



Traditional and Local Knowledge for Sustainable Development: Empowering the Indigenous and Local Communities of the World



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Synonyms

[Indigenous and local knowledge](#)

Definition

Traditional and local knowledge is the collective body of knowledge, innovations, and practices of indigenous peoples and local communities worldwide (UN 1992). In this context, “traditional” implies that the knowledge is gained through extensive experience in a specific place, landscape, or ecosystem and carried from one generation to the next (Curci 2010).

Traditional and local knowledge is a significant component of human-environment relationships in local ecosystems. Indigenous peoples have depended on nature for their survival for generations, thus developing a strong connection with

their habitat and an understanding of their environment based on observation and experience. Local communities have developed a mastery of their environs that has shaped and sustained their intergenerational livelihoods, including crop farming, farm animal rearing, and beekeeping.

In the process, indigenous peoples and local communities learn to discern how human activities and natural phenomena affect them and their surroundings, allowing them to form appropriate responses. It is this practical acumen that guides them in using and managing their land and its resources sustainably, creating a system that enables them to adapt and thrive in their location. Unprecedented changes in their surroundings can deplete the resources they have become accustomed to and alter the overall dynamics in their social group, threatening their survival and the continuity of their rich cultural heritage.

Traditional and local knowledge is not static, but rather dynamic in its characteristics, ingrained in culture and social changes. It is acquired through direct experience and observation, accumulated over time, and modified as it is relayed across generations. Cultural elements can be tangible, such as tools, clothing, and shelter, and intangible, such as folklore and spiritual activities. As wisdom or ways of knowing formed and transformed by the social structure, cultural norms, political system, spiritual beliefs, and biophysical environment of a social group, traditional and local knowledge must be interpreted with a nuanced understanding of the local context

and conditions in which it was generated and from which it cannot be isolated.

Introduction

The success of the 2030 Agenda for Sustainable Development rests on the committed participation, synergistic efforts, and expedient action of public and private sectors at local, national, regional, and global scales. To achieve the 17 Sustainable Development Goals (SDGs), it is necessary to recognize and empower social groups that are often marginalized, disadvantaged, and misrepresented by various development programs, policies, and legislation. Among such groups are indigenous peoples and local communities that inhabit diverse ecosystems, embody different cultures, and possess complex knowledge systems.

There is widespread evidence that indigenous and local communities (ILCs) frequently face a range of adversities, including social exclusion, persistent poverty, loss of land rights, limited access to resources, and high vulnerability to the impacts of climate change. Despite the abundance of activities designed to improve their quality of life, many ILCs worldwide continue to experience oppression and discrimination. Past development undertakings were usually top-down interventions that equated development with modernization (Sillitoe 1998) and overlooked an element that is fundamental to ILCs' survival, identity, worldview, and way of life – traditional and local knowledge (TLK).

Nature of Traditional and Local Knowledge

Definitions of TLK are plenty and often context-dependent. The term is associated with both contents of knowledge and the attitudes toward them. The absence of a universal description reflects the intricacy of TLK, which is expressed and embodied in different ways, and the diversity of ideas associated with the term.

TLK systems are relative to culture and specific to location, but they share a number of common aims and attributes. These are to sustain natural resources for subsequent generations, nurture human connections and human-environment relationships, preserve cultural identities, ensure reciprocity or the sharing of benefits among members of the community, and limit market exchange (Parrotta et al. 2016).

