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TRAINING MANUAL

Indigenous Peoples
& Integrated Water Resources Management

Cap-Net UNDP
2018

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2012 Arturo Sanabria, Courtesy of Photoshare. In the archipelago of Quirimba Island, Mozambique, a woman with a muciro face mask carries a container of fresh water on her head.

Photo: pixabay

Acronyms

ACHPR	African Commission on Human and People's Rights
AIPP	Asia Indigenous Peoples Pact
CBD	Convention on Biological Diversity
CEDAW	Convention on the Elimination of all Forms of Discrimination Against Women
CERD	Committee on the Elimination of Racial Discrimination
CESCR	Committee on Economic, Social and Cultural Rights
ECOSOC	United Nations Economic and Social Council
EMRIP	Expert Mechanism on the Rights of Indigenous Peoples
ICCPR	International Covenant on Civil and Political Rights
ICESCR	International Covenant on Economic, Social and Cultural Rights
ICPD	International Conference on Population and Development
ICWE	International Conference on Water and the Environment
IFAD	International Fund for Agricultural Development
ILO	International Labour Organization
IPACC	Indigenous Peoples of Africa Coordinating Committee
IUCN	International Union for Conservation of Nature
IWGIA	International Work Group for Indigenous Affairs
IWRM	Integrated Water Resources Management
OAS	Organization of American States
OHCHR	United Nations Office of the High Commissioner for Human Rights
PAHO	Pan American Health Organization
SDG	Sustainable Development Goal
SIWI	Stockholm International Water Institute
UNCED	United Nations Conference on Environment and Development
UN DESA	United Nations Department of Economic and Social Affairs
UNDG	United Nations Development Group
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNHRC	United Nations Human Rights Council
UNPF	United Nations Population Fund
WGF	Water Governance Facility
WHO	World Health Organization

Foreword

Indigenous peoples are the most vulnerable to climate change impacts as they depend greatly on natural resources to sustain their economic activities and for survival. Even in the developed countries, as revealed by news and media in recent decades, indigenous peoples are under-privileged and excluded from basic water and sanitation provision. On the other hand, Indigenous and traditional people play an incredible role in conserving the natural resources and increasing resilience to climate change impacts. Conflicts among indigenous peoples and governments that have been reported in development projects, occur due to contradictory interests. Many environmental activists and various indigenous people have been threatened and even murdered in the recent decade for advocating against destruction of the eco-system.

It is important for water managers, state governors, planners and developers of water supply and sanitation projects, professionals, and IWRM trainers, to understand the different interests of indigenous communities, and explore ways to engage them in project planning and implementation stages. There is a huge knowledge base among indigenous peoples which could be applicable in building resilience to climate change, and in water management planning. The indigenous and traditional knowledge strongly relates to sustainability as it doesn't harm the balance of the eco-system, rather, enhances it.

These training materials are intended to increase our understanding about indigenous peoples and to recognize their invaluable knowledge on sustainable water management. A trainer can use the materials and adapt it for a specific situation. Cap-Net believes that this material will be useful in training and addressing the ground-level knowledge gaps as this publication is the product of a process that took a few years working with experts in the subject as well as water managers and other stakeholders.

Themba Gumbo

The Director,
Cap-Net UNDP

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Overview

This training manual and the supporting materials are inspired by the fact that the integration of indigenous peoples' rights and traditional knowledge into water resources management is often not recognized, and institutionalized, as an effective means to enhance sustainable development in the entire river basin. Indigenous and traditional peoples are custodians of biologically and culturally diverse environments, and possessors of invaluable knowledge on their water resources. However, they are often ignored in decision-making on water, unequally treated in conventional water management systems, and disproportionately affected by conflicts. While facing the impacts of global climate change in local environments and resource management systems, we cannot afford to ignore the environmental knowledge of the world's indigenous peoples. This training manual, therefore, is intended for trainers, water managers and professionals, and leaders in the water sector ,to facilitate the integration of traditional knowledge and indigenous peoples into water management and related interventions, and as a guide to adapt and use in their trainings. The facilitators' guide specifically provides tools and examples to plan training programmes on this topic.

There is very little compiled material on traditional knowledge and indigenous peoples, but current research and new developments could be built on the traditional technologies as improvements and adaptations to the present scenarios. A lot of traditional knowledge has not been passed on to the next generation and has not been recognized or integrated to present-day practices. The training material and the training course consist of six modules, namely, Module 1: Introduction; Module 2: Human rights, indigenous rights and gender perspectives; Module 3: Indigenous peoples' access to water and sanitation; Module 4: Traditional knowledge and indigenous technologies in water management in a climate change context; Module 5: Indigenous peoples and water conflict management; and Module 6: Implementing an intercultural approach in IWRM. The training manual presents the basic concepts on integrating indigenous peoples into water management and issues related to indigenous rights. It additionally provides guidance on conflict management, incorporating indigenous peoples' knowledge for sustainable planning and resource management. The facilitators' guide includes a description of each module, and different tools and exercises that can be practised in a training programme, and enables the trainer to lead participants on to effective learning.

MODULE 1 aims to describe and understand IWRM, the definition of indigenous peoples, the role of indigenous value system, and challenges faced by indigenous peoples in terms of resources and access to water and sanitation. Working towards the Sustainable Development Goals (SDGs), it recognizes the value of indigenous peoples' participation and the integration of traditional knowledge in water management.

MODULE 2 presents the recognized rights of indigenous peoples under international law and more specifically international human rights law. Furthermore, it discusses the effects and constraints imposed by specific human rights on IWRM. The module concludes with the consideration of a gender perspective in the implementation of and compliance with indigenous peoples' rights.

MODULE 3 provides an overview of problems in access to water and sanitation by indigenous peoples and describes how cultural differences and perceptions, as well as belief systems influence access to water and sanitation services.

MODULE 4 presents a detailed overview on traditional and indigenous technologies recognizing the importance of reviewing and adapting these technologies for present-day water management practices. It also discusses the vulnerability of indigenous peoples in a climate change context, and adaptation measures which take traditional knowledge into consideration.

MODULE 5 provides the context, causes and nature of conflicts between indigenous peoples and non-indigenous water users, through the lens of indigenous peoples' rights and the right to water. It also discusses the types of actions and strategies that are needed to ensure recognition of indigenous peoples' rights in IWRM and prevent conflicts.

MODULE 6 introduces the intercultural approach - a process that aims to recognize and integrate indigenous peoples' rights, knowledge, perspectives and interests in any planned action, including legislation, policies and projects, by creating spaces for their meaningful participation and continuous dialogue between all parties.

THE FACILITATORS' GUIDE presents all relevant methods and tools for face-to-face and online trainings, additional case studies, and sample programmes with guidelines on each session. This is a guide that the trainer could use and adapt with his/her own design to a given context. Additional six case studies presented at the end is a piece of knowledge from the ground and were developed based on the information received from the participants of the online course.

The objectives of this training package are to facilitate learning to integrate traditional knowledge into policies and practices in Integrated Water Resources Management (IWRM), and discuss ways to enhance indigenous peoples' participation in sustainable water management and development.

MODULE 1

Introduction

Learning Objectives

TO LEARN

- **Who are the indigenous and traditional peoples?**
- **What is Integrated Water Resources Management?**

TO STUDY

- **The role of water in indigenous value systems**
- **Water and sanitation challenges faced by indigenous peoples**

TO RECOGNIZE

- **How indigenous peoples and traditional knowledge are reflected in the Sustainable Development Goals**

Photo: Austin Schmid

1.1 Context

"Water is at the core of civilizations and is a key component in all cultures- past, present and future. Water-related decisions have economic, social, environmental as well as ethical dimensions of existential importance, especially for the most vulnerable groups affected by poverty, exclusion and discrimination including women and indigenous peoples.

It is imperative to foster the knowledge embedded in the collective experience of humanity to respect its diversity, which holds irreplaceable keys for the man-made and natural environmental capacity to respond with wisdom and justice to change as a catalyst for peaceful and equitable cooperation. There is also a need to fully take into account the complex cultural realities, ethical imperatives and the vulnerable groups in decision making, water management and governance, to enhance cooperation with all relevant actors." **- 7th World Water Forum Daegu Gyeongbuk Recommendations on Water Cultures and Equity**

This manual was inspired by the belief that the integration of indigenous peoples' rights and traditional knowledge into water resources management can be an effective means to enhance sustainable development in the whole river basin. Indigenous and traditional peoples are often ignored in decision-making on water, unequally treated in conventional water management systems, and disproportionately affected by water conflicts, despite being the custodians of biologically and culturally diverse environments and possessors of invaluable knowledge on their water resources. Faced with the impacts of global climate change in local environments and resource management systems, we cannot afford to ignore the environmental knowledge of the world's indigenous peoples. The inclusion of traditional knowledge can play a vital role in recognizing and fixing the pitfalls of existing management practices.

While attention to indigenous peoples' issues and indigenous activism in environmental matters is growing globally, indigenous peoples' perspectives still have a minor role in international mechanisms related to the management of water resources. The recognition of their environmental rights at the international level is often not respected or transformed into concrete policies or procedures at the national and local levels. Inadequate management procedures and the absence of recognized land and water rights, make it difficult for indigenous peoples to meaningfully influence water management decisions.

The participation of vulnerable groups is essential for the sustainability of water management solutions. Indigenous peoples' ability to participate fully in sustainable development practices on their lands is limited by economic, social and historical factors. In view of the sustainable development of the natural environment, as well as the cultural, social, economic and physical well-being of indigenous peoples, efforts should be made to recognize, promote and strengthen the role of indigenous communities in water management systems. The Integrated Water Resources Management (IWRM) approach provides a possible means of addressing their lack of participation, as it seeks to enhance dialogue between different stakeholders and favours decision-making at the lowest appropriate institutional level.

This manual provides a framework for more inclusive and equitable management of water resources, taking into account the rights and knowledge of the world's indigenous peoples. Despite a growing number of publications on indigenous peoples' issues, the indigenous peoples of the Global South

have been largely absent in the literature. This is highly unrepresentative considering that about 70 percent of the world's indigenous peoples live in Asia alone (UN DESA, 2015). To counter this imbalance, the geographical focus of the manual is mostly on Africa, Asia and Latin America, while examples from northern continents are also included.

In this chapter, we define some core concepts and examine the importance of water for indigenous communities, as well as the necessity of integrating indigenous peoples' rights and knowledge, into water management plans and decisions in all areas inhabited by, or culturally important to, indigenous and traditional peoples.

1.2 Who are the indigenous and traditional peoples?

A commonly cited estimate of the indigenous population of the world is 370 million people, constituting 5 percent of the global population and comprising 5000 different groups in 90 different countries (UN DESA, 2015). However, there is no universally adopted definition of indigenous peoples. A strict formal definition is not seen as desirable by indigenous peoples' organizations themselves, as labels imposed on indigenous peoples by non-indigenous groups have historically been misused against them. Indigenous peoples can be identified by the principle of self-identification, according to which, they have the right to determine their own identity or membership in accordance with their customs and traditions (UNDRIP, 2007).

Even so, some working definitions are in use to frame the discussion on indigenous peoples. The most widespread are the definition of the Martinez Cobo report, the definition of ILO Convention No. 169, and the definition by Erica-Irene Daes (see Further Reading for more information). The broad understanding of indigenous peoples in the UN system is based on the similarities of these


Photo: Kyaw Thar

Box 1.1: Common criteria for the definition of 'indigenous peoples'

Self-identification: Self-identification as indigenous people at the individual level and accepted by the community as their member.

Specific territory: Historical continuity with precolonial and/or pre-settler societies.

Strong connection to nature: Strong link to territories and surrounding natural resources.

Distinctiveness: Distinct social, economic or political systems. Distinct language, culture and beliefs.

Non-dominance: Form non-dominant groups of society.

Perpetuation of cultural heritage: Resolve to maintain and reproduce their ancestral environments and systems as distinctive peoples and communities.

definitions. Some common criteria that apply to most indigenous populations are summarized in Box 1.1. Not every criterion needs to be met for a group to be considered indigenous.

Indigenous peoples' social, cultural and economic conditions distinguish them from non-indigenous sections of society. Indigenous peoples have their own social and legal systems, languages, customs and traditions; strong links to surrounding ecosystems and ecosystem services; and a distinct set of rights, because of their ancestry and stewardship of their lands, territories and resources. Many indigenous groups share historical legacies of discrimination, dispossession of lands and natural resources, destruction of cultures, and human rights violations.

Different names are attributed to indigenous and traditional groups around the world. In some regions the term 'indigenous' is more widely accepted than in others (see Box 1.2). Some groups prefer to call themselves tribal, aboriginal, autochthonous, First Peoples or First Nations, for example, and in some contexts, occupational and geographical terms like hunter-gatherers, nomads, pastoralists, peasants and hill people are also used interchangeably with indigenous peoples.

Considering the oppressed history of the world's indigenous peoples, much reinforced by mystification and cultural reductionism based on a certain set of expected characteristics, it is important to keep in mind the differences that exist between the indigenous peoples and cultures of the world, including their perceptions of and approaches to water resources. Rather than being static, indigenous cultures constantly absorb new influences and change within their own terms, informed by their own values and cultural relations.

While the challenges they face always be addressed with the same methods, there are many similarities in the situations of indigenous peoples in different regions. Lack of access to social services and political participation, poverty, discrimination and economic marginalization are common problems for many of the world's indigenous peoples, who strive for the recognition of their ways of life and the protection of their rights, including the right to lands, territories and natural resources (UN DESA, 2006). By applying an integrated, intercultural approach in the water management cycle these problems can be flexibly addressed in different contexts, taking into account indigenous peoples' traditional environmental knowledge as well as their vulnerabilities and international human rights principles.

Box 1.2: The definition dilemma – an African example

In many parts of Africa and Asia, the use of the term 'indigenous' has been especially contested. All Africans are said to be indigenous to the African continent, and the protection of the rights of indigenous peoples has been opposed because it is perceived as a way of granting special rights to some ethnic groups over others, supposedly leading to tribalism and ethnic conflicts. The African Commission on Human and People's Rights (ACHPR) has been working to correct these misunderstandings, stating that the protection of indigenous peoples' rights alleviates the forms of discrimination experienced by them and not by others. Giving recognition to the wide variety of ethnic groups in African states, can open new ways to develop societies based on respect for, and the non-discriminatory inclusion of all ethnic groups.

