# Generation IV International Forum (GIF)

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# Introduction to GIF

## Accelerating the Readiness of Gen IV Systems to Meet Net Zero Goals

- **Strengthening Gen IV system features to address climate change**
  - Ø Enabling Flexible operations applications beyond electricity generation
- **Supporting transition from R&D to demonstration and deployment**
  - Ø Technical readiness,
  - Ø Regulatory readiness
  - Ø Optimising performance
- **Strengthening the relevance of GIF to the industry**
  - Ø Promoting Industry engagement
  - Ø Senior Industry Advisory Panel (SIAP)
- **Supporting the development of the Gen IV talent pipeline**

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# Generation IV Goals

## GIF has 8 technology goals in 4 broad areas

### SUSTAINABILITY

- Non-polluting, sustainable, long-term availability and **efficient fuel utilisation**
- **Minimise** the amount of **waste** produced and optimise their management

### ECONOMICS

- Clear **lifecycle advantage** over other energy sources
- Level of financial risk comparable to other clean energy sources

### SAFETY & RELIABILITY

- Excellence in **safety** and **reliability**
- Very **low likelihood** and degree of reactor core damage
- Elimination of the need for offsite emergency response

### PROLIFERATION RESISTANCE & PHYSICAL PROTECTION

- **Unattractive and least desirable** route for diversion or theft of weapons-usable materials and increased physical protection against acts of terrorism

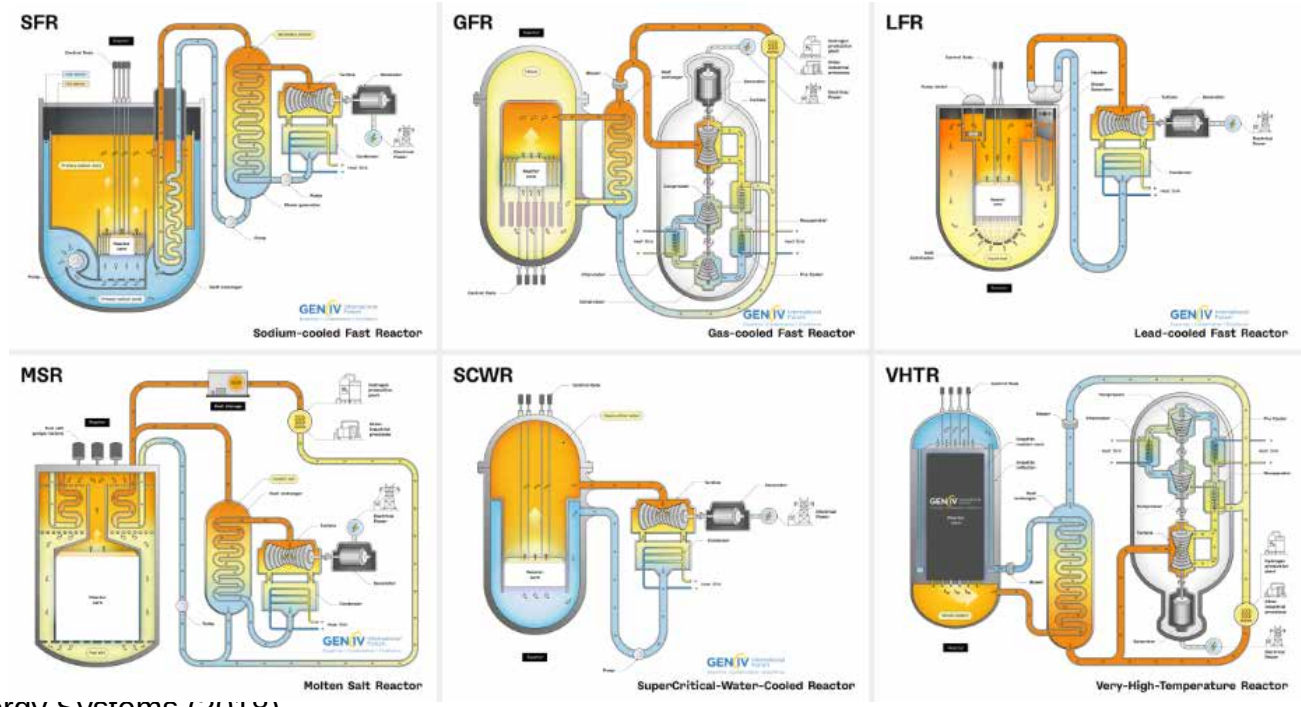
# Generation IV Systems

## Technologies identified as promising to meet Gen. IV Goals and deployable starting from 2030

GIF started its work by gathering more than **100 experts to review more than 130 reactor concepts**.

