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COMBINING INDIGENOUS PEOPLES' AND LOCAL KNOWLEDGE WITH SCIENCE FOR SUSTAINABLE FOOD SYSTEMS DEVELOPMENT

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Follow up to the UN Food Systems Summit 2021 and responding to Food Crises

The transformation of global food systems is needed to eliminate hunger and achieve the sustainable development goals. There has been a call for solutions to transform food systems to increase sustainability, resilience and efficiency in the wake of the United Nations Food Systems Summit 2021 (UNFSS 2021). Indigenous Peoples' knowledge, practices and worldviews differ from mainstream science and may provide a valuable contribution to current debates on sustainable food systems.¹ However, Indigenous Peoples' and local communities' knowledge and practices continue to be marginalised in policy and decision-making, as Indigenous Peoples' and local food systems cannot be characterized according to the conventional concepts of food systems. Indigenous Peoples' food systems emphasize circularity and include various ways of utilizing food and are embedded in a biocentric approach intimately tied to nature, while promoting the equitable distribution of resources.²

Science and research are critical for innovations that accelerate the transformation of food systems.³ Combining evidence-based local and Indigenous Peoples' knowledge with science in a spirit of mutual respect between experts from various knowledge, cultural and academic backgrounds can be an opportunity. This brief makes policy recommendations for linking Indigenous Peoples' as well as local communities' knowledge and science potentially serving the transformation processes for sustainable food systems.⁴

Indigenous Peoples' and local knowledge

Numbering over 476 million worldwide, Indigenous Peoples live across over 90 countries and seven socio-cultural regions⁵ and are understood to have their own distinct cultures, languages, and traditions, while they may have a special relationship with the land and natural resources in their area. Indigenous Peoples tend to reside in sites of rich biodiversity and possess rich biocultural diversity

- and knowledge that has been preserved for generations,
- which highlights the importance of their participation in
- the drafting and implementation of food policy for the
- future continuation of their livelihoods.⁶

- Indigenous Peoples' practices are diverse and vary
- depending on the geographical region and territory, i.e.
- some indigenous crops show outstanding performance
- and adaption in (semi-) arid regions while contributing
- to cultural and ecosystem services. Indigenous Peoples'
- food systems in tropical rainforests are built on a diversity
- of local or traditional management practices and Indig-
- enous Peoples' knowledge in mountainous regions is
- often linked to mixed farming systems including pastoral
- activities.⁷

- Local and Indigenous Peoples' knowledge about food
- systems exists all over the world. It refers to a mix of
- traditional knowledge systems adapted to site-specific
- conditions and based on informal yet systemic experi-
- ence. Farmers and Indigenous Peoples are not only recip-
- ients of introduced knowledge or technologies. They
- are also innovators who often develop new techniques
- or improve existing practices to fit them into their local
- conditions and adapt to global changes. Local farmers'
- and Indigenous Peoples' innovations include technolo-
- gies or practices which can be applied along the value
- chain, differ from common or traditional practices, and
- are developed by a farmer or a group of farmers or in a
- communal base by Indigenous Peoples without external
- assistance. Both, Indigenous Peoples' knowledge sys-
- tems, and farmers' own potential for the development
- of innovative local solutions had been neglected histor-
- ically. Instead, when generating agricultural innovations,
- they were attributed to research organizations. Howev-
- er, in the last three decades, the benefits emerging of
- cooperation between research and farmers for instance
- in on-farm research, have come more into focus. Close
- contact between researchers and farmers revealed the
- wealth of knowledge about dynamic innovation pro-
- cesses and can help expand a tenuous knowledge
- base.⁸ Farmers' and Indigenous Peoples' innovations

can play a critical role in addressing agriculture’s challenges because their innovation process leads to the creation of site-appropriate technologies (hybridizing technologies and innovations).⁹ Additionally, if the innovation capacity of local farmers and Indigenous Peoples can be further stimulated, their ability to autonomously adapt to changing conditions can be increased. Between 2016 and 2018, PARI and respective national partners, organized a series of farmer innovation contests in African countries that revealed interesting innovations, such as new formulations of animal feeds and the discovery of ethno-veterinary medicine for the treatment of livestock diseases using local herbs.¹⁰

The speed of climate change threatens to overtake the adaptation capacities of Indigenous Peoples’ food systems and other local food systems knowledge systems. Science and local and Indigenous Peoples’ knowledge systems need to jointly explore their true innovation and adaptation capacities.

