

Indigenous Knowledge Research Infrastructure (IKRI): A Tool to Achieve Sustainable Development Goals and Lessons from the COVID-19 Pandemic

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Abstract

The “Global Research Initiative and Knowledge Repository” that uses frontier technologies to develop a digital infrastructure, to capture, process, analyze, and present indigenous knowledge from multiple sources, is a unique and novel tool being developed to drive recovery from the COVID-19 pandemic and get back on track to achieve the 17 Sustainable Development Goals (SDGs) for 2030.

The digital infrastructure initiative called the “Indigenous Knowledge Research Infrastructure (IKRI)”, includes a “Technology-Based Repository”, which was conceptualized as part of the 2021 UN Food Systems Summit process, with the collective efforts of CANEUS, FILAC, UNOOSA, FAO, IFAD and global stakeholders representing both Indigenous and scientific communities, as well those with stake in the implementation of SDGs.

This science-policy brief presents both technical and policy issues along with empirical evidence acquired from this global partnership’s collaborative effort, which were launched, and undertaken during the COVID-19 pandemic, by identifying the challenges and opportunities to create the IKRI concept, undertake its design, development, and formulate the operational plan.

The IKRI aims to leverage diverse efforts worldwide covering a structured framework partnerships with a workable and replicable new development model that will support the needs of those communities most vulnerable, and ensure that no one is left behind, thereby contributing to accelerate transformations across the 2030 Agenda and theme of 2022 Multi-stakeholder Forum on STI.

Introduction

CANEUS and FILAC in partnership with UNOOSA are working on a multi-year cooperation agreement¹ to help the global Indigenous communities bridge the gap with technological equalities, specifically hands-on training, and capacity development using emerging technologies.

CANEUS, FILAC and UNOOSA joined the UN 2021 Food Systems Summit as an opportunity to contribute to the Summit goals, through the integration of Indigenous Knowledge with frontier technologies for food Systems transformation.

Food is connected to all aspects of our lives: water, land, energy, culture, jobs, technology, economies, politics, and is a lifeblood for our families, cultures, and communities. Climate change is further creating more difficulties in food production linked to extreme weather conditions, such as droughts, floods, and major fires around the world. For example, 29% of greenhouse gas emissions come from the food supply chain, and 35 % of all food produced is wasted, accounting 80% of the loss of biodiversity and 70% of freshwater used². Additionally, with the COVID-19 pandemic, poor nutrition is placing individuals at higher

risk of non-communicable diseases and leading to increased food insecurity.

Indigenous Peoples possess ancestral knowledge about cultivation, production and processing of food and conservation of diverse crop varieties that has proven to be resilient and in tune with the nature, and it is an opportunity to integrate this knowledge with emerging technologies.

To that end, CANEUS, FILAC and UNOOSA attempted to mobilize meaningful initiatives for concrete actions and deliverables to help transform global food systems.

Three-Step Process

This This initiative builds on series of related multi-stakeholder collaborative efforts from the [2021 UN STI Forum](#) ³; and [UN HLPF 2021 SDG learning session](#) ⁴.

These activities covered three step process covering (a) a [Global Dialogue held on May 31st, 2021](#) ⁵ involving consultations with Indigenous peoples’ and S&T communities, followed by (b) a [focused conceptualization session](#) at the [UN FSS Pre-Summit on July 31, 2021](#) ⁶ to formulate the concept of the “Global Research Initiative and Knowledge Repository”, which then culminated with (c) the launch of the [“Indigenous Knowledge Research Infrastructure \(IKRI\)”](#) ⁷ to Support

the UN Food Systems Summit Action Area: “Support Means of Implementation”.

Step 1: A Global Dialogue: Examining the Challenges and Opportunities

The Global Dialogue “Integration of Frontier Technologies and Indigenous Knowledge for Food Systems Transformation”, organized by CANEUS, FILAC and UNOOSA, and held on May 31st, 2021, formed the core element of the engagement process for stakeholders to come together to share evidence, experiences, and new ideas. It encouraged analyses, explorations, and solutions that are specific to the Indigenous Peoples context.ⁱ

The focus of this Global Dialogue was in combining developments in scientific concepts such as space data, AI, blockchain and identifying solutions to those mandated to deliver the Summit outcome, specifically focusing on Indigenous communities. Specifically, it was important that these scientific concepts identify solutions that can deliver wide-reaching benefits for each of the five “Action Tracks” of the Summit.

For example, through Action Track 4, scientific concepts such as space data would enable entrepreneurship and address the inequitable access to resources and distribution of value, which would improve resilience through social protection and seek to ensure that food systems “leave no one behind.”

Facts and Issues:

The Global Dialogue examined and identified the challenges and barriers that currently exist related to food systems and how Indigenous Peoples can contribute solutions combined with emerging technologies that can be adapted and replicated.ⁱⁱ

These helped demonstrate that:

1. Indigenous ancestral knowledge and aspects linked to Science and Technology can contribute to the achievement of the Food Systems Summit objective.
2. Indigenous Peoples and aspects of science and technology can synergize and contribute to more inclusive food systems.
3. Linkages between technical scientific aspects with the resilient ancestral Indigenous knowledge.
4. Lessons learned during the Covid-19 pandemic are scalable and can be replicable worldwide.

