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Science Technology Policy Fellowship

**2024 Leadership
STeP Conference**



**Science Diplomacy Group
Project Presentations
Guatemala 2024**

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for informed decision-making

*Consensos e inclusion para
la toma de decisiones informadas*

United Nations Oceans Conference (UNOC) Stakeholder Meeting

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Project Introduction



- United Nations Oceans Conference (UNOC) aims to support action to conserve and sustainably use the oceans, seas and marine resources for sustainable development
- Compared outcome documents from 2017 and 2022 United Nations Oceans Conferences
- Identified gaps and priorities for stakeholder meeting ahead of UNOC 2025 (co-hosted Costa Rica & France)

Credit: <https://www.un.org/en/conferences/ocean2022>



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Analysis of past UNOCs: Identifying opportunities

- Integration across international frameworks and policy initiatives
 - e.g., UN Ocean Decade, UN Convention on the Law of the Sea, UN Convention on Biological Diversity (Kunming-Montreal Global Biodiversity Framework)
- Develop comprehensive strategy to address plastic pollution in marine environment
- Expand uptake of One Health approach, recognizing the interconnected health of people, animals, and ecosystems
- Broaden stakeholder engagement to include more voices and perspectives, particularly from indigenous and local communities



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Analysis of past UNOCs: Ongoing challenges



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- Keeping commitments to national action plans
- Technological, innovative and capacity building
- Integration of local and indigenous knowledge
- Fostering public-private partnerships
- Development of a digital ocean data hub
- Creation of an ocean health innovation fund



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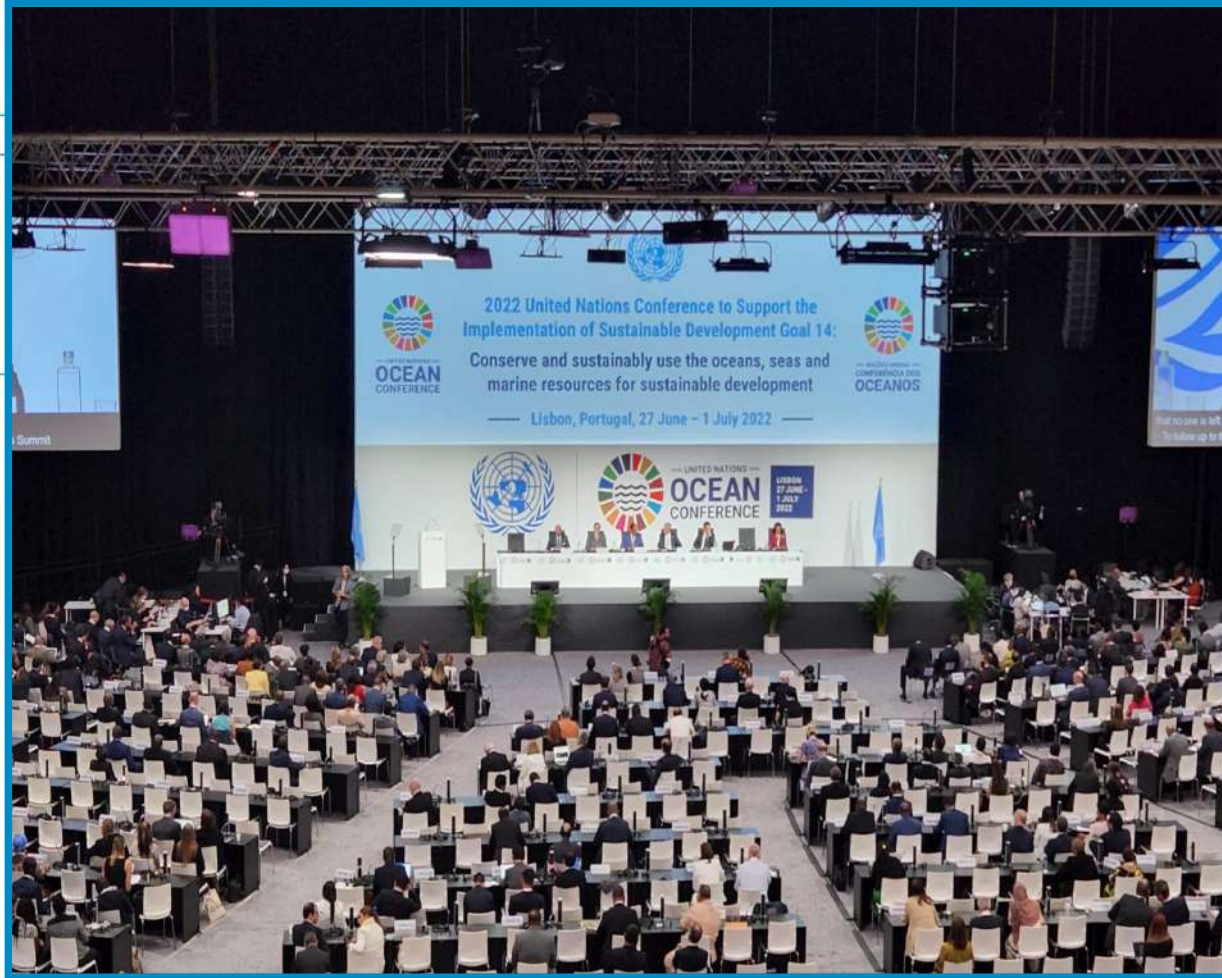


