

Responsible AI Strategy for the Environment

Workshop Report

November 2023



GPAI

THE GLOBAL PARTNERSHIP
ON ARTIFICIAL INTELLIGENCE

This report was developed by Experts and Specialists involved in the Global Partnership on Artificial Intelligence's project on Responsible AI Solutions for the environment (RAISE). The report reflects the personal opinions of the GPAI Experts and External Experts involved and does not necessarily reflect the views of the Experts' organisations, GPAI, or GPAI Members. GPAI is a separate entity from the OECD and accordingly, the opinions expressed and arguments employed therein do not reflect the views of the OECD or its Members.

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Executive Summary

The Global Partnership on AI (GPAI) has put climate action and biodiversity preservation at the top of their agenda. As a general-purpose technology, artificial intelligence (AI) can be harnessed responsibly to accelerate positive environmental action. Since 2020, the ‘Responsible AI Strategy for the Enforcement’ (RAISE) project, under the leadership of Responsible AI Expert Working Group, have been conducting important foundational work to understand both the opportunities and challenges of AI in relation to climate action¹ and biodiversity preservation². Project RAISE has also taken steps to act on the recommendations of these foundational reports, including publication of AI readiness guidance booklets for net-zero³, collaboration with the OECD to assess environmental impacts of AI compute and applications⁴, and exploring the concept of a net-zero data space in collaboration with the UK⁵.

With the explosive popularization of generative AI methods in 2023, Project RAISE has also undertaken work to address the G7’s Hiroshima AI process⁶, to facilitate discussions on generative AI, with the aim of leading to delivery of practical projects.

To further these mandates, on August 4th, 2023, Project RAISE held a virtual workshop, bringing together experts at the intersection of AI and the environment to co-design future approaches to international collaboration and practical action. The workshop structure is detailed in Section 1.

The workshop had **three main objectives**, which were to:

1. Expand Project RAISE’s network of specialists and collaborators, growing its community;
2. Inform the community about Project RAISE’s and other initiatives’ work at the intersection of AI and the environment; and
3. Engage in enriching and interactive dialogue to advance the GPAI and Project RAISE missions, ultimately increasing Project RAISE’s impact.

To set the stage for the workshop’s dialogue and increase awareness of ongoing work at the intersection of AI and the environment, the Project RAISE team invited speakers from various institutions to provide an overview of five priority topics in the context of the RAISE program: AI and climate change, AI and biodiversity, power and diplomacy of data, prioritization of people and planet, and AI for supporting the green transition. These presentations (summarized in Section 2) enabled participants to begin thinking about the existing opportunities and challenges of utilizing AI for the environment—how the research at this intersection is currently understood, which actions can be taken immediately, and which require further resourcing and action to be accomplished.

Through this framing, a number of interesting discussions took place. Participants were asked to provide suggestions and recommendations for Project RAISE to consider in order to facilitate international collaboration and practical actions. The key findings of these dialogues are listed below, with further explanations and details found in Section 3.

¹ [CLIMATE CHANGE AND AI: Recommendations for Government Action](#) (GPAI, 2021)

² [Biodiversity and Artificial Intelligence: Opportunities & Recommendations for Action](#) (GPAI, 2022)

³ [AI readiness guidance booklets](#) for net zero in four key sectors: energy, transport, agriculture, and foundation industries

⁴ [Measuring the environmental impacts of Artificial Intelligence compute and applications: The AI footprint](#) (OECD, 2022)

⁵ [Building a net zero data space for AI applications](#)

⁶ Hiroshima AI process: “We recognize the need to immediately take stock of the opportunities and challenges of generative AI, which is increasingly prominent across countries and sectors, and encourage international organizations such as the OECD to consider analysis on the impact of policy developments and Global Partnership on AI (GPAI) to conduct practical projects. In this respect, we task relevant ministers to establish the Hiroshima AI process, through a G7 working group, in an inclusive manner and in cooperation with the OECD and GPAI, for discussions on generative AI by the end of this year.” - [G7 Hiroshima Leaders’ Communiqué](#)



International Cooperation

Connecting Existing Efforts

- Bring together initiatives and stakeholders to facilitate knowledge sharing and transfer

