Policy Brief 3: Supporting Biocultural Diversity

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INFORMATION AND COMMUNICATION TECHNOLOGIES

In May 2019, more than 120 participants - Indigenous Peoples from Canada, the United States of America, Aotearoa New Zealand, and Australia, together with partners and supporters - came together at a Regional Indigenous Research Action Conference and at the first North American Dialogue on Biocultural Diversity to advance joint strategies to promote the diversity of life on Earth. This series of policy briefs draws from the discussions held at these meetings and the recommendations of the Atateken Declaration,[1] adopted by the participants of the Dialogue.

Introduction

Information and communication technologies (ICTs), which include videos, apps, and geographic information systems (GIS), are becoming increasingly accessible and ubiquitous, but their role in conservation contexts is under-examined. These technologies will increasingly shape the techniques and indicators that measure the effectiveness of environmental policy.

Local communities worldwide, many of which are homes to the Indigenous stewards of 'territories of life',[2] often bear the unfair burden of externally-imposed regulations and technologies of accountancy and surveillance. The documentation and recording of Indigenous Knowledge (IK), practices, and territories using communication and information technologies also raises questions of data sovereignty, conceptual subjugation, and accessibility.

It is nonetheless possible to mobilize community-driven ICTs for revitalizing Indigenous cultures and languages, protecting territories, and collectively monitoring environmental changes, for the preservation of biological and cultural diversity. It is therefore essential to develop respectful technologies of environmental monitoring and territorial governance with Indigenous Peoples, and to include them in environmental monitoring and policy making at all levels.

Key points

- The use of communication and information technologies for environmental management on Indigenous ancestral lands and waters raises questions of data sovereignty, conceptual subjugation, and accessibility.

- Such technologies can nonetheless become powerful tools for cultural, linguistic, and territorial protection by and for Indigenous communities.

- Policies, programs, and projects aimed at using technologies to benefit biocultural diversity should create and sustain conditions for Indigenous knowledge holders to mobilize their knowledge systems, and for respectfully braiding multiple knowledge systems to guide conservation, sustainable development, and decision-making.

Main challenges

Data sovereignty and knowledge integrity

Control over knowledge and information is one of the main concerns related to the use of ICTs in Indigenous contexts. Indigenous communities may want to document their knowledge and practices to facilitate cultural revitalization and transmission to youth, for instance, or to inform environmental monitoring and management. In both cases, data and knowledge are collected, recorded, and stored using technological resources from outside the community, which raises the question of the control Indigenous Peoples retain on how the knowledge is accessed, used, and interpreted. Data ownership is a source of concern due to intellectual property laws that do not correspond to the collective nature of Indigenous Knowledge and practices. Copyright laws can allow, for instance, the individual who recorded or wrote down the collectively-owned knowledge to gain exclusive property rights to it.[3] Increasing the accessibility and visibility of Indigenous Knowledge and cultures could therefore facilitate their economic exploitation by non-Indigenous individuals.[4]

In addition, Indigenous data are often collected and used as part of research, monitoring, and management programs built on Western science and worldviews. IK is thus incorporated into a Western framework that determines what is important, how it should be measured, and for what purpose. There is a risk that, through appropriation by dominant narratives of development and conservation, IK could be diluted, denatured, fragmented or misused, negating its distinctive holistic approach.[5]

The conceptual constraints of GIS mapping

The use of GIS tools to map customary territories of Indigenous Peoples dates to the 1960s in Canada and Alaska. Territorial maps were primarily used to document and defend ancestral lands, waters, and access to natural resources.[6] However, the use of maps in the scientific management of territories can also contradict Indigenous conceptualizations of territory, reinforce state regulatory authority, and generate conflicts with and among Indigenous groups.[7] Some biocultural aspects of territorial integrity, such as ceremonies, language, sense of place, and identity, escape conventional mapping methods. Ever evolving and dynamic systems are mapped as static points, lines, and polygons that cannot holistically represent the manifold relations of Indigenous Peoples to their territories.[8] Hence, many aspects of Indigenous life projects are lost to view, due to the limits of GIS mapping.