Place in Traditional Systems and Processes

According to the World Intellectual Property Organization (WIPO) (2010:2–3), TLK is present in different contexts and embedded in traditional systems and processes, including:

- Architecture and building techniques
- Methods and designs in woodwork, stonework, metalwork, and crafting jewelry and other accessories
- Textile techniques, such as weaving and dyeing, and materials used in the process
- Methods and materials used in body decoration and modification, cosmetics, other products for use on the body, and aromatics
- Methods in birthing, bone setting, and spiritual healing
- Medicinal use of materials derived from plants, minerals, and animals
- Methods in preserving, processing, and preparing food and drinks
- Farming and agricultural knowledge
- Skills in hunting, fishing, and gathering
- Management of the environment and sustainable use of natural resources
- Knowledge of plant and animal species and weather patterns
- Customary laws and traditional systems in conflict management and decision-making

TLK can be linked with traditional cultural expressions (TCEs), which may or may not embody TLK, and both should be viewed holistically because they are integral to all ILCs (WIPO 2005). This includes TLK related to the following, which represent and identify ILCs or groups within them: expressions of folklore through

traditional designs, icons, symbols, music, performances, and rituals; creation and use of instruments, products, clothing, and accessories; and material culture, handicrafts, and artifacts (WIPO 2005, 2010:2–3).

Role in Sustainable Development

Indigenous knowledge has become increasingly visible in development discourse since the 1980s (Henkel and Stirrat 2001). Its inclusion in bottom-up approaches has been considered a countermeasure to the unfavorable effects of development strategies that were employed in previous decades (Agrawal 1995). An informed understanding of how societies function at multiple levels increases the likelihood that specific groups are neither excluded nor harmed by planned change; after all, imposing certain forms of knowledge and practices on people, rather than discussing their own concept of progress and how it can be achieved, can incapacitate and dissuade them from participating (Gardner and Lewis 2015).

The usefulness of TLK and its potential to bring about favorable change have been documented in different fields, including arts, education, environment and sustainability, health and nutrition, medicine, and technology. TLK is a critical factor in protecting the cultural heritage of ILCs and upholding the quality of the areas they occupy. As the majority of ILCs across the globe reside in areas that are rich in biodiversity (SCBD 2004), building their capacity in managing their environment, engaging in sustainable livelihoods and use of resources, and sharing TLK with younger community members can secure both ecosystem health and human well-being. TLK can also drive partnerships for the SDGs. For instance, TLK holders can help address local challenges that are also global concerns, such as biodiversity conservation, climate change adaptation and mitigation, and agricultural innovation, with support from stakeholders in other sectors and input from other knowledge systems.

While its significance is acknowledged and content is applied in various disciplines, the role of TLK as a driver of sustainable development has garnered immense global attention in environmental issues. This has prompted a thorough

examination of current human-environment relationships and their impacts. Such is emphasized to a greater extent in discussions on biodiversity conservation and natural resource management compared to, for example, discussions on climate change.

For instance, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) has set up a task force on indigenous and local knowledge systems to increase ILCs' participation in various areas of its work. The task force, which was assembled during the second session of the IPBES Plenary in 2014, is a way to recognize the role of TLK in biodiversity conservation, sustainable ecosystem management, and human well-being. This contrasts with climate change assessments of the Intergovernmental Panel on Climate Change, where indigenous knowledge systems are mentioned but neither explored in depth nor critically engaged and indigenous issues had been inadequately represented in the past (Ford et al. 2016).

Realistic Application

According to Briggs (2005:99), while the use of indigenous knowledge has been regarded as “an alternative way of promoting development in poor rural communities,” several challenges have hindered the assumed and aspired outcomes of applying such knowledge, stemming from “a focus on the (arte)factual; binary tensions between western science and indigenous knowledge systems; the problem of differentiation and power relations; the romanticization of indigenous knowledge; and the all too frequent decontextualization of indigenous knowledge.”

Overstating the value of TLK can also reduce the effectiveness of participatory approaches to development (Henkel and Stirrat 2001). Failing to consider that members of a social group have varying levels of access to and control of resources, and experience the effects of development interventions differently even if they share the same knowledge system and cultural heritage, can have a similar outcome (Gardner and Lewis 2015).

For instance, as Clarke (1990) pointed out, traditional techniques or materials are not

necessarily more suitable to conservation management than their modern counterparts. People may be inclined “in this cash-demanding world to use whatever ways are easily available, effective, labor-saving, and cheap, whether traditional or modern, whether conservationist or devastating” (Clarke 1990:234).