Inclusion of Local Communities

- Amplify the voice of local communities, involving them in a way that respects their data sovereignty while bringing context-specific knowledge
- Incorporate non-traditional knowledge systems into applied efforts
- Communicate findings back to local communities, transforming where appropriate from global to national and/or subnational levels

Best Practices

- Find common ground
- Provide innovative knowledge sharing formats

Practical Actions

Data Sharing Innovation

- Explore open science and data protection methods (striking the right balance between these approaches) to enable data accessibility for AI innovation for the environment

Measurements and Metrics

- Establish standards for measurements and benchmarks in relation to environmental reporting and disclosures

Generative AI

- Evaluate evolving opportunities for generative AI to accelerate environmental initiatives such as dissemination of knowledge, fact-checking, or data generation (ex: text, images, materials)

Based on these recommendations, Project RAISE will undertake both short-term and longer-term approaches to continue its work. Short-term, the project will seek to pursue close collaboration with the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), design a project stream for the standardization of environmental reporting measurements. Longer term, the project will seek to further cement the GPAI's role as a facilitator and connector who enables organizations to learn from each other, increasing impact exploiting opportunities for innovative knowledge sharing mechanisms. Each of these approaches will seek to establish further collaboration both internal and external to GPAI, and will be conducted in consultation with Project RAISE's growing network of experts and specialists at the intersection of AI and the environment.

Finally, Project RAISE calls upon governments to take action in prioritizing climate and biodiversity preservation in their national policies, along with elaborating long-term strategies with other key stakeholders. These actions are imperative, as collaboration is key to facing today's global crisis.



1. Workshop Structure

Objectives

Held online on August 4, 2023, this workshop was organized under the aegis of the Project RAISE program of the GPAI's Responsible AI Expert Working Group. Contextually based on Project RAISE's accomplishments to date⁷ (since 2021), the aim of the event was to discuss an overarching perspective on the responsible use of AI and generative AI for climate action and biodiversity preservation, in order to help define a strategy for practical actions. Furthermore, the workshop aimed to help identify orientations for collaboration that could be discussed with the various attending organizations, leading to possible joint initiatives in 2024.

Participants

The virtual workshop brought together a broad range of experts representing academia, industry, governments, non-governmental/non-profit, and international/intergovernmental organizations, including organizations such as the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), the Open Data Institute (ODI), the Institute of Electrical and Electronics Engineers (IEEE), the World Wildlife Fund (WWF), the Patrick J. McGovern Foundation. The complete list of attending organizations can be found in Annex 1.

Format

The 4-hour workshop began with a presentation of the RAISE program by its co-leads. This was followed by presentations from five invited speakers, including a question and answer period for each. Participants were then split into two groups, and invited to discuss one of two topics: (1) Strategies for International Cooperation, and (2) Strategies for Practical Actions. The workshop concluded with a summary from each of the discussion groups, bringing the group back together to exchange views on possible actions and collaborations, as well as immediate next steps.

2. Expert Presentations

To set the stage for the workshop's dialogue and increase awareness of ongoing work at the intersection of AI and the environment, the Project RAISE team invited five speakers from various institutions to provide an overview of five priority topics in the context of the RAISE program:

1. Climate Change & AI: Reflecting Back and Looking Ahead - David Rolnick, McGill University;
2. Trustworthy AI for Biodiversity - Tanya Berger-Wolf, Ohio State University;
3. Power, Ecology and Diplomacy in Data Ecosystems - Calum Inverarity, Open Data Institute;
4. Prioritizing People and Planet as The Metrics for Responsible AI - J.C.Havens, IEEE SA;
and
5. AI for supporting research on climate change, biodiversity, and the green transition - Frank Dignum, University of Umeå.

These presentations enabled participants to begin thinking about the existing opportunities and challenges of utilizing AI for the environment—how the intersection is currently understood, which actions can be taken immediately, and which require further resourcing and actions in order to be first realized, then accomplished.