Access and technical challenges

In addition to the general risks associated with documenting Indigenous Knowledge, cultures, and territories, ICTs present specific technical challenges. Even if a community decides that the benefits of using these technologies outweigh the risks, barriers may impede access to technologies. In remote communities, access to both hardware and software can be an issue, with internet availability and speed complicating the sharing and storing of data.[9] The costs of acquiring and managing technological tools can also be a constraint, especially when funding is only available to support initial data collection and not subsequent analysis and dissemination. It is also worth noting that ICTs are not necessarily intuitive and are rarely designed with Indigenous users in mind, which make them hard to master without capacity development support.

At the same time, too much access to technologies has been identified as a problem by some Indigenous communities. Cellphones, computers, and televisions provide easy access to content produced by the dominant Western culture, which can influence Indigenous youth's relationship to their own culture. Apps and technologies developed by and

for Indigenous Peoples have to compete with a rising tide of tools and content, in addition to having to adapt to constantly evolving knowledge and media platforms. This raises issues of relevance, dissemination, and obsolescence.

Opportunities

Culture and language preservation and revitalization

Despite their challenges, ICTs have the potential to promote biocultural diversity when used in a culturally-sensitive way. Such technologies can be powerful tools of cultural revitalization and transmission, including by engaging Indigenous youth in learning about and regaining pride in their culture, language, and territory. Creating audiovisual material such as videos and podcasts about Indigenous cultures, Knowledge, experiences, and perspectives can open a dialogue between Indigenous youth and Elders, and between Indigenous and non-Indigenous communities. The process can empower Indigenous producers in reclaiming narratives about their communities. The audiovisual material, rather than simply being an end in themselves, can inspire youth to reconnect with traditional activities on the land. They also allow Indigenous communities to give visibility to their lifeways, stories, and perspectives and to present them to a non-Indigenous audience, thereby contributing to educate non-Indigenous Peoples about Indigenous realities.

Audiovisual technologies have the noteworthy advantages of being compatible with oral tradition and being accessible to a wider audience than written material. They are particularly fitted to support language revitalization. Language apps are emerging as a way to create bridges between younger generations and Elders and knowledge-holders.[10] As with videos, language apps are useful as conduits for fostering the use of Indigenous languages in everyday interactions. Language revitalization can also be supported by having other software and technological tools available in Indigenous languages. Beyond translation, Indigenous pro-
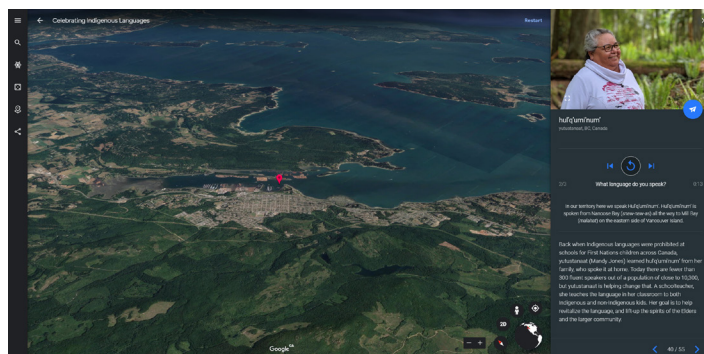

Google Earth Voyager story "Celebrating Indigenous Languages" is an example of the use of technology to promote Indigenous languages.

grammers should be involved in the design of ICTs to ensure their alignment with Indigenous knowledge systems, values, and needs.