Photo: Mohammad Arju/ ICCA Consortium

Next steps

- Project explores advancements in policy, technology, and international cooperation around ocean health and sustainability
- Goal: develop a product to inform Stakeholder Meeting in preparation for 2025 UN Ocean Conference
- Science diplomacy approaches can support action on addressing transdisciplinary global issues



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El Niño and Agriculture in the Caribbean and Central America: Exploring the implications for Food Security

Naphtali John: CERMES, UWI (Barbados)

Anne-Teresa Birthwright: IWCA (Jamaica)

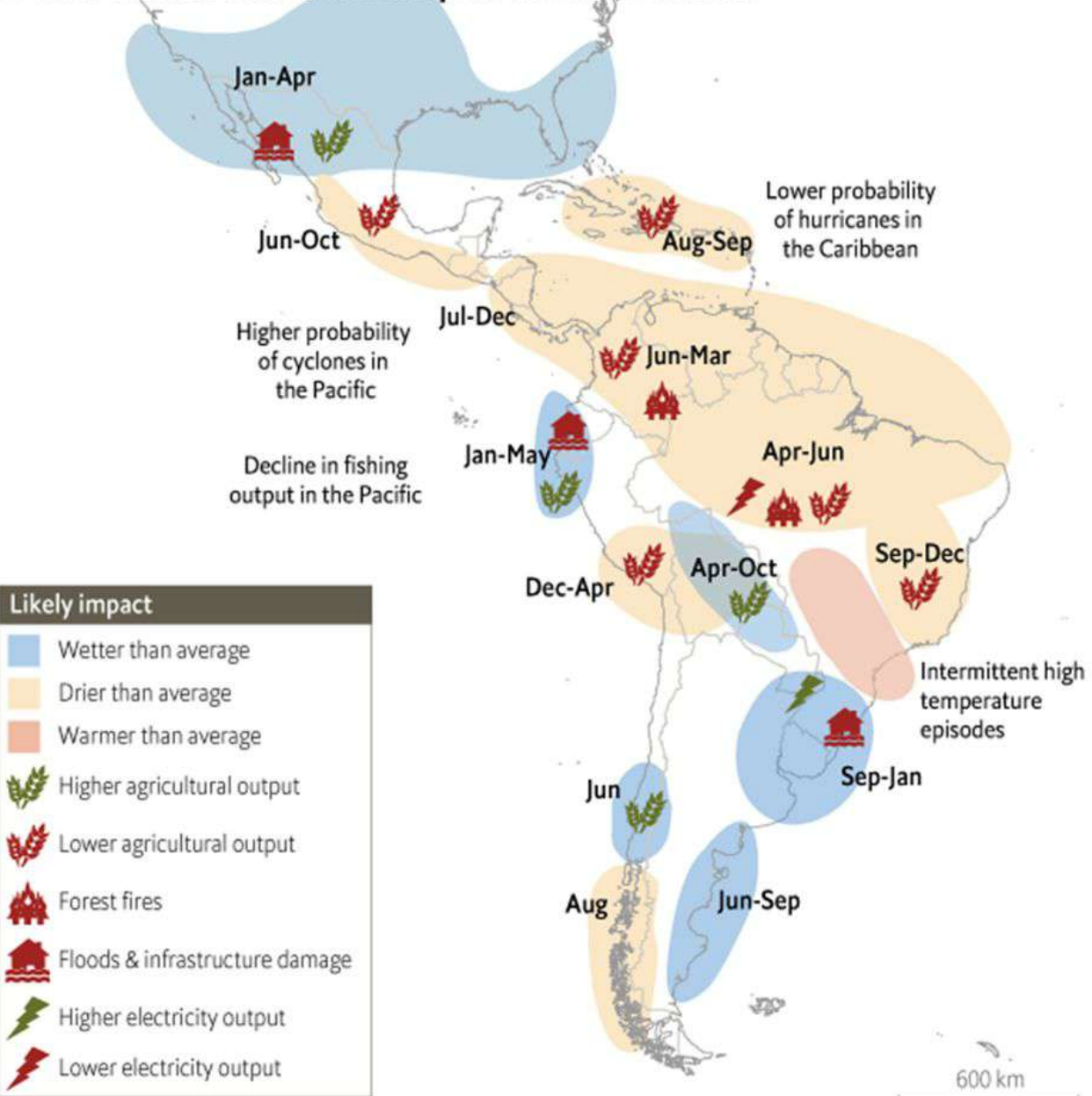
Chaya La Piere: CERMES, UWI (Barbados)

Rosario Quintero: SENACYT (Panama)

Zuhelen Padilla: PAHO, IAI (Mexico)



El Niño will have an uneven impact on Latin America



Sources: National meteorological agencies; International Research Institute for Climate and Society; United Nations Environment Programme/GRID-Arendal; World Meteorological Organisation; Oceana; Infobae; La Nación (Argentina); 2000 Agro (Argentina); Meteored (Chile); Bio Bio Chile; Ministerio de Agricultura (Colombia); EIU.

