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Theoretical
Impulses + Case
Studies

Interdisciplinary Perspectives on the Interplay between Human Rights and Sustainability

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Preface

The following collection of manuscripts emerged from an interdisciplinary virtual exchange held during the Winter semester of 2023/2024 at the Environmental Campus Birkenfeld, organized by Prof. Dr. Milena Valeva and Prof. Dr. Kathrin Nitschmann. Additionally, Prof. Dr. Héctor Bombiella Medina, a lecturer of anthropology in the Department of World Languages and Cultures at Iowa State University, contributed to the virtual exchange and supervised case studies 3 and 4, bringing his extensive experience in this field and facilitating the international exchange. Within the elective module on Human Rights, students from the Bachelor's programs "Nonprofit and NGO Management" and "Environmental and Business Law," as well as the Master's program "Energy and Corporate Law," explored the interconnections between human rights and sustainability.

In an era marked by unprecedented environmental challenges and profound social transformations, the intersection of human rights and the rights of nature has emerged as a critical area of inquiry and debate. Today, as we face the dual crises of climate change and biodiversity loss, the traditional boundaries between human and environmental rights are increasingly blurred. This confluence demands a fresh, interdisciplinary approach to understanding and addressing the complex and interrelated issues at hand.

Human rights, fundamental to the dignity and freedom of individuals, are deeply impacted by environmental degradation. Communities worldwide are experiencing firsthand the devastating effects of polluted air, contaminated water, and deforested landscapes, all of which undermine basic human rights to health, livelihood, and well-being. Conversely, recognizing the rights of nature – the intrinsic value of ecosystems and species – challenges us to reconsider our legal, ethical, and philosophical frameworks. It calls for a paradigm shift from an anthropocentric world-

view to one that embraces the interconnectedness of all life forms.

Engaging in robust discussions and research on these topics is essential in today's context. By exploring interdisciplinary perspectives, we can forge innovative solutions that honor both the rights of individuals and the integrity of nature. This special issue aims to contribute to this vital discourse, providing insights and fostering dialogue on how we can collectively navigate the complex landscape of human rights and environmental sustainability.

The first chapter „Human rights and SDGs in the context of democracy“ examines the significance of international human rights in today's context and links them to new value systems like sustainability.

The second chapter, the case study „Rights of Nature“ explores the concept of granting legal rights to nature itself by comparing laws from various countries to show how it combats environmental exploitation.

The third chapter, the case study „Traditional coca leaf consumption and drug trafficking in Colombia“ delves into the complex issues surrounding coca cultivation in Colombia, highlighting its economic, social, and political impacts.

The fourth chapter, the case study „The artisanal fishing community of Chorrillos, Peru“ aims to provide theoretical insights and recommendations for improving the livelihoods of artisanal fishing communities in Peru, considering legal, ethical, and environmental perspectives as well as how economic liberalization, privatization, and deregulation affect the community's socio-economic conditions.

Traditional ecological knowledge – a key element of sustainable development

Author: Nina Giordano

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1 Introduction

Over forty years ago, physicist and deep ecologist Capra indicated: *"Ecosystems sustain themselves in a dynamic balance based on cycles and fluctuations, which are nonlinear processes. Linear enterprises, such as indefinite economic and technological growth will necessarily interfere with the natural balance and, sooner or later, will cause severe damage. Ecological awareness, then, will arise only when we combine our rational knowledge with an intuition for the nonlinear nature of our environment. Such intuitive wisdom is characteristic of traditional, non-literate cultures, [...] in which life was organized around a highly refined awareness of environment."* (1982, p. 41) Since then, natural ecosystems are being pushed beyond their limits with human societies confronting unprecedented challenges like climate change, species extinctions and pollution. Various approaches like ecological restoration, conservation, renewable energies and carbon

sequestration have been deployed to tackle the global ecological crisis. Yet, a crucial element remains largely overlooked: integrating local and traditional ecological knowledge as well as indigenous perspectives with modern western science to foster environmentally sustainable solutions. (Hoagland, 2016)

This student research paper explores how the concept of traditional ecological knowledge is defined in science, law and policy literatures and what contribution place-based communities such as the artisanal fishery of Chorrillos can serve for improving cooperative environmental and natural resources management. The method applied aims to evaluate existing literature, synthesizing ideas, and critically analyzing the status quo. Subsequently, the paper will provide recommendations for integrating ecological traditional knowledge in legal frameworks and practice through sound policy aimed at sustainable development.