Outcomes of the UNFSS2021

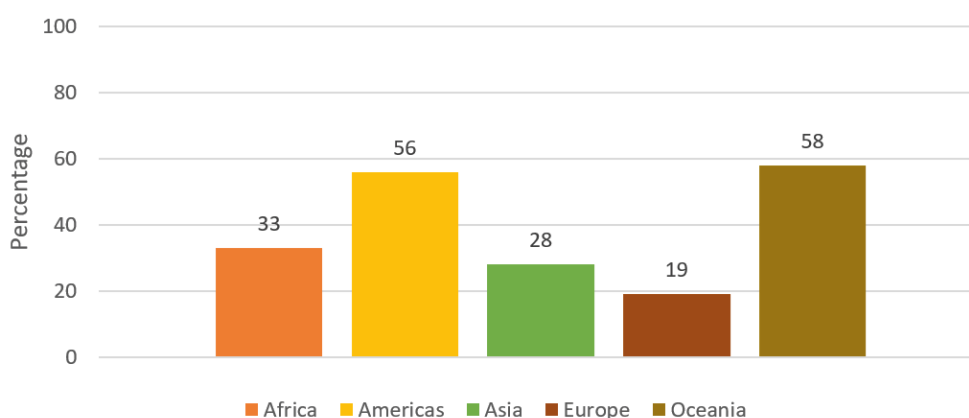
Collective work by Indigenous Peoples’ representatives and experts, scientists, researchers and UN staff, coordinated by the [Global-Hub on Indigenous Peoples’ Food Systems](#), lead to the publication of the White/Wiphala Paper on Indigenous Peoples’ food systems¹¹. The paper provides evidence on the sustainability of Indigenous Peoples’ food systems and articulates the importance of respecting Indigenous Peoples’ rights to ensure the preservation of their food systems. It was a relevant paper to show the game-changing nature of Indigenous Peoples’ food systems during the UNFSS21. The importance and potential of local and Indigenous Peoples’ knowledge was highlighted in the Secretary-General’s Chair Summary and Statement of Action on the UN Food Systems Summit 2021.¹² In the aftermath of the UNFSS 2021, thanks to the leadership of the United Nations Perma-

• nent Forum on Indigenous Issues, Indigenous leaders
 • around the world, seven member countries (Canada,
 • Dominican Republic, Finland, Mexico, New Zealand, Nor-
 • way and Spain), the Food and Agriculture Organization of
 • the United Nations (FAO) and other UN agencies, a Coa-
 • lition on Indigenous Peoples’ Food System was formed
 • with the purpose of ensuring understanding, respect,
 • recognition and protection of Indigenous Peoples’ Food
 • Systems.¹³

• After the UNFSS 2021, 118 countries developed national
 • pathways, providing strategies for transforming food
 • systems. An analysis of countries’ attention to science,
 • research, innovation and technology (SRTI) for food
 • systems based on SRTI keyword mapping from National
 • Pathways reports, shows that in 62 percent of the coun-
 • tries’ strategies science, research, technology and inno-
 • vation are more or less significantly mentioned. Quality
 • of governance effectiveness is identified as a strong driv-
 • er of more attention to science in countries’ strategies.¹⁴

• However, only 36 percent of the countries mention
 • Indigenous Peoples’ food systems. In this, Oceania
 • leads with 58 percent of the countries with mentions,
 • followed by the Americas with 56 percent, Africa with
 • 33 percent, Asia with 28 percent and Europe with 19
 • percent. This indicates that even though the impor-
 • tance of Indigenous Peoples contribution to food sys-
 • tems is emphasized, plans for implementation need
 • further promotion of local and Indigenous Peoples’
 • knowledge.