According to the African Commission's Working Group of Experts on Indigenous Populations/Communities, the focus should be less on aboriginality and more on self-identification as indigenous and distinct from other groups. Central to this is:

- a special attachment to and use of ancestral lands, fundamentally important for their collective physical and cultural survival as peoples; and
- an experience of subjugation, marginalization, dispossession, exclusion or discrimination because of their different ways of life.

According to the Indigenous Peoples of Africa Coordinating Committee (IPACC), common characteristics of being indigenous in Africa include:

- political and economic marginalization rooted in colonialism;
- discrimination based on the dominance of agricultural peoples in the state system;
- particularities of culture, identity, economy and territoriality that link hunting and herding peoples to their home environments; and
- specific forms of discrimination due to differences in physical appearance.

The ACHPR definition of indigenous peoples also includes the following elements:

- Their cultures and ways of life are under threat, in some cases to the extent of extinction;
- The survival of their particular way of life depends on access and rights to their traditional land and natural resources thereon; and
- They suffer from discrimination, being regarded as less developed and less advanced than other, more dominant sectors of society.

According to IPACC, typical indigenous groups in Africa live by hunting and gathering, nomadic pastoralism, or traditional dryland horticulture. Indignity is associated with both the negative experiences of discrimination and marginalization and the positive aspects of being holders of unique knowledge of the long-term management of ecosystems. Some communities find themselves outside the state system and under-represented in governance. Affirmative recognition within international standards on the rights of indigenous peoples is necessary to ensure these peoples' survival.

1.3 What is Integrated Water Resources Management?

1.3.1 Basic elements of IWRM

Within an IWRM framework, all aspects of water resources interventions are considered at a catchment level, replacing politically determined management areas and conventional sector approaches with integrated planning (see Box 1.3 on levels of integration). According to a widely used definition of the Global Water Partnership, IWRM promotes the coordinated development and management of water, land and related resources in order to maximize the resultant economic and social welfare in an equitable manner, without compromising ecosystem sustainability. IWRM is a systematic process for the sustainable development and monitoring of water resources use and allocation in the context of social, economic and environmental objectives.

Integrated management means that all the different uses of water resources are considered together. The effects of each water use on the others are taken into consideration, as well as the overall social and economic goals and the achievement of sustainable development. Different user groups can engage in and influence strategy formulation. *Management* is used in the sense that it highlights the need to focus not only on the development of water resources but also on conscious management that ensures long-term sustainable use of water resources, preserving them for future generations. River basins need strategic, long-term and binding resources management plans.

IWRM emerged as a paradigm shift away from the state-centred, sector-by-sector, top-down management model, integrating the three 'E's of equity, efficiency and environmental sustainability in the same management framework (see Box 1.4 on the three 'E's). Sustainable water resources management requires the coordinated use of land, surface water and groundwater between upstream and downstream users. Planning is integrated across sector boundaries both at the basin and the community levels, and based on an open flow of information, good communication and an understanding of people's needs, desires and abilities.

According to the Global Water Partnership (2000), the successful implementation of IWRM requires:

- An enabling legislative and policy environment;
- Appropriate institutional arrangements; and
- A set of management instruments for gathering data and information, assessing resource availability and needs, and allocating resources.

These three elements need to be linked across various sectors. Capacity development on a range of levels, and reforms of water management laws and institutions might be needed to ensure effective implementation.

1.3.2 Agenda 21 and the Dublin principles

IWRM was developed as a response to concerns over the growing pressure on the quantity and quality of the world's freshwater resources. The concept was first introduced in Agenda 21, the guidance document for sustainable development, approved at the 1992 United Nations Conference on Environment and Development (also known as UNCED or the Earth Summit). The IWRM concept was inspired by the sustainability agenda of the 1980s and 1990s, including the Brundtland report, and the 1992 Dublin principles (see Box 1.5). Since then, the IWRM framework has been further developed in international forums as well as national policies and legislation.

Box 1.3: Levels of integration in Integrated Water Resources Management

Catchment linkages: The physical, chemical and biological make-up of a stream relates to the surrounding physical features of the watershed. Analysis of these features helps understand stream–watershed relationships and predict the effects of human influences on different stream types.

Scientific interdisciplinarity: Integrating all aspects of the physical and ecological system of a stream into planning at the catchment level requires many types of knowledge. Interdisciplinary planning can draw from biology, geography, chemistry, urban studies, and social and humanistic sciences that help understand the intercultural aspects of water resources management planning. Interdisciplinarity is necessary to ensure the comprehensiveness of water management decisions.

Temporal integration: Catchment management plans need to be flexible and adaptive, in order to take into account both gradual and abrupt changes in human and natural environments. Water resources management systems and institutions will need to evolve with and adapt to changes in society. Monitoring, evaluation and new planning is an intrinsic part of the IWRM cycle.

Multi-stakeholder participation: Participation is needed to share knowledge; to ensure a balance between the multiple societal interests in the catchment area; and to obtain an overview of the needs, challenges and ambitions of all stakeholders. Detailed information about the environment and the impacts of activities should be accounted for in management plans. A fully participative negotiated consensus is needed for the sustainability and ownership of the decisions taken for the watershed. Indigenous peoples' collective rights to the lands, territories and natural resources that they have traditionally occupied and used should be recognized, as well as their participation in the formulation, implementation and evaluation of all development plans and programmes that may affect them.

Source: Adapted from the Cap-Net manual on a HRBA to IWRM.

Box 1.4. The three 'E's

Efficiency: of water use, to make water go as far as possible.

Equity: in allocation of water across different social and economic groups.

Environmental sustainability: to protect water resources and associated ecosystems.

Chapter 18 of Agenda 21 (UN division for sustainable development, 1992) is devoted to the "Protection of the Quality and Supply of Freshwater Resources: Application of Integrated Approaches to the Development, Management and Use of Water Resources." It states that:

"Water is needed in all aspects of life. The general objective is to make certain that adequate supplies of water of good quality are maintained for the entire population of this planet, while preserving the hydrological, biological and chemical functions of ecosystems, adapting human activities within the capacity limits of nature and combating vectors of water-related diseases. Innovative technologies, including the improvement of indigenous technologies, are needed to fully utilize limited water resources and to safeguard those resources against pollution."

In further defining the concept of Integrated Water Resources Management, Agenda 21 highlights the following elements:

- Protection of water resources, taking into account the functioning of aquatic ecosystems and the perenniality of the resource;
- Prioritizing the satisfaction of basic needs and the safeguarding of ecosystems; and
- IWRM at the catchment basin or sub-basin level.

Indigenous peoples are frequently mentioned in Chapter 18 of the Agenda. In addition, Chapter 26 is devoted to indigenous peoples and makes several references to the sustainable development of natural resources. Issues brought up in the two chapters include the following:

- Water resources need to be managed at the lowest appropriate level, placing particular emphasis on the introduction of public participatory techniques, including the enhancement of the role of indigenous peoples;
- The active participation of indigenous peoples in water management teams and the formulation of resource management policies and strategies should be encouraged, strengthened and facilitated at the national and local levels;
- The managerial capabilities of water-user groups, including indigenous peoples, should be strengthened to improve efficiency at the local level;
- A better understanding of indigenous peoples' environmental management experience should be applied to contemporary development challenges. Indigenous communities should be consulted on their needs, knowledge and practices in the field of natural resource management and conservation;
- Adopted technologies should be responsive to the needs and constraints of the community concerned. Traditional and indigenous practices should be recognized and utilized to maximize and sustain local involvement;
- States could promote the construction of water treatment facilities and the development of appropriate technologies, taking into account sound traditional and indigenous practices; and
- The efficiency of indigenous peoples' resource management systems can also be increased by promoting suitable technological innovations

Box 1.5: The Dublin principles

Principle 1: Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment. Since water sustains both life and livelihoods, effective management of water resources demands a holistic approach, linking social and economic development with protection of natural ecosystems. Effective management links land and water uses across the whole of a catchment area or groundwater aquifer.

Principle 2: Water development and management should be based on a participatory approach, involving users, planners and policy makers at all levels. The participatory approach involves raising awareness of the importance of water among policy makers and the general public. It means that decisions are taken at the lowest appropriate level, with full public consultation and involvement of users in the planning and implementation of water projects.

Principle 3: Women play a central part in the provision, management and safeguarding of water. This pivotal role of women as providers and users of water and guardians of the living environment has seldom been reflected in institutional arrangements for the development and management of water resources. Acceptance and implementation of this principle requires positive policies to address women's specific needs and to equip and empower women to participate at all levels in water resources programmes, including decision-making and implementation, in ways defined by them.

Principle 4: Water has an economic value in all its competing uses and should be recognized as an economic and social good. Within this principle, it is vital to recognize first, the basic right of all human beings to have access to clean water and sanitation at an affordable price. Past failure to recognize the economic value of water has led to wasteful and environmentally damaging uses of the resource. Managing water as an economic good is an important way of achieving efficient and equitable use, and of encouraging conservation and protection of water resources.

1.3.3 Indigenous peoples as vulnerable groups in IWRM

Continuous dialogue and the participation and inclusion of all stakeholders are among the cornerstones of the IWRM framework. Special attention is paid to vulnerable groups, such as children, youth, disabled people, indigenous peoples and other minorities. Participatory techniques are needed to ensure water management decisions that are in public interest as defined and negotiated by local stakeholders, including indigenous peoples.

In the absence of legal requirements to engage them, vulnerable groups are often excluded from water management processes. According to international law, states are obliged to recognize the rights of indigenous peoples with respect to the territory that they have traditionally occupied, including the natural resources on which they rely, and to respect customary and traditional arrangements for water allocation. They are also obliged to ensure non-discriminatory treatment. The application of well-formulated and context-specific indicators to measure progress in realizing indigenous peoples' rights can help make informed decisions in water resource allocations.

In spite of their historical and present-day particularities in relation to land and water resources, indigenous peoples are often grouped together with other vulnerable groups in international agreements and resource management frameworks. Disaggregating information on indigenous populations and mapping the locations of indigenous peoples' traditional lands, resources and sacred places in the catchment, can help to give a clearer picture of their situation in each river basin. Information should be disaggregated by gender as well as ethnicity, as indigenous women are in a situation of greater marginalization, due to their gender as well as their indigenous status.

Indigenous Peoples

is the internationally agreed term that encompasses different indigenous and tribal communities around the world.

More than **370 million**

5% of the global **population**

15% of the **poor**

More than **5,000 different groups**

Live in more than **90 countries**

Custodians of **80% world's biodiversity**

Speak **4,000** out of **7,000 languages**

*Figures are estimates from UN sources.

Food and Agriculture Organization of the United Nations

#WeAreIndigenous
fao.org/indigenous-peoples

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One aspect of being vulnerable is the lack of formal recognition of and knowledge about entitlements. Enlightenment about existing rights is therefore needed to include indigenous groups in water-related planning. Enlightenment is also needed at the catchment management agency level, where the lack of information about vulnerable groups may lead to discriminatory planning.

1.4 Indigenous peoples and water

1.4.1 Water in indigenous value systems and spirituality

Indigenous peoples' cultures and identities have strong connections to their lands and natural resources. Life on earth is based on a holistic cosmic order, dependent upon relationships and connections to living and non-living beings. Culture, social life and spirituality are closely connected to nature and the organization of the universe. Indigenous spirituality is centred on the natural world, including certain geographical features like water bodies. Many of the world's rivers, lakes and springs are sacred sites for indigenous peoples.

Water also has historical significance as a central element in indigenous peoples' struggles over their ancestral lands and resources. The physical, cultural and spiritual existence and survival of many of the world's indigenous peoples depends on their continued access to their water resources. In addition to cultural and spiritual purposes, indigenous peoples use their water resources for supply and sanitation, livelihoods and economic uses. Compared to non-indigenous groups, they face transversal difficulties in access to all of these uses.

In many indigenous cultures, water is respected not as a commodity but as a living part of nature, a sentient being with which people interact to ensure the rights and participation of all living beings. Water is sacred, belongs to nature and cannot be owned by anyone. The fourth Dublin principle on the economic value of water has therefore been subject to substantial criticism from indigenous

as well as other groups, as it originally ignored the value of water as a social and cultural good. For indigenous peoples, water is a basic human right. Regarding water primarily as an economic good that can be traded and sold can appear to be a value conflict, prioritizing market forces at the expense of the role and participation of indigenous peoples in the design of water-related policies and programmes. Additionally, indigenous peoples might not be able to pay irrigation fees or want to pay for poor-quality services whose revenues are not invested to benefit their own systems (Tauli-Corpuz, 2006).

Incorporating an intercultural approach into the water management cycle can provide tools to address these issues in an equitable manner within the IWRM framework. The fourth Dublin principle now recognizes water as a social good and the right of every human being to have access to clean water and sanitation at an affordable price. Module 6 of this manual provides some ideas for alternative, non-monetary ways of charging for water and the possible subsidization of water services in communities that oppose the introduction of a tariff system. Designing management structures adapted to existing indigenous systems can help spread the benefits equally among different water-user groups. The importance of open dialogue, active participation, and the 'Free, Prior and Informed Consent' of indigenous peoples regarding decisions concerning their water resources becomes even more significant in this context.

1.4.2 Water and sanitation challenges faced by indigenous peoples

Indigenous peoples are more prone to face difficulties related to water and sanitation than other segments of society. They have lower access to and weaker coverage of water supply and sanitation services and a higher tendency to suffer from multidimensional poverty, malnutrition and other health deprivations. These disparities can be attributed to physical and economic as well as cultural and political factors, including the historical exploitation of indigenous peoples' resources and the forced cultural assimilation imposed upon them. Access to sanitation is sometimes hindered by different perceptions of health and hygiene in indigenous and non-indigenous societies.

The ILO Convention No. 169 and the UN Declaration on the Rights of Indigenous Peoples (2007) recognize the indigenous peoples' right to own and control their lands and to own, use and manage the natural resources on those lands. Despite international agreements, indigenous peoples' 'Free, Prior and Informed Consent' is often not sought regarding large-scale water projects on their lands and territories. The lack of appropriate consultation has led to many industrial and water power conflicts around the world, causing serious social and cultural disruption in indigenous societies.

In many indigenous societies, women are more vulnerable than men when it comes to water-related problems. The impacts of forced resettlements are more profound for women, who often have to walk longer distances to fetch water and wood, giving up their income-producing activities and becoming economically dependent on men. In addition, women's knowledge of water management systems, technologies and cyclical environmental changes might not be as valued as men's for cultural reasons.