2 Traditional ecological knowledge

Traditional ecological knowledge (TEK) refers to accumulated expertise, practices, and ideas held by indigenous as well as local communities, received, preserved, and transmitted orally from one generation to another (Casi et. al., 2021). Berkes, an applied ecologist has defined it as "a cumulative body of knowledge, practice, and beliefs, 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". (2012, p. 7) Even though there is no precise definition, it's widely accepted that the term "traditional" doesn't exclusively denote something relegated to the past. Instead, it pertains to collected wisdom over a long duration, constantly changing and being up-dated. Furthermore, TEK transcends mere descriptive literature and defies categorization into distinct disciplines like biology, geography, or chemistry (Casi et. al., 2021).

2.1 Local, indigenous and traditional ecological knowledge

Ethnoecology, as a subfield within ethnology and closely related to ethnobiology, is a field of study that focuses on the ways in which different human cultures and indigenous peoples perceive, interact with, and manage their environments. It involves the examination of how various societies understand and utilize their natural surroundings, including their knowledge of plants, animals, ecosystems, and environmental processes (Putra, 2021). Within the realm of ethnoscience, three terms – local ecological knowledge (LEK), traditional ecological knowledge (TEK), and indigenous knowledge (IK) – are often used, each capturing distinct facets of the dynamic connections between long-standing traditions and practices of certain regional, indigenous, or local communities.

LEK refers to the knowledge about local ecosystems, held by a specific group of people such as fishers and farmers regarding their local environment. It encompasses insights into the behaviors and development of animals, plants and habitats, often accumulated through direct and prolonged interaction. It is context-specific, drawing on the experiences and observations of individuals within a particular locale.

Within the realm of ethnoscience, three terms – local ecological knowledge (LEK), traditional ecological knowledge (TEK), and indigenous knowledge (IK) – are often used, each capturing distinct facets of the dynamic connections between long-standing traditions and practices of certain regional, indigenous, or local communities.

TEK broadens the scope to include knowledge which was passed down through multiple generations, living in close contact with nature, It embodies the wisdom, practices and beliefs concerning the environment that have been transmitted orally or through cultural traditions. TEK reflects a long-term, collective understanding of ecological dynamics and is deeply intertwined with cultural identity (Fischer et. al., 2015).

Indigenous Knowledge (IK) is often considered a subset of TEK. However, while TEK may include knowledge from various cultural groups, IK specifically focuses on the unique perspectives and practices of indigenous people. It encompasses not only practical insights into natural resources but also incorporates spiritual, cultural, and social dimensions. It emphasizes the reciprocal relationship between humans and nature, recognizing the interconnectedness of all living beings (The World Bank, 1998).

2.2 The six faces of TEK

Over the years, several authors have tried to identify and contrast the environmental knowledge held by aboriginal, native and indigenous people with the knowledge system employed by colonizer. Some have categorized knowledge elements into groups that collectively constitute the TEK of a community. For instance, Houde (2007) envisaged six interconnected and mutually evaluative

"faces" of TEK (Figure 8), to delineate areas of similarity and differences with Western science (WS). (Das et. al., 2023) He visualized TEK as a pentagon anchored by its cosmological foundation, which gives meaning to the knowledge system. The first three faces at the bottom are typically more readily grasped by non-Natives and valid in a non-TEK context. The remaining three faces, which involve ethics and values, cultural identity, and cosmology, are particularly aligned with TEK and potentially bear fundamental differences from the mainstream values that are encoded in western institutions. (Houde, 2007)

The most recognized manifestation of TEK is specific and factual observations, synthesized information as well as empirical understanding of natural phenomena. This includes detailed data on various aspects of the environment, such as ecological patterns, seasonal cycles, animal behavior and the abundance of wildlife. This face entails not only passive observation but also active participation, where community members intimately interact with their surroundings through subsistence activities such as hunting, fishing, farming, and gathering. It also involves comprehending the interrelationships between species, the connections within the biophysical environment, and the spatial distributions and historical trends of population patterns. TEK holders possess a nuanced