Main Findings & Implications

“Latin America and the Caribbean is the world’s breadbasket and lungs.” Michael Morris, World Bank's Lead Agriculture Economist

- a **30%** rise from 2019-2021 in the number of individuals confronting hunger and food insecurity (FAO 2023)
- existing policies **vary significantly across the region**
- some countries have advanced frameworks that integrated DRM and climate adaptation, while others lag behind, lacking resources or coordination

High vulnerability

Water scarcity (geographic disparity)

High dependence on rainfall for irrigation

Access to technology for agriculture (limited funds)

Agricultural decline

Economic impact

Decreased crop yields and livestock and poultry health

Loss of employment

Reduction in agricultural exports

Increase in food import bill

Food insecurity

Decline in availability and affordability of locally-produced crops, livestock, poultry, and fisheries

Health problems due to increase in processed foods



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Gaps: What do we need?

- A multi-faceted approach to adaptation and resilience-building within the agriculture sector, (collaboration between government officials, local communities, scientists, and regional partners)
- Sustainable practices and climate-resilient strategies (safeguard the livelihoods of farmers and fishers, ensure food security, and promote economic stability)

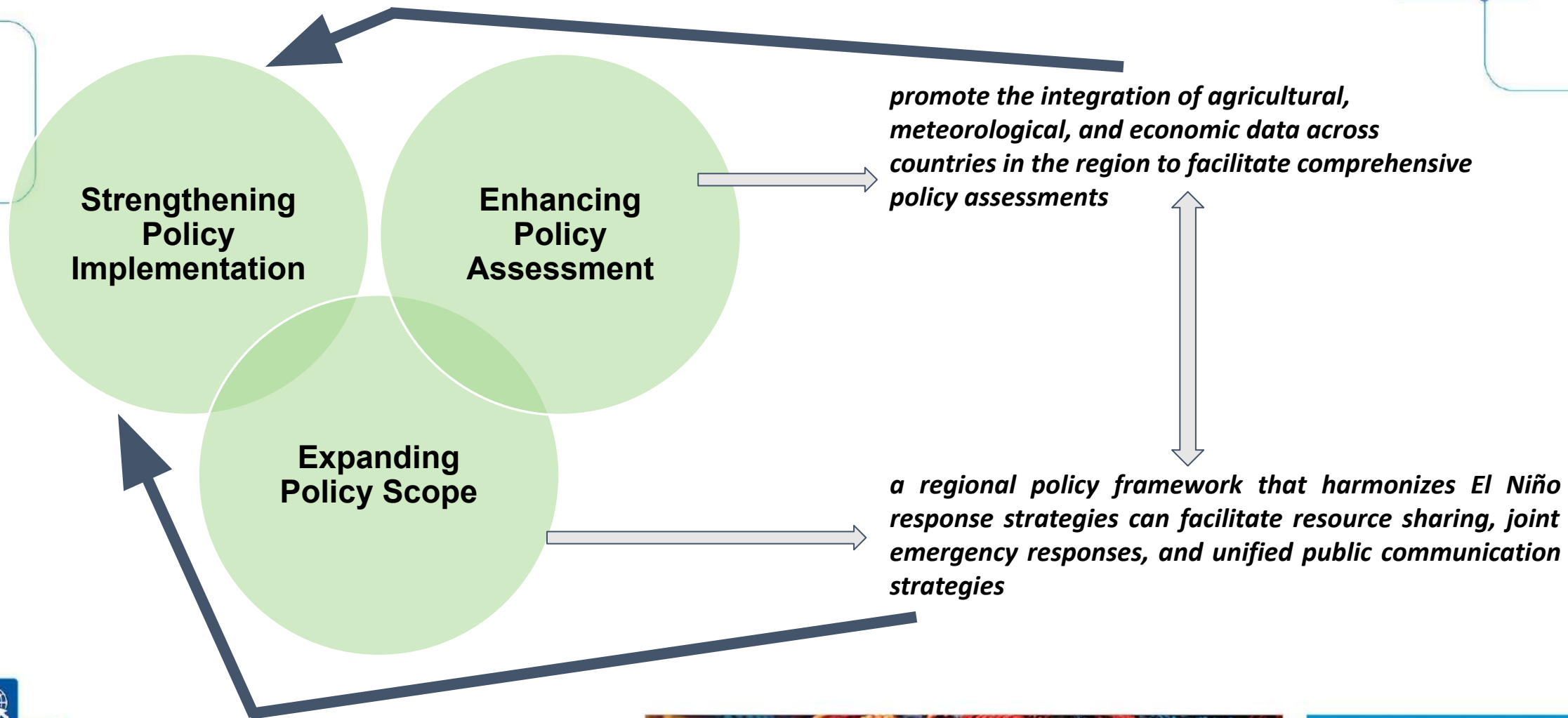
Methodology: desk review of literature, reports, policy documents, traditional media to find (i) existing vulnerabilities, (ii) existing policy, (iii) practices and (iv) collaborative efforts in Barbados, Jamaica, México, Panamá and Trinidad & Tobago



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Call to Action - Science diplomacy recommendations (policy brief)



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Análisis de los comités de comunidades locales y pueblos indígenas en organizaciones internacionales/multilaterales.