Territorial protection and knowledge transmission through mapping

Maps and alternative cartographic representations can play a positive role in protecting biocultural diversity. They are potential instruments of empowerment, resistance, and biocultural protection. Visual representations of Indigenous territories are powerful advocacy tools that can support struggles for self-determination and rights recognition. Indeed, the documentation of knowledge through participatory GIS and mapping can facilitate solidarity work within Indigenous communities, as well as communication between communities and other actors, such as government agencies and extractive industries.[11] Building their own GIS database also gives greater control to Indigenous communities over the information that can and cannot be shared outside the community. Standard GIS mapping technologies are nonetheless double-edged swords, since they are anchored in a Western way of understanding and representing spatial relations.[12] For that reason, some initiatives, such as MappingBack, are opening spaces for alternative forms of spatial representations that better reflect Indigenous ways of seeing and relating with their territories, in particular to support Indigenous territorial defense against the extractive industry.[13]
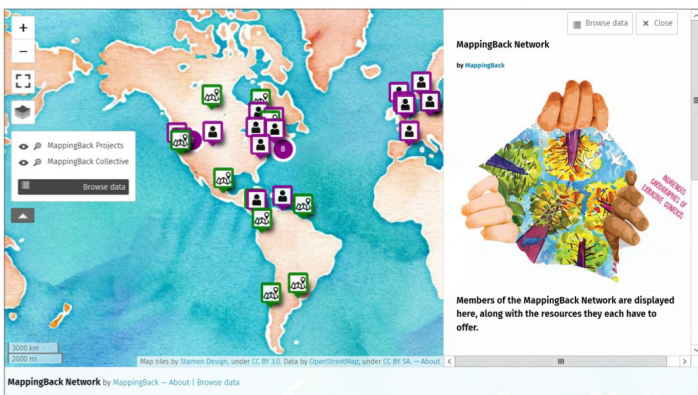
The MappingBack network, at www.mappingback.org/home_en/resources/

Mapping technologies can also support knowledge, culture, and language revitalization and transmission through recording oral history and IK. Maps and story maps can record culturally-significant elements such as place names, spiritual sites, itineraries, and hunting territories. Maps can therefore become channels to pass down territorial information to Indigenous youth.[14] Mapping technologies can serve as teaching tools to engage Indigenous youth in learning about and interacting with their ancestral lands and waters. They can also educate and raise awareness among non-Indigenous communities about Indigenous languages, cultures, and territories.[15]

Community-based environmental monitoring and stewardship

Information and mapping technologies can support biocultural monitoring and management by Indigenous communities. Collaborative management and community-based monitoring are increasingly recognized as essential to sustainable resource management and environmental protection.[16] Indigenous Peoples have deep-seated knowledge about and are in regular contact with their ancestral lands and waters, which make them experts at noticing changes in environmental conditions.[17] Indigenous Peoples devise their own indicators, grounded in place, to monitor environmental health in a holistic way, taking into account human-environmental relations.[17] Community-based monitoring and stewardship therefore build on and reinforce Indigenous territorial relations, playing a positive role in preserving Indigenous cultures and identities. Indigenous languages are also rich in information for monitoring.[9] A growing number of Indigenous Peoples have appointed landscape guardians who conduct ecological monitoring and protect against breaches of traditional environmental codes.[18]

Braiding Indigenous and Western knowledge systems, rather than trying to fit IK into Western science and processes, makes for more effective environmental science and management.[5,19] For that reason, technologies and other scientific methods and tools used to support community-based monitoring need to be adapted to the ways Indigenous Peoples relate and interact with the environment, and not the other way around.[9] Indigenous Peoples need to be involved as equal partners in all phases of research, monitoring, and management, including the development and use of technologies. For instance, Four Rivers Environmental Services Group supports community-based environmental monitoring and stewardship by Matawa members First Nations, in Ontario, Canada, by responding to their capacity development needs in GIS and data collection, so that the communities can then do the work themselves. The projects combine IK with Western science while being guided by community values.[20] The appropriate use of technology for data collection and mapping is also an opportunity to train and engage youth in environmental monitoring.

Policy recommendations

We recommend that policies, programs, and projects aimed at using technologies to benefit biocultural diversity should create and sustain conditions for mobilizing Indigenous knowledge systems

by the knowledge holders to guide conservation, sustainable development, and decision making, notably:

• Provide capacity development and on-going funding to Indigenous Peoples so that they are empowered to exercise their rights and responsibilities over their ancestral lands and waters.