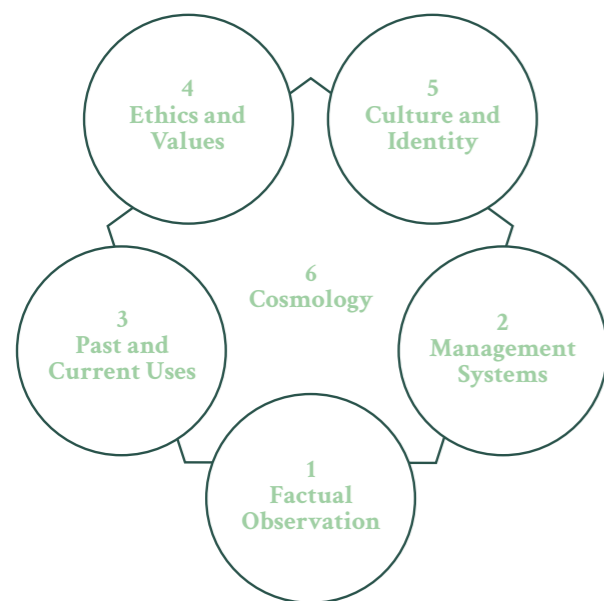


Figure 8: The six faces of TEK (Houde, 2007, p. 5)

understanding of ecological interplay, discerning subtle cues and indicators that inform decision-making regarding use of resources, agricultural practices and ritual ceremonies (Houde, 2007). This face aligns closely with resource management approaches and proves highly valuable in environmental impact assessments, risk evaluations and managing vulnerable resources. (Das et. al., 2023)

According to Houde, TEK largely serves the purpose of subsistence. Therefore, a prominent focus in TEK research revolves around resource management systems and its alignment with local environments. Consequently, the second face pertains to the methodologies aimed at fostering the sustainable utilization of local natural resources. This includes practices such as pest control, conservation techniques, diverse cropping patterns and mechanisms for assessing resource status. TEK-based management systems typically incorporate a holistic understanding, considering not only the ecological aspects but also the social, cultural, and spiritual dimensions of resource use. These management systems often employ a combination of traditional practices, customary laws, and community governance structures to regulate resource use. For instance, mechanisms such as seasonal harvest restrictions, rotational farming techniques and community-based monitoring programs. Furthermore, native communities actively engage in collaborative research and conservation partnerships, integrating traditional and scientific knowledge systems to enhance the effectiveness of conservation efforts (Houde, 2007).

The third dimension acknowledges the time facet of TEK. It reflects knowledge of the past and current uses of the environment. Firstly, it includes insights into historical land-use practices, such as traditional farming methods, hunting techniques and fishing practices. And secondly, it incorporates cultural heritage, encompassing oral traditions and historical narratives. These narratives also reinforce cultural identity and give a sense of family and community. This face underscores the dynamic relationship between indigenous peoples and their environments, advocating for the recognition and respect of traditional knowledge in modern conservation and resource management efforts. It is often revealed by First Nations in the context of

land claims' negotiations (Houde, 2007). Unfortunately, significant limitations of this aspect arise from potential misinterpretation resulting from limited control over information derived from oral history and uneven distribution of benefits stemming from the knowledge (Das et. al., 2023).

The fourth manifest relates to value statements about "how things should be" and encompasses the ethical principles and cultural values that guide indigenous communities' interactions with mother nature. This aspect emphasizes the intrinsic connection between human well-being, environmental ethics and spiritual harmony. Traditional cultures often emphasize values such as respect for all life forms and collective responsibility for maintaining ecological balance. This holistic worldview challenges anthropocentric notions of resource exploitation and advocates sustainable practices. Incorporating ethics and values into resource management requires recognizing and respecting diverse cultural perspectives and incorporating Native governance structures and decision-making processes. It involves fostering dialogue, collaboration, and mutual learning between local communities and state institutions to develop inclusive and equitable policies that honor both traditional wisdom and modern scientific knowledge. However, these values may not always align with the dominant discourse. Furthermore, it can be said that this face of TEK is currently not well implemented in state resource management (Houde, 2007).