⁷ GPAI's ['A responsible AI strategy for the environment'](#) Project page



Climate Change & AI: Reflecting Back and Looking Ahead

Presenter: David Rolnick, McGill University

Relevant GPAI Report: [Climate Change and AI: Recommendations for Government Action](#) (2021)

The gaps in expertise, education, coordination, and infrastructure hinders the rapid transition from innovation into real-world solutions. The following key policy recommendations are suggested:

- The improvement of **data standards and data sharing** via task forces and platforms;
- The ensurement of **impact-driven funding** for AI research and innovation;
- The development of **cross-sectoral innovation centers with private and public stakeholders** to incubate projects & facilitate collaboration;
- The building of **AI capacity and literacy in climate-relevant** industries, government bodies, and civil society via upskilling and secondment programs;
- The establishment of best practices for **responsible and participatory design**;
- The consideration of **potential positive/negative** climate impact in shaping new technology development.

Trustworthy AI for Biodiversity

Presenter: Tanya Berger-Wolf, Ohio State University

Relevant GPAI Report: [Biodiversity and Artificial Intelligence: Opportunities & Recommendations for Action](#) (2022)

In response to numerous biodiversity risks, such as information leaking about protected areas and species, or greenwashing and undermining local community data rights, key recommendations are highlighted that have a focus on data, outreach, funding, tools, and capacity building:

- **Data:** governments and industry are called upon to support biodiversity data openness and availability, as well as to establish an international data taskforce on drivers of biodiversity loss.
- **Outreach:** prioritize outreach to local communities and seek the deployment of security and privacy enhancing technologies to protect data.
- **Funding:** governments and multilateral funds should increase funding for applications and for cross-cutting digital infrastructure.
- **Tools and Metrics:** establish a network of policy and practice AI labs globally, to support policy makers, practitioners, and AI experts.
- **Capacity Building:** develop AI for biodiversity training and hold regular events to amplify conservation.

Power, Ecology and Diplomacy in Data Ecosystems

Presenter: Calum Inverarity, The Open Data Institute

Relevant Article: [Power, Ecology and Diplomacy in Artificial Data Infrastructure](#) (2023)

Recognizing the wielding of power by a few groups of actors, data diplomacy and redefining international diplomatic rules are put forward as solutions to overcome the challenges ahead. The following key recommendations are stressed in order to support governments in tackling their responsibilities, especially around privacy-enhancing technologies (PETs):

- **Further highlight and investigate the ecological cost** of internet's material infrastructure impacts, in order to build efficient and sustainable advocacy work around climate change;



- Use the ways in which data, digital technologies, and technical infrastructure are underpinning the internet as a **tool for diplomacy**;
- **Conduct further research** in areas such as environmental impact of digital technologies and data infrastructures and how to be more responsible with the volume of data created, stored and processed.

Prioritizing People and Planet as The Metrics for Responsible AI

Presenter: John C. Havens, IEEE SA

Relevant Articles: [Ethically Aligned Design](#) (2019), [Strong Sustainability by Design](#) and [Prioritizing People and Planet as the Metrics for Responsible AI](#) (2023)

Taking roots on the vision of prioritizing the development of the ecosystem and emphasizing human flourishing at the outset of design, key recommendations include:

- Human Rights–AI Systems shall be created and operated to **respect, promote, and protect internationally recognized human rights**;
- Well-being–AI Systems creators shall **adopt increased human well-being** as a primary success criterion for development;
- Data Agency–AI Systems creators shall empower individuals with the **ability to access and securely share their data**, to maintain people’s capacity to have and maintain control over their identity.

AI for Supporting Research on Climate Change, Biodiversity, and the Green Transition

Presenter: Frank Dignum, University of Umeå

As part of effective policy making for the environment and biodiversity preservation, policies must be based on research and take into account potential effects on climate, communities and human reaction. Key recommendations in that direction include:

- People conducting research have to ensure that the AI technologies mobilized are focused on the goals. **The focus isn’t which data to collect, but rather for what purpose.** The problem to be solved must be at the heart of the tools deployed, and researchers should **determine how AI should contribute to the solution right from the start**;
- Decision makers could benefit from using **AI as a tool to measure the impacts of public policies**. Indeed, policy making must **counter the potential human reactions, as well as any negative side effects**.

Note: In November 2023, in the context of the projects led by Professor Dignum, various stakeholders will be invited to share their views on their needs and their capacities in the context of public policies for the environment.

