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Interim report IAI-Regional Assessment

Summary: This report to the Parties for CoP-30 presents the conceptual and theoretical background to the design of the Regional Assessment, and the methodological approach to its implementation. In the Americas, the IAI act as a major boundary spanner since it pursues the production and exchange of scientific information relevant to global environmental change. The Regional Assessment (IAI-RA) is one of its key boundary spanning activities, as it entails a mechanism enabling iterativity between science funders and decision-makers to pursue the creation of usable knowledge. The design and implementation of the IAI-RA follows an iterative and flexible methodological approach consisting of seven main stages, of which the first three stages have been completed. The results of the IAI-RA will guide science funding priorities and capacity building activities implemented by the IAI oriented to support the production of science that Parties will need to make more informed decisions related to GEC. In addition to guiding science funding priorities, these results will be used by the IAI to identify and/or facilitate collaboration among Parties with similar needs and priorities.

1. Introduction

Successfully navigating contemporary environmental challenges requires the integration of new and evolving scientific knowledge into decision-making processes (Cvitanovic & Hobday, 2018). However, policy decisions with consequences for the environment are still often not based on scientific evidence, and research about the environment is often not based on policy-relevant questions (Parsons et al., 2015). How to increase the production of scientific knowledge that could be readily usable by policy and decision-makers attempting to formulate effective strategies for preventing, mitigating and adapting to global environmental change? This question lies at the heart of science policy, and guides the mission of organizations working at the science-policy interface.

The Inter-American Institute for Global Change Research (IAI) is an inter-governmental organization that pursues the production and exchange of scientific information relevant to global environmental change (GEC) to reach the vision of a sustainable Americas. The 2019-2044 IAI Strategic Plan mandates assessing "*the domestic and international global change policy and decision making landscape of member countries…to support the IAI in funding research that is policy-relevant*" (Theme I, Goal 2). By April 2022, this Regional Assessment (IAI-RA) has been designed and is being implemented.

This report to the Parties for CoP-30 presents the IAI-RA process, and is organized as follows. Section 2 reviews the conceptual and theoretical background for strategies (e.g. IAI-RA) aimed at promoting policy-relevant research agendas. Section 3 describes the design and progress in the implementation of the IAI-RA. Section 4 describes its expected outcomes, and discusses the strengths and limitations of this approach.

2. Conceptual and theoretical background

A review of the literature shows the presence of at least three main models of science-policy interaction oriented to the production of policy-relevant research agendas. These models differ in who drives the agenda for what knowledge is produced. At the science-policy interface, science can be conceptualized in terms of "supply" of knowledge and information, and societal outcomes in terms of a ''demand'' function that seeks to apply knowledge and information to achieve specific societal goals (Sarewitz & Pielke, 2007). Supply- and demand-side actors have tended to adopt distinct strategies to bridge the science-policy gap brought about by their cultural and social differences (Roux et al., 2006).

In a first model, scientists drive the research agenda by "pushing" knowledge across the science-policy gap. In this model, the pursuit of knowledge itself drives scientific production, and the applicability of this knowledge in the solution of problems, while desirable, is not always assumed nor a necessary condition for its funding (Lawton, 2007). The science-policy interface is seen as a two-player game where scientists have to produce and deliver sound scientific knowledge to policy makers who, in turn, will produce appropriate policies. The "science push" model follows a linear and unidirectional trajectory from the identification of relevant research questions by scientists to the adoption of recommendations based on its results, in the form of favourable changes in policy (Cáceres et al., 2016). The lack of impact of science on policy is usually seen as scientists' failure to address relevant research questions and/or properly convey the message to politicians, or as the incapacity of policy makers to 'read' the scientific message in an appropriate manner. This model assumes that, were policy makers more adequately briefed with relevant, policy-oriented scientific findings, 'correct' policies will follow (Lawton, 2007). In other words, it is basically a technical–communicational problem.