The fifth aspect recognizes the importance of language and images of ancient cultures that serve as vectors for cultural identity. It has been argued that the essence of Native cultures resides in the land, and if the land undergoes significant transformation or loss, cultures and communities may similarly vanish. Land serves as repository of stories as well as heritage, therefore safeguarding these sites is essential for the enduring preservation of Native culture (Houde, 2007). Through TEK, communities maintain a profound connection to their ancestral lands, fostering a sense of belonging and continuity across generations. The preservation and revitalization of TEK contribute to the revitalization of indigenous cultures and the assertion of indigenous rights to self-determination and sovereignty. (Das et. al., 2023)

The final identifiable dimension of TEK is a culturally rooted cosmology, which serves as the foundation of all the other faces and is inherently intertwined with them. It is considered more of philosophy than an ideology and delves into the spiritual and metaphysical dimensions of indigenous understanding (interpretation or representation) of the environment. The cosmology elucidates the interconnectedness between humans, nature and the cosmos, shaping belief systems, rituals and practices that govern human-nature relationships. Many anthropologists have delved into this dimension of TEK, aiming to understand how Native people understand human-nonhuman animal relationships and how these perceptions directly impact social dynamics, obligations towards fellow community members and resource management practices. By recognizing and respecting indigenous cosmologies, we can deepen our understanding of human-environment relationships and cultivate more holistic approaches to conservation and stewardship (Houde, 2007).

2.3 Actors of TEK

TEK encompasses a diverse array of actors, each playing a unique role in the preservation, transmission and development of this body of knowledge. It is important to note that the actors involved vary significantly based on cultural and regional contexts. In general, however, the following internal actors can be captured. Indigenous and local communities, often the primary holders and practitioners of TEK, accumulate wisdom through generations of living closely connected to their natural surroundings. In particular, elders and traditional leaders often play a crucial role in passing down TEK. Shamans, healers and spiritual leaders are repositories of wisdom and experience and hold knowledge about the spiritual connections between humans and the environment. Furthermore, community members actively engage in traditional practices related to agriculture, hunting, fishing and herbal medicine, and therefore contribute to the development and continuity of TEK. Artisans and craftsmen, through their traditional crafts, possess knowledge about sustainable resource use and material selection.

Outside the communities, storytellers and historians support the transmission of important in-

formation about ecological processes and the relationships between humans and nature. External researchers and scholars help to preserve TEK by collaborating with indigenous and local communities to document, understand and validate the traditions (Houde, 2007). The cooperation between scientific researchers and TEK holders is essential for developing effective strategies for sustainable resource management. Integrating both scientific and traditional perspectives can lead to more comprehensive and culturally sensitive approaches to environmental issues (Berkes, 2007). Additionally, some government and policy agencies as well as non-governmental organizations work with communities to integrate TEK into conservation and biodiversity protection initiatives. It is particularly important to convince stakeholders in the economic and political sector, including local authorities and policymakers of the benefits of TEK and its influence on environmental protection, by integrating and turning them into ambassadors.

2.4 Relation between TEK and Western science

While the significance of TEK has gained recognition on the global stage and publications on the subject have surged, the relationship between WS and traditional knowledge remains controversial (Berkes, 2007). They represent two distinct but interrelated approaches to understanding the natural world. WS, rooted in empirical observation, experimentation, and theoretical frameworks, has its origins in the Enlightenment era and has since become the dominant paradigm globally. It follows the steps of developing hypothesis, testing hypothesis, analyzing results and defining conclusions. Furthermore, it emphasizes objectivity, quantifiability and the use of specialized methodologies to study and explain natural phenomena.

In contrast, TEK is derived from the accumulated wisdom, practices, and beliefs of Native communities and is often an integral part of a culture (Hoagland, 2016). Although there are many differences between the two knowledge systems, there are similarities that should not be overlooked. Both are founded on the principles of observation and the formulation of concepts derived from these observations. At the same time, findings are constantly verified through repetition and verification, inference and recognition of pattern events.

Additionally, many of the guiding principles established by ancestral resource managers align with rules derived from ecological science (Das et. al., 2023). Even though TEK is often perceived in conventional WS as lacking a quantitative, systematic approach to measurement, not all researchers are opposed to it. Botanists were among the first scientists to show an interest in TEK during the 18th century. It largely remained within their domain throughout the nineteenth and twentieth centuries. However, the 1990s witnessed a revitalized and heightened interest in TEK. Nowadays, it has become a highly-valued source of information as part of numerous research disciplines such as ecology, archaeology, medicine, agronomy and climatology. At the same time, various actors recognized that a successful approach must be multidisciplinary, incorporating the participation of local communities by bringing in Natives as collaborators in scientific projects and conservation efforts (Royer, 2016). Experts in WS are increasingly acknowledging that TEK can offer insights that are absent in current research and by combining the two forms of knowledge, capable of enhancing each other's strengths through multidisciplinary approaches for mutual benefit (Hoagland, 2016). And last but not least, blending WS and TEK offers a comprehensive approach, potentially serving as the foundation for addressing our most intricate environmental challenges. Neglecting either one would make the environmental issues worse. Put plainly, science devoid of wisdom lacks conscience (Hoagland, 2016).