Solutions arising from the combination of TLK and scientific knowledge can build ILCs’ resilience, but it is important to first determine in which aspects such knowledge systems are mutually consistent and compatible (Rochet et al. 2008). Also, if the top-down standardization approaches of governments cannot be harmonized with the bottom-up approaches of ILCs that rely on customary laws and TLK, transmitting and retaining TLK will be hampered. Consequently, the advantages of incorporating TLK in sustainable development efforts may not be fully realized. Hence, it is crucial to not only acknowledge the value of TLK but also increase opportunities for ILCs to acquire knowledge that will help them deal with current global challenges.

International Instruments

As more and more entities are recognizing the value of TLK, the knowledge is increasingly at risk of being misappropriated and exploited for commercial reasons. ILCs often experience the repercussions rather than the benefits of such pursuits.

As a locally shared resource, TLK can be regarded as intellectual property (IP) that needs to be protected. However, it is difficult to specify its legal and economic value (Van Overwalle 2005), along with what constitutes TLK IP rights and who classify as TLK holders. For instance, many smallholder farmers, fishers, and livestock keepers possess knowledge that is highly useful in preserving agricultural biodiversity and cultural heritage; although such knowledge should be protected as IP, the knowledge holders may be unaware of its value (CIP-UPWARD 2003).

Globally, steps are being taken to respond to this complexity. Several international instruments on recognizing and protecting ILCs and their

rights, knowledge, and culture are already in place, and more are being negotiated.

United Nations Declaration on the Rights of Indigenous Peoples

In 2006, the United Nations Human Rights Council recommended the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). Adopted by the General Assembly in 2007, the UNDRIP is a comprehensive, nonlegally binding instrument that sets a basic global standard for the treatment of indigenous peoples. It bespeaks the global recognition of indigenous peoples’ rights, knowledge, and culture, making it an important tool in the fight against human rights violations, discrimination, and marginalization that indigenous peoples have long been experiencing. Its application will help accomplish the SDGs and their respective targets, which cover the critical areas of people, planet, prosperity, peace, and partnership (UN 2015). The UNDRIP states:

Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions. (UNGA 2007: Article 31)

Convention on Biological Diversity

The Convention on Biological Diversity (CBD) was adopted at the United Nations Conference on Environment and Development in 1992. The vital contribution of TLK in the conservation and management of diverse biological and genetic resources has been widely acknowledged since the treaty was enacted. In Article 8(j) of the CBD, the parties to the convention are requested as follows:

Each Contracting Party shall, as far as possible and as appropriate: (j) Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local

communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices. ... (UN 1992: Article 8(j))

Akwé: Kon Guidelines

In its fifth meeting in 2000, the Conference of the Parties (COP) of the CBD adopted the program of work on Article 8(j) and related provisions (COP 5 Decision V/16). Set in motion following Task 9 of the program of work, the Akwé: Kon guidelines were adopted in 2004 (COP 7 Decision VII/16F). These are:

...voluntary guidelines for the conduct of cultural, environmental and social impact assessments regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities. (UN 2004:Decision VII/16F)

The guidelines were named after a Mohawk term that means “everything in creation,” which was given by the Kahnawake community (SCBD 2004). They serve as a collaborative framework to ensure that ILCs are thoroughly involved; traditional knowledge, innovations, and practices are considered; and appropriate technologies are used in the assessments described above.

WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge, and Folklore

The WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge, and Folklore is working toward international legal instruments to safeguard IP, TLK, TCEs, and genetic resources.

The WIPO (2005) summarized the main demands on the IP system that have emerged in policy debates: recognition of TLK holders’ rights in connection with their TLK and matters arising from third parties’ unauthorized acquisition of IP rights over TLK. Positive and defensive protections are the two forms of IP-related protection

that are currently in motion, where the first provides TLK holders the right to take action or seek remedies against certain types of TLK misuse, while the second protects against illegitimate IP rights obtained by others over TLK subject matter (WIPO 2005).