Indigenous peoples often have low participation levels in water-related projects and development opportunities. Culturally insensitive management structures that do not involve or respect indigenous authorities have negative impacts on traditional leadership institutions. Non-indigenous values based on individualism might place indigenous authorities under pressure, invading spaces traditionally governed according to the collective values of indigenous peoples.

1.4.3 Indigenous peoples and water in the Sustainable Development Goals (SDGs) of the 2030 Agenda

In the Sustainable Development Goals of the 2030 Agenda of the United Nations, specific references to indigenous peoples occur twice: in target 2.3 to double the productivity and incomes of indigenous peoples through equal access to land and resources, and target 4.5 to ensure equal access to all levels of education for indigenous peoples and others in vulnerable situations. In several other goals and targets, indigenous peoples are included under the broader concept of vulnerable groups. In addition, indigenous peoples are referred to in the political declaration of the Agenda and in the section on follow-up and review, encouraging states to conduct reviews of progress drawing on contributions of indigenous peoples.

Human rights principles are strongly reflected in the 2030 Agenda. The focus on reducing inequalities is important to indigenous peoples, who almost universally live in marginalized situations. Of the SDG indicators, the following are particularly relevant for indigenous peoples:

- 1.4.2 and 5.a.1 on secure tenure rights to land;
- indicator 2.3.2 on small-scale farmers' income;
- indicator 4.5.1 on parity in access to education; and
- indicators 10.3.1 and 16.b.1 on experiences of discrimination as prohibited in international human rights law.

The methodology for data collection and follow-up of these indicators is being developed at the time of writing. Indigenous peoples have actively advocated for the disaggregation of all data.

Improving the situations of the world's indigenous peoples is crucial to achieving many of the SDGs, including those in which there is no specific mention of indigenous peoples. Goal 6, to ensure the availability and sustainable management of water and sanitation, calls for universal and equitable access to safe water and the protection and restoration of water-related ecosystems. Profound changes are needed in the way indigenous peoples' rights and participation are realized in water-related decision-making around the world. There is an implementation gap in relation to international agreements, which are often not translated into action at the national and local levels.

Indigenous peoples' roles in sustainable water resources management should not be seen only in terms of their vulnerabilities and rights violations. According to the UN, indigenous peoples occupy 20 percent of the Earth's territory. They have developed a holistic knowledge of their lands, natural resources and environment over many generations. Indigenous peoples' values, traditional knowledge and resource management practices should be recognized with a view to promoting environmentally sound and sustainable development. Through better inclusion of and respect for their perceptions and knowledge, indigenous peoples can make great contributions to the sustainability of water management in river basins around the world.

According to Victoria Tauli-Corpuz (2006), the UN Special Rapporteur on the Rights of Indigenous Peoples, indigenous peoples are constantly seeking ways to enable the modern world to accept and understand their world views, cultures and lifestyles, and suffer from the lack of spaces for serious dialogue. As a process that enhances dialogue between different stakeholders, IWRM can provide a framework for creating such spaces in the future.

Further reading and references to more supporting materials are included in the facilitator guide.

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Box 1.6. Main sources for the definitions of indigenous peoples:

- 1986: UN Sub-Commission on Human Rights – Study on the Problem of Discrimination against Indigenous Peoples – 'Martinez Cobo Study' – UN Doc. E/CN.4/Sub.2/1986/7;
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- 1999: World Health Organization – Geneva Declaration on the health and survival of indigenous peoples (WHO 1999);
- Conventions of the International Labour Organization;
- United Nations Working Group on Indigenous Populations: Working paper on the concept of indigenous people;
- Article 33 of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

MODULE 2

Human rights, indigenous rights and gender perspectives

Learning Objectives

- **To be familiar with the existing international instruments related to indigenous peoples' rights**
- **Identify the specific indigenous peoples' rights on their natural resources and the consequences for IWRM**
- **Understand the gender perspective in the implementation of indigenous people's rights**

The content of the module covers the recognized rights of indigenous peoples under international law, including human rights law and other specific international instruments. It articulates the effects and constraints imposed by the specific human rights safeguards of indigenous peoples on Integrated Water Resources Management (IWRM) public administration processes. The chapter concludes with an examination of indigenous peoples' rights, including a gender perspective, within the context of IWRM.

2.1 Indigenous rights protection in international law

2.1.1. Defining indigenous peoples under international law

The world has some 5,000 groups of indigenous and tribal peoples, with an estimated population of 370 million living in 90 different countries. They constitute roughly 5 percent of the global population.[1] Each group has its own distinct language, cultural traditions, customary laws and ancestral lands. In many cases, indigenous peoples have a history of colonial and postcolonial dispossession of lands, territories and natural resources that set them apart or marginalized them from mainstream society. Today, indigenous peoples amount to 15 percent of people living in poverty and they suffer disproportionately from illiteracy, disease, infant and maternal mortality.[2]

There is no universally agreed definition of 'Indigenous Peoples' among States and indigenous communities. This is because, depending on the definition of indigenous peoples, some communities could have been prevented from falling within the scope of the definition, and thus from being protected by the international framework on indigenous peoples' rights. Therefore, instead of a strict definition, legal experts and practitioners in international organizations created a non-exhaustive list of criteria to define 'Indigenous Peoples' on the basis of case law. Box 1.1 (Module 1) lists specific criteria.

States are the primary duty bearers of the implementation of human rights in international human rights law. National authorities, more specifically the legislative and judiciary power, are responsible for acknowledging the validity of the above-mentioned criteria to ensure that a given community may qualify as 'indigenous peoples' in their national setting. Without such official acknowledgement, the members of a given indigenous community may not claim any of the specific collective entitlements described at national level. Nevertheless, the non-recognition of indigenous peoples at national level does not prevent them from claiming their rights under international and regional human rights protection systems.

2.1.2. The international legal framework protecting indigenous peoples

In 1957, the first international organization to address the discrimination and exploitation faced by indigenous peoples was the International Labour Organization (ILO). The ILO developed the first binding international instrument – Convention No. 107 to abolish the forced labour conditions faced by many indigenous peoples worldwide.[3] Seventeen countries are still bound today by this convention.

Due to an "inherent assimilationist orientation," the ILO Governing Body undertook a revision of Convention No. 107 which led to the adoption of the 1989 Indigenous and Tribal Peoples' Convention (ILO 169 Convention), to enhance the autonomy of indigenous peoples.[4] This convention was drafted in recognition of the desire for indigenous peoples to exercise control over their territories,

[1] *UN DESA (2016). Sustainable Development Knowledge Platform – Indigenous Peoples. Available at https://sustainabledevelopment.un.org/majorgroups/indigenouspeoples.*

[2] *WGF (UNDP Water Governance Facility) (2016). Indigenous Peoples. Available at http://watergovernance.org/focus-area-post/indigenous-people/.*

[3] *ILO (International Labour Organization) (1953). The ILO Convention on Indigenous and Tribal Populations, 1953 (No .107). Available at http://www.ilo.org.*

[4] *See ILO (2013). Handbook for ILO Tripartite Constituents – Understanding the Indigenous and Tribal Peoples Convention, 1989 (No. 169). Geneva: ILO. Available at http://www.ilo.org/wcmsp5/groups/public/---ed_norm/---normes/documents/publication/wcms_205225.pdf.*

natural resources, institutions and economic, social and cultural practices – rather than to promote their integration in society as suggested in Convention No. 107. The ILO 169 Convention has been ratified by 22 countries. Today, it is the most important binding element of international law specifically protecting indigenous peoples' rights. In total, 39 countries have ratified either the ILO Convention No. 107 or No. 169, and have committed internationally to protect specific rights of indigenous peoples.

In a historic decision, the United Nations General Assembly adopted the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP or Declaration) on 13 September 2007. One hundred and forty-four States voted in favour of the Declaration, which recognizes the rights of indigenous peoples on a wide range of issues and provides a universal framework. It sets out the rights that States should recognize, guarantee and implement. UNDRIP also establishes a framework for discussions and dialogue between indigenous peoples and States.

It is important to note that the UNDRIP is composed of several existing international standards on the rights of indigenous peoples. Those standards include, *inter alia*:

- Article 30 of the Convention on the Rights of the Child (1989);
- Article 8j of the Convention on Biological Diversity (CBD, 1992);
- Chapter 26 of Agenda 21 (1992);
- General Recommendation XXIII of the International Convention on the Elimination of All Forms of Racial Discrimination (1965);
- Articles 1 and 27 of the International Covenant on Civil and Political Rights (ICCPR,1966);
- The International Covenant on Economic, Social and Cultural Rights (ICESCR,1966);
- The International Conference on Population and Development (ICPD,1994);
- ILO's Indigenous and Tribal Peoples Convention, 1989 (No. 169);
- Preamble of the United Nations Environment Programme Malmö Ministerial Declaration (UNEP, 2000);
- Paragraph 32 of the Beijing Declaration and paragraph 34 of the Platform for Action (1995);
- General comment No. 21 on: Right of everyone to take part in cultural life (Art. 15, para. 1 (a), of the International Covenant on Economic, Social and Cultural Rights);
- Article 4 of the Universal Declaration on Cultural Diversity and paragraph 14 of its programme of action (2001);
- Articles 2, 3 and 7 of the Convention on the Protection and Promotion of the Diversity of Cultural Expressions (2005);
- The Convention for the Safeguarding of the Intangible Cultural Heritage (2003); and
- Convention Concerning the Protection of the World's Cultural and Natural Heritage (1972).

Furthermore, jurisprudence on indigenous peoples' rights from human rights treaty bodies, (specifically the committees that monitor the implementation of human rights covenants and conventions) constitute an additional source to support UNDRIP.

Finally, there are several regional institutions that address the rights of indigenous peoples. The Organization of American States nominated a Special Rapporteur and established a Working Group to analyse the Draft American Declaration on the Rights of Indigenous Peoples. The Inter-

American Court of Human Rights adopted several decisions in favour of the Rights of Indigenous Peoples and their rights to water resources management.[5] The Working Group on Indigenous Populations/Communities of the African Commission of Human and Peoples' Rights developed a series of reports and country visits that have clarified the situation of indigenous peoples in Africa. The African Court on Human and Peoples' Rights also developed case law in relation to the rights of indigenous peoples.[6]

2.2 The United Nations framework for the protection of indigenous peoples' rights

This section presents the main protection mechanisms of the rights of indigenous peoples at the UN level.

2.2.1 Special Rapporteur on the rights of indigenous peoples

The Special Rapporteur can receive communications on allegations of specific human rights concerns. There is no need to exhaust domestic avenues for redress. The Special Rapporteur *inter alia*:

- Addresses communications from relevant sources (governments, indigenous peoples and their communities/organizations) on alleged violations of the rights of indigenous peoples;
- Formulates recommendations to prevent violations of the rights of indigenous peoples; and
- Works in close cooperation with other subsidiary organs of the Human Rights Council (in particular the Expert Mechanism on the Rights of Indigenous Peoples, relevant United Nations bodies and regional human rights organizations).

2.2.2 Expert Mechanism on the Rights of Indigenous Peoples

The Expert Mechanism on the Rights of Indigenous Peoples (EMRIP) was established in 2007 by the Human Rights Council, the UN's main human rights body.[7] The Expert Mechanism can consider submissions from indigenous peoples in relation to the specific study it undertakes. The annual session of the Expert Mechanism, which is open to indigenous individuals and their organizations, provides an opportunity to participate in discussions on indigenous issues. The rules governing participation allow indigenous peoples' organizations and individuals to attend these sessions once accreditation is granted.

2.2.3 Permanent Forum on indigenous issues

The Permanent Forum considers issues involving human rights, and has an interactive dialogue in which the Special Rapporteur and the Expert Mechanism both participate. It can provide advice to United Nations agencies on how to implement indigenous peoples' rights. Indigenous peoples can

[5] For a summary of relevant jurisprudence from the Inter-American system, see Inter-American Commission on Human Rights, 'Indigenous and Tribal Peoples' Rights over their Ancestral Lands and Natural Resources: Norms and Jurisprudence of the Inter-American Human Rights System' (OEA/Ser.L/V/II., Doc. 56/09).

[6] See for instance: African Commission on Human and Peoples' Rights, Centre for Minority Rights Development (Kenya) and Minority Rights Group (on behalf of Endorois Welfare Council) / Kenya.

[7] UN Human Rights Council, Expert Mechanism on the Rights of Indigenous Peoples, A/HRC/RES/ 6/36, 14 December 2007, and see UN Human Rights Council, Expert Mechanism on the Rights of Indigenous Peoples, A/HRC/RES/33/25, 30 September 2016.

participate in a number of ways, especially through oral and written interventions during its annual session. The Forum is also mandated to advise the Economic and Social Council to *"provide expert advice and recommendations on indigenous issues [...]."*

2.2.4 ILO monitoring mechanisms

The following are of particular relevance:

- Committee of Experts: it reviews States' reports in relation to ILO Conventions 107 and 169. The Committee can either send a direct request to a State or make observations regarding a specific situation. The tripartite Conference Committee on the Application of Standards discusses the report of the Committee of Experts and a number of country-specific cases, for which the States concerned are asked to appear for questions. The report of the Conference Committee is then discussed and adopted by the International Labour Conference;
- ILO Governing Body: it can receive petitions (called representations) from employers' or workers' organizations. These can be sent to either the Committee on Freedom of Association or to a Governing Body tripartite committee that can seek information from the government concerned and draw up a report with recommendations to be followed up by the Committee of Experts or by a commission of inquiry; and
- A member State, a delegate to the International Labour Conference or the Governing Body can file complaints against a State for non-compliance with a convention it has ratified.

2.2.5 Further UN mechanisms relevant to the protection of indigenous peoples' rights: human rights treaty bodies

Individuals can forward communications to UN treaty bodies under certain conditions. Whether an individual can bring a communication to such a mechanism depends on whether the State has consented to the communication procedure in relation to that treaty body, e.g. the optional protocol. It is to be highlighted that prior to submitting to monitoring mechanisms, claimants must have exhausted their respective domestic remedies. The monitoring bodies in Table 1 are relevant concerning indigenous peoples' rights.