3. Strategies for International Collaboration and Practical Actions

The success of Project RAISE and other AI-for-climate initiatives hinges on international collaboration, which is crucial to address the pressing issues of the global climate crisis. In 2021, the GPAI’s report on [Climate Change and AI](#) identified strengthening international collaboration as one of eight fundamental factors in unlocking the full potential of AI for climate:



Figure 1: Recommendations for building implementation, evaluation, and governance capabilities (GPAI 2021)

Practically, the GPAI’s main objective is to “bridge the gap between theory and practice on AI by supporting cutting-edge research and applied activities on AI-related priorities”⁸. This need is echoed by the G7’s Hiroshima AI Process’ call to “take stock of the opportunities and challenges of generative AI, which is increasingly prominent across countries and sectors, and encourage international organizations such as the OECD to consider analysis on the impact of policy developments and Global Partnership on AI (GPAI) to conduct practical projects”⁹. It is in this context that Project RAISE pursues practical actions for advancing trustworthy AI, including application of generative AI, for climate action and biodiversity preservation.

To achieve these objectives, the workshop’s dialogue was designed to understand Project RAISE’s next steps with regards to international collaboration and practical actions. What format could/should the next steps take? Which goals would be best for Project RAISE to pursue, or to catalyze? What tangible outcomes should the project aim to achieve?

Participants were prompted using the following discussion questions:

1. What opportunities or strategies exist for Project RAISE to develop meaningful collaborations with various institutions (ex: OECD, IEEE, IPCC, IPBES, etc.)?

⁸ [About the GPAI](#)

⁹ [G7 Hiroshima Leaders’ Communiqué](#)



2. What are some practical projects and/or priority use cases that can pave the way for concrete results at the intersection of AI and the environment? What obstacles need to be overcome to be successful?

This section summarizes the key discussion points resulting from the workshop's dialogues.

International Collaboration

Connecting Existing Efforts

Participants discussed the pervasive issue of access to, and availability of data: not having it, not knowing whether it exists, not understanding that it could be available elsewhere. Although government-backed agencies are becoming more established (for example, the Flanders Research Institute for Agriculture, Fisheries and Food, ILVO¹⁰, in Belgium), it's often smaller institutions who are working on initiatives that could be relevant to many others working at the intersection of AI and the environment.

The dissemination and diffusion of the work represents another challenge, the lack of communication between investigators. Participants noted investigators' limited reach with key stakeholders, reducing their potential impact.

The GPAI should seek to play a role in identifying such initiatives, amplifying their efforts by bringing them to the international stage, and building the bridges needed to connect them to other related initiatives around the globe. A directory format was suggested as a potential mechanism for achieving this aim, facilitating knowledge sharing and the transfer of learnings and/or best practices.

Inclusion of Local Communities

Participants discussed the importance of GPAI's multi-stakeholder approach, especially the inclusion of local communities. When investigating climate and biodiversity matters in a particular region, engaging with local communities brings forth crucial context-specific information. A specific example shared was concerning local knowledge in an area where poaching of animals occurs - individuals understand the logistics surrounding these acts, and can provide perspectives and data that are nearly inaccessible via traditional research methods.

Another point was raised around remaining open to knowledge systems other than Western-based knowledge systems, specifically the need to integrate indigenous communities (and their associated knowledge systems) into environmental efforts. These groups bring ground truth information that is based in their respective local contexts, which can help expand current collective understanding. At the same time, it is crucial to ensure that knowledge and information gleaned is also communicated back to these communities, and done in an intentional and respectful manner—often, global perspectives and approaches may not be applicable at national or subnational levels¹¹.

Considering these particular contexts, the GPAI would benefit from operationalizing the work of the Data Governance Expert Working Group on data justice¹², ensuring that AI is applied in a way that respects the data sovereignty of these stakeholders.

¹⁰ [About ILVO](#)

¹¹ IPBES currently works with two networks aimed at tackling these issues: [Open-ended Network of IPBES Stakeholders \(ONET\)](#): a space for stakeholders to organise among the community, engage with IPBES, and support the platform's work, and the [International Indigenous Forum on Biodiversity and Ecosystem Services \(IIFBES\)](#), an open-ended, self-organizing network that aims to bring together members of Indigenous Peoples and local communities who are interested in the work of IPBES.