Other legal concepts for the protection of TLK include prior informed consent, where third parties are required to consult TLK holders, obtain their agreement before their knowledge is accessed and used, and inform them about the possible outcomes of such use; equitable sharing of benefits, where TLK holders will collect a fair share of the benefits (monetary or nonmonetary) stemming from the use of TLK; laws on unfair competition and trade practices; and respect for customary laws and practices (WIPO 2005).

Transmitting and Retaining Knowledge

The patterns of knowledge transmission, which are useful in identifying social relations that facilitate the “generation, maintenance, spread, and devolution” of innovations and cultural attributes (Reyes-García 2010:6), are salient in understanding the factors that shape different facets of TLK systems. For instance, they can reveal regularities in human-human and human-environment interactions in a community; the social structure, stratification, and institutions that influence decision-making, partnership-building, and benefit-sharing; social hierarchies that can preserve TLK but also limit its diffusion; types of knowledge that are frequently circulated, among whom, when, and for what purpose; specific contexts in and methods by which TLK is efficiently and effectively disseminated such that it is consequently applied and not merely held; and circumstances that lead to the abandonment of certain types of knowledge.

Such information can be used to pinpoint segments in the transmission process that are conducive to either the onward movement or the gradual decline of valuable TLK. It can help determine situations where the synergies between TLK and scientific knowledge can increase the innovative and adaptive capacities of ILCs. Also, it can offer

insight into why some TLK systems are more resilient to a range of disturbances than others. As a result, policies that protect TLK, ensure that holders of such knowledge will benefit from its use, and promote ILCs' inclusion and increased participation in planning, implementing, monitoring, and evaluating sustainable development initiatives can be formulated.

Vertical, Horizontal, and Oblique Transmission

TLK can be transmitted vertically, from parents to their children; horizontally, between people from the same generation regardless of their relationship; and obliquely, between unrelated people from older to younger generations (Cavalli-Sforza and Feldman 1981). In horizontal and oblique transmission, the number of people who impart and receive knowledge varies. TLK can be relayed from one person to another or shared among a number of people. In "one to many," an individual passes on TLK to several people, such as a leader or a teacher educating community members or students; in "many to one," several people convey TLK to an individual, such as older members of a social group training a younger member of their cohort (Hewlett and Cavalli-Sforza 1986).

All three modes of transmission are essential in ensuring the continuity of TLK. Used conjointly, they can strengthen ILCs' tenacity in various social, economic, and environmental conditions; when knowledge from a range of sources flows regularly, people are able to glean from a rich knowledge base and develop suitable responses to both expected and unprecedented changes in their circumstances. The prevalence, impact, and importance of each mode of transmission vary at different stages in people's lives.

Vertical transmission occurs mostly during childhood, when individuals' primary role models, main sources of information, and constant companions are their parents. It is the most important mode of transmission at this stage, especially for passing on knowledge, practices, and skills that have been inherited from family members. Horizontal and oblique transmission become the prominent modes of transmission

during adulthood, when individuals interact more with other people in their community and develop wider social networks. As they grow older, children spend less time with their parents and increasingly seek the company of people outside their family. Their external influences multiply, and cultural knowledge expands, reshaping the knowledge they had first acquired from their parents and other family members when they were younger (Aunger 2000). This also allows them to pursue more specific knowledge, practices, and skills that may be different from those held by their family (Eyssartier et al. 2008).

Oblique or intergenerational transmission is pivotal to the long-term preservation of TLK, especially in the face of its rapid erosion on which comparisons of the extent of its loss, persistence, and generation across cultures are lacking (Paniagua-Zambrana et al. 2016). Power relations within ILCs can also prevent the oblique transmission of vital knowledge, such as when elders or leaders are reluctant to share their expertise (Maunganidze 2016).