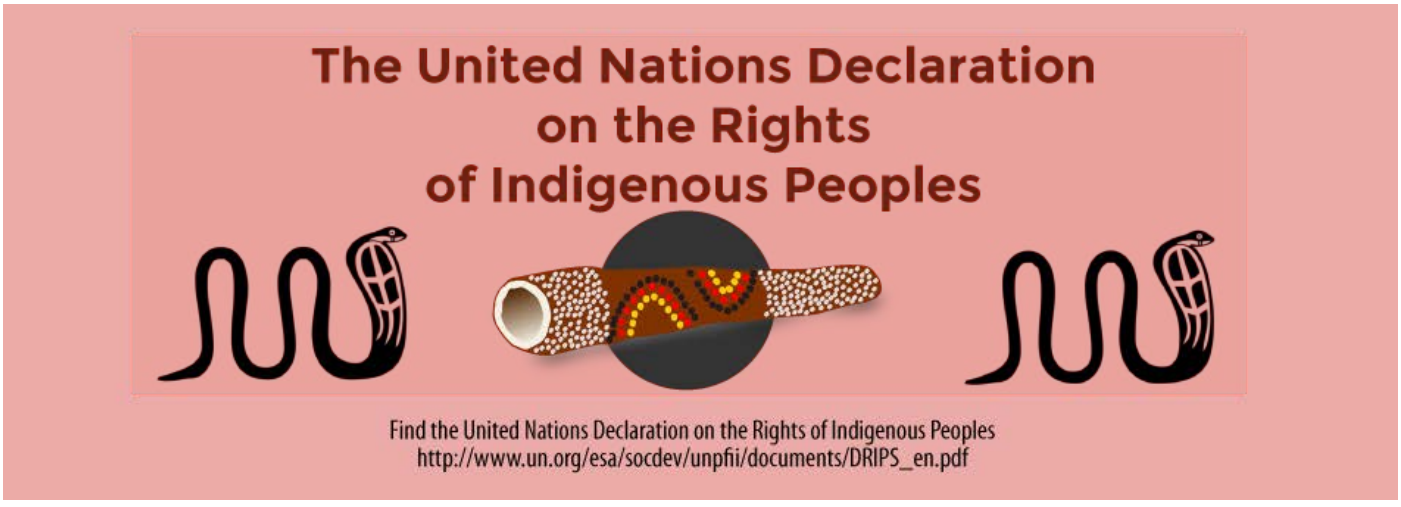
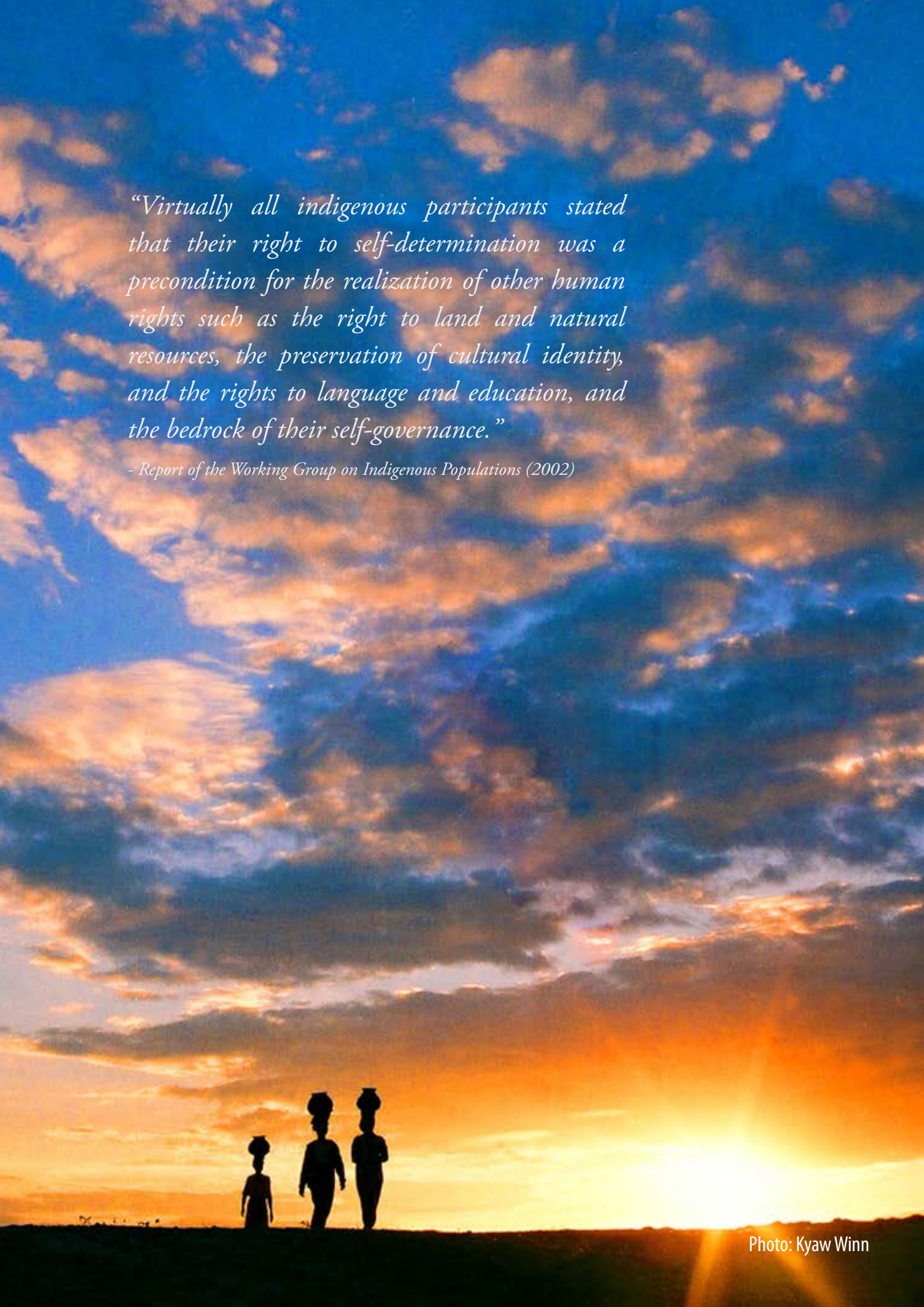


Table 2.1: Monitoring bodies that are relevant with regard to the rights of indigenous peoples

Monitoring body	Procedure available	Relevance for indigenous peoples' rights
Human Rights Council	• Universal Periodic Review; • Complaint mechanism (open to individuals).	Through the Universal Periodic Review procedure, the Human Rights Council can assess States' compliance with the rights of indigenous peoples. Indigenous peoples and accredited organizations can participate in the process by submitting information. Indigenous peoples can also report violations of human rights they suffer through the complaint mechanism of the Human Rights Council.
International Covenant on Civil and Political Rights and the Human Rights Committee	• State to State complaints; • Individual communication (open to individuals); • Inquiries (committee's own initiative).	Indigenous peoples can directly complain to this treaty body (individual communication) for the violation they are suffering from, especially under Art. 1 and Art. 27 of the ICCPR. Individuals can directly complain to the Human Rights Committee.
International Covenant on Economic, Social and Cultural Rights and the Committee on Economic, Social and Cultural Rights (CESCR)	• State to State complaints; • Individual communications (open to individuals); • Inquiries (committee's own initiative).	Articles 1 and 15 of the ICESCR are of particular relevance to the rights of indigenous peoples. Many of the Covenant's rights related to health, food, housing and culture concern indigenous peoples and their right to water. (See particularly General Comment 21, CESCR). Individual communication procedure similar to the Human Rights Committee and other treaty bodies.
International Convention on the Elimination of All Forms of Racial Discrimination and the Committee on the Elimination of Racial Discrimination (CERD)	-State to State complaints; -Individual communications (open to individuals); -Inquiries (committee's own initiative); -Early warning and urgent action procedure.	Through General Recommendation XXIII (1997), the CERD especially recognized the rights of indigenous peoples to participate in decision-making processes and to control, develop and use their own natural resources, thus including water resources. This Committee may constitute a key element in the protection of indigenous peoples' rights in relation to water resources management due to its early warning and urgent action procedure, which is designed to respond quickly to situations requiring urgent action. Individual communication procedure similar to other treaty monitoring bodies.
Convention on the Rights of the Child and the Committee on the Rights of the Child	-State to State complaints; -Individual communications (open to individuals); -Inquiries (committee's own initiative).	In its General Comment 11 on indigenous peoples, the Committee on the Rights of the Child declared that the right to enjoy one's culture "may consist of a way of life which is closely associated with territory and the use of its resources." This must logically include the right of indigenous peoples to own, use and develop their water resources. Individual communication procedure similar to other treaty monitoring bodies.
Convention against Torture and the Committee against Torture	-State to State complaints (same possibilities as above); -Individual communications (open to individuals); -Inquiries (committee's own initiative).	General Comment 2 of the Committee is of particular relevance to the rights of indigenous peoples as it prohibits States from discriminating against indigenous communities in the implementation of the Convention. Individual communication procedure similar to other treaty monitoring bodies.


"Virtually all indigenous participants stated that their right to self-determination was a precondition for the realization of other human rights such as the right to land and natural resources, the preservation of cultural identity, and the rights to language and education, and the bedrock of their self-governance."
- Report of the Working Group on Indigenous Populations (2002)
Photo: Kyaw Winn

2.2.6 Individual and collective human rights

One distinguishing feature relating to the rights of indigenous communities is that the community itself is the collective holder of those specific rights.

The Inter-American Court of Human Rights has stressed: *"The close ties of indigenous people with the land must be recognized and understood as the fundamental basis of their cultures, their spiritual life, their integrity, and their economic survival. For indigenous communities, relations to the land are not merely a matter of possession and production but a material and spiritual element which they must fully enjoy, even to preserve their cultural legacy and transmit it to future generations."* [8]

Indigenous peoples' rights are, by definition, collective rights. In other words, they are vested in indigenous individuals that organize themselves as peoples. While also including rights of individuals, the extent of recognition of collective rights in the Declaration is groundbreaking. Prior to the International Covenant on Civil and Political Rights Declaration, the international human rights system had been slow to endorse the concept of rights vested in groups, with the exception of the right to self-determination.[9] It had been generally perceived that individuals' rights would be sufficient to ensure adequate protection and promotion of rights with a collective dimension, such as the right to culture. However, with the adoption of the Declaration, the international community clearly affirms that indigenous peoples require recognition of their collective rights as peoples to enable them to enjoy human rights.

2.2.7 Normative foundations of the requirement for 'Free, Prior and Informed Consent'

The principle of 'Free, Prior and Informed Consent' (FPIC) is linked to treaty norms, including the right to self-determination affirmed in common Article 1 of the International Human Rights Covenants. It is also linked to the right to develop and maintain cultures, under Article 27 of the International Covenant on Civil and Political Rights (ICCPR) and Article 15 of the International Covenant on Economic, Social and Cultural Rights (ICECSR). Likewise, the treaty bodies have progressively framed the obligation in the context of the right to self-determination.[10]

How can this obligation of free, prior and informed consultation be fulfilled?

According to the Office of the United Nations High Commissioner for Human Rights[11]:

- *"Free implies that there is no coercion, intimidation or manipulation.*
- *Prior implies that consent is to be sought sufficiently in advance of any authorization or commencement of activities and respect is shown to time requirements of indigenous consultation/consensus processes.*
- *Informed implies that the information provided covers a range of aspects, including the nature, size, pace, reversibility and scope of any proposed project or activity; the purpose of the project as well as its duration; locality and areas affected; a preliminary assessment of the likely*

[8] *Case of the Mayagna (Sumo) Awas Tingni Community v. Nicaragua, Judgement of 31 August 2001, Series C, No. 79, para. 149.*

[9] *See Article 27 of the International Covenant on Civil and Political Rights, which refers to "persons belonging to … minorities."*

[10] *'Free, Prior and Informed Consent' of Indigenous Peoples (Sept. 2013). Available at http://www.ohchr.org/Documents/Issues/IPeoples/FreePriorandInformedConsent.pdf .*

[11] *Ibid.*

economic, social, cultural and environmental impact, including potential risks; personnel likely to be involved in the execution of the project; and procedures the project may entail.

- *This process may include the option of withholding consent. Consultation and participation are crucial components of a consent process."*

Box 2.1: UN General Assembly A/HRC/21/47, 6 July 2012

"From this perspective, it is important to note that the Declaration does not seek to bestow indigenous peoples with a set of special or new human rights, but rather provides a contextualized elaboration of general human rights principles and rights as they relate to the specific historical, cultural and social circumstances of indigenous peoples, including the situation of indigenous women and girls."

2.2.8 Free, prior, and informed consultation articulated in practice

The World Bank Operational Manual, OP 4.10-Indigenous Peoples, is a policy which aims to guarantee that the development process fully respects the dignity, human rights, economies and cultures of indigenous peoples. Such adherence is acknowledged in the policy as a contribution to the World Bank's mission of poverty reduction and sustainable development. Accordingly, all projects that are proposed for World Bank financing and affect indigenous peoples, shall have engaged in a process of free, prior and informed consultation with the affected community; and such engagement shall have successfully secured their broad support. In the same manner, the Declaration on the Rights of Indigenous Peoples explicitly requires States to obtain consent of indigenous peoples in cases of:

- The relocation of indigenous peoples from their lands or territories (Article 10); and
- The storage or disposal of hazardous materials on indigenous peoples' lands or territories (Article 29).

Concerning the El Diquís hydroelectric project that affected indigenous territories in Costa Rica, former Special Rapporteur on the rights of indigenous peoples, Professor S. James Anaya (2008-2014), strongly recommended that efforts should be taken to mitigate the power imbalance between the parties. He proposed the appointment of a team of multidisciplinary experts from various disciplines pertinent to the issue such as intercultural dialogue, indigenous peoples' rights and the technical aspects of the hydroelectric project. The team would be an active participant to facilitate all stages of the consultation process, inclusive of support to the indigenous peoples to organize themselves for the process.[12]

Continuing to emphasize that indigenous peoples have a stronger voice in their development, Special Rapporteur Anaya further acknowledged in his report to the Human Rights Council that there was a need for 'greater measures' to ensure that indigenous peoples could establish their own priorities. Further, consultation procedures in the course of legislative and administration decisions affecting indigenous peoples, particularly in the context of extractive industry projects, should encompass genuine dialogue with priorities as identified by indigenous peoples at the forefront.[13]

[12] *Report of the Special Rapporteur on the rights of indigenous peoples: Addendum, The situation of the indigenous peoples affected by the El Diquís hydroelectric project in Costa Rica, A/HRC/18/35/Add., 8 July 2011.*

[13] *Report of the Special Rapporteur on the rights of the indigenous peoples, James Anaya, A/HRC/21/47, 6 July 2012 at paragraph 10.*

Box 2.2: Key indigenous peoples' rights derived from the right to self-determination

- The right to own, develop, control and use traditional land and resources including water;
- The right to participate in public decision-making (including development projects and/or concessions) affecting the indigenous peoples' control and use of traditional land, resources and water;
- The right to object to a suggested use by public authorities of traditional land, resources and water (also referred to as the requirement of ''Free, Prior and Informed Consent''); and
- In case of consent to relocation, the right to just compensation.