Pablo Sanhueza, Ministerio de CTCI, Chile. María Schukler, IAI Directorate Fellow. Laila Sandroni, IAI Directorate TD Coordinator. Miriam Hird, Department of National Defence, Government of Canada.





Alberto, Movimiento
Campesino, Argentina.



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El desafío: cómo abrir la mirada y los espacios de toma de decisión

- Los espacios de partición donde convergen Pueblos Indígenas y Comunidades Locales presentan distintos y diversos formatos.
- Gracias a políticas de equidad e inclusión, diversas organizaciones internacionales han establecido Comités/paneles/plataformas/grupos de trabajo/foros/mesas de consulta como una forma de respuesta a la presión de los Pueblos Indígenas y Comunidades Locales por su inclusión
- A pesar de avances, persisten lógicas "top-down" en la concepción de espacios. Representantes indígenas reclaman reconocimiento y han manifestado su inconformidad en que PICL sea entendido de modo homogéneo. Sus trayectorias, sistemas de conocimientos y ontologías son diferentes, por tanto deben tener sus propios espacios de participación.



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Metodología de análisis

- Búsqueda de antecedentes y sistematización de casos: UNESCO-Local and Indigenous Knowledge System; UNFCCC- Local Communities and Indigenous Peoples Platform; FILAC- Fondo para el desarrollo de los pueblos indígenas de América Latina y el Caribe.
- Entrevistas a representantes de pueblos indígenas: Ramiro Batzin, perteneciente a los Maya Kaqchikel, Coordinador CICA/Sotz'il; a Lisa Koperqualuk y Anne Simpson del Consejo Circumpolar Inuit (Canadá).
- Conversaciones con expertos en el tema.
- Debates dentro del grupo de trabajo.



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Algunas reflexiones

- Tanto las comunidades locales como los pueblos indígenas tienen que participar del diálogo en calidad de “expertos”.
- Se deben encontrar puntos de encuentro que posibiliten el debate desde la diversidad.
- Cómo construir espacios de participación en donde distintos modos de hacer, ser y estar en el mundo tengan capacidad de agencia en la toma de decisiones.
- El IAI ha tomado este desafío y estamos trabajando en ello.



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A **Pan-American** Science Diplomacy Framework on AI for Climate Change

Anh-Khoi Trinh¹, Bhuvanesh Awasthi¹, Joshua
E. Porterfield², Sarah Raza¹

¹Government of Canada

²United States Government



Trust the machine: artificial intelligence may be the answer to creating rapid warning systems for volcanic eruptions



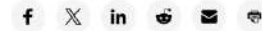
Technology

Google AI predicts floods four days early in South America and Africa

An artificial intelligence from Google can predict floods even in regions with little data on water flow, and its predictions four days in advance are as accurate as conventional systems manage for the same day

By Alex Wilkins

📅 21 August 2023



CASE STUDY ANALYSIS: SCIENCE DIPLOMACY



NATIONAL EFFORTS



ARTIFICIAL INTELLIGENCE



DIPLOMACY

- Multilateral action
- Collaboration
- International regulatory standards

Science Diplomacy Framework?

GLOBAL CLIMATE CHANGE



INTERNATIONAL EFFORTS



SCIENCE

- Infrastructure
- Data
- Talent



Challenges

- Absence of:
 - Measurable and achievable objectives
 - Formal governance structures
- Inadequate:
 - Monitoring and evaluation
 - AI adoption in the public sector
 - Capacity

SOLUTION: PAN-AMERICAN FRAMEWORK

North America

- Infrastructure and funding
- AI/R&D Talent

SCIENCE DIPLOMACY FRAMEWORK

Infrastructure



Data



Talent



Governance



LAC and South America

- Capacity
- Data
- Renewable Energy Potential



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Acceso limitado a la atención sanitaria en las comunidades indígenas rurales de Oaxaca: Recomendaciones desde “Una Salud” para abordar las pérdidas y daños no económicos

Luz M. Cumba García

AAAS Science & Technology Policy Fellow,
IAI STeP Science Diplomacy Fellow (USA)

Brian Leung

U.S. Global Change Research Program (USA)

María Inés Carabajal

Inter-American Institute for Global Change Research (IAI), University
of Buenos Aires (Argentina)

Valentina Hernández

Ministerio de Economía, Fomento y Turismo - División de Desarrollo
Productivo Sostenible (Chile)



Pérdidas y daños no económicos

Visión General



- **Pérdidas y daños:** efectos adversos del cambio climático que no pueden minimizarse mediante la adaptación climática
- Política climática de la COP27 - Artículo 8 (Fondo de pérdidas y daños)
- Económico (monetario) frente a no económico (no monetario)
- Incluye daños a las personas, sociedades y el medio ambiente
- Parte integral del debate sobre la justicia climática