The result of this work was the **identification of the six nuclear energy systems concepts seen as the most promising to meet Gen IV goals** and be deployable starting from the 2030s:

- Lead cooled Fast Reactor (**LFR**),
- Molten Salt Reactor (**MSR**),
- Sodium cooled Fast Reactor (**SFR**),
- Super-Critical Water Reactor (**SCWR**),
- Very High Temperature Reactor (**VHTR**), and
- Gas cooled Fast Reactor (**GFR**) systems.




Two **GIF publications** resulting from early technology review and analysis efforts:

- Generation IV **Technology Roadmap** (2002, updated in 2014)
- GIF **Research and Development Outlook** for Gen. IV Nuclear Energy Systems (2018)

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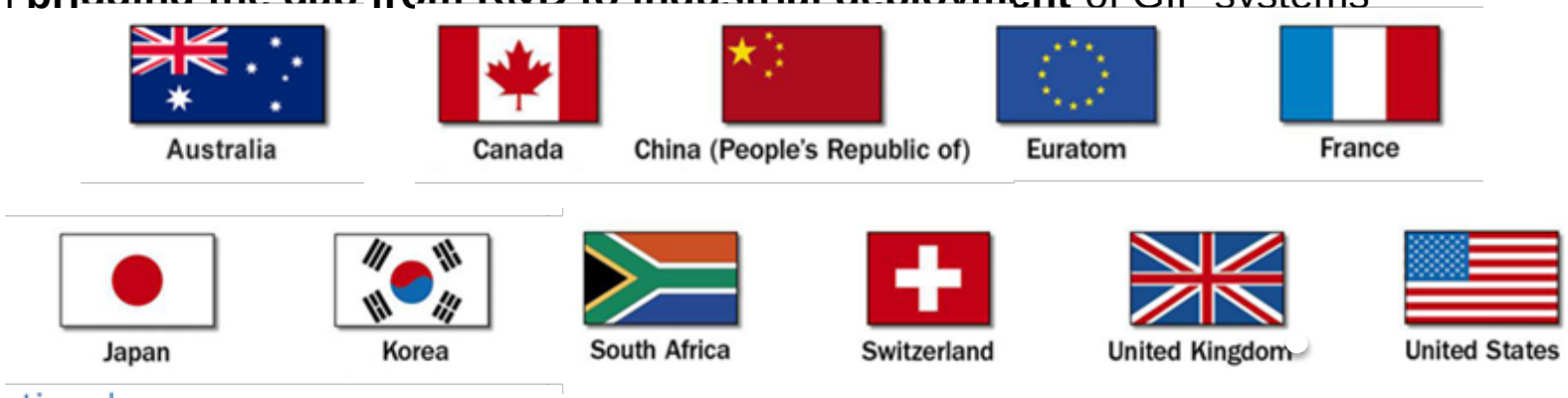
# The Generation IV International Forum

GIF, launched in 2001, as a **framework for international co-operation** in research and development **for the next generation of nuclear energy systems**.