The need to strengthen consultation has also been highlighted within the UN organization. Lack of appropriate consultation regarding the identification of World Heritage Sites in areas with indigenous populations is one example. During his country visit to Argentina (November and December 2012), Special Rapporteur Anaya was advised that the indigenous peoples living around the Quebrada de Humahuaca were not involved in the process of its declaration as a World Heritage Site. Additionally, they had no input in the management of the site and felt limited in their abilities to maintain their traditional and subsistence activities in the area. Special Rapporteur Anaya has confirmed that he has met with the United Nations Educational, Scientific and Cultural Organization (UNESCO) in relation to the organization's development of a policy on indigenous peoples, and advised UNESCO on how it can actively support indigenous peoples' rights.[14]

2.2.9 Indigenous women

In relation to indigenous women, a point of contention inevitably arises at the intersection of the human rights guaranteed to indigenous women because of their status as women, and those guaranteed because of their status as indigenous. Consequently, the question has been posed: How do international human rights standards protect, or how should they protect, indigenous women differently from non-indigenous women?[15] Addressing this question, former Special Rapporteur Anaya references the Human Rights Council report of the former Special Rapporteur on violence against women, its causes and consequences, Rashida Manjoo (2009-2015). In her report she stressed: *"A holistic approach to understanding discrimination and violence against women requires, among others, (a) treating rights as universal, interdependent and indivisible; (b) situating violence on a continuum that spans interpersonal and structural violence; (c) accounting for both individual and structural discrimination, including structural and institutional inequalities; and (d) analyzing social and/or economic hierarchies among women, and between women and men, i.e., both intra-gender and inter-gender."*[16]

The holistic approach remains significant to achieving success in the elimination of violence against indigenous women and girls; thereby it must be addressed in conjunction with the rights held by all indigenous peoples. Thus, the historical circumstances of discrimination and marginalization experienced by the indigenous community as a whole, which in turn has led to limited access to economic and social resources, should be considered as efforts are undertaken to alleviate violence against indigenous women.

[14] *A/HRC/21/47 at paragraphs 11-13.*

[15] *A/HRC/21/47 at paragraph 25.*

[16] *Report of the Special Rapporteur on violence against women, its causes and consequences, Rashida Manjoo, A/HRC/66/215 at paragraph 80.*

A delineation of the holistic approach to combating violence against women and girls has been said to encompass the obligations as found in UNDRIP: *"advancing indigenous peoples' autonomy and self-governance (Articles 5 and 18); strengthening indigenous peoples' traditional justice systems (Articles 34 and 35); increasing indigenous peoples' access to justice (Article 40); and improving indigenous peoples' economic and social conditions (Article 21)."* In summary, to make advances in the reduction of violence against women, it is necessary to strengthen indigenous peoples' self-determination.[17]

Furthermore, with respect to how States can support indigenous peoples' endeavours in self-determination, Special Rapporteur Anaya recommended that States increase indigenous peoples' participation in the design, delivery and oversight of programmes related to preventing and punishing violence against women; as well as provide support to programmes which indigenous populations have formulated on their own that have proved to be successful.[18]

[17] *A/HRC/21/47 at paragraph 29.*

[18] *A/HRC/21/47 at paragraph 32.*

Photo: Chetan Soni

2.3 Indigenous peoples' rights and water resources management

2.3.1 Cultural rights and the right to self-determination: a cornerstone of indigenous peoples' rights

Indigenous peoples' right to self-determination constitutes a key element for the implementation of their rights. According to UNDRIP (Article 3), indigenous peoples *"by virtue of the rights to self-determination freely determine their political status and freely pursue their economic, social and cultural development."* In addition to UNDRIP, human rights conventions and their treaty monitoring bodies recognize that indigenous peoples enjoy, to a specific degree, a separate collective **right to self-determination**, which directly results from the protection of their cultural rights.

The right to self-determination and cultural rights (Box 2.2) are considered the basis from which all other indigenous rights stem. Beyond the legal interpretation, this understanding also reflects the opinion of numerous indigenous groups as highlighted in the Report of the Working Group on Indigenous Populations. This report underlines that *"Virtually all indigenous participants stated that their right to self-determination was a precondition for the realization of other human rights such as the right to land and natural resources, the preservation of cultural identity, and the rights to language and education, and the bedrock of their self-governance."*[19]

2.3.2 The right to own, use and develop water resources and the right to participate in river-basin management processes

It is important to note that indigenous peoples' right to life is intrinsically linked to their right to water.[20] As stated by the former Special Rapporteur on the Rights of Indigenous Peoples, *"There are numerous populations whose subsistence depends on their close link with rivers and lakes and the regularity of rains, or, when it comes to herdsmen or nomads, to the aquifers in desert or semi-desert areas [...]."*[21]

Therefore, the right of indigenous peoples to own, use and develop their natural resources and their water resources is particularly strong under international law. According to UNDRIP:

- Indigenous peoples have the right to own, use, develop and control their traditional lands and resources (Article 26 of UNDRIP);
- Indigenous peoples have the right to maintain spiritual relationships with their traditional lands, territories, waters and coastal seas (Article 25 of UNDRIP); and
- A positive obligation lies upon States to give legal recognition and protection to these lands and natural resources (Article 26.3 of UNDRIP; Article 15 of the ILO 169 Convention).

Furthermore, indigenous peoples have various rights in relation to participation in river-basin management processes:

- Indigenous peoples must be consulted and represented through their own institution, in

[19] *United Nations Economic and Social Council, Report of the Working Group on Indigenous Populations on its twentieth session, 8 August 2002, E/CN.4/Sub.2/2002/24.*

[20] *See African Commission on Human and Peoples' Rights, Centre for Minority Rights Development (Kenya) and Minority Rights Group International on behalf of Endorois Welfare Council, Para. 212. See also Article 7, UNDRIP.*

[21] *UN Human Rights Council, Report of the Special Rapporteur on the situation of human rights and fundamental freedoms of indigenous people, Rodolfo Stavenhagen, A/HRC/4/32, 27 February 2007.*

conformity with their customs and traditions when resource management projects are applied to them (Articles 3, 4, 5, 13, 18, 19, 23, 27 and 32 of UNDRIP; Articles 7 and 15 of the ILO 169 Convention);

- Indigenous peoples shall have the right to decide their own priorities for the process of development which affects their territories. (Article 7 of the ILO 169 Convention); and
- States must conduct an impact assessment, in relation with indigenous peoples, concerning plans and projects affecting them (Article 7.3 of the ILO 169 Convention).

A key to indigenous peoples' effective participation in Integrated Water Resource Management (IWRM) is contained in the principle of subsidiarity, which favours smaller, decentralized decision-making. Adhering to this principle means that water resources should be managed at the lowest appropriate institutional level. The introduction of participatory techniques in IWRM, which assist local groups in visualizing plans for catchment areas and in voicing their perspectives, is important in ensuring that water system interventions are in the public interest as defined and negotiated by local stakeholders (indigenous peoples in particular).

There are further considerations in relation to conceptualizing concrete methods concerning IWRM. Notably, the issue of technology choice becomes important with regard to interventions in water resources. Dominant cultural practices of dam building, hydropower generation, canal construction and bulk water distribution networks may be considered instruments of cultural assimilation. In this respect, for each proposed change to a watercourse, a question should be posed: To what extent are modern technology choices appropriate from the point of view of local communities? In many cases, the improvement of indigenous technologies, which are often rooted in long-term interactions with nature that have proven to be sustainable, can provide an alternative point of departure. As a means of conflict prevention, and with due regard to the right to self-determination and the principle of 'Free, Prior and Informed Consent' that indigenous peoples enjoy under international law, innovative technologies must be studied in close collaboration with indigenous communities. Such means of water exploitation can be, and have been, proven to be beneficial for both indigenous peoples and society as a whole.

Examples of traditional and innovative adaptation of indigenous peoples' practices already being implemented in response to water resource management and climate change risks include: creating floating vegetable gardens, shoreline reinforcement, improved building technologies, rainwater harvesting, supplementary irrigation, traditional farming techniques to protect watersheds, continuation of customary obligations, community-based disaster risk reduction, and combining traditional and scientific knowledge.

In summary, indigenous knowledge systems may provide keys to sustainability that will be much needed in the context of the evolving water crisis.[22]

[22] *European Parliament, Directorate General for External Policies, Indigenous Peoples and Climate Change, 2009, EXPO/B/DROI/2009/03.*

2.3.3 'Free, Prior and Informed Consent' in water resource management and applicable rights in evictions under exceptional circumstances

According to international instruments and standards applicable to indigenous peoples' rights, States shall consult and cooperate in good faith with indigenous peoples in order to obtain their 'Free, Prior and Informed Consent' before adopting any measures that may affect them. As a result, States must obtain the consent of indigenous communities before any of the following actions in the implementation of IWRM processes:

- The adoption of legislation or administrative policies, including water-related policies that may affect indigenous peoples (Article 19 of UNDRIP);
- The undertaking of projects that affect indigenous peoples' rights to land, territory and resources, including water resources (Article 32 of UNDRIP); and
- The storage or disposal of hazardous materials on indigenous peoples' lands or territories – including territories containing water resources (Article 29 of UNDRIP).

Furthermore, indigenous peoples having unwillingly lost possession of their lands, when those lands are "confiscated, taken, occupied or damaged without their 'Free, Prior and Informed Consent'", are entitled to restitution or other appropriate redress (Article 28 of UNDRIP). The final set of obligations concerning the implementation of the principle of 'Free, Prior and Informed Consent' are to be found under the ILO 169 Convention. These include that *"the consultations carried out in application of the convention shall be undertaken, in good faith and [...] with the objective of achieving agreement or consent to the proposed measures."*

Key indigenous peoples' rights right to self-determination

The right to own, develop, control and use traditional land and resources including water.

The right to participate in public decision-making (including development projects and/or concessions) affecting the indigenous peoples' control and use of traditional land, resources and water.

The right to object to a suggested use by public authorities of traditional land, resources and water (also referred to as the requirement of 'free, prior and informed consent').

In case of consent to relocation, the right to just compensation.

2.3.4 Rights of indigenous peoples: legal implications within the context of IWRM (Box 2.3)

Indigenous peoples' rights	Legal source	Effect on IWRM
Right to self-determination	Art. 1 + Art. 27 (ICCPR); Art. 1 + Art. 15 (ICESCR); CERD (GR XXIII/1997); Art. 3, 18, 19, 20, 27, 33 UNDRIP; Art. 1, Art. 6 ILO 169 Convention; Art. 2 General Assembly resolution 1514(XV); Art. 1 United Nations Declaration on the Right to Development; UNESCO; Report of the International Conference of Experts held in Barcelona from 21 to 27 November 1998.	Right to decide on the allocation and management of water resources (on their territory).
Right to own, develop control and use traditional land, resources and water	Art. 8, 25, 26, 27 UNDRIP; Art. 14, 15, 17 ILO 169 Convention.	Right to decide on the allocation and management of water resources (on their territory).
Right to decide 'own priorities'	Art. 7 ILO 169 Convention; Art. 32, 25, 23 UNDRIP.	Right to decide on the priorities of water uses among competing water uses (water for nature; for other industrial uses). States must conduct impact assessment and preserve the environment.
Right to use customary law/practices	Art. 7, Art. 13 ILO 107 Convention (protection of customary laws, must be reflected in national legislation); Art. 8, 9, 14, 15 and 35 ILO 169 Convention (right to retain customary law and institution and institutions); Art .11, 12, 26, especially Art. 27, 34 and 40 UNDRIP.	Right to use customary practice s for the administration and decision-making process on water allocation
Right to control and share in the benefits of the use of traditional knowledge	ICESCR (General Comment 17); Art. 23 ILO 169 Convention; Art. 31 UNDRIP; Art. 7 Convention on the Protection and Promotion of the Diversity of Cultural Expressions; Art. 15 Convention for the Safeguarding of Intangible Cultural Heritage; Art. 8j, 10c, 15 Convention on Biological Diversity; Art. 27 ICCPR; Art. 4 UNESCO Universal Declaration on Cultural Diversity.	Right to use their traditional knowledge in the management of water resources. Right to control and get a shared benefit (e.g. from hydropower).
Right to participate in public decision-making affecting the control and use of traditional land, resources and water	Ibid; then the right to self-determination + Art. 5 ILO 107 Convention; Art. 6 and Art. 15 ILO 169 Convention; General Recommendation No. 21 CERD, principle also contained in the Second International Decade of the World's Indigenous People; Art. 18 UNDRIP.	Indigenous peoples have the right to participate in river-basin management procedures.
Right to be represented through own institutions	Art. 5, 18, 19, 20, 23, 32, 33 UNDRIP; Art. 4, 5, 6, 8 ILO 169 Convention.	Rather than adapting to nationally defined representation processes, indigenous peoples can choose their own representatives (in addition e.g. to other general civil-society representatives).