Fuente: Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (WIM), UNFCCC



Pérdidas y daños no económicos en comunidades indígenas rurales de Oaxaca, México: Enfoque “Una ‘Salud’”

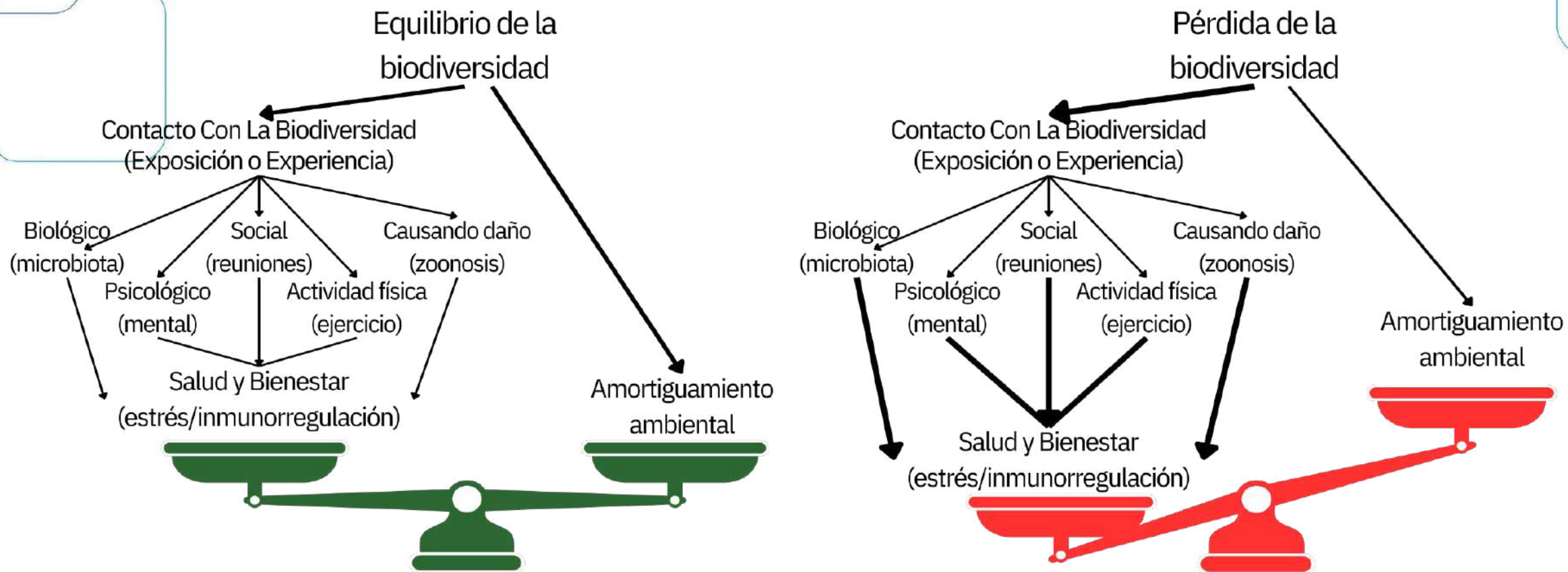


Fuente: WHO Policy Brief: Loss and Damage, Nov 2022

	Impact	Health Condition	
		Acute and emergent	Slow-onset and chronic
Direct L&D	injury or trauma	physical injury or death	<ul style="list-style-type: none"> mobility impairment post-traumatic stress disorder increased incidence of vector-borne disease (e.g., mosquitos transmitting malaria, cholera) food safety risks from new pathogens and/or soil and water contaminants malnutrition
	water quality	water-borne disease drinking water scarcity decline in sanitation and hygiene	
	air quality	new-onset lung disease exacerbation of asthma or chronic obstructive pulmonary disease allergic response	<ul style="list-style-type: none"> increased likelihood of adult lung disease heart attack, and/or stroke increased incidence of chronic allergies
reduced	food availability	food scarcity macronutrient deficiency	<ul style="list-style-type: none"> dietary change micronutrient deficiency increased incidence of stunting and wasting increased susceptibility to diabetes, obesity, heart disease decreased cognitive development of children depression
	non-economic impacts of reduced agricultural productivity	grief stress	<ul style="list-style-type: none"> increased multidimensional vulnerability broad, negative impacts on social determinants of health dietary change depression anxiety solastalgia¹ loss of agency² loss of sense of place reduced social cohesion intimate partner violence decreased access to traditional medicines weakened immune systems
Indirect L&D	degradation to biodiversity and ecosystems	←	
	loss or degradation to territory, cultural heritage/artifacts, indigenous or local knowledge		
	loss of cultural way of life, and/or societal or cultural identity, loss of safety networks		



Pérdidas y daños no económicos de la pérdida de biodiversidad en las comunidades de Oaxaca, México



Modificado de: Robinson et al., 2024,
Environmental Research



Recomendaciones y próximos pasos

1. Acceso a servicios médicos y sanitarios

- Desarrollar sistemas integrados de vigilancia epidemiológica
- Reconocer la importancia de curanderos tradicionales para mejorar la atención médica (incluyendo salud mental) y veterinaria