GIF members:

- **Defined criteria and goals** for next generation of nuclear energy systems
- **Identified**, amongst several hundreds of reactor concepts, the **six nuclear energy systems** that had the strongest potential to fulfil the GIF criteria
- Have been **collaboratively advancing R&D** on the six GIF systems
- Now focus on **bridging the gap from R&D to industrial deployment** of GIF systems

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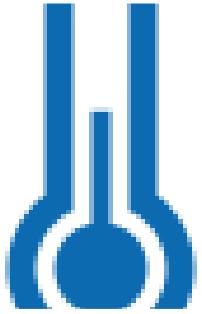
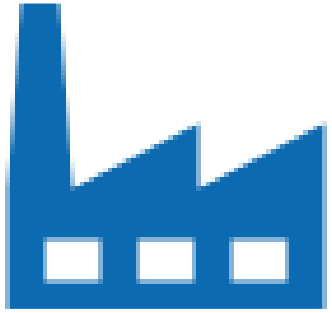
# Cross-cutting working groups

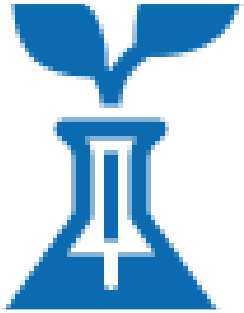
Risk & Safety (RSWG)



Non-Electric and Cogeneration Applications of Nuclear Energy (NECA-WG)



Advanced Manufacturing & Materials Engineering (AMMEWG)



Education and Training (ETWG)

Proliferation Resistance and Physical Protection (PRPPWG)

Economics & Modelling (EMWG)