¹² [Data Justice Policy Brief: Putting Data Justice into Practice](#) (November 2022)



Noted Best Practices for International Collaboration

Finding Common Ground: Participants also discussed the need for ample amounts of pre-work for global-scale initiatives, especially between international organizations, to find a common ground for understanding. The specific example of monitoring biodiversity was used as an example of where it would be crucial to align on specifics of any particular undertaking between groups. What specific areas are being evaluated? What specific measurements are of interest? In these collaborative environments, there can be numerous objectives and pathways forward, especially when moving beyond direct measurements of biodiversity indicators towards including factors such as benefits to the human population, or ecosystem services.

Innovative Knowledge Sharing Formats: Participants raised that it would be important for GPAI to move beyond traditional means of conducting intergovernmental and interorganizational dialogues to new forms of idea exchanges. One such format could be the exchange of research (prior to publication) between parties in order to solicit feedback and comments. Another mechanism could be to avoid a primarily diffusionist approach (or more harmfully, techno-colonialism), to a model where more space is given to people working in grassroots communities, learning and building from their experiences. The GPAI should also seek to learn from the existing open science community, to evaluate how to share resources in an interoperable way.

Practical Actions

Data Sharing Innovation

The lack of data is a root challenge. Often, the implementation of concrete solutions is hampered by public policies that are too often drawn up without sufficient data. Illustrating this issue, representatives shared that not having access to data prevented the implementation of concrete actions on the ground, forcing them to use older data sets. Participants noted the possibility of using privacy-enhancing technologies (PETs) and participatory data collection methods to help fill data gaps. A cited example was an effort within the Netherlands to increase the accessibility of data from citizen weather stations¹³, providing a means of collecting dispersed data, and applying privacy techniques to make said data clean, available, and usable for the purposes of model development or improvements.

An important question was raised to the group concerning the paradox, or tension, between data sovereignty (and giving the power for an entity to own and control its data) and letting data flow for processing purposes. It was noted that further work must be done to understand the proper balance to be struck between these approaches.

Measurements and Metrics

A significant amount of the discussion focused on the need for standardization of measurements. While there exist projects such as Science-Based Targets initiative¹⁴ that are working to establish agreement on commitments, there is further need to create parity between different types of players in the AI ecosystem to hold everyone to the same standards in terms of how to conduct measurements, the transparency of disclosures, and the general quality of reporting.

¹³ [Citizen weather station obstruction profiles](#)

¹⁴ The [Science Based Targets initiative](#) (SBTi) drives ambitious climate action in the private sector by enabling organizations to set science-based emissions reduction targets. SBT also released a [Corporate Net-Zero Standard](#) in April 2023, to provide guidance, criteria, and recommendations to support corporates in setting net-zero targets.



Participants also noted that there are many indicators that can possibly be measured; which makes the process of measuring quite complicated. Often, questions arise such as:

- How do we measure impact?
- What are we going to measure?
- How do we establish baselines?
- What things are we establishing baselines for?

When thinking about the example of assessing emissions for a machine learning model, it's important to consider more than direct emissions and consumption, as explored through the 2022 OECD report *Measuring the environmental impacts of artificial intelligence compute and applications: The AI footprint* drafted in consultation with experts involved in GPAI¹⁵. Participants agreed on the importance of organizations disclosing their consumption data, and highlighted that a disclosure format is referenced in the draft EU AI Act; when this format is agreed-upon, it would be useful for the GPAI and the OECD to collaborate and calibrate those requirements. Another option would be for GPAI to amplify the recommendation of the voluntary commitments¹⁶ put forth in the US whereby "...companies commit to develop and deploy advanced AI systems to help address society's greatest challenges." by encouraging organizations to disclose such information.

Generative AI

With the popularization of Generative AI systems in 2023, brought into the public eye through the release of ChatGPT, discussions also focused on the potential opportunities for generative AI, or foundational models, to further environmental efforts. Possible avenues noted included the following:

- Summarizing climate research information and knowledge¹⁷ for the purposes of dissemination across different audiences;
- Scaling dissemination efforts by providing a "voice" for biodiversity (or other environmental focus areas) through fact-based generative AI, providing information to millions more people than traditional communication means;
- Reviewing and synthesizing news and social media posts to fact-check¹⁸, or to understand general sentiments, in order to determine how to target future actions or campaigns;
- Proposing candidate molecules or materials as input for scientific research and laboratory testing;
- Synthetic data generation (modeled after existing data sets, or imagery); and
- Creating foundation models that engage with a deeper understanding of the laws of physics that can move from climate simulation to climate emulation; i.e. digital twins^{19 20}.