Preserving Knowledge

The tacit nature of TLK, which means it is knowledge derived from firsthand experience (Polanyi 1966), is a major hurdle in its transmission, especially to people from younger generations within a social group or people from outside a social group who have neither experienced nor observed the foundations of such knowledge. Certain parts of TLK are explicit, such as the names of wild plants that are edible or unfit for human consumption, and these parts are easy to explain, share, and document even without the receiver of the knowledge having any prior experience or practice of its application. Explicit knowledge, which is codified knowledge (Polanyi 1966), can be communicated through formal language and means and stored in easily accessible platforms, such as academic lectures and guidebooks.

For instance, in mushroom production, older and more experienced mushroom farmers know how to set up the logs for Shiitake production in different seasonal and environmental conditions, even if they are unable to verbalize the process. On the other hand, the manuals explain when to

turn the logs, the length to cut them to, and at what temperature this should be done. This example shows that it is easier to update explicit knowledge than tacit knowledge. Tacit knowledge is transmitted informally and highly efficiently among members of a group with strong ties, while explicit knowledge is transmitted efficiently among members of a group with weak ties (Byosiere et al. 2010).

Converting TLK from tacit to explicit can facilitate its transmission, proper use, and greater inclusion in policy, and make its positive contributions in various aspects of sustainable development reach a wider spectrum, as long as due protection is given to ILCs and their rights. However, such conversion is not without its obstacles. Given the holistic nature of TLK, it can be difficult to document fragments of knowledge, practices, and innovations when they are taken out of context or isolated from the whole.

Strategies to preserve TLK have their corresponding pros and cons. For instance, Agrawal (1995) explained that indigenous knowledge can be preserved both *in situ* and *ex situ*. He noted that *in situ* preservation entails indigenous peoples having control over their land and its resources, since knowledge holders should have the right to decide how their knowledge must be saved and used and by whom. Potential setbacks to *in situ* preservation are, for indigenous peoples, lack of resources to protect their knowledge, preference to stop using their knowledge because it cannot cope with the demands of globalization and a market economy, and vulnerability to modernization and, for outsiders, higher costs associated with accessing and distributing indigenous knowledge (Agrawal 1995). On the other hand, he noted that *ex situ* preservation, albeit its capacity to extract useful knowledge, exposes the knowledge to decontextualization and favors larger and more powerful entities than the knowledge holders themselves (Agrawal 1995).

Channels and Motivations

Research on the transmission of TLK in general and traditional ecological knowledge (TEK) in particular mostly centers on the types of knowledge and how the body of knowledge can be

preserved and documented. Investigations on the specific channels through which such knowledge is relayed are limited and should be explored further. The ways by which ILCs learn, keep, and share knowledge influence the progression or discontinuation of their TLK (Maunganidze 2016). Identifying these channels, as well as other novel mechanisms for knowledge transfer, will be useful in retaining TLK and combining it with scientific knowledge to help ILCs adjust to changing social, economic, political, and environmental circumstances.

Also, analyzing people's methods and motivations in transmitting TLK (Martini et al. 2014) can inform incentives for creating suitable policies and programs for the management of ecosystems and the services they provide, as well as pathways through which these can be carried out sustainably, without marginalizing the ILCs they aim to serve. Transdisciplinary research that integrates the analyses of both ecosystem characteristics and social dynamics should be conducted to further understand the transmission of TEK in ILCs, as this will help explain the hurdles in community-based interventions and translate research to practice within an ecosystem framework (SantoDomingo et al. 2016).

Traditional Ecological Knowledge

TEK has enriched the pool of knowledge on biodiversity conservation and human well-being. Understanding the dynamics of its transmission can inform various aspects of ecosystem management, including conservation strategies, socio-ecological resilience, and social learning.

Sustainable Ecological Management

TLK, such as traditional practices and techniques, should be integrated in the governance of diverse local environments (Marques et al. 2016). TLK holders have been found to make accurate forecasts of changes in their surroundings due to their experiences and observations; hence, methods to increase ILCs' involvement in managing their natural resources, especially in decision-making

activities, are increasingly being discussed on various platforms (Rochet et al. 2008).

