



# Final Statement of the Workshop on Indigenous Peoples' Knowledge and The Sciences: Combining traditional knowledge and sciences for resilience to address climate change, biodiversity loss, food security, health

Statement based on the PAS & PASS Workshop of March 14-15, 2024\*



Sixty-three participants from thirty-three countries, including many Indigenous Peoples' socio-cultural regions of the world, converged in a momentous dialogue on the intersection of traditional knowledge systems and science, addressing critical challenges faced by our planet and humanity. This significant event was jointly organized by the Pontifical Academy of Sciences (PAS) and the Pontifical Academy of Social Sciences (PASS). It brought together Indigenous leaders, scholars, knowledge holders, and a diverse array of scientists, alongside representatives from United Nations agencies. The following Statement provides a summary of key insights and recommendations.

## Conference Purpose

The Pontifical Academy of Sciences (PAS) and the Pontifical Academy of Social Sciences (PASS) champion an interdisciplinary approach to scientific knowledge, fostering international collaboration. Their mission is to promote the study and progress of both the social and natural sciences, with a focus on the promotion of justice, development, solidarity, peace, and conflict resolution. PAS and PASS serve as bridges between faith and reason, encouraging dialogue that transcends scientific, spiritual, cultural, philosophical and religious boundaries. This conference

called upon Indigenous Peoples and Scientists in the social and natural sciences to hold an open dialogue, based on mutual respect, and shared concerns for human and planetary health.

The urgency of our gathering stems from the alarming decline in planetary health, manifested by climate change and biodiversity loss. It also served as a platform for meaningful dialogue on the pivotal role of knowledge in crafting locally relevant solutions with the potential for global impact. By integrating the insights and knowledge systems of Indigenous Peoples[1] and science communities we explored new opportunities for solutions to the global challenges of resilience to climate change, biodiversity loss, and food systems problems.

The intersection of Indigenous Peoples' knowledge and scientific communities' analytical insights remains an untapped resource. Insufficient opportunities for exchange and collaborative platforms hinder joint efforts to develop innovative solutions. However, growing these opportunities and platforms can lead to significant advancements in sustainability, justice and equity.

Pope Francis captured the essence of our mission in his address at the workshop's outset, "...your Workshop represents an opportunity to grow in reciprocal listening: listening to indigenous peoples, in order to learn from their wisdom and from their lifestyles, and at the same time listening to scientists, in order to benefit from their research. This workshop was considered a success by the participants, and it sends a message to government leaders and to international organizations, encouraging them to acknowledge and respect the rich diversity within the great human family." [2]

Below are the key insights and specific calls to shift perspectives and drive action.

## **1. Recognition and Dialogue**

### **1.1. Recognizing and Valuing Indigenous Peoples' Knowledge**

We call for a new and respectful acknowledgment of Indigenous Peoples' world views and the value of their knowledge and wisdom. This may include promoting empirical approaches and appreciation of empirical aspects of Indigenous Peoples' knowledge, aligning oral histories with scientific methodologies, while respecting contextual, metaphysical and cultural differences. As Pope Francis pointed out in his address to participants, "...I encourage you to draw from the patrimony of the wisdom of your forebears and from the fruits of your scientific research the vital energy needed to continue to cooperate in the service of truth, freedom, dialogue, justice and peace. The Church is with you, an ally of the Indigenous Peoples and their wisdom, and an ally of science in striving to make our world one of ever greater fraternity and social friendship." [3]

### **1.2. Recognizing Historical and Ongoing Rights Violations against Indigenous Peoples**

The diverse experiences of expropriation and exposure to violence endured by Indigenous Peoples across all hemispheres in the past must never be forgotten, and the lasting impacts of colonialism be acknowledged. In the present day, Indigenous Peoples continue to face rights violations. These ongoing issues demand urgent attention and resolution. It is imperative to respect their rights, both locally and internationally, as delineated in various United Nations Declarations and Conventions.[4] Gatherings among Indigenous Peoples and scientists must be encouraged to amplify the voice of Indigenous Peoples in the realms of science and innovation.