# Countries Involvement in GIF's Systems

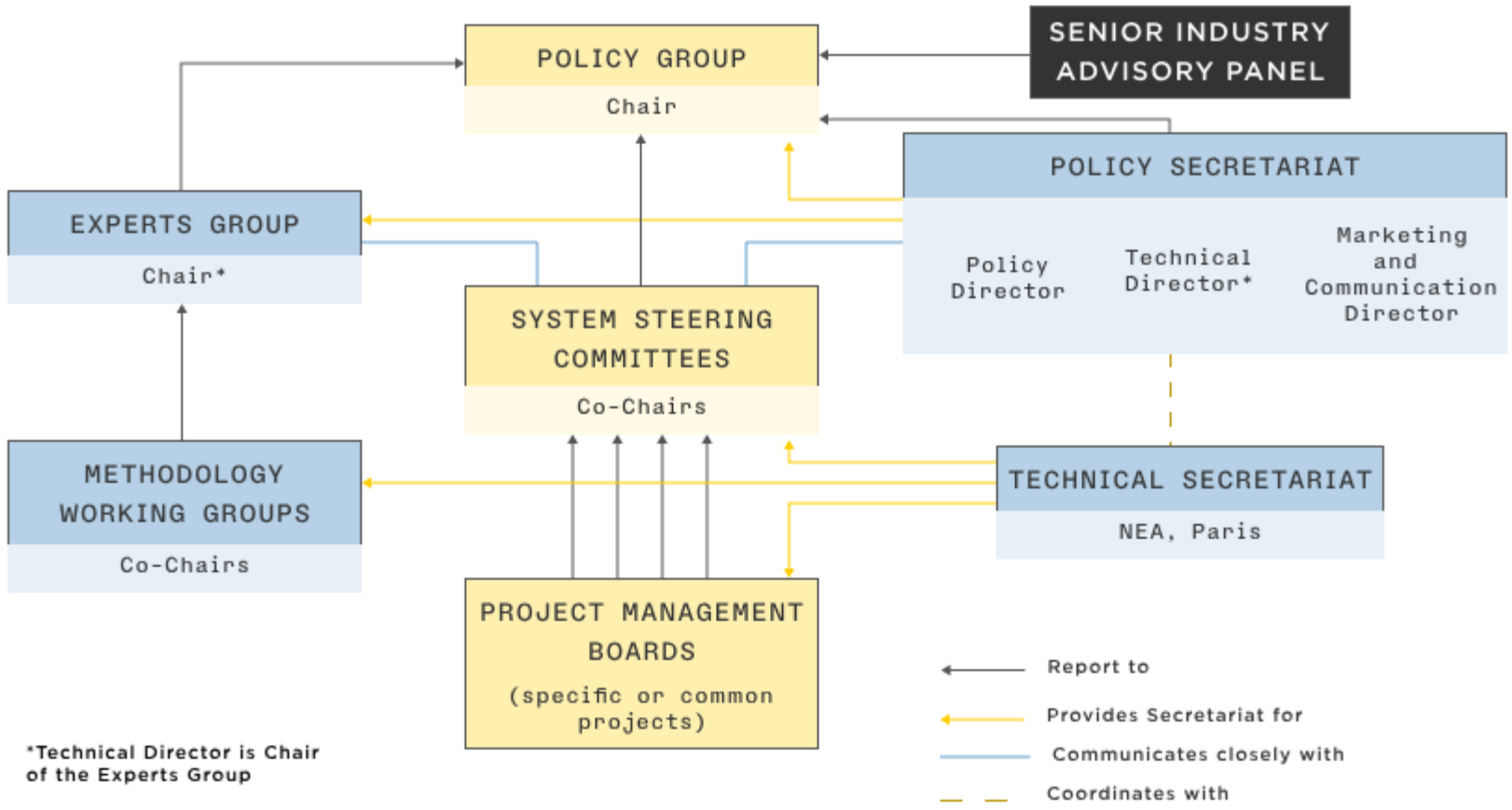
**System Steering Committees**

- Sodium-cooled Fast Reactor (SFR) — Member countries
- Very High Temperature Reactor (VHTR) — Member countries
- Supercritical-water-cooled Reactor (SCWR) — Member countries
- Gas-cooled Fast Reactor (GFR) — Member countries

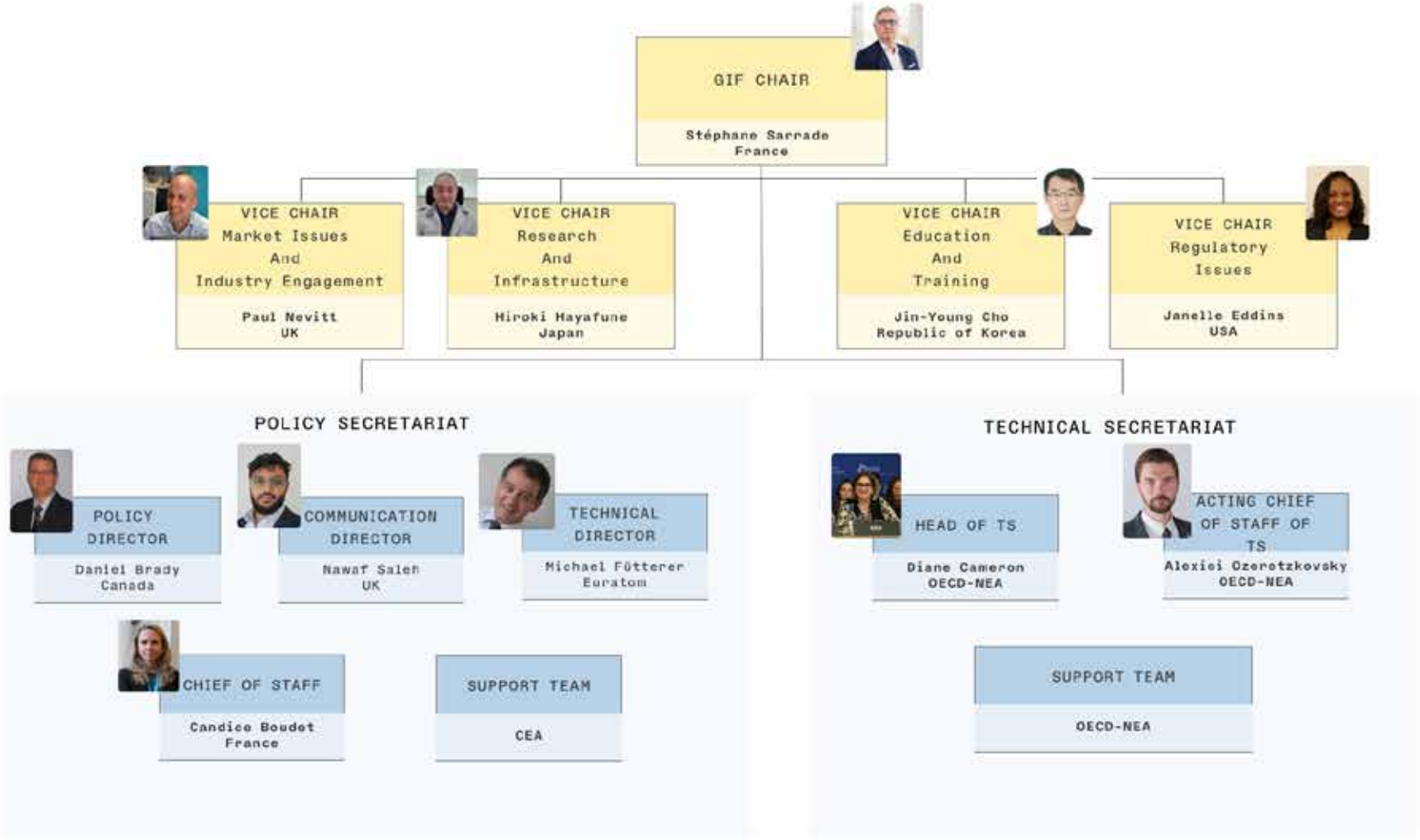
**Provisional System Steering Committees**