Entitlement to positive measures (from authorities) to ensure participation (logistics & training on entitlements)	Art. 3, Art. 26 ILO 107 Convention; Art. 4 ILO 169 Convention; Art. 13, 38, 39 UNDRIP.	Indigenous peoples have the right to (1) be trained in order to be aware of their entitlements to join river-basin decision-making fora; (2) be trained to enhance knowledge on procedures and processes; (3) receive financial support to fund costs of their participation.
Right to participate using native language	Art. 27 ICCPR; Art. 30 CRC; Art. 30 ILO 169 Convention.	River-basin agencies and commissions covering indigenous territories have to provide documentation (in oral and/or written form) in the traditional language of indigenous peoples; and have to arrange adequate infrastructure to enable indigenous peoples to contribute to the work of the commission using their native language.
Right to object to a suggested use by public authorities	Art. 6 ILO 169 Convention; Art. 19, 29, 32 UNDRIP. See also 'International Expert Group Meeting on the Convention on Biological Diversity's International Regime on Access and Benefit-Sharing and Indigenous Peoples' Human Rights' (E/C.19/2007/8).	Indigenous peoples have the right to reject (veto - 'Free, Prior and Informed Consent') water rights allocations.
Right to specific protection if 'religious value'	Art. 13 ILO 169 Convention; Art. 11, Art. 12 UNDRIP.	The indigenous peoples' right to veto ('Free, Prior and Informed Consent') a water use if water has a spiritual/ religious value for the indigenous community.
Protection from law enforcement in case of objection (no penalties, or confinement)	Art. 12 ILO 169 Convention.	Indigenous peoples have a right to oppose a given water right allocation without the risk of being sanctioned.
Right to only be evicted to safeguard human rights of other population components	Specific protection required from forced evictions (e.g. for dam construction) (See ICESCR – General Comment 7).	Indigenous veto right to a given water use can only be waived to safeguard water-related human rights of other communities (e.g. human right to water; irrigation rights for subsistence agriculture – right to food).
General protection from coercion for all cases	Art. 2 ILO 107 Convention; Art. 3 (2) ILO 169 Convention.	Indigenous veto right cannot be waived on other grounds (than human rights safeguards), including development interest of other groups of society (e.g. extractive industry).
Guarantee of land of at least equal quality (including compensation)	Art.12 ILO 107 Convention; CERD General Recommendation XXIII.	If the indigenous veto right has been waived on justified grounds, indigenous peoples should not face any additional risks with regard to the enjoyment of their human rights, and they deserve a share of benefits (e.g. irrigation rights fees resulting from dam construction).

2.4 The role of indigenous women in IWRM

In 1992, the Dublin Statement on Water and Sustainable Development stated in its Principle 3 that *"women [shall] play a central part in the provision, management and safeguarding of water"* while acknowledging that *"[t]his pivotal role of women as providers and users of water and guardians of the living environment has seldom been reflected in institutional arrangements for the development and management of water resources (ICWE, 1992)."*

Regarding indigenous women in particular, there is growing recognition in literature of their contribution "as crucial biodiversity managers, custodians of seeds, keepers of sophisticated water management systems and agricultural technology, long term observers and recorders of cyclical environmental change, protectors of water among many other contributions."[23] There are examples of indigenous women practising water treatment (with plants), storage and re-use (for agricultural purposes). For instance, in Sri Lanka, "water from domestic washing was used to irrigate vegetable gardens, and water used to wash rice was given to the cows."[24]

At the same time, women are particularly vulnerable among indigenous communities.[25] Indigenous women's knowledge is often unheard due to so-called 'division of roles' justified on the basis of cultural practices.[26] As discussed previously in section 2.1.6 of this document, this reality leads to a complex question, whether the adherence to indigenous communal institutions and cultural values may lead, under certain circumstances, to the violation of individual human rights; especially the rights of women and girls.

While there is not an internationally agreed response to the aforementioned conflict, UN agencies took the clear position to protect women from discrimination and to promote gender equality to the extent that they developed programmes which actively support the participation of women in decision-making. For instance, WHO, IUCN and IFAD undertook activities to promote the active participation of women in water resources management to enhance food security in the context of climate change (see examples from Panama [WHO/PAHO, et al. 20]), Thailand [IUCN 2011] and UN agencies [IFAD: CBD 2008, 27]). This practice is aligned with the 1986 UN Convention on the Elimination of Discrimination Against Women (CEDAW) Article 4(1) and its interpretation by the Committee in its General Recommendation No. 25 on 'Temporary Special Measures.'[27]

2.5 Conclusion

In summary, indigenous peoples hold strong rights over the management of their ancestral territories, natural land and water resources in international human rights law. These rights are enshrined through several international instruments relevant to indigenous peoples' rights as well as through other international instruments of a wider scope. Case law at regional and international

[23] *Gabrielson, T., C. Hall, et al. (2016). The Oxford Handbook of Environmental Political theory. Oxford: OUP.*

[24] *Ulluwishewa, R.K. (1994). Women's indigenous knowledge of water management in Sri Lanka, Indigenous Knowledge and Development Monitor, Vol. 2, no. 3: pp. 17-19. The Hague: IRC. Available at http://www.ircwash.org/resources/womens-indigenous-knowledge-water-management-sri-lanka.*

[25] *Oviedo, G. and A. Fincke (2009). Indigenous Peoples and Climate Change. Brussels: European Parliament. Available at https://cmsdata.iucn.org/downloads/european_parliament_study_on_indigenous_peoples_and_climate_change.pdf.*

[26] *Szach, N.J. (2013). Keepers of the Water: Exploring Anishinaabe and Metis Women's Knowledge of Water and Participation in Water Governance in Kenora, Ontario. Manitoba: University of Manitoba.*

[27] *UN ECOSOC (United Nations Economic and Social Council) (1999). General recommendation No. 25 on Article 4, paragraph 1, of the Convention on the Elimination of All Forms of Discrimination against Women, on temporary special measures. .*

levels further supports this fact. The right of indigenous peoples to own, use and develop their water resources is increasingly being implemented under international law. No use of their natural resources can be initiated without their 'Free, Prior and Informed Consent' . Indigenous peoples' use of water resources has also proven to be positive and may be rendered more productive and beneficial to the entire society when coupled with innovative water management techniques and programmes. The protection mechanisms (monitoring bodies and other relevant agencies) have been efficient and supportive of their rights, as well as open and accessible for indigenous people's redress of rights violations.

Finally, indigenous women play a key role in the management and preservation of water resources. They also hold significant rights to participate in decision-making processes under international law. Nevertheless, several scholars and institutions have highlighted to the potential conflict between adherence to indigenous communal institutions and cultural values and, under certain circumstances, individual human rights of women and girls. In spite of this conflict, there has been international support of programmes to overcome gender discrimination and promote inclusion of women in water resources management.

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MODULE 3

Indigenous peoples' access to water and sanitation

Learning Objectives

LEARN OR BETTER UNDERSTAND

- **Culturally accepted social practices, norms and beliefs on access to water and sanitation in different traditional communities**
- **The issues related to access to water and sanitation in indigenous communities and their participation in stakeholder organizations contributing to water management-related decision making**
- **Governance arrangements in regions that promote or inhibit indigenous peoples' enjoyment of their land rights and access to water, its productive use and their livelihoods**

3.1 Introduction

Indigenous peoples' (IP) access to specific water bodies differs across indigenous cultures, and is closely connected to the individual's and the peoples' group identities. Indigenous peoples have historically been among the poorest and most excluded people with regard to access to basic services such as education, water, health, housing, information and technology. However, in the past three decades, there has been a strong trend towards the reaffirmation of indigenous identity and culture. Important advances have been made towards improving the well-being and enhancing the participation of IP. Despite progress in raising the profile of indigenous peoples in local and international spaces, the current situation of IPs' access to water and sanitation is still daunting.

Unlike other societal groups, indigenous peoples have different perceptions, modes of participation and recognition of rights towards access to water and sanitation which may not be appreciated in the same way across different groups of people.

It is important for water managers, state governors, planners and implementation groups of water supply and sanitation projects, professionals and IWRM trainers to understand the different belief systems such as: attitudes, habits, norms, participation practices and rights pertaining to access to water and sanitation by the different IPs' communities.

"Poverty levels among Indigenous Peoples are more than twice those found among other Latin Americans, and they are 10 to 25 percent less likely to have access to piped water and 26 percent less likely to have access to improved sanitation" **(Clementine, M., 2016). Therefore, fulfilment of rights to safe water and sanitation for indigenous peoples is the ultimate and essential step to achieve universal coverage.**

3.2 Overview of problems in access to water and sanitation of the world's indigenous communities

There is evidence that access to water and sanitation coverage statistics could be misrepresenting the actual situation concerning indigenous peoples' access to water and sanitation facilities. This can be seen in Australia where, according to national statistics, the entire population has access to water and sanitation, but the aboriginal communities experience a higher rate of common infectious diseases than inhabitants of large urban communities (Hall, N. et al., 2016). Residents in these communities suffer from water- and hygiene-related health concerns at a greater rate than the general Australian population (McDonald et al., 2008). Therefore, it is important to consider access to water resources and sanitation infrastructure in terms of quality, maintenance and sustainability.

An extensive review of the literature and project experiences reveal the inequalities of Water, Sanitation and Hygiene (WASH) services of indigenous populations in studies in Nicaragua. Additionally, these studies show the inefficiencies of doing 'business as usual', the need for intercultural dialogue, and inclusion of all interest groups in the planning stages of infrastructure provisions. According to Tinoco et al. (2014), ethnic minorities and indigenous peoples make up 8 percent of the inhabitants of Nicaragua, and most of them live in the two Autonomous Regions. Between 60 and 70 percent of the rural population in the regions studied lacks access to improved water and sanitation facilities.

Operational documents of World Bank projects carried out in a number of countries including Bangladesh, China, Cambodia, Ethiopia, India, Indonesia, Kenya, the Lao PDR, Myanmar, Nepal, Papua New Guinea and Vietnam show that ethnic minorities and indigenous peoples are the most marginalized in terms of access to water and sanitation and also suffer from poor water quality, related health issues and natural disasters. More details on projects concerning different indigenous peoples and ethnic minorities in each country can be accessed at http://www.worldbank.org/en/topic/sustainabledevelopment/projects/operational-documents?teratopic_exact=Water+Supply+and+Sanitation&qterm=&lang_exact=English&docty_exact=Indigenous+Peoples+Plan

There is evidence that even in developed nations indigenous communities are more vulnerable to water crises. Recent literature on the Canadian First Nations indigenous communities shows that they face daily challenges to access safe water for drinking and hygiene—a fundamental human right enjoyed by most Canadian citizens. Research conducted by Human Rights Watch (2016) in First Nations communities in the province of Ontario between July 2015 and April 2016 revealed the severity of the water crisis and the ensuing health risks. Indigenous populations are at risk in many countries due to the absence of regulations or their inefficient enforcement. Other oversights and omissions in wastewater management and protection of water quality affect indigenous peoples. Enforcing legislation and control measures, as well as allocating funds for wastewater management infrastructure are of the utmost importance to protect water sources, and to ensure access to safe water for indigenous communities. In terms of water and sanitation infrastructure, indigenous communities are often underserved and marginalized. Water conservation technologies also need to be designed for indigenous communities based on the situations they are in, while being sensitive to their cultural mores surrounding water. There is no single picture or common explanation for the lack of access to water supply and sanitation in indigenous communities, because their access,

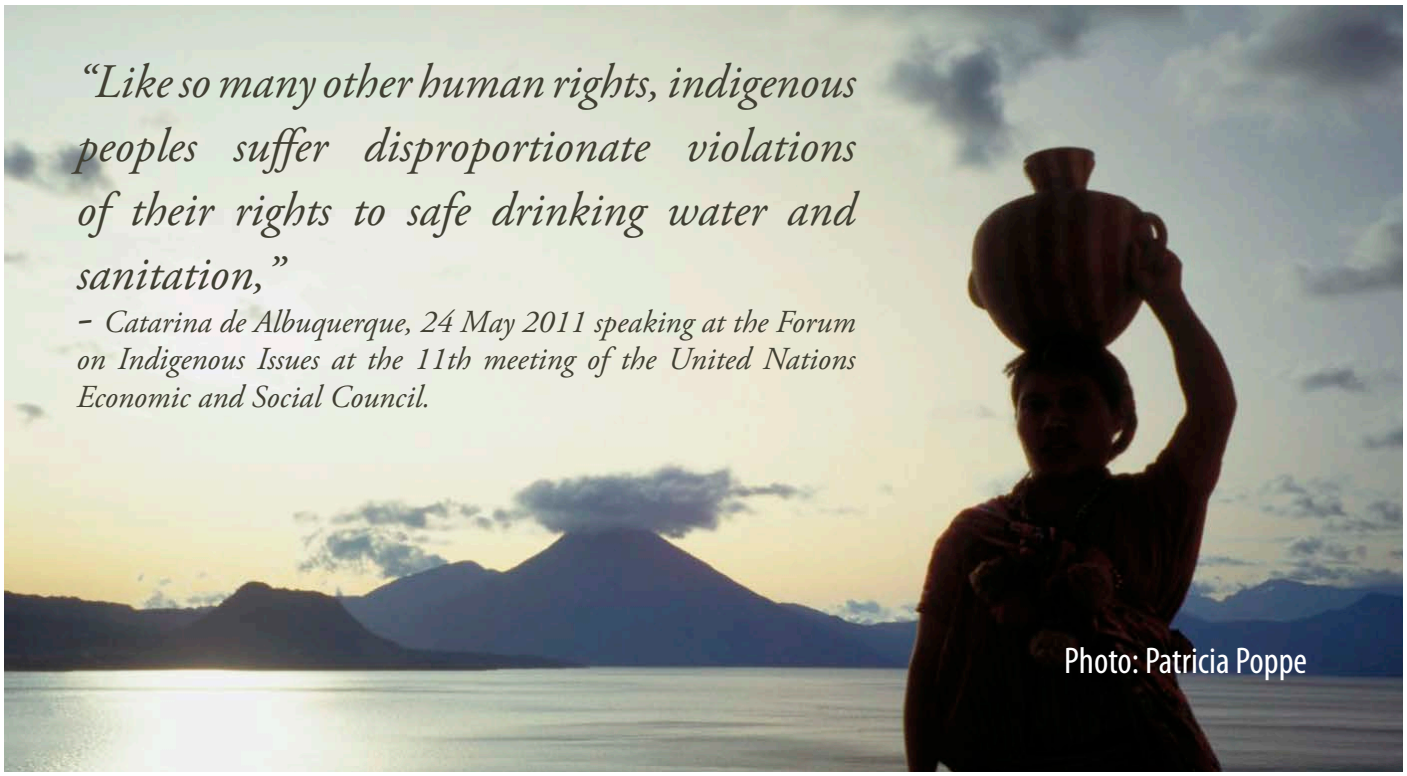
Box 3.1: Facts and figures: Indigenous peoples' access to water and sanitation

Indigenous peoples constitute approximately 5% of the world's population, and traditionally occupy lands in mountainous regions, valleys, plains and watersheds. Indigenous peoples generally suffer a higher burden of disease, have higher mortality and overall shorter life expectancy; yet they make up 15% of the world's poor. (Jiménez, Cortobius & Kjellén, 2014; UN, 2009)

In a world, where:

- 2.6 billion people have gained access to improved drinking water sources since 1990, but 663 million people are still without;
- At least 1.8 billion people globally use a source of drinking water that is contaminated with fecal matter;
- Water scarcity affects more than 40 percent of the global population and is projected to rise;
- Over 1.7 billion people are currently living in river basins where water use exceeds recharge;
- 2.4 billion people lack access to basic sanitation services, such as toilets or latrines;
- Each day, nearly 1,000 children die due to preventable water- and sanitation-related diseases;
- Approximately 70 percent of all water abstracted from rivers, lakes and aquifers is used for irrigation; and
- Floods and other water-related disasters account for 70 percent of all deaths related to natural disasters.