3 Roles and relevance of TEK in natural resource management and marine conservation

Since the economic globalization has progressed, there has been a notable trend towards the homogenization of knowledge and practices related to the utilization of natural resources. Standardized approaches to resource management and exploitation have become more prevalent, often prioritizing efficiency and profit over the preservation of biodiversity and cultural heritage. Furthermore, resource managers and state officials often view knowledge, not generated by Western-trained scientists, as secondary or unreliable (Arico and Valderrama, 2010).

Over time, especially since the widespread acceptance of "sustainable development" concepts at the Rio Summit in 1992, development paradigms have transitioned from a narrow, segmented view to a broader, holistic approach emphasizing the promotion of "knowledge dialogues" among diverse knowledge systems (Arico and Valderrama, 2010). This has resulted in an increased awareness of the crucial role that TEK plays in sustainable development (Naureen, 2020). For generations, traditional communities have actively managed ecosystems to ensure survival and well-being. The management includes various activities, such as agricultural production, health services, maintenance and adaptation measures such as water and environmental management, as well as adjustments to climate change and variability (Pisupati and Subramanian, 2010). Their traditional management systems have evolved to harmoniously blend in with regional ecosystems. This integration is so profound that ecosystems and cultivated landscapes can be regarded as "biocultural" entities (Arico and Valderrama, 2010).

Therefore, the use of TEK, in the guise of ecological management practices, is acknowledged as a potent conservation tool. In this context, community support consistently proves pivotal in sustaining conservation plans over the long term. Furthermore, community-based management plans tend to work better than top-down (usually Western) approaches to conservation. Due to their holistic perspective on the environment, many indigenous communities recognize interconnections among ecological processes, species interactions and abiotic factors shaping species biology. This understanding of environmental linkages stems from extensive, longstanding engagement with specific regions and may not be readily apparent to those lacking intimate familiarity with the area. Consequently, the inclusion of TEK elements in research programs is essential. Not only can native and local people give access to location-specific knowledge, but also enhanced understanding of environmental connections and empowerment through local capacity building (Drew, 2005). However, it's crucial to highlight the difference between TEK and its implementation via customary management practices, whether conservation-oriented or not. While these con-

The inclusion of Traditional Ecological Knowledge elements in research programs is essential. Not only can native and local people give access to location-specific knowledge, but also enhanced understanding of environmental connections and empowerment through local capacity building.

cepts are interconnected, effective land and water management relies on the prudent utilization of knowledge. Consequently, TEK serves as the intellectual foundation for such practices, while customary ecological management practices represent strategies grounded in applied TEK. Numerous efforts, especially in marine contexts, have concentrated on incorporating customary ecological management practices into conservation strategies (Drew, 2005).

Local and traditional knowledge held by fishers, such as the artisanal fishing community of Chorrillos in Peru, represents a significant yet underutilized resource for understanding the dynamics of coastal ecosystems, including both continuity and change. Fishers' extensive experience in coastal environments, combined with their direct interactions enriches our understanding of these ecosystems over time (Fischer et. al., 2015). With increasing acceptance among scientists and managers that coastal fisheries require ecosystem-wide management rather than focusing solely on individual species populations, the lack of understanding regarding coastal fishery ecosystem processes becomes increasingly apparent. In the marine realm, climate change presents numerous risks, including heightened flooding, species extinction and intensified effects of natural disasters. Additionally, ongoing ocean acidification could profoundly impact marine ecosystems and the services they offer. Given these challenges,

it's imperative to leverage local knowledge of the marine environment as a crucial element in adaptive management strategies (Arico and Valderrama, 2010).

The greater and more refined ecological knowledge fishers, resource managers and scientists have, the more likely their ability to make precise predictions regarding the status and distribution of fishery resources. In this regard, both WS and TEK share similar objectives and should therefore push collaborations forward (Fischer et. al., 2015). To achieve genuine two-way knowledge exchange, the platforms and venues for fostering fishery knowledge should be democratized. Fishers are likely to contribute more knowledge and engage further in applying ecological insights to management when they feel assured that their contributions will be heard and valued (Fischer et. al., 2015).

