

Addressing systemic risks in a changing climate: Science and technology in support of cross-sectoral decision-making

Three recent major challenges:

- Climate disasters
- COVID-19 pandemic
- Russian invasion of Ukraine

→ threaten human lives and prosperity beyond national boundaries.



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Climate challenge:

The IPCC AR6 concluded:

- $< 2^{\circ}\text{C}$: Economic benefits exceed climate mitigation costs.
- $< 1.5^{\circ}\text{C}$: Impacts and risks would be kept significantly lower.
- Net zero should be fully committed by or around mid-century.

“Children today and the following generations would experience very severe climate impacts if prompt action is not taken now.”

Possible consequences:

- mitigation or adaptation including nature-based solutions.
- changes in behavior and values including dietary habits.
- additional carbon dioxide removal activities.



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COVID-19 Pandemic:

The reduction in greenhouse gas emissions by the COVID-19:
Not significant enough for its impact on climate to be detected above natural variability.

The pandemic increased society's vulnerability to climate change:

- Limiting access to medical services.
- Worsening the damage induced by hydro-met extreme events.
- Slowing the progress of economic development.
- Hindering the advancement of social equity.

especially in low-income countries.



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Russian invasion of Ukraine:

- Exacerbating existing climate change and health challenges.
- Diverting major resources away from these challenges.
- Making a profound impact on global food security, *especially in low-income countries*.
- Causing a major energy crisis.



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The way forward : sustainable, resilient and inclusive

*only through discussion and effective problem-solving,
employing a cross-sectoral decision-making process
based on scientific evidence
across national, regional, and cultural boundaries.*

- ✓ IPBES-IPCC Workshop in 2020
 - ✓ New post-2020 Global Biodiversity Framework
- Accelerate cross-sectoral consilience.
 - Link cutting-edge science and technology with individual action.
 - Shape human resources necessary to lead these efforts.



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G7 Leaders' commitments:

- reduce global greenhouse gas emissions by 43 per cent by 2030,
- accelerate the clean energy transition no later than 2050,
- enhance resilience and adaptive capacity to climate change

Actions to be taken by the G7 countries:

1. Increase support for improvement of models.
2. Accelerate quantitative assessments across disciplines.
3. Establish cross-sectoral frameworks.
4. Support the integration of data assessed in various reports.
5. Foster the integration of "facilitators".
6. Enhance international technical cooperation and financial support.



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Recommendation 1

Increase support for improvement of models to project impact of anthropogenic climate change on economies, which will also create a better understanding of the effect of potential policies on national and global economic development. Integrated quantitative assessments are needed to define the technological, social and economic steps required to achieve commitments to reduced emissions by 2030 and net-zero by 2050. This should involve national road maps to net zero, informed by research and analysis, and should act as exemplars for other nations outside the G7.



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Recommendation 2

Accelerate quantitative assessments across disciplines using observation, model development, analysis, and evaluation by integrating the knowledge of climate, water cycle, biological processes, agriculture, energy consumption, and anthropogenic and natural greenhouse gas emissions in the natural and social sciences and humanities.



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Recommendation 3

Establish cross-sectoral frameworks at local, national, regional, and global levels to link cutting-edge science with on-site decision-making and action. International cooperation in IT infrastructures, such as exascale computing for the next generation models of climate and its impacts, and data integration functions, should be developed to support these frameworks and address challenges in climate change mitigation and adaptation and disaster risk reduction.



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Recommendation 4

Support the integration of data assessed in various reports by promoting globally coordinated activities to increase data accessibility in cooperation with the Group on Earth Observations (GEO) and other relevant organizations. Relevant key reports include, for example, national reports on global indicators of the SDGs and the Sendai Framework for Disaster Risk Reduction, IPCC and IPBES assessment reports and their data repositories, NDC performance reports, the Glasgow Leaders' Declaration on Forest and Land Use at UNFCCC COP26, and the Global Biodiversity Framework at UN CBD COP15.



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Recommendation 5

Foster the integration of "facilitators" to work as catalysts capable of providing expert advice based on a broad range of scientific and indigenous knowledge about climate change in the local context⁵). These facilitators can be members of the science community, the education community, the private sector, or local government, with experience and skills in communication. Facilitators can bridge the gaps between scientific society and local stakeholders, support education and training, and inform ways leading to practical solutions.



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Recommendation 6

Enhance international technical cooperation and financial support, including repurposing funds and financial frameworks, especially for the most vulnerable countries with a large resource deficit, in order to pursue shared objectives and take concerted actions. This includes a more significant role for the public and private sectors and more effective use of insurance schemes.



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