### **1.3. Reframing Philosophical and Epistemic Perspectives**

We advocate for nuanced discussions that explore the complementarity of Indigenous Peoples' knowledge and science, and promote engagement with faith-based communities. We acknowledge that traditional lifestyles and knowledge systems are not relics of the past, but are dynamic, evolving and integral to shaping the future.[5]

### **1.4. Enhancing Dialogue among Indigenous Peoples and Scientists**

We are steadfast in our commitment and urge other Academies, as well as national and international scientific organizations, to foster substantive, participatory, and respectful dialogues between Indigenous Peoples and scientific communities. The aim is to bridge existing divides and overcome misconceptions. As mentioned by Pope Francis addressing the workshop,[6] "...open dialogue between indigenous knowledge and the sciences, between communities of ancestral wisdom and those of the sciences, can help to confront in a new, more integral and more effective way such crucial issues as water, climate change, hunger and biodiversity."

### **1.5. Fostering Local and Global Connections through the “Braiding” of Indigenous Peoples Knowledge and Sciences**

The concept of “braiding” is a unique form of cooperation where the knowledge of Indigenous Peoples and scientific insights intertwine, each preserving its distinct identity. The process of “braiding” and building bridges among diverse Indigenous Peoples and scientific communities, both locally and globally, is crucial. It is particularly significant for collaborative efforts in areas such as on climate change adaptation, biodiversity conservation, ecosystems functionality, and sustainable food system practices. While much of this knowledge holds specific local significance, its applicability across various locations gives it a global resonance.

## **2. Collaborative Policy and Decision-Making Involving Indigenous Peoples and Scientific Communities**

### **2.1. Establishing New Science Policy Approaches**

Innovative approaches are essential to foster collaboration between Indigenous Peoples and scientific communities. These should be rooted in respect, steering clear of extractive practices, and hold the knowledge of Indigenous Peoples in high esteem. We are committed to amplifying Indigenous-led research activities, either independently or in conjunction with science-driven research efforts. A combination of insights from both natural and social sciences can prove instrumental in crafting robust cooperation frameworks between scientists and communities. The knowledge of Indigenous Peoples is complex and embedded in their cultural practices and epistemologies that are often overlooked or misunderstood by natural scientists.

## **2.2. Enhancing International Policies to uphold the Rights of Indigenous Peoples**

We urge national and regional governments worldwide to formally recognize the significance of Indigenous Peoples' knowledge and its invaluable contributions to tackling global challenges. We advocate for the incorporation of relevant indigenous Peoples' knowledge into policy formulations and decision-making processes. Our call extends to bolstering the rights and participation of Indigenous Peoples in international policy arenas, particularly where science policies and innovations unfold. These include the UN International Decade of Indigenous Languages, the UN Water Action Decade, The International Decade of Sciences for Sustainable Development, the UN Decade of Ocean Science for Sustainable Development, the UN High Seas Treaty (Biodiversity Beyond National Jurisdiction), the UN Framework Convention on Climate Change (UNFCCC), The UN Convention on Biological Diversity (UNCBD), the UN Convention to Combat Desertification (UNCCD). We also emphasize their inclusion in influential intergovernmental bodies like the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), as well as powerful consultation mechanisms such as G20.

At an international level, we underscore the need for intellectual property rights protection. It is imperative for innovation brokers to meticulously document knowledge attribution to safeguard indigenous contributions from erasure, while honoring the collective nature of their wisdom.

## **2.3. Strengthening National and Sub-National Policy and Rights**

We encourage national and subnational governments not only to appropriately regulate but also rigorously enforce the secure land rights of Indigenous Peoples. The aim of crafting and implementing comprehensive policies in cooperation with Indigenous communities is to overcome poverty and vulnerability tailored to their circumstances.

