to all Gen-IV systems:

- regulatory issues (assigned to Alice Caponiti, United States);
- market opportunities and challenges (assigned to Sylvestre Pivet, France);
- enhancement of R&D collaborations (assigned to Jong Hyuk Baek, Korea).

On the **regulatory issues**, the mission for the Vice Chair is to co-ordinate the GIF's efforts with various regulatory bodies to achieve harmonized regulatory requirements. Routine dialogue between the international research and development community, and regulatory community is mutually beneficial to facilitate a collaborative approach to:

- identify and resolve key regulatory issues;
- identify and address safety research needs;
- further harmonize design, safety and regulatory requirements.

The work will therefore include continuing to promote the external view of Safety Design Criteria and Guidelines (SDC/SDG) reports for sodium fast reactors (and by extension to other Gen-IV systems), and working towards IAEA Safety Standards. The role is also to lead GIF

engagement with the OECD/NEA WGSAR (Working Group on the Safety of Advanced Reactors) and with the related IAEA Sections.

On **Market Opportunities and Challenges**, one important topic identified is dealing with decarbonized hybrid energy systems. It is anticipated that in future low-carbon energy systems, variable renewable energy systems will have an increasing share of the overall energy mix, and will need to be complemented by energy storage and dispatchable energy technologies. Gen-IV energy systems in that sense could play an important role both as a low-carbon source of electricity and as a source of low-carbon heat for industrial or other applications in the decarbonized hybrid energy systems. In this context, the proposed Vice Chair mission is to engage with external GIF stakeholders (private sector, policy makers, investors) and various GIF bodies (Systems Steering Committees, Economic Modelling Working Group, Senior Industrial Advisory Panel) on how Gen-IV systems could address future energy market needs and challenges, and support the development of innovative reactor concepts. The role of the Vice Chair is also to co-ordinate GIF-related activities with other multilateral initiatives promoted by international organizations (IAEA/INPRO, NEA/IFNEC, NEA/NI2050). This mission could contribute to further investigate and assess through position papers, the cost and value of Gen-IV nuclear systems, the role of the private sectors for the deployment of Gen-IV systems, and to adjust the policy to develop Gen-IV systems.

The scope of the Vice Chair mission on **Enhancement of R&D Collaboration** is to assist the GIF Chairman with the help of the GIF R&D Infrastructure Task Force and all the GIF system bodies in:

- better understanding the drivers, opportunities and constraints related to the use of large-scale facilities for qualification purposes;
- examining the various means to share such resources and also R&D results in order to optimize joint research and shared results;
- investigating other R&D topics (cross-cutting issues) that are relevant to the research challenges or technical gaps, to further boost the development of Gen-IV systems positioned in the future energy mix.

The Vice Chairs reports the progress of their mission during the Expert Group/Policy Group meetings.

During 2019, GIF participated to The Clean Energy Ministerial (CEM10) and Mission Innovation (MI-4) in Vancouver (Canada) with a Showcase Poster booth in the Clean Energy sector, and the participation to a GIF joint Expert Panel on “Breakthroughs – Insights on Nuclear Energy Innovation”. The Vancouver meeting was also the opportunity to hold a Round Table discussion between all **GIF Policy Group members and the SMR vendors** attending this event (more than 15 companies gathering all the six Gen-IV concepts).

GIF also presented a position talk in the IAEA International Conference on Climate Change and the Role of Nuclear Power (October 2019, Vienna). It was the opportunity to highlight the growing interest from the private sectors for advanced reactors – essentially on Small or Micro Modular Reactor – which is changing the vision of future Gen-IV deployment. Consequently, the Gen-IV systems have now to reply and adjust their solutions to some increased flexibility requirements. Advanced nuclear energy systems can provide solutions underpinning economic growth, offering additional features in terms of performance and sustainability compared to existing concepts. The GIF calls on policymakers to acknowledge the real contribution that nuclear energy is making today to the mitigation of carbon emissions from the power sector, and to consider supporting the deployment of advanced nuclear reactors and related innovative applications.

At ICAPP 2019 Conference (Juan les Pins, France), GIF signed with other 42 members the **“Declaration from Nuclear Societies”**<sup>1</sup> to reassess, and *“that Nuclear Energy can make its full expected contribution, as part of the clean energy portfolio, towards decarbonization goals”*.

1. [www.sfen.org/sites/default/files/public/atoms/files/declaration-icapp-2019\\_002.pdf](http://www.sfen.org/sites/default/files/public/atoms/files/declaration-icapp-2019_002.pdf).

Turkey presented its bid to join the GIF at the 46<sup>th</sup> PG meeting (October 2018). GIF Policy Group agreed to review this bid through technical discussions (phone conferences) between GIF and Turkish experts on areas of common interest: mainly on MSR chemistry, materials and design, and Innovative Power conversion. A GIF delegation of experts realized Technical visits to Turkish National Scientific and Nuclear Organisms (TUBITAK, TAEK and Istanbul University) in August 2019, and reported to the Policy Group (48<sup>th</sup> in Weihai, China) their technical audit and conditions to pursue the Turkey bid process. This process will continue in 2020.

### Highlights from the Experts Group and the Cross-cutting Working Groups and Task Force

The Experts Group advises the Policy Group on priorities and methodology thanks to the work carried out in specific Task Force and Working Groups. The progress report of all these cross-cutting actions are Chapters 5, 6 and 7. However, it worth mentioning some main achievements carried out in 2018 and 2019 such as:

- the 4<sup>th</sup> GIF Symposium held in Paris, France on 16-18 October with about 300 participants, plenary sessions and 8 technical sessions. Proceeding will be published in 2020 and accessible on the GIF website;
- the completion of the SFR SDC/SDG Document;
- the pre-production of a Gen-IV Position paper on Flexibility of GEN-IV Systems produced by the EMWG (final diffusion in 2020);
- the preparation of a joint Workshop with Nuclear Industry on Advanced Manufacturing and R&D Infrastructures needs and opportunities, as a completion of the actions carried out respectively in the Advanced Manufacturing and Materials Engineering (AMME) and the R&D Infrastructure (RDTF) Tasks Force (18-20 Feb. 2020 at OECD/NEA);
- the great success of the GIF Webinar series reaching a total of 36 webinars in 2019. The 2020 program is almost fully planned (one per month).



2018 GIF Symposium Program Cover

For 2020, according to the Program Plan proposed by the New Technical Director, GIF will pursue its efforts towards the following items:

- GIF initiative towards private sector.
- Flexibility of Generation IV systems + position paper on application of heat valorization.
- GIF initiatives towards technical innovations and advanced material and manufacturing.
- Position papers on safety standards for the licensing of advanced reactors.
- Promote education & training trying to enlarge this effort towards knowledge capitalization.

In 2020, for its 20<sup>th</sup> anniversary, GIF intends to be represented at several key events such as the **World Nuclear Exhibition** (Paris, 8-10 December).



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