To find out more facts and figures about Sustainable Development Goals on water and sanitation, Goal #6 visit: http://www.un.org/sustainabledevelopment.



problems and situations vary depending on the location. Furthermore, the paucity of access to safe water and sanitation has dire consequences on indigenous peoples' health and hygiene. This is further aggravated by lack of knowledge and awareness, as well as poor access to health services.

3.3 Indigenous peoples' perceptions of access to water and sanitation

Perceptions play an important role in the survival of indigenous peoples' cultures. The individuals in a group share a common ethnic identity. This however, can also pose threats that can act against IPs' survival. This module helps learners to appreciate and pay attention to the cultural survival of indigenous peoples and their various perceptions in relation to access to water and sanitation. Cultural survival means 'survival against all odds' (in this context, 'odds' means anything which harms the balance and identity of their culture and territories). Indigenous peoples' survival entails retention and preservation of their distinctive cultural identity against odds such as political, social, economic and cultural practices that subjugate them and inhabit the territories that they received from their ancestors.

Access to water and sanitation is perceived by indigenous peoples as an issue of survival. Their cultural beliefs about the realities in their societies - such as beliefs about water; gender roles in access to water; and life relations to water - help them to persist against all forms of odds.
Indigenous peoples have rich and diverse cultures based on a profound spiritual relationship with their land and natural resources. Dichotomies such as nature versus culture do not exist in indigenous societies. Indigenous peoples do not see themselves as outside the realm of nature, but as part of nature, and they have their own specific attachment to their land and territory, and their own specific modes of production based on their unique knowledge of the environment they inhabit.

This subsection of the module focuses on learning about indigenous peoples' perceptions **of access to water and sanitation based on their belief systems and cultures**, although these cannot be generalized for all indigenous groups, as it may vary depending on sociocultural influences and their exposure to the surrounding communities, development interventions and knowledge. Therefore, learners should keep in mind that different indigenous groups' perceptions of access to water and sanitation may be better understood by employing the local vernacular terms related to water and its use. The subsection helps learners to elicit information on some traditional perceptions about access to water and sanitation, and reflect on the experiences of different social groups. This provides the grounds for understanding and learning about different cultural expressions in indigenous communities. This subsection draws upon the view that access to water and sanitation depends on how different people perceive and value it.

3.3.1 Cultural survival and IPs' perceptions

According to IPs' perceptions, the more a person is emotionally attached to their indigenous culture and identity, the more committed they will be to the retention and preservation of the cultural survival of their belief systems. This determines how indigenous peoples participate in actions that uphold the values of their sociocultural system for access to water and sanitation.

This section uses illustrations to help the learner understand important aspects of access to water and sanitation in relation to indigenous peoples' culturally based perceptions, gender roles and water-cultural relations.

Although there are many beliefs that today's world rejects as myths or primitive, backward concepts, some indigenous and traditional practices add an unseen value to the sustainability and conservation of water and related resources. However, these traditions and beliefs have often been misunderstood and ignored in development projects, which has led to failure in serving the indigenous communities and fulfilling their rights. Descriptions of indigenous peoples' perceptions highlight the importance they place on sustainable utilization of water and sanitation services; survival of indigenous cultures and traditions; and resource conservation. Table 1 highlights some of the salient perceptions about water and sanitation among some indigenous communities.

Group exercise: Discovering IPs' perceptions

In small groups or in a plenary session, invite training participants to discuss and share the common views and perceptions surrounding water and sanitation in their own communities.

Table 3.1: IPs' perceptions and their implications for access to water and sanitation

IPs' salient perceptions of water and sanitation	Implications for IP's access to water and sanitation
1. Cultural perception of water as a 'gift of nature'	Water is enjoyed as a free resource, accessible through different water facilities including wells, streams, ponds and rainwater harvesting. Perceiving water as a free resource makes it difficult to implement water utility payment systems in IP water-user communities. IP communities' livelihoods are attached to their water resources and nature, and they value their conservation and avoid exploitation. They prefer the freedom of enjoying that gift of nature. On some occasions, even though they may highly value the protection of this resource, they might lack the knowledge on how the pollution that accompanies growing population and settlements happens, and affects the resource.
2. In some indigenous cultures, talking about, seeing and sharing excreta disposal facilities (pits, latrines/toilets) is considered a 'taboo'	Sanitation must be safe, adequate and conducive to the protection of public health and the environment. In indigenous communities, adequate sanitation is not only fundamental for human dignity and privacy, but associated with taboos. IPs' taboos are important mechanisms for setting standards, maintaining sanitation and protecting water. But taboos make it difficult to promote the implementation and use of improved sanitation facilities and education on hygiene. If awareness and educating components have not been included in the programme, it could lead to wasted investments and failure of the project.
3. Gender roles and access to water and sanitation • Collecting/fetching water is perceived as a 'woman's task'; and • Maintaining water facilities (e.g. constructing wells, de-silting) is perceived as a 'man's task'.	Indigenous women have a strong attachment to water and play a distinct role in accessing, caring for and protecting water using traditional protocols. Indigenous women are often called the "Keepers of the Water", "Carriers of Water" and "inheritors of water knowledge, protection and management." Understanding the role of indigenous women as custodians of culture, language and beliefs will strengthen and add value to their contribution and benefit efforts to ensure sustainable access to water and sanitation. It is vital to ensure the participation of women in the planning stages of the projects.
4.Water is life, sentient, sacred and healing Quote by Aboriginal women, Ontario, Canada: *"The Aboriginal women have a special connection to water, that mainstream society hasn't considered. Lack of recognition has not stopped the Aboriginal women from fulfilling their obligations. . ."* For Indigenous peoples and their ways of life, water is a living thing, a spiritual entity with 'life-giving' forces. Source: Kate Cave & Shianne McKay, Water Song: Indigenous Women and Water (2016).	Water has significant cultural importance to indigenous communities. Indigenous peoples' perceived values of water ensure that water is to be respected, protected and nurtured. IPs' perceived values of water determine community participation that comes with duties and responsibilities in ensuring specific solutions to their water and sanitation needs. Ignoring perceived values of IPs on water and sanitation, limits meaningful participation in the development and management of water and sanitation services.

Box 3.2: Transforming sociocultural barriers into sustainable WASH solutions (How sociocultural barriers prevent/impact WASH solutions)

Various effects of sociocultural barriers have been documented as hindrances in water and sanitation projects. Recurring ones include:

- Failure to integrate existing authority structures and lack of understanding of power dynamics in the leadership, resulting in the imposition of new and non-sustainable water governance organizations;
- Cultural resistance to imposing norms of 'good governance', including principles of 'equality and inclusion' is common; and
- Governance structures promoted by external agencies that often fail to handle the seasonal migration of many indigenous peoples.

Indigenous peoples and ethnic minorities generally have a more integrated view of the relationship between health and well-being, including the perception of disease transmission. This fundamentally affects which solutions they perceive as desirable and acceptable.

The impacts of not understanding the sociocultural aspects of water and sanitation interventions are visible in a study involving six indigenous communities. These include:

- Rejection of solutions due to clashes with cultural preferences;
- Non-functioning solutions from lack of knowledge of local environmental conditions, and failure to recognize relevant local knowledge;
- Inactive management organizations due to lack of capacities; and
- Incomplete infrastructure installations due to the absence of control and monitoring.

These experiences reflect the lack of capacity or incentives to respect and integrate indigenous peoples' and ethnic minorities' perceptions and practices. This may hamper progress and put water and sanitation sustainability at risk. In the worst case, investments are wasted as facilities are not used or almost immediately fall into disrepair.

Source: Tinoco et al., 2014

3.4 Indigenous peoples' participation in access to water and sanitation services

This subsection focuses on **learning how indigenous peoples can participate in stakeholder organizations** (e.g. networks, platforms, forums, groups) **to improve access to water and sanitation services** in their communities. Learners should keep in mind that as access to water and sanitation services becomes more formal, organized and competitive, indigenous groups are unable to negotiate for services and for continued access and use. The subsection helps learners to identify how they can participate in governance structures and processes to access water and sanitation services in their respective communities. This section is based on the observation that IPs mainly depend on traditional knowledge (and tools) that have evolved over time and have been passed down generations, to make decisions on life goals, and choice of actions for access to water and sanitation services. More elaborate discussion on IPs' participation is included in Module 6 of this manual.

This subsection on IPs' participation contains: i) governance structures and processes for access to water and sanitation services in IP communities; ii) roles different stakeholders play; and iii) participation of indigenous peoples in rural water supply projects.

3.4.1 IPs' governance structures for water and sanitation services

"Governance refers to the evolving processes, relationships, institutions and structures by which a group of people, community or society organize themselves collectively to achieve things that matter to them" (Hunt et al., 2008). Considering that water and sanitation services matter to IPs, it is important to understand community governance structures for their access to water and sanitation.

Governance structures and processes for access to water and sanitation services in IPs' communities are unique to indigenous communities, but have some similarities to conventional governance structures. Some of the IPs' governance authorities are:

- Community assemblies - these primarily work as high-level policy bodies. They are responsible for traditional maintenance of indigenous knowledge, skills and practices;
- Community authorities such as the elders' council, the community arbitrator/judge and the supervisor of natural resources;
- Territorial governments - these have been more recently instituted - responsible for the governing of one indigenous territory; and
- Community task groups - these comprise groups of people formed to address a specific task in their neighbourhood.

3.4.2 Stakeholder roles in water and sanitation services

In IP communities, like in any other society, different people hold different stakes in access to water and sanitation services. One of the fundamental challenges in indigenous community governance is the lack of understanding of different people's stakes. It is important to understand the pertinent questions related to stakeholders and their roles, such as: who has power/authority over what; what are the governing rules; how are decisions enforced; how are rights and interests negotiated; and what structures would best enable achieving community goals?

Key stakeholder categories in water and sanitation services

- Water users – refers to people, livestock and other biodiversity that use water for their living;
- Water and sanitation service providers – including; public/government agencies, private companies, civil society and community efforts;
- Policy makers, regulators and allocators of water and sanitation resources – including national and local legislative and administrative authorities, catchment management bodies and officials responsible for water and sanitation and related services;
- Civil society organizations, such as non-governmental organizations, academic institutions, the media and professional bodies responsible for building capacity, advocacy, research, information communication, regulation, and networking among stakeholders in water and sanitation services; and
- Industrial and agricultural water users, who compete for the same resources, or share the resources in multiple ways such as wastewater reuse.

Importance of ensuring participation of indigenous peoples in rural water supply projects

- The effective identification of water sources;
- Upstream community consultation on water safety (ensuring safety of the water source);
- An understanding of local historical knowledge about water availability and patterns, risks and potential in the catchment;
- To identify water supply systems preferred by IP, like integrated water use in traditional systems (e.g. some communities prefer to use well water and streams, instead of water supplied to the house, for bathing purposes;
- To be aware of the existing taboos on water supply, and to understand where awareness and education on water quality needs to be applied;
- To recognize potential catchment conservation measures;
- To identify investment priorities for water supply. For example, it may be more important for IPs to invest in water transportation devices rather than a water pumping system. It is important to carefully identify the IPs' priorities because in some cases investment may lead to negative consequences in IPs' communities. For instance, in the case of some community water sources, pumping without restoration of the catchment has contributed to the aquifers drying up because pumping leads to more use and water wastage.

Ownership of water supply and sanitation systems is a key factor for maintenance plans and sustainability of the system. Transferring ownership of the maintenance of community water supply systems will also facilitate the integration of traditional knowledge into water management. In this manual, Module 4 will talk about traditional knowledge and long-established communities (covering but not limited to the indigenous peoples) that employ this knowledge.

Discussion questions

Have you encountered any conflicting situations in applying traditional knowledge in water management and ensuring water supply for all (i.e. in achieving SDG 6)?

Does capacity development for indigenous communities help them face the challenges related to lack of access to clean water and sanitation?

Should States prioritize fulfilling the rights of indigenous peoples and reducing inequalities?

Photo: Joydeep Mukherjee

3.5 Indigenous peoples' land rights and access to water for productive use and livelihoods

This subsection focuses on **helping IPs be informed about their land rights in relation to access to water for productive use and livelihoods** in their communities as awareness has not been given much priority in the advocacy for rightful access. This section is based on the premise that land rights and access to water are largely governance issues and that fulfilment and enjoyment depends on the recognition of rights to access, and how the recognition can be translated into action to benefit the rights holders.

This module recognizes that institutions, instruments and mechanisms are in place to promote IPs' land rights and access to water. A participatory discussion with IP learners helps to identify what could be done to better address issues of IPs' land rights and access to water for productive use and livelihoods.

This section contains: i) land-related constraints faced by IPs when participating in processes pertaining to access to water for productive use and sustaining livelihoods, ii) formal and informal recognition of indigenous peoples' land rights in different contexts, iii) initiatives that have attempted to address land rights and access to water for IPs, iv) participatory discussions on possible ways to realize IPs' land rights and access to water for productive use and livelihoods.

3.5.1 The United Nations and land rights for indigenous peoples

The United Nations (UN) provides important instruments and mechanisms for promoting land rights of indigenous peoples around the world. The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) highlights key issues on lands, territories and natural resources, including the right for indigenous peoples to:

- Maintain spiritual relationships with the land;
- Not to be forcibly removed or dispossessed;
- Have their own land tenure systems;
- Claim redress for land that has been taken or damaged; and
- Conserve and protect the environment.