Sustainable ecological management requires the integration of TEK with scientific knowledge. For instance, the IPBES has highlighted the harmonized use of diverse knowledge systems in its discussions. It is important to preserve TLK and evaluate its potential contributions to science, particularly in areas where empirical data are unavailable (Wehi 2009). TEK embedded in ancestral sayings can supply useful information from which scientific hypotheses, avenues for collaboration, and sustainable ecological management approaches can be determined (Wehi 2009).

Owing to the strengths of blending multiple knowledge systems, ILCs can benefit from short- and long-term solutions that are empirical, ecologically sound, culturally acceptable, economically viable, and suitable to their socioecological context. The engagement of various actors from multiple spatial and institutional scales can reduce the loss of TEK through the heightened transmission of such knowledge (Tang and Gavin 2016).

Socioecological Systems

There are numerous case studies on the transmission of TEK for use in local food and health systems. For instance, mushrooms and other non-timber forest products like honey produced in unique local or regional socioecological systems have been the focus of research on local food retention (Kohsaka et al. 2015; Uchiyama et al. 2017). In this regard, the socioecological system can facilitate the transmission of TEK (Santiago et al. 2016), and TEK can facilitate the growth of the local landscape.

TEK is an integral part of local and ethnic food production, such as the production of traditional place-based agricultural products (Kajima et al. 2017). European and Asian local and ethnic foods are registered as Intangible Cultural Heritage at the United Nations Educational, Scientific and Cultural Organization (UNESCO) for their contribution to bonding traditional communities, maintaining rituals, and facilitating intercultural exchanges (Kohsaka 2017).

Socioecological systems have their own unique characteristics that influence the corpus

of available local knowledge, which also reflects people's understanding of the interdependence between ecosystem health and human well-being. Transmitting and applying such knowledge can contribute to the efficient and effective management of ecosystems and the services they provide, which will prevent the overuse and consequent decline of natural resources and conserve biological and genetic diversity. In turn, ILCs will be able to adapt to increasing stressors, minimize the harmful effects of resource use and other human activities on the environment, and maintain their livelihoods and well-being while also retaining their cultural identity. Efforts to identify new actors, as well as avenues through which proponents of diverse knowledge systems can work together, can make unique local or regional socioecological systems more resilient.

Knowledge on Wild Edible Plants

TEK on wild edible plants, which is transmitted orally in situ by members of the community in which it was generated, is vanishing due to numerous factors, including acculturation and degradation of ecosystem quality (Barreau et al. 2016). In rural areas in Japan, the deterioration of the satoyama ecosystems and market economy has modified traditional food systems, and the resulting changes can damage TLK systems and cultural identities (Cetinkaya 2009). The loss of such knowledge is alarming, especially since local food that rely on ecosystems are essential components of ILCs' way of life (Della et al. 2006). Efforts to highlight the origins of food, such as geographical indications, have bolstered the demand for local specialty food products that embody regional identity (Pardo-de-Santayana et al. 2007).

Knowledge on Beekeeping

Another example is the transmission of TEK on beekeeping, which helps maintain pollination services. Such knowledge is important because native beekeeping, which has both economic and cultural values that are part of people's regional identity (Adal et al. 2015), has positive effects on social, economic, and ecological dimensions and contributes to the sustainable management of

forest resources (Park and Youn 2012; Kohsaka et al. 2017; Uchiyama et al. 2017). However, this does not imply that scientific knowledge should be disregarded. The combined use of TEK and scientific knowledge can increase the diversity of honey bees, and diversity should be maintained to prevent their extinction (Athayde et al. 2016).

Driving Partnerships for Sustainable Development

Bridging different knowledge systems leads to diverse ways of looking at and responding to rapid social and environmental change, enabling more informed, inclusive, and appropriate courses of action for sustainable development (UN SAB 2016). Such integration can strengthen cooperation and prompt greater participation among various stakeholders, such as ILC representatives, scientists, field practitioners, academic and research institutions, business entities, government agencies, local and international organizations, and wider civil society. Consequently, it can level the playing field in terms of access to resources and opportunities and thus distribute power and reduce inequality. This reinforces the pledge of the SDGs to leave no one behind (UN 2015) – a commitment that should be monitored rigorously as threats to social, economic, political, and environmental security continue to emerge.