Conservation efforts continuously adapt to confront the diverse and ever-changing threats to the environment. In this ongoing evolution, it's imperative to explore novel techniques and disciplines to effectively address these challenges (Drew, 2005). In this context, knowledge is pivotal in fostering sustainable relationships between society and the biosphere. It not only drives practical advancements like technology but also shapes societal values and informs national policies. The challenge lies in implementing a paradigm shift giving emphasis to management systems that embrace diverse knowledge and practices, moving away from standardized approaches. Promoting a mosaic of traditional management systems, in which indigenous and native people are equal, is crucial. Ultimately, traditional, local and scientific knowledge systems must engage in a genuine dialogue to identify adaptive solutions for sustainable development in response to evolving natural and socio-economic conditions (Arico and Valderrama, 2010).

4 TEK in policy and law

But how exactly is TEK legally protected, and what are suitable measures for acknowledging and promoting this body of knowledge? The following chapters delve into global and national legal frameworks as well as ways to preserve TEK, followed by recommendations for sound policy-making in the ecology of sustainable development.

The recognition of TEK was initially highlighted in the Brundtland Report of 1987. This pivotal document globally acknowledged the significant potential contribution of Indigenous peoples in addressing pressing environmental challenges.

4.1 Protection and legal framework

Once TEK has been disseminated beyond the community, those recipients might further distribute it to third parties who haven't consented to adhere to social conventions and aren't legally obligated to do so. Regardless of the good intentions, established protocols and best practices, the shared knowledge isn't regulated by customary laws or community aspirations. Instead, it falls under foreign legal frameworks such as public domain, intellectual property and freedom of expression. Therefore countries have begun to put into place laws and regulations that protect the transfer of TEK to third parties (Hardison and Williams, 2013).

The recognition of TEK was initially highlighted in the Brundtland Report of 1987. This pivotal document globally acknowledged the significant potential contribution of Indigenous peoples in addressing pressing environmental challenges. The UN Declaration on the Rights of Indigenous Peoples, adopted by the UN Human Rights Council in 2006, emphasizes two main points:

a) Indigenous peoples have the right to not only preserve, control, protect, and develop their cultural heritage but they also hold intellectual property rights over these assets.

b) States are obliged to collaborate with indigenous peoples in implementing effective measures to recognize and protect these rights.

Furthermore, Principle 22 of the Rio Declaration on Environment and Development acknowledges the crucial role of native people in

management as well as development and advocates for the recognition of their cultural identity and interests in participating towards sustainable development. Since 2010, the Nagoya Protocol is the leading global framework for safe-guarding TEK and ensuring fair benefit-sharing from genetic resource use. This legally binding agreement mandates that access to TEK linked with genetic resources requires prior informed consent and equitable participation. The Framework Convention on Biological Diversity, under Article 8 (j), highlights the significance of acknowledging IK and confirms TEK as a crucial "technology" for implementing effective biodiversity conservation and sustainable practices under Article 16 (Naureen, 2020). The rights of indigenous peoples within the right to development (Article 1 of the Declaration on the Right to Development), are closely associated with various overarching international legal standards and principles. These include participation rights, the right to self-determination, and the recognition and application of collective rights related to land and natural resources (Naureen, 2020)

Additional major instruments that acknowledge native peoples' right to protect TEK are the "Universal Declaration of Human Rights" (Article 27), the "International Covenant on Economic, Social and Cultural Rights" (Article 15, paragraph 1 (c)), the "International Labour Organisation Convention No.169 concerning Indigenous and Tribal Peoples in Independent Countries" (Articles 13, 15, 23) and the Agenda 21 (Paragraph 26.1). (Aboriginal and Torres Strait Islander Social Justice Commissioner, 2009)

On the national level of Peru, the proposal for the protection of TEK outlines in its first article, that the Peruvian government has to recognize indigenous peoples' rights to determine the fate of their collective knowledge. This acknowledgment is based in the constitutional right to intellectual creativity and property, as stated in article 2(8) of the National Constitution of 1993. Additionally, "Decision 391" recognizes Native communities' rights to innovations and practices in Article 7. Law No. 26839, concerning the conservation and sustainable use of biological diversity, enacted in 1997, mandates in Article 24 that the knowledge and innovations of these communities

form part of their cultural heritage, necessitating mechanisms for their regulation and dissemination (Paden, 2007).