Outcome:

The outcome from this Global Dialogue contributed by (a) examining the challenges, barriers, and policy issues for integrating Indigenous knowledge/experiences with emerging science and technologies, and (b)

identifying workable and replicable solutions, and new development model for improving the food security for Indigenous People.ⁱⁱⁱ

Step 2: Conceptualization

This conceptualization exercise was undertaken during the UN FSS Pre-Summit held on July 26th, 2021.^{iv}

The thematic focus was “making innovation a significant enabling factor” for food systems transformation and accelerate progress and impact on the 2030 Agenda amongst Indigenous Peoples, specifically youth, women, and producer groups. It aimed to launch sets of new commitments through coalitions of action by mobilizing new partnerships as well potential financing mechanisms.

Facts and Issues:

The input from the panel of global experts contributed to formulate a structured framework and partnership to deliver wide range of nature positive food system transformation.

These contributed to:

- **Formulate new global public-private partnership** covering key stakeholders, e.g. Indigenous communities, public and private entities, research and academic institutions and consumers, to create a global research initiative and knowledge repository to integrate Indigenous Knowledge into the Food Systems.
- **Define the components, procedures and best practices using Indigenous knowledge with technology-based repository** covering frontier technologies for development of a portal to capture, process, analyse and present for a structured framework to support food systems for climate and other global priorities.
- Inspire engagement of Indigenous youths to develop entrepreneurship tools and technology transfer by highlighting importance of preservation of Indigenous knowledge for Sustainable food systems and long-term economic gains.
- Identify and **mobilize potential public and private financing mechanisms** to implement this global collaborative initiatives to help **advance related bold ambitious targets** by the UN Food Systems **Indigenous leadership**.

Outcome:

The outcome further contributed to Action Tracks # 3 and 5, by delivering latest evidence-based and scientific approaches from around the world, explicitly linking the earth observation systems (EOS) and Innovation of

geospatial intelligence (IGI) with frontier technologies for the benefit of Indigenous Peoples, landscapes and leverage indigenous knowledge for benefit of the World.

Launch of “Indigenous Knowledge Research Infrastructure (IKRI)” to Support the Implementation of the UN Food Systems Summit

The “Global Research Initiative and Knowledge Repository to integrate Indigenous Knowledge into the Food Systems” was launched at the [UN FSS on 23 September 2021](#)

Facts and Issues:

By engaging with diverse stakeholders, collaborators, and investors, IKRI will demonstrate that Indigenous ancestral knowledge and aspects linked and integrated with emerging science and technology can contribute to the 2030 Agenda for Sustainable Development.

The key issues included:

- Understanding interests and concerns of key stakeholders
- Policy and regulatory aspects of IKRI focusing on intellectual property rights related to indigenous knowledge and protecting interests of indigenous people knowledge while offering benefits of such knowledge to the food systems
- Technical aspects of IKRI such as understanding the requirement of all stakeholders that can be incorporated into IKRI, defining data components of IKRI, ways to tap into existing scattered data from the public/private domain and approaches to collect data from primary sources before such knowledge is lost with time.
- Financing the IKRI for strengthening the indigenous food system and knowledge
- Protecting indigenous systems from disaster and climate risks, by effective use of technologies such as Earth observation

Outcome:

This initiative will complement and contribute to the FAO-led Global Center on Indigenous Peoples' Food Systems and contribute to the Coalition for Indigenous Peoples' Food Systems, whose objectives are shared by IKRI.

Results and Key Policy Recommendations⁸ for action:

- The IKRI is the valuable partnership and initiative, and several key organizations have interest to support the implementation of IKRI. These

stakeholders need to be kept on board with the progress in this initiative.

- The interests of indigenous people must be protected while developing IKRI that calls for in-depth discussion on policy and regulatory frameworks associated with IKRI
- Indigenous people are real owner of the knowledge, and they must get benefitted from IKRI, while such knowledge is used for strengthening food systems
- Seek financial support from key stakeholder organizations for initial phase of IKRI that may include planning series of brainstorming meetings to discuss the points that I mentioned above; develop a detailed document/project proposal that would also include the road map and timeline of implementation; and conduct outreach in various sub-regions in all continents to generate awareness for the IKRI and create a global network to support IKRI
- IKRI must also aim to provide technology and policy support to protect indigenous systems from disaster and climate risks.

The proposed repository will ensure that Indigenous Peoples and Local Communities preserve their knowledge and practices, especially given the rapid pace of development motivating indigenous youth to migrate to economic growth centers threatening the physical, sociological, and economic setup of indigenous communities.

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8. CANEUS / FILAC / UNOOSA, “IKRI Global partnership, a tool to achieve sustainable development goals”, Report of the side event held within the framework of the ECOSOC 2022 Partnership Forum, on February 2, 2022.

ⁱ https://caneus.org/UN-FSS_May_31_en.pdf

ⁱⁱ https://caneus.org/1.UNFSS_Background_Paper_May_31.pdf

ⁱⁱⁱ https://caneus.org/Report_UNFSS_Global_Dialogue_May_31_2021.pdf

^{iv} <https://caneus.org/unfss2021/>