The Open-Ended Intergovernmental Meeting of Scientific Experts on Biological Diversity, which was called at the request of the first Intergovernmental Committee on the CBD to assess the scientific and technical issues for the initial COP meeting, was held in Mexico in 1994. Besides identifying the need to acknowledge the value of TLK, establish a mechanism to protect TLK and compensate TLK holders for the use of such knowledge, and foster collaboration among individuals and groups from various sectors, the scientists also concluded:

The question itself has to be rephrased. The challenge is not to find the ways to integrate, in modern management practices, knowledge, innovations and practices of indigenous and local communities.

Rather, it is to define, in collaboration with indigenous and local communities, which modern tools may be of help to them, and how these tools might be used, to strengthen and develop their own strategy for conservation and sustainable use of biological diversity, fully respecting their intellectual and cultural integrity and their own vision of development. (UNEP 1994:29)

A paradigm shift in attitudes toward society and the environment is necessary to protect ILCs' heritage and IP (Von Lewinski 2008). Partnerships that link TLK with science and policy and enhance resilience through innovation and sustainable technologies, where ILCs are effectively and actively engaged rather than merely included as a token gesture, should be at the core of collaborative programs on sustainable development.

The International Partnership for the Satoyama Initiative (IPSI) and the Globally Important Agricultural Heritage Systems (GIAHS) Program are international collaborations that aim to protect and increase the resilience of socioecological production landscapes and seascapes (SEPLS) and traditional agricultural systems. Many SEPLS and agricultural heritage landscapes worldwide have been deteriorating due to rapid industrialization, urbanization, modernization, and globalization – a reality that threatens the environment and the survival of people living in such areas.

International Partnership for the Satoyama Initiative

The IPSI was launched at COP 10 in Nagoya, Japan, in 2010. It was established to support the efforts of the Satoyama Initiative, a joint undertaking of the Ministry of the Environment of Japan and the United Nations University Institute for the Advanced Study of Sustainability, which works to “realize societies in harmony with nature” through ecologically sound socioeconomic ventures in agriculture, fisheries, and forestry (IPSI Secretariat 2015).

To achieve its vision, the IPSI combines research and practice in its threefold approach: (1) consolidating wisdom on securing diverse ecosystem services and values; (2) integrating TEK and modern science to promote innovations;

(3) exploring new forms of co-management systems or evolving frameworks of ‘commons’ while respecting traditional communal land tenure” (IPSI Secretariat 2015:4). This approach is operationalized in five main activity clusters: (1) knowledge facilitation, (2) policy research, (3) research for indicators, (4) capacity building, and (5) on-the-ground activities (IPSI Secretariat 2015:23).

To guide its approach and activities, the IPSI considers six complementary perspectives on social, economic, and environmental factors. These are (1) resource use within the carrying capacity of the environment, (2) cyclic use of natural resources, (3) recognition of local traditions and culture, (4) multistakeholder participation and collaboration, (5) contributions to sustainable socioeconomies, and (6) improved community resilience (IPSI Secretariat 2017:7).

For over 200 member organizations and many external stakeholders, the IPSI is a platform to share knowledge on SEPLS, including preserving and using TLK to foster mutually beneficial human-environment relationships, and work together on activities that will maintain and cultivate thriving SEPLS or revive those that are degraded (IPSI Secretariat 2015). TLK is a critical component of the abovementioned approach, activities, and perspectives, with ILCs being an essential part of the entire process. By confronting multidimensional issues in biological and cultural diversity, ecosystems, and human well-being through partnerships that link multiple knowledge systems, the IPSI helps bring the SDGs to fruition.