Participants further noted some important caveats relating to the opportunities of generative AI for environmental action. The first, is that often chatbot style tools don't use generative AI for information extraction, but rather to style the output for the chat. Second, that in scenarios where accuracy is crucial, experts are needed to interpret information being delivered by generative AI systems to test its reasonableness and quality. Third, there must be evaluation metrics to review

¹⁵ [Measuring the environmental impacts of artificial intelligence compute and applications](#)

¹⁶ [FACT SHEET: Biden-Harris Administration Secures Voluntary Commitments from Leading Artificial Intelligence Companies to Manage the Risks Posed by AI](#)

¹⁷ [ChatClimate](#); grounded on the latest IPCC Report, or [ClimateQ&A](#), a conversational assistant that sifts through IPCC and IPBES reports.

¹⁸ Examples of current approaches to climate fact-checking include [Climate Feedback](#): a worldwide network of scientists sorting fact from fiction in climate change media coverage, with the goal of helping readers know which news to trust, and [Climate Fever](#): A Dataset for Verification of Real-World Climate Claims.

¹⁹ The Decoder: [Earth Virtualization Engines are the future of climate research](#)

²⁰ [Destination Earth](#), a European Commission flagship initiative for a sustainable future



what's been generated by these systems to ensure it has produced “good data” — correctly distributed, unbiased, doesn't overemphasize certain aspects, is physically plausible, etc.

Additional Possibilities

Due to the limited time of the workshop, not all ideas raised could be fully explored. A number of possibilities were briefly highlighted as avenues that GPAI, both within and more broadly than Project RAISE, could consider:

- GPAI should act as a multilateral science policy platform, promoting and building upon open science and towards collective benefit
- GPAI should create a space for grassroots communities to educate and share their experiences, such as through webinar series
- GPAI should assess how to facilitate the transformation of processes between different contexts, findings connections between emerging solutions and seemingly disparate existing challenges
- GPAI should be the global point of reference for education in AI, for the domains in which it operates - offering educational programs, resource repositories, unearthing use cases, informing on how to use emerging AI technologies to address today's challenges
- GPAI should broker connections between other international institutions and facilitate the engagements of experts, combining networks between organizations to share calls for proposals or participation, stakeholder engagements or stakeholder matching

4. Looking Forward

Based on the discussions of the workshop, there are numerous opportunities for Project RAISE to continue in its mission. Initial next steps will surround **further collaboration with IPBES**, moving forward with concrete actions such as presenting RAISE's work to the IPBES' Multidisciplinary Expert Panel, the creation of a transversal work plan with GPAI across IPBES including their Task Force on Knowledge & Data, Capacity Building, and Indigenous and Local Knowledge, organizing initial meetings to create a common language and guide the creation of a common agenda, and begin a live document on shared agreements and goals leading to an efficient workflow and roadmap.

It is clear that a major concern at the intersection of AI and the environment is that organizations cannot be held accountable for their environmental impact without proper metrics. Project RAISE will thus seek to **develop a project stream on the topic of standards for measurement**, and implement as part of the GPAI's 2024 Work Plan. Building on the 2022 work in collaboration with the OECD, there is a strong need to further define the measurement standards used to assess environmental impact, that go beyond energy use and carbon emissions.

On a longer-term horizon, Project RAISE will seek to **further cement GPAI's role as a facilitator and connector for organizations to learn from each other**. To help tackle the roadblockers previously discussed, Project RAISE aims to put in place strategies to connect various programs, with particular challenges, to learn from different nations and contexts. Within the GPAI, Project RAISE hopes to link expertise and break the lack of communication between national and international experts. Project RAISE believes that reinforcing those bridges will lead to a better understanding of the communities' needs and opportunities.

Also on a longer-term horizon, in response to data availability and access issues, Project RAISE will seek to **exploit opportunities for innovative knowledge sharing mechanisms**. This should be



done in collaboration with the other three GPAI Expert Working Groups, Data Governance, Innovation and Commercialisation, and the Future of Work.