## **2.4. Combatting Educational Segregation**

Our focus extends to amplifying Indigenous Peoples' youth opportunities. This includes respecting and integrating Indigenous Peoples' knowledge and science into educational curricula,

underscoring their synergistic relationship and fostering mutual understanding. Through inquiry-based learning approaches, a new generation of scholars and practitioners adept in both knowledge systems can become leaders in this field. Youth mentorship programs can be instrumental in transitioning to an understanding of both indigenous knowledge and scientific concepts, paving the way for innovative applications in various professional fields.

## **2.5. Promoting Inclusive Decision-Making**

We are committed to ensuring that indigenous persons, both women and men, have an active role in the decision-making processes that affect their lands, waters, and lives, reflecting their rights, priorities and protocols. We recognize and protect providers of ethnoecological knowledge in territorial, national, regional, and international policies and legal frameworks to protect Indigenous Peoples' knowledge, making it easily accessible worldwide by building databases and digital libraries governed by explicit rules of ownership and use.

# **3. Critical Action Areas for Collaboration in Biodiversity, Food, Climate and Health**

## **3.1. Supporting Indigenous Peoples' Knowledge for Biodiversity and a Healthy Planet**

The preservation and enhancement of Indigenous Peoples' knowledge is pivotal in biodiversity conservation efforts. Central to this initiative is securing the land rights of Indigenous Peoples, while valuing their role in mitigating deforestation, sustainable use and conservation of wild species, combating land and soil degradation, and promoting ecosystem restoration. The participants took note of the Kunming-Montreal Global Biodiversity under UNCBD's auspices and the importance of the Joint Programme of Work focusing on the links between biodiversity and cultural diversity.

## **3.2. Addressing Food and Nutrition Challenges through the Collaboration of Indigenous and Scientific Communities**

We are committed to holistic and sustainable approaches and support platforms and coalitions to enhance food and nutrition security, ensuring the protection of land, forest and water rights. We acknowledge the invaluable contributions of Indigenous Peoples' diets, including their integration into school meals, provision of plant germplasm, and inspiring a respectful relationship with nature.

## **3.3. Valuing and Making Use of Indigenous Peoples' Health and Pharmaceutical Knowledge**

Indigenous Peoples' contributions to health offer big opportunities for all humankind. Partnerships with established science-based health systems must be explored further for mutual benefits. Fair and equitable sharing practices and sound joint assessments of use and impacts are to be implemented. The opportunities are not only in discovering new pharmaceutical products

originating from Indigenous Peoples' knowledge, but also in adopting health insights derived from their lifestyles.

### **3.4. Operationalizing Indigenous Peoples' Knowledge for Climate and Macro-Environmental Action**

Indigenous Peoples are disproportionately impacted by climate injustice, suffering the most from the climate change impacts on their environments, including health of oceans and waters, despite minimal contribution. The increasingly deep insights into the earth's atmosphere and beyond are relevant both for scientists and Indigenous Peoples. All efforts should be encouraged to include Indigenous Peoples in national platforms on climate adaptation and mitigation. Addressing air and light pollution is also a critical component of the broader planetary health agenda. We encourage an augmented co-production of knowledge that combines Indigenous Peoples' perspectives with scientific methodologies to bolster effective climate adaptation, mitigation, and transformation toward resilience. Nature-based solutions embedded in a bioeconomy can be mutually pursued in both urban and rural spaces, harnessing the synergy between scientific and Indigenous Peoples knowledge.