Percentage of Countries noting Indigenous Peoples' Food Systems in National Pathways Document



Policy recommendations for promotion of Indigenous Peoples' and local knowledge

Local and Indigenous Peoples and their food systems are at the forefront of climate action not only because they are highly threatened by it but also because they are champions of resilience. They have adapted to the conditions that many people consider hostile or marginal sites, e.g. extreme climatic conditions (arid or freezing environments), what conventionally is called poor soils¹⁵, among others. Yet, responding to climate change and transforming food systems requires all available knowledge and science. Therefore, promoting, and preserving local and Indigenous Peoples' knowledge and practices is essential as well as enabling environments for them to continue evolving and adapting to changing conditions. In the same way, recognizing the relevance of Indigenous Peoples' knowledge and contributions to mainstream science is essential to respond to the climatic crisis and food security needs.

Three priorities for Action in Support of and Partnership between knowledge carriers of Indigenous Peoples Food Systems and scientists can be state:

1. Policy positioning: Inclusion of Indigenous Peoples' perspectives in UNFSS National Pathways if they wish to contribute while respecting their Free, Prior and Informed Consent (FPIC), and considering Indigenous Peoples' own pathways and transnational for the way forward.
2. Learning and knowledge sharing: Partnership with science communities (Indigenous and non-Indigenous) in countries and internationally, and Indigenous Peoples, to explore the contributions of Indigenous Peoples' food systems to healthy diets, biodiversity, resource protection (with and versus other food systems in the same contexts) while ensuring Indigenous Peoples FPIC at all the time.
3. And vice versa: Indigenous Peoples' knowledge and local food systems' expertise should critically assess science-based technology innovations in the food systems while guaranteeing PFIC.

Endnotes

1 FAO (2021) [The White/Wiphala Paper on Indigenous Peoples' food systems](#). Rome: Food and Agriculture Organization.

2 Baena, P. A., Brunel, A., Fernández-de-Larrinoa, Y., Martínez-Cruz, T. E., ... & Communities, L. L. (2023) [In Brief: The White/Wiphala Paper on Indigenous Peoples' Food Systems](#). In J. von Braun, K. Afsana, L.O. Fresco & M.H.A. Hassan (eds.) Science and Innovations for Food Systems Transformation, pp. 229-259. Cham: Springer.

3 von Braun, J., Afsana, K., Fresco, L. O. & Hassan, M. H. A. (2023). Science and Innovations for Food Systems Transformation, Springer Cham. <https://link.springer.com/book/10.1007/978-3-031-15703-5>

4 The reflections of this paper are the result of the authors' presentations and conversations with other panellists participating in the session "Linking indigenous knowledge with transformation processes of sustainable food systems – concepts and examples" during the GFFA in January, 2023.

5 See endnote ii.

6 See endnote ii.

7 Azam-Ali, S., Ahmadzai, H., Choudhury, D., Von Goh, E., ... & Olutayo, A. (2021) [Marginal areas and indigenous people: priorities for research and action](#). In J. von Braun, K. Afsana, L.O. Fresco & M.H.A. Hassan (eds.) Science and Innovations for

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- 8 Scherr, S. J. (1991). On-farm research: the challenges of agroforestry. *Agroforestry Systems* 15: 95-110.
- 9 Martínez Cruz, T.E. (2020) [On Continuities and Discontinuities: The Making of Technology-Driven Interventions and the Encounter with the MasAgro Programme in Mexico](#) (PhD dissertation). Wageningen: Wageningen University; Tambo, J. (2018) [Recognizing and rewarding farmers' creativity through contests: experiences and insights from four African countries](#). *Food Security* 10: 1237–1250.
- 10 PARI (2023) [Farmer Innovation Contests](#). Bonn: Center for Development Research, University of Bonn.
- 11 See endnote i.
- 12 United Nations (2021) [Secretary-General's Chair Summary and Statement of Action on the UN Food Systems Summit](#).
- 13 FAO (2022) [The Coalition on Indigenous Peoples' Food Systems gains momentum at its launching and calls upon more members to join](#). FAO News 18 October.
- 14 von Braun, J. (2023) [UN Food Systems Summit 2021 –What Role Science and Innovation in the Summit and in Countries' Plans and Why?](#) ZEF-Discussion Papers on Development Policy No. 325. Bonn: Center for Development Research, University of Bonn.
- 15 Martínez-Cruz, T.E. (2022). [El Problema del 'Expertise' y la necesidad de crear diálogos interculturales en desarrollo Internacional](#). Published at LASA Blog series.

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