As for preserving and promoting TEK, communities and actors involved can take various actions to raise awareness about the value of TEK: adequate documentation of local practices (eg. data-banks or libraries), education and transmission, cultural revitalization, networking and collaboration but also observing and signing agreements so that TEK is not misused and benefits return to the community from which they originate (The World Bank, 1998).

4.2 Sound policymaking

The achievement of the UN Sustainable Development Goals (SDGs) and other globally agreed development objectives heavily relies on a shared understanding of the fundamental principles of effective, sustainable governance (CEPA, 2018). Therefore, institutions and policy-makers play a crucial role to meet these targets. Unfortunately, public sector reforms remain a major challenge in many countries. But how to improve on the governmental capacity to listen, to analyse, to deliver and to leave no-one behind remains the challenge.

In order to address this issues, the Committee of Experts on Public Administration (CEPA) has formulated a serie of principles regarding effective governance for sustainable development. These voluntary principles aim to offer practical, expert advice to interested nations on various governance obstacles linked to the implementation of the 2030 Agenda (CEPA, 2019). These fundamental principles are applicable to all public institutions, including executive and legislative organs, as well as sectors like security, justice, independent constitutional bodies and state corporations (CEPA, 2018). The principles are designed to not only engage the relevant UN organizations, regional organizations as well as professional and local communities, in an inclusive manner, but also to provide a baseline for responsible policy-making (CEPA, 2019).

One of the first three principles that focus on effectiveness, is sound policy-making. It refers to well-crafted and effective strategies or guidelines designed to address specific issues or achieve par-

tical goals in a manner that is rational, evidence-based and conducive to positive outcomes. According to CEPA there are eight pathways to sound policy-making: "Strategic planning and foresight, regulatory impact analysis, promotion of coherent policymaking, strengthening national statistical systems, monitoring and evaluation systems, science-policy interface, risk management frameworks and data sharing", (CEPA, 2019) while promoting the common good and long-term sustainability.

Sound policy offers multiple advantages for placed-based communities and Native people: Firstly, it can facilitate the recognition and validation of TEK within legal and regulatory frameworks. This involves acknowledging the cultural significance and validity of IK systems alongside scientific evidence. By legally recognizing TEK, policymakers can ensure its protection, respect its ownership rights and provide mechanisms for its incorporation into decision-making processes. Secondly, sound policy can promote collaboration and co-management arrangements between government agencies, local and indigenous communities and other stakeholders. By fostering partnerships based on mutual respect and shared governance, policies can enable the participation of local communities in natural resource management. This can lead to the co-design and imple-

Policy support is crucial for TEK's recognition in science and society. Sound policy may serve as a vital bridge between state, national as well as regional economic actors, policymakers and local communities such as the artisanal fishers in Chorrillos in recognizing the importance of their practices and knowledge on society, government and science.

mentation of policies that integrate TEK with scientific approaches, leading to more holistic and effective resource management strategies. And last but not least, sound policy can incentivize the incorporation of TEK into land-use planning, conservation strategies, and sustainable development initiatives.

5 Conclusion

This paper explored TEK and identified its six faces, each of which is an important dimension to consider in the exchange of cultural values, legal complexities and risks to environmental sustainability. Furthermore, TEK was compared with the modern scientific system and areas as well as topics of convergence and potential synergy of collaboration between the two bodies of knowledge were presented. However, it is important to bear in mind that (what has been reported) remains incomplete, precisely because combining TEK and WS is a complex attempt that requires group-based interdisciplinary collaboration. Participation of local and indigenous people should not be limited to impact assessments for projects, but should also take place in the strategic planning phase. Because these communities may hesitate to share their knowledge due to a history of exploitation, inadequate recognition and respect for their values and rights, partnership and co-management arrangements will have to be designed in such a way that locals can be involved from the initial stages of decision-making processes and that TEK is properly safeguarded. Therefore, policy support is crucial for TEK's recognition in science and society, fostering a broader paradigm for integrating diverse knowledge systems. Latin American countries in particular, face multiple challenges in implementing protections for TEK, due to the lack of political will, insufficient coordination, limited financial resources and the adverse impact of multinationals (Paden, 2007). Sound policy may serve as a vital bridge between state, national as well as regional economic actors, policymakers and local communities such as the artisanal fishers in Chorrillos in recognizing the importance of their practices and knowledge on society, government and science. Effective policy mechanisms can provide the necessary framework for acknowledging, validating, and integrating TEK into decision-making

processes and can promote a more inclusive and holistic approach to environmental management, conservation and sustainable development.



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