### **3.5. Promoting Ethical Partnerships and Research Funding, and Future Engagement by Global Academies**

We encourage scientists to reassess fundamental assumptions, promote ethical collaborations and support knowledge preservation and research capacities of Indigenous Peoples. To realize this vision, science communities need to design structured and unbiased funding mechanisms, in consultations with funders, placing value on the knowledge of Indigenous Peoples and promoting its co-production with science. We foresee huge opportunities arising from the engagement between Indigenous Peoples' knowledge and scientists. Academies of sciences and arts around the world are ideally positioned to seize these opportunities. The Pontifical Academies of Sciences and of Social Sciences aim to continue the engagement beyond this initial workshop. It is crucial to support the sustainability of Indigenous institutions, including their recovery and recognition, as a foundation for sustaining and revitalizing Indigenous Peoples' knowledge systems.[7]

## **LIST OF WORKSHOP PARTICIPANTS**

1. Rev. Prof. Helen Alford, Pontifical Academy of Social Sciences, President
2. Prof. Dr. Joachim von Braun, Pontifical Academy of Sciences, President
3. His Eminence Cardinal Peter Turkson, Pontifical Academies of Sciences and Social Sciences, Chancellor
4. Right Rev. Msgr Dario E. Viganò, Pontifical Academies of Sciences and Social Sciences, Vice Chancellor
5. Prof. Vanderlei S. Bagnato, PAS Academician, University of Sao Paulo and Texas A&M University, Professor

6. Prof. Mohamed Hassan, PAS Academician, Sudanese National Academy of Sciences, President
7. Prof. Pierre Léna, PAS Academician, Office of Climate Education, Emeritus President
8. Prof. Virgilio Viana, PAS Academician, Foundation for Amazon Sustainability, Director General
9. Her Excellency Sonia Guajajara, Ministry of Indigenous People, Brazil, Minister
10. His Excellency Bishop Marcelo Sánchez Sorondo, PAS and PASS Former Chancellor
11. Ambassador Hindou Oumarou Ibrahim, AFPAT, President/Ambassador
12. Ambassador Nelson Ole Reiyia, Nashulai Maasai Conservancy, CEO/Co-Founder
13. Prof. Adriano Fontana, Istituto Nazionale di Astrofisica, Research Director
14. Mrs. Agnes Leina, Il'laramatak Community Concerns, Executive Director/Founder
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30. Prof. Lun Yin, Center for Biodiversity and Indigenous Knowledge, Director
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32. Dr. Maximo Torero Cullen, FAO, Chief Economist
33. Mr. Mehrdad Ehsani, Rockefeller Foundation, Vice President, Food Initiative, Africa
34. Dr. Myrna Kay Cunningham Kain, Center for Autonomy and development of Indigenous Peoples – Pawanka Fund, Former chair
35. Dr. Nigel Crawhall, UNESCO, Chief, Local and Indigenous Knowledge System (LINKS)

36. Prof. Octaviana Trujillo, Northern Arizona University, Founding Chair and Professor Emeritus
37. Dr. Ora Marek-Martinez, Northern Arizona University, Associate Vice President/Assistant Professor
38. Msc Pablo Innecken, FAO Indigenous Peoples Unit, Expert on biodiversity and climate change
39. Ms. Pauliina Nykänen-Rettaroli, World Health Organization, Senior Technical Lead and Unit Head, Human Rights
40. Prof. Paulo Artaxo, University of São Paulo, Director of the Center for Amazonian Sustainability
41. Mr. Q'apaj Conde, Secretariat of the Convention on Biological Diversity, Associate Programme Management Officer
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46. Elder Wendy Phillips, Grand Challenges Canada, Leader
47. Dr.rer.nat. Yolanda López-Maldonado, Indigenous Science, Researcher
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52. Dr. Robert Nasi, CIFOR, Director General
53. Mr. Stanley Kimaren Riamit, Indigenous Livelihoods Enhancement Partners (ILEPA), Team Leader
54. Archbishop Samuel Kléda, Metropolitan Bishop of Douala, Cameroon, Healthcare and Traditional Pharmaceutics Practitioner
55. Mr. Juan Carlos Jintiach Arcos, Global Alliance of the Territorial Communities (GATC), Executive secretary
56. Mr. Gasparini Kaingang, Ministry of Indigenous People of Brazil, International Affairs
57. Mr. Leonardo Otero Vieira de Oliveira, Ministry of Indigenous People, Head of Communication
58. Ms. Rosa Maria dos Anjos Vieira, Foundation for Amazon Sustainability (FAS), Member
59. Ms. Georgia Franco, Foundation for Amazon Sustainability (FAS), Member