- Lead-cooled Fast Reactor (LFR) — Member countries
- Molten Salt Reactor (MSR) — Member countries — Observers:

# GIF Governance



# GIF Leadership Team (2025-2027)

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# Objectives and strategic orientation for the 3 years to come

**The aim is to remain at the forefront of technological innovation and to pursue international collaborations in order to stimulate and accelerate the deployment of Generation IV systems.**

## Ø Capitalising on and improving the expertise acquired

- Entry into force of the **2025 GIF FA (10 y)** on March 1, 2025, ensuring continuity of project
- Organisation of the **GIF Industry Forum** during the French presidency, building on the successful 2022 event.

## Ø Expanding to new players, new applications and new markets beyond power generation.

- **Strengthening collaboration**
  - With start-ups
  - With European partners such as the European Alliance for SMRs, SNETP, and International organisations IAEA, OECD/NEA, IEA
- Take better account of the **fuel cycle parameters** in the various systems
- Establish a comprehensive **communication strategy** to raise GIF profile and attract new talent

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# Increasing GIF's Engagement with Industry: GIF regional Industry Round table

## Objectives of the GIF Industry Round Table:

- Understand Chinese **industry perspectives on the opportunities and challenges** of participating in Generation IV system development.
- Explore mechanisms to **de-risk investment and strengthen collaboration** between government, laboratories, industry, and finance.
- Identify practical steps the GIF Policy Group can take to **enable stronger industry engagement globally**.

## Expected outcomes of the GIF Industry Round Table :

- Clear articulation of **industry needs and expectations** from GIF.
- Identification of **enablers for finance and industry participation** in Generation IV development.
- Agreement on **2–3 concrete actions** for the Policy Group to progress.

**GIF IRT 2025, Republic of Korea, October 2025**

**GIF IRT 2026, China, April 2026**

# GIF's main challenges

## 🧠 Knowledge Management

- Ø That's the bottom line: **turning knowledge into strategic value**

Over the past 20 years, the organisation has built a strong knowledge that must now be capitalised and transformed into lasting value.

- Ø ***Challenge***: It requires staffing and budget

## 🏭 Appeal to Industry

- Ø To ensure lasting relevance, **GIF must connect with industry needs**, and industry must in turn acknowledge and leverage what GIF can bring to the table.
- Ø ***Challenge***: It requires clear rules, IP acceptable for both GIF & Industry

## 🤝 Diplomatic considerations

- Ø GIF is based on a **Framework Agreement** for international collaboration, signed by Governments
- Ø ***Challenge***: GIF's work from the governance level to the project level is subject to diplomatic dynamics

## 💰 Limited budget

- Ø GIF's budget lean on **Voluntary Contribution**, yearly established and approved
- Ø ***Challenge***: GIF needs to elaborate a 2 to 3 years budget plan. Must find financial ways to support GIF activities (communication, inver

# Thank you for your attention

Follow GIF's activities

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