In a second model, policy-makers drive the research agenda by "pulling" the knowledge needed from the science to the policy domain. Here, in pursuit of a solution to a problem, science is commissioned or sought out by policy-makers. In these cases, the expectation that the science produced is more readily applicable is higher, even if use is not straightforward (Dilling & Lemos, 2011). The downside of purely a ''demand pull'' model is that stakeholders may demand information which is not feasible to produce or scientifically robust (Sarewitz & Pielke, 2007). Policy-makers can use a number of "pull" strategies to obtain the information they require. The identification and articulation of a portfolio of information needs is very often far more complex and elusive than it may sound, partly because the future is uncertain. Easily identifiable needs

may constitute only the visible tip of the iceberg, and may change more quickly than scientists or funding organizations are able to respond (Roux et al., 2006).

A lack of mutual engagement in two-way communication and its concomitant strategy-of-hope represent the major shortcoming of the push-pull strategies. In response, a third model combines ‘‘science push’’ and ‘‘demand pull’’, in a co-production model where the research agenda is shaped in an ongoing, iterative fashion between knowledge producers and users (Lemos & Morehouse, 2005). In this model, although the initial impetus from information production often comes from the science community, through close iterativity with potential users, knowledge is co-produced. This knowledge, in many cases, better fits users' needs than that produced by more traditional models (Dilling & Lemos, 2011). Here, the science–policy interface is seen as a multidirectional and iterative process where power relationships play a critical role. Instead of being the instrumental execution of rational decisions, knowledge use in policy decisions is an inherently political process, in which scientific knowledge is only one element (Cáceres et al., 2016). The co-production of research agendas requires science policy organizations “owning” the task of negotiating and reconciling the supply and demand of knowledge (Dilling & Lemos, 2011; Sarewitz & Pielke, 2007).

The review of successful and failed cases of science-policy interactions in the Global South, with emphasis in Latin America, suggest that the co-production model has more potential to support the production of policy-relevant and usable knowledge in this context. For example, Cáceres et al. (2016) describe the process of attempting that the scientific knowledge produced in an IAI-funded project effectively influences Forest Law implementation in Central Argentina. They conclude that the failure to do so “*is not a ‘delivery problem’ where scientific findings fail to reach the appropriate policy maker, nor is a ‘communication/translation problem’ where the message is not graspable by target audiences. Rather, policy making is a highly contested, non-linear and multi-sectoral field where institutions, subjectivities, values, interests, power relationships, as well as knowledge, play a role; science is just one element in this wider framework*”. Most scholars coincide that a key factor increasing the likelihood of success of the co-production model is the presence of institutions and organizations owning the task of fostering iterativity between knowledge producers and users to create tailored and adaptive research agendas (Dilling & Lemos, 2011; Posner & Cvitanovic, 2019). This is illustrated by the knowledge network formed by an IAI-funded project on water governance in the Arid Americas: “*By and large, the dialogic network approach has produced useful, usable, and integrative science in policy-making, chiefly because of open communication and continual and iterative interactions”* (Lutz-Ley et al., 2021).

One of such institutional arrangements and mechanisms making fruitful science-policy interactions more likely in the Global South are boundary spanners and boundary spanning activities (Posner & Cvitanovic, 2019). Boundary spanners are organizations that specifically and actively facilitate the process of enabling exchange between the production and use of knowledge to support evidence-informed decision making in a specific context (Bednarek et al., 2018). In the Americas, the IAI act as a major boundary spanner since it pursues the production and exchange of scientific information relevant to global environmental change. The Regional Assessment (IAI-RA) is one of its key boundary spanning activities, as it entails a mechanism enabling iterativity between science funders and decision-makers to pursue the creation of usable knowledge. Unlike in a purely “demand pull” model where decision-makers may demand information which is not feasible to produce or in a purely “science push” model where scientist may produce knowledge that is not policy-relevant (Sarewitz & Pielke, 2007), the IAI-RA is meant

to understand the decisions made by governments and, from that, identify the kinds of knowledge that are both needed to support government decisions and feasible to produce by the science community. In other words, the IAI-RA is a step towards reconciling the supply and demand of knowledge through the co-production of a tailored and adaptive research agenda.