60. His Excellency Ambassador Everton Vieira Vargas, Ambassador of Brazil to the Holy See
61. Mr. Carlos Eduardo da Cunha Oliveira, Minister-Counsellor, Embassy of Brazil to the Holy See
62. Ms. Fernanda Graeff Machry, Second Secretary, Embassy of Brazil to the Holy See
63. Msgr. Fernando Chica Arellano, Permanent Observer, Holy See Mission to the United Nations Food and Agriculture Agencies in Rome.

## END NOTES

\* This Statement is based on presentations and discussions during the workshop. A draft set of conclusions was presented by the Presidents of PAS & PASS at the end of the workshop and discussed with and augmented by workshop participants. The Presidents of PAS & PASS have made efforts to integrate comments made. In view of the many and diverse suggestions received, this may not reflect the opinions of all. The full information, concerns, and action proposals are in the more than 40 presentations given at the workshop. While the workshop participants are listed below the Statement issued by the Presidents and the Chancellor of PAS & PASS, this does not imply their individual endorsement of it or the endorsement of their organizations.

[1] The 2007 United Nations Declaration on the Rights of Indigenous Peoples refers to both indigenous knowledge and traditional knowledge. While Indigenous and local knowledge are older concepts than traditional knowledge, the latter has gained more visibility in the literature. We acknowledge that there are as many Indigenous knowledges as there are Indigenous nations in the world. ‘Indigenous’ is not used here as an adjective but to refer to the knowledge holders and their diversity. We recognize that Indigenous Peoples self-identify and associate with the UN Declaration on the Rights of Indigenous Peoples, while many communities are the holders of sophisticated orally-transmitted knowledge systems. Defined by IPBES, “Indigenous and local knowledge (ILK) refers to dynamic bodies of integrated, holistic, social and ecological knowledge, practices and beliefs pertaining to the relationship of living beings, including people, with one another and with their environments. A cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment.” <https://www.ipbes.net/glossary-tag/indigenous-and-local-knowledge> Encouraged by workshop participants we use the terminology “Indigenous Peoples’ knowledge” throughout this Statement.

[2] <https://www.vatican.va/content/francesco/en/speeches/2024/march/documents/20240314-pas.html>

[3] <https://www.vatican.va/content/francesco/en/speeches/2024/march/documents/20240314->

[pas.html](#)

[4] United Nations Declaration on Indigenous Peoples' Rights, the Indigenous and Tribal Peoples Convention, 1989 (ILO 169), the General Recommendation No. 39 on the Rights of Indigenous Women and Girls of the Committee on the Elimination of Discrimination against Women (CEDAW, among others. Additionally, for the meaningful participation of Indigenous Peoples and in the enactment of their right to self-determination, the effective implementation of their Free, Prior and Informed Consent in all the matters that affect Indigenous Peoples. The use of these frameworks should help improving the meaningful participation of Indigenous Peoples in the International Decade of Indigenous Peoples' languages, the Water Action Decade, the COPs of biodiversity and Climate Action, the implementation of the Sustainable Development Goals as well as other processes currently put in place.

[5] Aristotle points out in his *Metaphysics* that there are different kinds of knowledge: one is experimental knowledge which is the basis of science, and another is scientific knowledge by causes. Being the son of a physician, the Philosopher knew that his father cured diseases on the basis of his experience, not always knowing what the cause of the disease was. According to Aristotle, there is no opposition between experimental and scientific knowledge.

<https://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0052%3Abook%3D1%3Asection%3D981a>

[6] <https://www.vatican.va/content/francesco/en/speeches/2024/march/documents/20240314-pas.html>

[7] The financial support by the Alfred P. Sloan Foundation and by the Rockefeller Foundation facilitating participation of a number of workshop participants is gratefully acknowledged.