2. Preservación de biodiversidad

- Promover prácticas agrícolas sostenibles para preservar la biodiversidad y reducir riesgos de enfermedades
- Fortalecer programas de conservación de ecosistemas y especies clave

3. Educación y concienciación

- Promover la colaboración interdisciplinaria y multinivel entre sectores de la salud humana, animal y ambiental
- Apoyar la atención médica y la investigación científica desde un abordaje holístico

4. Políticas y enfoques integrales

- Integrar consideraciones de "Una Salud" en políticas relacionadas con efectos del cambio climático en comunidades rurales
- Fomentar la **cooperación internacional** para fortalecer la capacidad de respuesta a nivel regional y global



*Policy brief para hacedores de políticas en México y en América Latina y el Caribe - en proceso





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Urban Green Infrastructure for Climate Adaptation in LAC

Julius Bright Ross, AAAS Fellow, USA

Gabriela Duarte, BPBES, Brasil

Federico Caetano Grau, UdelaR, ANII, Uruguay

Chanté Saunders, Dept. of Emergency Management, Barbados

Alice Ramos de Moraes - BPBES, Brasil

Christina Ridley, Mitacs Fellow, Canada



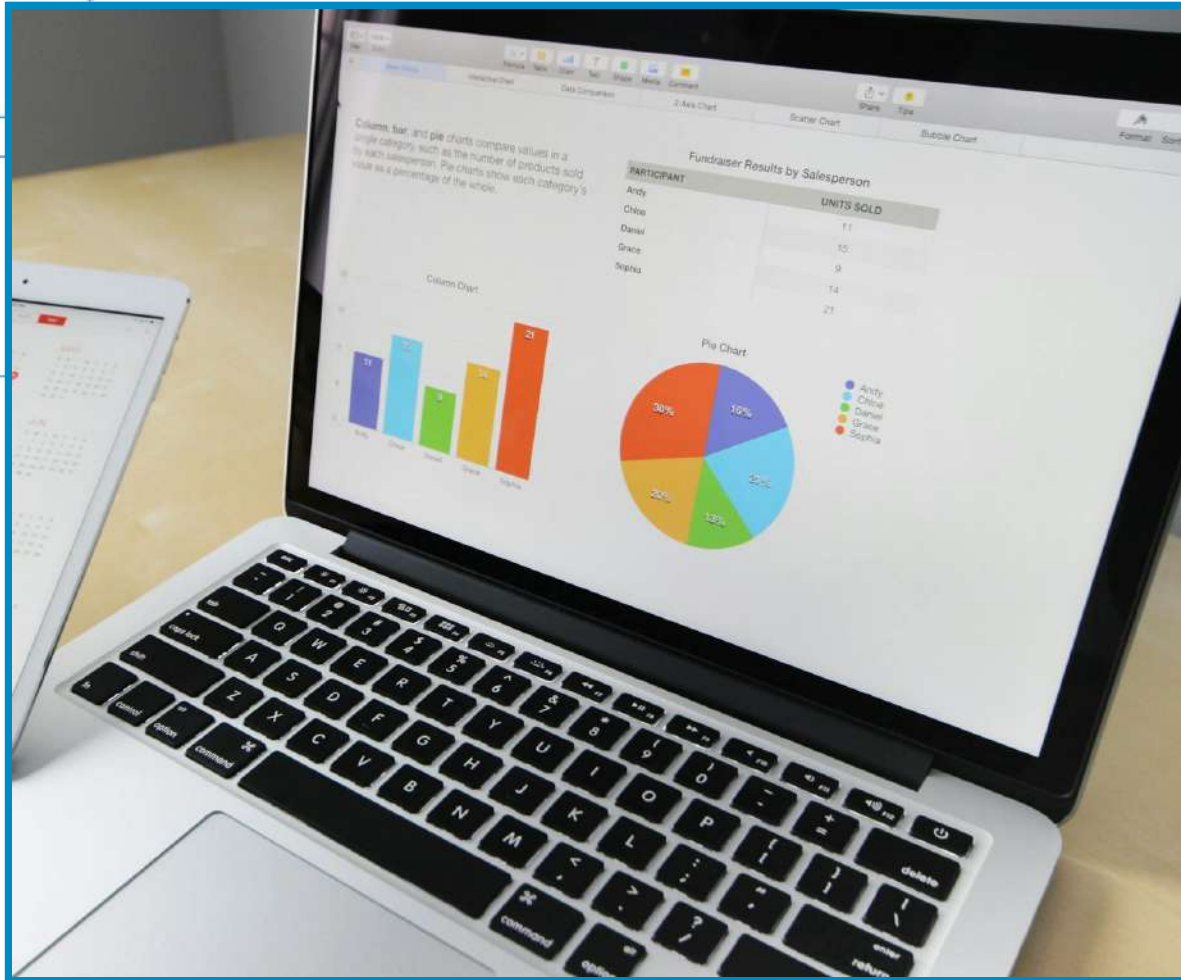
Corredores Verdes de Medellín

- 70 hectáreas de espacio verde
- 880,000 árboles
- Redujo temperatura 2°C en 3 años

Corredores Verdes de Medellín

- 70 hectáreas de espacio verde
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¿Podemos replicar esta experiencia en el resto de América Latina y el Caribe?