Finally, Project RAISE will continue to call upon governments to take action in **prioritizing climate and biodiversity preservation in their national policies**, along with elaborating **long-term strategies**. RAISE also encourages governments to **collaborate with experts** by connecting them with decision makers and by **facilitating access to data**. GPAI offers various programs and spaces of discussion to support practical AI initiatives for the environment, and governments are thus encouraged to **take part in these opportunities**. Finally, governments are invited to **join forces with other key stakeholders** within the GPAI towards the common goal of responding to the climate and biodiversity crisis.



Appendix 1: Participating Organizations

<ol style="list-style-type: none">1. ABEJA Inc.2. AppliedAI Initiative3. Booz Allen Hamilton4. Comisión Nacional Forestal de Mexico (CONAFOR)5. Climate Change AI (CCAI)6. Duke University7. Government of Jalisco (Mexico)8. Global Partnership on Artificial Intelligence (GPAI)9. Intergovernmental Panel on Climate Change (IPCC)10. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)11. International Business Machines Corporation (IBM)12. International Center of Expertise in Montreal on Artificial Intelligence (CEIMIA)13. Institute for Clinical Evaluative Sciences (ICES Consulting)14. Institute of Electrical and Electronics Engineers (IEEE)15. Instituto Federal de Educação, Ciência e Tecnologia de Minas Gerais (IFMG)16. KPMG International17. Massachusetts Institute of Technology (MIT)	<ol style="list-style-type: none">18. McGill University19. Mila - Quebec Artificial Intelligence Institute20. National Forest Commission of Mexico21. National Institute for Research in Digital Science and Technology (INRIA)22. Natural Resources Canada23. Ohio State University24. Open Data Institute25. Patrick J. McGovern Foundation26. Poland Ministry of Digital Affairs27. Research ICT Africa28. Royal Roads University29. Secretaría de Medio Ambiente y Desarrollo Territorial30. Senckenberg Society for Nature Research31. Sorbonne University32. The Future Society (TFS)33. Umea University34. Universidad Iberoamericana35. University of Pittsburgh36. U.S. Department of Agriculture Forest Service (USFS)37. World Wide Fund for Nature (WWF)
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Appendix 2: Workshop Resources

Please find below a list of the resources that were shared with and by participants during the workshop:

GPAI Reports

- [1] [Climate Change and AI: Recommendations for Government Action](#), November 2021
- [2] [Biodiversity & Artificial Intelligence. Opportunities and Recommendations](#), November 2022
- [3] [Measuring the environmental impacts of artificial intelligence compute and applications](#), November 2022 (Published via OECD)
- [4] [Data Justice Policy Brief: Putting data justice into practice](#), November 2022
- [5] [Trustworthy Data Institutions Framework](#), November 2023

External Resources

- [6] [Why We Need an Intergovernmental Panel for Artificial Intelligence](#)
- [7] [IPBES Data and Knowledge Management Policy](#) [Based not only on FAIR principles, but also on CARE principles. Also follows the Principles for the Ethical Use of Artificial Intelligence for UN Systems]
- [8] [Jalisco's multiclass land cover analysis and classification using a novel lightweight convnet with real-world multispectral and relief data](#)
- [9] [Agave Crop Segmentation and Maturity Classification with Deep Learning Data-Centric Strategies Using Very High-Resolution Satellite Imagery](#)
- [10] [Citizen weather station obstruction profiles](#)
- [11] [ChatClimate](#) – grounded on the latest IPCC Report
- [12] [ClimateQ&A](#)
- [13] Open-ended Network of IPBES Stakeholders, [ONET](#)
- [14] [Wildlabs.net](#), a good place of collaboration for conservation NGO that has a bit of focus on AI
- [15] Indigenous International Forum on Biodiversity and Ecosystem Services, [IIFBES](#)
- [16] [Estimating the Carbon Footprint of BLOOM, a 176B Parameter Language Model](#)
- [17] [Do Foundation Model Providers Comply with the Draft EU AI Act?](#)
- [18] [Discovering Novel Biological Traits From Images Using Phylogeny-Guided Neural Networks](#)
- [19] [Ecological insights from three decades of animal movement tracking across a changing Arctic](#)
- [20] [Why computer-made data is being used to train AI models](#)
- [21] Presentation at AI2S2 2023: [GPAI Project RAISE: a Responsible AI Strategy for the Environment](#)
- [22] Presentation at AI2S2 2023: [Generative AI, a game-changer for climate action?](#)