3. Methodological approach

The design and implementation of the IAI-RA follows an iterative and flexible methodological approach. This approach consists of seven main stages, presented in Table 1.

Table 1. Timeline for developing the seven stages of the IAI Regional Assessment

Stage of the IAI-RA methodological approach		Date of implementation
i)	Scoping workshops with Parties	July-August 2021
ii)	Information session for Parties	February 2022
iii)	Survey distribution to Parties	March-April 2022
iv)	Follow-up interviews with Parties	April 2022
v)	Sub-regional listening sessions	May-June 2022
vi)	Policy analysis	July-August 2022
vii)	Mapping of information needs	September-October 2022

By April 2022, the first two stages have been completed, the third stage (survey distribution to Parties) is ongoing, and the next four stages are planned as indicated in the timeline (Table 1). The first stage consisted of scoping workshops with small groups of regional scientists and national focal points to explore themes and create the survey to be sent to decision-makers (i.e. focal points of IAI Parties). At the time of writing, 14 Parties have completed the survey, and we expect the others to complete the survey by early May.

The second stage consisted of an Information session that was held on 17 February 2022, aimed at presenting the IAI-RA to focal points of IAI Parties and piloting the RA survey (questionnaire survey in Annex). The briefing focused on three main aspects: i) a description of the background and objectives of the Regional Assessment, ii) the proposed timeline for carrying out this initiative and iii) the content of the survey with a practical demonstration of its format. Regarding the latter aspect, an overview of the survey content was shared, together with an interactive session where participants were able to respond to three survey items while viewing the results in real time. The topics of the survey include: i) priority areas of work in the participant's institution in relation to global environmental change, ii) types of decisions made by the participant's institution in relation to global environmental change, iii) use of scientific information in decision and policy making, and iv) transboundary collaborations and international agreements related to global environmental change.

The third stage consists of the implementation of the RA survey. For this, the survey was designed in Qualtrics, which is a platform for creating, distributing and analysing online surveys. The RA online survey was distributed to IAI Parties´ focal points on 14 March, who were asked to complete the survey no later than 14 April.

In the fourth stage, personal interviews are planned to be held by phone with focal points of Parties that were unable to complete the online survey.

Once most Parties have completed the survey, a fifth stage will consist of sub-regional listening sessions, whereby focal points of Parties belonging to Americas´ sub-regions (e.g. Andean, Southern Cone, Caribbean) will be: i) presented with preliminary survey results, ii) asked to complement survey responses through a more in depth discussion on science needed to support decisions on global environmental change.

The sixth stage will consist of the analysis of policies and decisions related to GEC made by Parties, through the systematic review of policy documents. For this stage, Parties will be asked to provide documents, for instance, establishing national priorities for environmental policy and science related to GEC.

Finally, the seventh stage will consist of the qualitative and quantitative analysis to triangulate the multiple sources of information collected throughout the RA process. This analysis will allow us to: i) identify commonalities and points of divergence among IAI Parties regarding policies and decisions related to GEC, ii) infer science information needs based on decisions and desired outcomes, and iii) map decisions and information needs across IAI Parties.

4. Expected outcomes

The IAI Regional Assessment (IAI-RA) is a boundary spanning activity aimed at gathering information that will help the IAI Directorate to prioritize research and capacity building actions. To achieve this, the IAI-RA seeks to increase our understanding of the policies and decisions related to GEC made by IAI Parties. Based on that understanding, the results of the IAI-RA will guide science funding priorities and capacity building activities implemented by the IAI oriented to support the production of science that Parties will need to make more informed decisions related to GEC. In addition to guiding science funding priorities, these results will be used by the IAI to identify and/or facilitate collaboration among Parties with similar needs and priorities.