Funding and capacity development should support Indigenous biocultural monitoring, management, and restoration for the long run. They should also foster the development and use of technologies that strengthen the bond between people and their lands and waters.

• Promote Indigenous-led and collaborative research on wildlife, the environment, and resources, with appropriate support from state governments, industry, and academia.

Data and studies from community-based environmental monitoring and assessment initiatives should actively and routinely inform decision-making.

• Support youth engagement in building a future based on their communities' lifeways, through enhanced opportunities for education in Indigenous knowledge systems, values, and identities as well as through formal educational opportunities such as university studies.

Youth engagement can be encouraged through the use in schools of appropriate technologies, such as videos, maps, and apps, which aim at revitalizing IK and cultural practices, notably by creating bridges between youth and Elders and by building upon traditions of environmental management.

Policies, programs and projects should also develop and support ethical processes that ensure respectful braiding of oral, written, and spiritual strands of multiple knowledge systems by such means as the following:

• Respect distinct Indigenous knowledge systems, spirituality, beliefs, practices, and cultures as well as long-standing rules, principles, and laws for governance of their territories, traditional lands and waters, resources, and sacred sites.

This requires that IK be considered no less valid than Western scientific knowledge in guiding environmental management and decision-making. Also required are audiovisual, mapping, and monitoring technologies that do not force Indigenous Knowledge and beliefs systems into a Western framework.

• Ensure the effective participation of Indigenous Peoples in the design and operation of the metrics and tools used for territorial management, monitoring, and decision-making.

Effective participation requires time and resources to overcome the limitations of 'off-the-shelf' technologies, while building relationships of positive reciprocity built on trust, respect, transparency, and accountability.

• Respect Indigenous ownership and control, and rights to confidentiality of culturally-sensitive data.

It is important to respect customary procedures, community protocols, or other guidance for respectful relationships, especially as may pertain to IK. Respectful relationships include considerations of free, prior and informed consent, and fair and equitable benefit-sharing.[21]

• Support the repatriation and restoration of Indigenous languages, Knowledge and related information, and artefacts (intangible and tangible cultural heritage).

This includes the repatriation of data, pictures, recordings, videos, maps, and other medium, in order to restore Indigenous sovereignty over their knowledge.

Conclusion

While risks need to be properly considered and mitigated, substantial benefits can be drawn from the use of ICTs to preserve biocultural diversity. Digital technologies should build upon aspects of translation that allow information and insights to be disseminated widely and efficiently at low cost, while guarding against aspects of digitization that remove information from the hands of local communities to be stored and archived elsewhere. Ultimately, using technologies for biocultural conservation should facilitate the collection and transmission of Indigenous languages, Knowledge, and territorial information by and for Indigenous Peoples.

Participants of the 2019 North American Dialogue on Biocultural Diversity, which informed this series of policy briefs.

Endnotes

1 The Atateken Declaration is available in English and in French at http://www.cbd.int/lbcd/resources/.

2 'Territories of life' is emerging as preferred terminology for "territories and areas conserved by Indigenous peoples and local communities", see https://twitter.com/ICCAConsortium.

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10 For example, see these two news stories about the development of language apps in Indigenous communities in Canada: https://globalnews.ca/news/4288160/Indigenous-language-app-wikwemikong-first-nation/; and https://www.cbc.ca/news/canada/thunder-bay/Indigenous-language-app-1.4970376.

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15 For example, see the Native Land initiative (https://native-land.ca/) and the Google Earth Voyager story "Celebrating Indigenous Languages"

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20 Four Rivers. "About us". Accessed November 12, 2019. http://four-rivers.group/about/.

21 The Tkarihwaié:ri Code of Ethical Conduct and the Mo' otz Kuxtal Voluntary Guidelines, under the Convention on Biological Diversity, provide guidance on these matters. They can be found at https://www.cbd.int/guidelines/.

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