Globally Important Agricultural Heritage Systems

The GIAHS Program of the Food and Agriculture Organization of the United Nations was initiated at the World Summit on Sustainable Development in Johannesburg, South Africa, in 2002 and registered in the Partnerships for Sustainable Development of the Commission on Sustainable Development in 2004. It has 57 designated sites in 21 countries (FAO 2018b), and 6 of these sites in China, Iran, the Philippines, South Korea, Tanzania, and the United Arab Emirates are also UNESCO World Heritage Sites (FAO 2018a).

Following a dynamic conservation approach that embraces the ongoing evolution of agricultural systems and participation of various stakeholders and strengthens ILCs’ capacity to cope with multidimensional pressures using locally adapted mechanisms, the GIAHS Program’s overall goal is to identify and protect globally important agricultural heritage systems with historical and contemporary relevance (FAO 2018a). The criteria for assessing potential GIAHS sites include (1) food and livelihood security; (2) agro-biodiversity; (3) local and traditional knowledge systems; (4) cultures, value systems, and social organizations; and (5) landscapes and seascapes features (FAO 2018a:11–12).

Historical relevance refers to the unique development of a site, encompassing the adaptation of the socioecological system to different social, economic, and environmental changes and the knowledge, practices, and innovations that have shaped the current landscape, while contemporary relevance refers to the current and future capacity of a site to achieve food and livelihood security, human well-being, and a range of environmental goals (FAO 2018a).

To achieve its overall goal, the GIAHS Program carries out activities to meet three primary objectives. These are to (1) leverage global and national recognition of the importance of agricultural heritage systems and institutional support for their safeguard; (2) build capacity of local farming communities and local and national institutions to conserve and manage GIAHS, and sustainably generate income and add economic value to agricultural heritage systems goods and services; and (3) promote enabling regulatory policies and incentive environments to support the conservation, evolutionary adaptation, and viability of GIAHS (FAO n.d.:4–5).

By integrating agricultural biodiversity, ecosystem resilience, and TLK on farming, fishing, and forestry, as well as striving for multi-scale partnerships to advance knowledge, policy, and innovation, the GIAHS Program positively contributes to the SDGs and the CBD (FAO 2018a).

Moving Forward

The loss and degradation of TLK have been documented in many ILCs in different regions of the world. To impede TLK erosion, it is necessary to share the lessons learned from and best practices in managing TLK through local and international collaborations. Connecting actors from diverse knowledge systems opens more avenues for transparent, regular, and systematic transmission of TLK, which is an indispensable building block of sustainable development, especially for ILCs.

International collaborations, such as the IPSI and the GIAHS Program, empower ILCs by consulting them in planning and implementing activities; building their adaptive capacity through sustainable resource use and management; supporting sustainable livelihoods; and ensuring that their perspectives are significantly considered in negotiations, decisions, and policies that concern not only their TLK but also their overall welfare.

Partnerships that link TLK with science and policy to promote innovation and further the spread of sustainable technologies reveal ILCs' major role as stewards of continuously evolving landscapes and seascapes around the globe. This reiterates the need for their genuine participation in matters that concern their future and the future of diverse ecosystems.

Cross-References

- ▶ Collaborative Governance
- ▶ Cross-Sector Partnerships: Role Toward Achieving the UN Sustainable Development Goals
- ▶ Cultural Ecology
- ▶ Disaster Risk Reduction and Resilience through Partnership and Collaboration
- ▶ Inclusive Partnerships: A Key to Achieving Sustainable Development
- ▶ Knowledge Sharing
- ▶ Multi-Stakeholder Partnerships
- ▶ Multi-Stakeholder Partnership in Public Policy

- ▶ Participatory Co-Design for Sustainable Development
- ▶ Preserving Culture in Meeting Sustainable Development
- ▶ Preserving Culture in Meeting Sustainable Development
- ▶ Public-Private Partnerships and Sustainable Development
- ▶ Reimagining Development Institutions for the SDG Era: Pathways to Impact
- ▶ Revitalize the Global Partnership for Sustainable Development through Community Engagement
- ▶ Supporting the Sustainable Development Goals through Partnerships and Local Development

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