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ANNEX: Questionnaire of the Regional Assessment survey

Dear Madam, Sir

Thank you for your time responding to this survey to help the IAI understand better how to serve the needs of your country. The results will be used to guide IAI-support activities and research in accordance with the IAI Strategic Plan and Scientific Agenda; your responses will ensure that IAI information will be better suited to inform your decisions and policies.

In this assessment, as defined at the IAI science agenda, the term Global Environmental Change (GEC) refers to the interactions of biological, chemical, physical and social processes that regulate changes in the functioning of the Earth system, including the particular ways in which these changes are influenced by and impact on human activities.

Purpose of the Regional Assessment:
The IAI Strategic Plan calls for a Regional Assessment to better understand the decisions that Parties make that are impacted by global environmental change (GEC). Decision XXIX/16, adopted at the 29th meeting of the Conference of the Parties (CoP-29, 2021) directed the Directorate to conduct this Regional Assessment. The information collected during this first Assessment will be used to inform IAI near-term priorities and help the IAI facilitate collaboration among Parties.

What will you be asked to do:
You will be requested to answer questions to map the domestic and international global environmental change policy and decision-making landscape. The responses will be compiled, and an analysis made. Questions regarding your ministry, etc., refer to the ministry, agency, or organization for which you work.

Are There Risks or Benefits If I Participate?
There are no foreseeable risks related to participation in this study. The benefit in participating is that the information shared will produce more relevant activities and publications in support of the IAI country members.

What Happens to the Information I Provide?
Participation in this study is completely voluntary. Information collected will be summarized by country and will not have personal attribution. Findings emerging from this data will be synthesized and a draft of the report will be sent to you for review, comments, and suggestions. The final report will be presented to the Conference of the Parties for its consideration.

If you have any further questions or want clarification regarding this survey and/or your participation, please contact: astewart@dir.iai.int

1.-Please indicate that you 1) understand to your satisfaction the information provided to you about your participation in this survey, and 2) agree to participate

- Yes
- No

2.- What IAI party do you represent?

- Argentina
- Bolivia
- Brazil
- Canada
- Chile
- Colombia
- Costa Rica
- Cuba
- Dominican Republic
- Ecuador
- Guatemala
- Jamaica
- Mexico
- Panama
- Paraguay
- Peru
- United States of America
- Uruguay
- Venezuela.

3.-How do you describe yourself?

- Male
- Female
- Non- binary /Third gender
- Prefer to self- describe:
- Prefer not to say.

4.- Please select the type of organization that best describes your ministry, institution, etc.

- Intergovernmental organization
- National Government
- Subnational Government
- Local Government
- Other

5.- Please tell us what is your main role in your ministry, institution, etc.?

- Decision maker
- Policy maker
- Science advisor
- Scientist
- Technician
- Analyst
- International relations
- Institutional national and local engagement
- Capacity building programs development and management
- Communication
- Indigenous affairs
- Other

6.- Please tell us the name of your ministry, institution, etc.

7.- What are the priorities of your ministry, institution, etc. linked to global environmental change? Please select up to 3. (Please note that these science priorities were identified in the IAI's Strategic Plan, adopted by Parties in 2019)

- Poverty & Equality
- Food security
- Water security
- Energy security
- Climate action
- Human health and wellbeing
- Biodiversity and ecosystem services
- Clean air, water, and soil

8. In addition to the priorities you already indicated above, are there any new emerging priorities for your ministry, institution, etc. linked to global environmental change? Choose as many as apply. (Please note that these science priorities were identified in the IAI's Strategic Plan, adopted by Parties in 2019)

- Poverty and equality
- Food security
- Water security
- Energy security
- Climate action.
- Human health and wellbeing
- Biodiversity and ecosystem services
- Clean air, water, and soil.