Este proyecto está en desarrollo:

- Contactando personas implicadas en proyectos de Infraestructura Verde Urbana en LAC.

Nuestro plan de acción:

- Usar cuestionarios digitales para evaluar en qué medida se relacionan con el cambio climático.
- Analizar respuestas para encontrar puntos en común, lecciones aprendidas y retos que han encontrado.
- Compartir conocimientos para replicarlos en otras ciudades de LAC.



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¿Qué hicimos?

- **Revisión de la literatura**
- **Análisis de grupos de interés**
- **Construimos un cuestionario**
 - **Lo adaptamos a diferentes idiomas**
 - **Contactamos actores influyentes dentro del ámbito de la infraestructura verde**

¿Qué vamos a hacer?

- **Análisis y sistematización de las respuestas**
- **Elaboración de un informe**

Objetivo: comprender sus perspectivas, desafíos y soluciones.

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La gobernanza para la provisión de evidencia en la acción climática y su diversidad. Los casos de Chile y Bolivia

Governance for the provision of evidence in climate action and its diversity. The cases of Chile and Bolivia

Angelo Attanasio, Spain, L21. IAI STeP Professional Development Collaborative Space 2023-2024

Fany Beatriz Ramos Quispe, Plurinational State of Bolivia, Belmont Forum

Carlos Sebastián Morales Quiroz, Chile, Ministry of Science, Technology, Knowledge and Innovation.

Claudia Andrea Morales Cabrera, Chile, Ministry of Science, Technology, Knowledge and Innovation.





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Diversidad/Pluralidad de modelos de gobernanza para la acción climática basada en evidencia y asesoramiento

Diversity/Plurality of governance models for climate action based on evidence and advice



Fuente: APMT
(<https://madretierra.gob.bo/encuentro-nacional-de-los-pueblos-por-la-madre-tierra-y-lucha-contra-el-cambio-climatico-2023/>)

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Cómo llegamos a esta conclusión?/ How did we get to this conclusion?

Bolivia: Establecida en 2017 y bajo el alero de la ley 300 Marco de la Madre Tierra y la autoridad Plurinacional de la Madre Tierra, la PNIOCCC responde a las demandas de los Pueblos Indígena Originarios y al Acuerdo de

Chile: A través del trabajo del Comité Científico Asesor de Cambio Climático, incorpora asesoramiento científico en la formulación e implementación de políticas públicas para la acción climática. La Ley Marco de Cambio Climático del 2022 lo integró formalmente dentro de la legislación del país, asignándole roles específicos en el asesoramiento científico para el diseño de políticas públicas en el área.

El Comité trabaja bajo el alero del Ministerio de Ciencia, Tecnología, Conocimiento e Innovación.



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Reflexiones finales/Final remarks

Los gobiernos deben promover espacios formales que permitan institucionalizar el uso de evidencia en la formulación de políticas públicas para la acción climática.

Estos espacios deben diseñarse bajo una gobernanza inclusiva que abrace y fortalezca la diversidad de sistemas de conocimiento.

IAI y Foro Belmont, representan una oportunidad para el diálogo inter científico en la ciencia transdisciplinaria.

Governments must promote formal spaces that allow institutionalizing the use of evidence in the formulation of public policies for climate action.

These spaces must be designed under inclusive governance that embraces and strengthens the diversity of knowledge systems.

IAI and Belmont Forum represent an opportunity for inter-scientific dialogue in transdisciplinary science.



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Impact of The Belem Declaration on Indigenous Communities and the Use of Natural Resources



Karina Vega-Villa, National Science Foundation

Christina Pooler, Center for Resource Management and Environmental Studies

Mariannela Ruiz, Mexican Association for the Advancement of Science

Camilo De Los Ríos Rueda, Duke University

Matías Mastrangelo, Inter-American Institute for Global Change Research





Liked by ninagualinga and 9,108 others

earthrise.studio Keep fossil fuels in the ground.



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This is what we found

- The suggestions and recommendations from the Indigenous and local communities were partially considered in the drafting of the Declaration
- The implementation organization (ACTO) needs to select methodologies that accurately reflects the perspectives and views of the indigenous and local populations.

“Hydrocarbons and oil seriously affect the health of Indigenous peoples, especially in Ecuador, Colombia, Peru, and Brazil. The commitments are not clear and Indigenous peoples are being treated in an indirect way.”



Fany Kuiru Castro
Witoto people
Colombia



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How did we get to this conclusion?