9. Please list 1-3 decision(s) or policy(ies) that your ministry, institution, etc. makes, or would like to make, for the priority area: QUESTION 9 AND 10 ARE ASKED FOR EACH OF THE THREE PRIORITIES LISTED IN QUESTION 7

Decision or policy 1
Decision or policy 2
Decision or policy 3

10. Please select the scale or location at which each decision or policy listed is, or would be, implemented

	International / transboundary	National / nationwide	State / Province	Local: County, Municipality or City
Decision or policy 1				
Decision or policy 2				
Decision or policy 3				

11.- As defined at the IAI science agenda, Global Environmental Change (GEC) refers to the interactions of biological, chemical, physical and social processes that regulate changes in the functioning of the Earth system, including the particular ways in which these changes are influenced by and impact on human activities.

To what extent do you agree or disagree with each of the following statements about Global Environmental Change (GEC)? Please select one answer per row

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I consider that Global Environmental Change (GEC) is a top priority in my ministry, institution, etc.					
I have enough information on GEC to understand					

how decisions and policies are or will be impacted by GEC					
I frequently use scientific information to inform my decisions and actions as they relate to GEC					
I have adequate resources to access necessary scientific information regarding GEC					
Senior leaders in my ministry, institution, etc. consider that GEC is a top priority in the ministry, institution, etc.					
My ministry, institution, etc. has adequate expertise and capacity to evaluate its decisions/policies in light of GEC					
My ministry, institution, etc. has a climate mitigation or adaptation plan, or both					
My ministry, institution, etc. uses the climate mitigation or adaptation plans, or both, to inform					

policies and decisions					
My ministry, institution, etc. has sufficient financial resources to implement decisions and policies related to GEC					
My ministry, institution, etc. has the institutional framework or mandate to implement decisions and policies related to GEC					

12. Please provide an example of how scientific information can be used to improve decision making in your ministry, institutions etc. or the ministries that you work with

13. In your opinion, what are the top 5 barriers to use scientific information to inform decision/policy making related to global environmental change? Please select up to 5.

- Lack of scientific information in my language
- Lack of scientific information available for non-technical audience
- Lack of local or regional evidence to inform decision making
- Lack of official databases
- Limited access to internet and other technologies
- Limited capacity to analyze and interpret data
- Lack of cross-sectoral collaboration
- Lack of political mandates
- Lack of engagement with the national scientific community
- Lack of engagement with the international scientific community
- Issues of data quality and access
- Lack of funds to access and use scientific information and databases
- Other government priorities
- Time constraints
- Other

14. In your opinion, what are the top 5 opportunities to use scientific information to inform decision/policy making related to global environmental change? Please select up to 5

- Increased access to scientific information and conferences
- Increased access to scientific information for non-technical audience through social media
- Growing body of national and regional evidence to inform decision making
- Increasing access to open databases
- Information from satellite imagery
- Increasing quality and quantity of long-term datasets gathered by government organizations
- Growing access to internet and communication technologies
- Increasing access to openly available software for data analysis
- Cross-sectoral collaboration
- Spaces for regional dialogue to exchange scientific information on transboundary issues
- Growing awareness/interest in GEC issues
- Funding and international cooperation for GEC
- Multilateral agreements/commitments that have to be addressed like NDCs
- Other

15.- Which international frameworks or agreements or conventions are a priority for your ministry, institution, etc.?

- Sustainable Development Agreements/ Framework: SDGs
- Climate Change Agreement/Frameworks: UN Convention on Climate Change (UNFCCC), Paris Agreement, Conference of Parties, etc.
- Biodiversity Agreements/Frameworks: Convention on Biological Diversity, Ramsar, etc.
- Wildlife Trade Agreements/Frameworks: CITES or other
- Indigenous and Human Rights Agreements/Frameworks: ILO, UNDRIP, Human Rights Declaration, etc.
- Economic Regional Agreements/Frameworks: Mercosur; Mexico, Canada and United States Free Trade Agreement, etc.
- Research and Open data Agreements/ Frameworks: IAI, Aguas Calientes Declaration, etc.
- Other

16. Is there something else you would like to share with us that we haven't asked?