Figure 1. Word frequencies (min. number of characters = 5, min. frequency = 10, words=50)



Methods

Expert Interview (ACTO)

Literature review (scientific journals, media articles, case studies, indigenous community blogs)

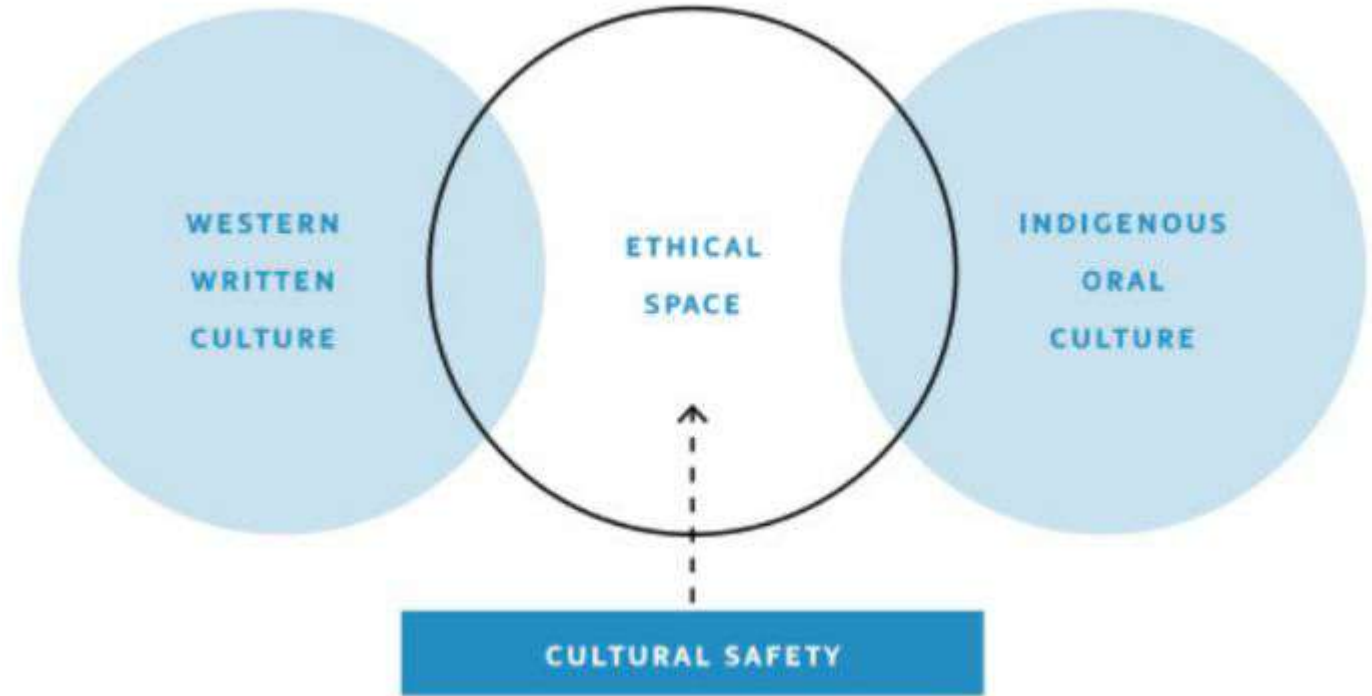
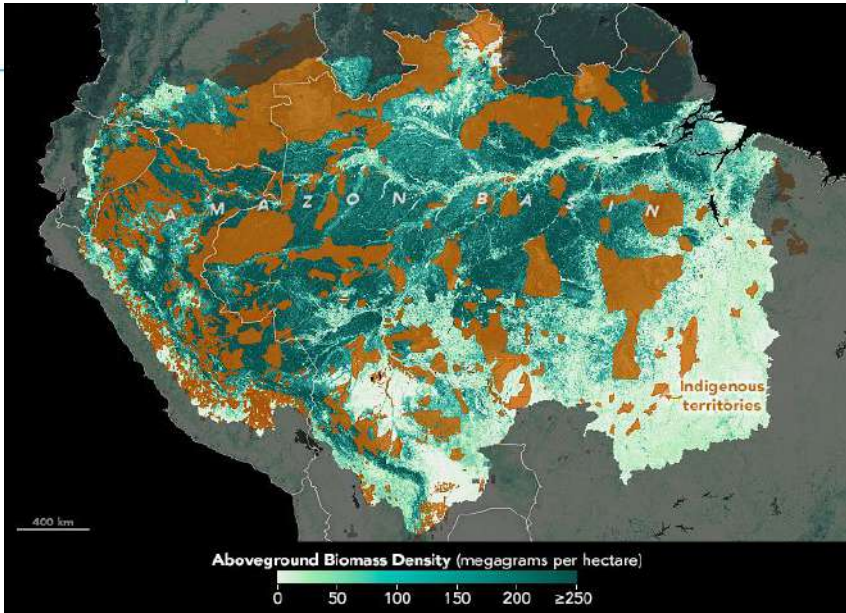
Text analysis of policy document

Policy review



Linkages to Science Diplomacy

Intentional and collaborative approach that creates a culturally safe space to bridge the gap between the language in the declaration and the implementation of the recommendations.



Sources: <https://earthobservatory.nasa.gov/images/151921/indigenous-communities-protect-the-amazon>
[Gwen Bridge Consulting | Empowerment and Equality for Indigenous People](#)



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