The land-related constraints faced by IPs are as follows:

- Indigenous peoples have clear systems of land tenure that are based on traditional systems, e.g. customary tenure, wherein understanding, practices, protocols and maintenance of the systems is handed down from generation to generation. However, most statutory laws on land in IPs' communities conflict with the traditional land tenure systems in aspects of ownership, use and conservation.
- Land is central to the survival and livelihoods of indigenous peoples, and is also used for spiritual and cultural well-being. Full enjoyment of indigenous peoples' right to land, in accordance to these needs, is constrained by the government's legal and regulatory frameworks, policies and administration, and perceptions of cultural practices being illegal.

- The administrative constraints of land rights for IPs relating to: land mapping, state versus private person's ownership of land, gazetting IPs for wildlife and natural resources conversation.
- Seizure of land occupied by indigenous peoples, without obtaining their 'Free, Prior and Informed Consent' relating to government and private sector development projects such as plantation schemes, mining, tourism and recreation, drastically affects IPs' land rights and enjoyment of land to fulfil their human needs.

3.5.2 Formal and informal recognition of indigenous peoples' land rights in different contexts

Formal and informal recognition of indigenous peoples' land rights supports their claims for access, and to own and use land in their communities. International law on the rights of indigenous peoples recognizes the importance of indigenous peoples' lands, territories and resources, and their significance in the enjoyment of other human rights. These international laws include:

- United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP);
- International human rights treaties;
- ILO Convention No. 169;
- Regional human rights treaties;
- Provisions in international human rights treaties such as the Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW) and the Convention on the Rights of the Child (CRC); and
- Domestic laws and federal constitution of IPs' communities relevant to indigenous peoples' land rights.

Indigenous peoples' access to land and related resources determines the enjoyment of their rights to safe water, both in quantity and quality. When their lands are occupied by any development project, their livelihoods, which have been closely associated with water and its related resources, are threatened. Therefore, any development or state project should have a component to build up indigenous peoples' resilience to changes, and to avoid discrimination and the violation of their rights.

Box 3.3: UN declarations on land and indigenous peoples

Article 26 of the UNDRIP, containing some of the most important points on land, states:

- 1. Indigenous peoples have the right to the lands, territories and resources which they have traditionally owned, occupied or otherwise used or acquired.
- 2. Indigenous peoples have the right to own, use, develop and control the lands, territories and resources that they possess by reason of traditional ownership or other traditional occupation or use, as well as those which they have otherwise acquired.
- 3. States shall give legal recognition and protection to these lands, territories and resources. Such recognition shall be conducted with due respect to the customs, traditions and land tenure systems of the indigenous peoples concerned.

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Group exercise: Eliciting informal practices - by-laws recognizing IP land rights

In separate discussion groups or in a plenary session, engage participants to discuss and share views on:

- What is done in their communities when one's land is taken over/ seized by either government officials or private investors?
- What can one do in case he/she is unable to go to courts of law when the land is taken over or seized?

Photo: Yew Kiat Soh

MODULE 4

Traditional knowledge and indigenous technologies in water management in a climate change context

Learning Objectives

- **Increased awareness of the impacts of climate change on indigenous populations and on water management**
- **Increased knowledge and appreciation of traditional water management technologies in general and for adaptation to climate change**
- **Reflect on the role of indigenous organizations and the state in implementing water-related adaptation strategies for climate change**

4.1 Introduction

Climate change is one of the most obvious consequences of industrial development, urbanization, and intensive use of natural resources.

Most climate change models and scenarios predict that the damage will be shared unequally; the most vulnerable will be peasant farmers and/or indigenous peoples of underdeveloped countries, since they directly depend on natural resources to sustain their economic activities and survival. The inequality of development enhances the inequality of impacts and responsiveness to climate change.

Water is perceived to have particular characteristics in many cultures of indigenous peoples. Principally, for them, water is much more than a resource. Water is regarded as a living being, a provider of life. Water is seen as a divinity, which enriches the earth (*Pachamama*[1]) and allows the reproduction of life, therefore it must be protected. They consider water as a social commodity that connect the nature and society together.

Traditional water management systems, developed and validated over hundreds of years by indigenous peoples, are proven alternatives for the sustainability of water resources and resilience to climate change, yet, they are being marginalized today. They must be understood, valued, recovered and disseminated as valid and relevant technologies.

4.2 Water crises and climate change adaptation

4.2.1 The main water-related impacts of climate change

Among the available projections on climate change, global warming will have the most profound effect on the quantity and quality of water available for humans and the environment.

The Intergovernmental Panel on Climate Change (IPCC) warned that warming by 2100 will be worse than expected, with a probable increase in temperature from 1.8 to 4 °C and a possible increase of up to 6.4 °C. As temperatures continue to rise, the impact on water resources and agriculture will be significant (Doering et al., 2002).

Some of the problems caused by climate change regarding water resources are (PACC MAE - CAMAREN, 2011):

- Climate change will affect the water cycle: higher temperatures increase the evaporation of water, which will lead to decreased soil moisture and reduced river flows. More evaporated water will also mean increased rainfall concentrated in different parts of the planet;
- At sea, the change temperature will affect the lives of aquatic animals, putting some of them at risk;
- Due to rising sea level, coastal aquifers will be salinized, which will cause crop damage;
- Decreased ice cover in snowy areas will lead to a temporary increase in flow rates and, eventually, the disappearance of ice and loss of flow;
- Droughts and floods will increase and this can adversely affect food production; and

[1] *Indigenous peoples in South America refer to mother earth as Pachamama. They believe Pachamama is a fertility goddess who presides over planting and harvesting; she embodies the mountains and causes earthquakes.*

- The alteration in rain cycles will also prevent adequate agricultural production.

Together, these factors put the food security of the world's populations at risk. Therefore, it is urgent to adapt to climate change.

4.2.2 Benchmark indicators worldwide

Two figures here present information on climate change and its impacts.

Figure 4.1: Things you should know about climate change. Developed by EFEverde

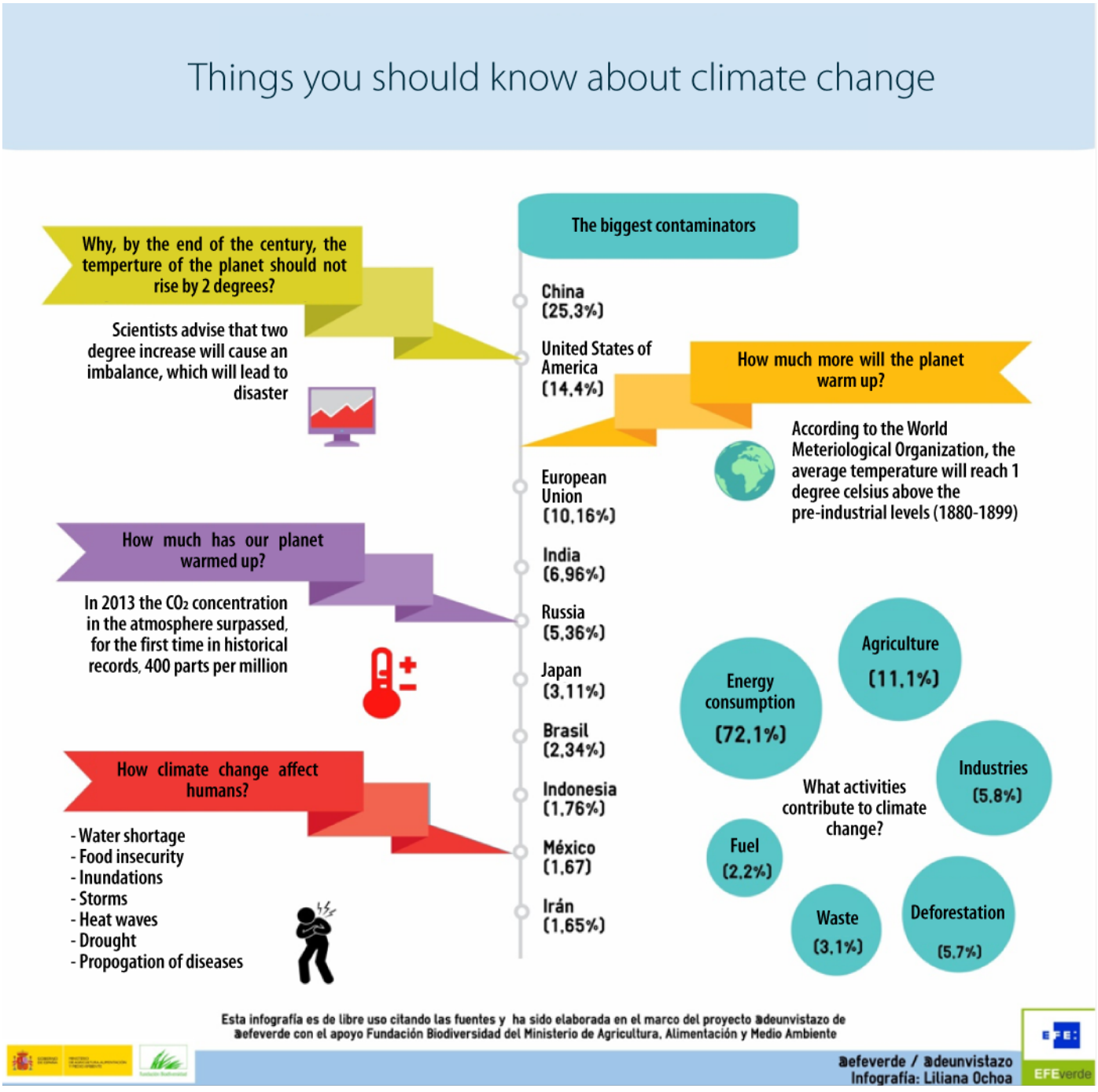
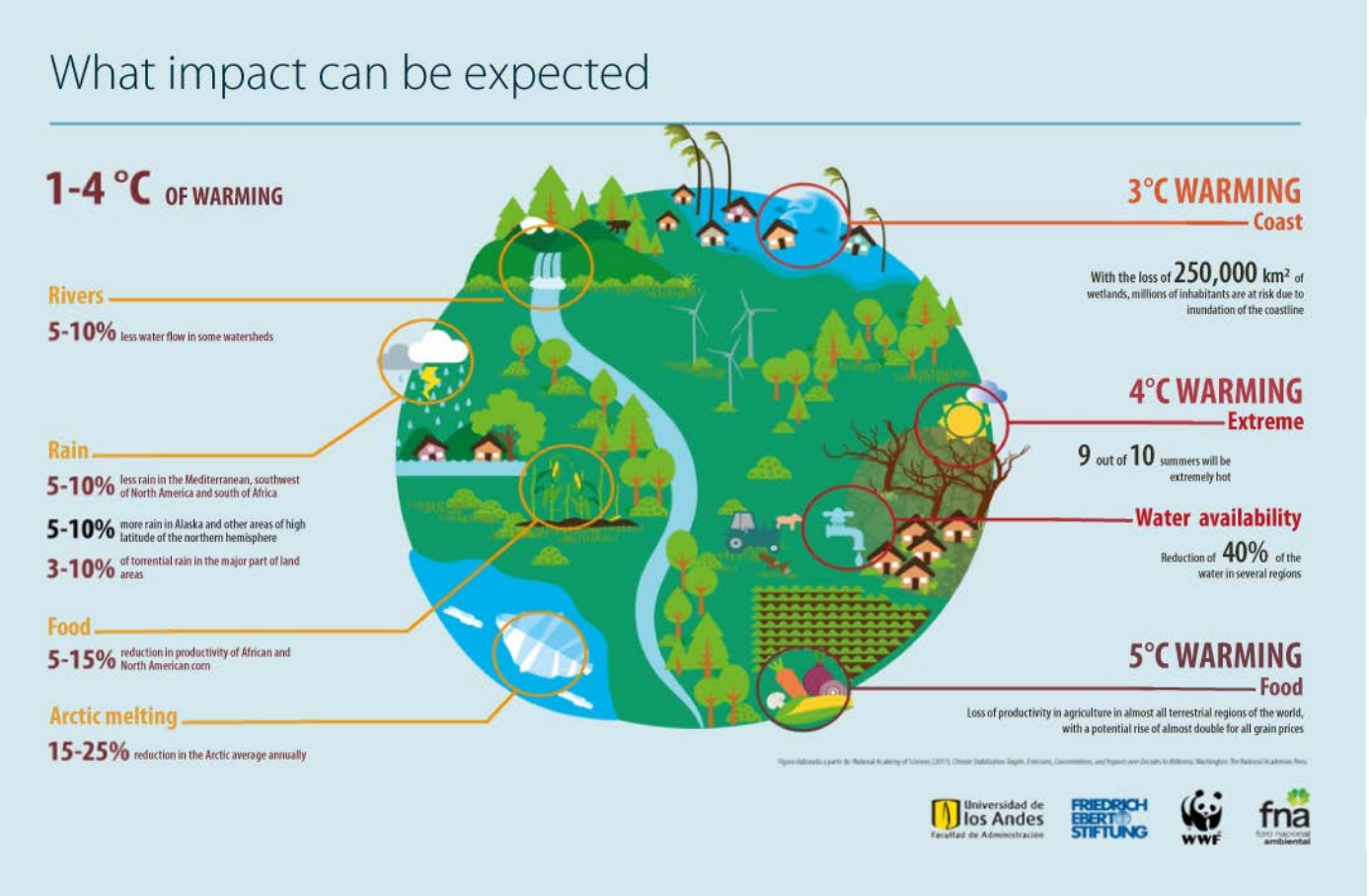


Figure 4.2: What impacts can be expected? Infographics developed by National Academy of Science (2011)



4.2.3 Concept and adaptation strategies in relation to water management

Adaptation needs a set of measures aimed at reducing the vulnerability of natural and human systems and the risks and damages that may arise from climate change (Isch, 2010).

Adaptation requires prior knowledge on how vulnerable we are. Vulnerability is the degree to which an ecosystem or human populations may be affected by the adverse effects of climate change and the risks that can arise at each specific site. Some catastrophic events that make us vulnerable are (PACC MAE - CAMAREN, 2011):

- Floods are characterized by rising water levels in river basins thereby exceeding the capacity of rivers, spilling onto riverbanks and submerging sections of land that may be highly populated;
- Landslides or mudslides are violent movements of land masses that occur when the soil is saturated due to increased rainfall; and
- Droughts are abnormal dry seasons in which there is little or no rain for a prolonged period that can extend to months or even years.

One way to address the impacts of these disasters is by making adaptation plans. Examples of adaptation measures related to water and agriculture are listed below (PACC MAE - CAMAREN, 2011):

- Integrated management of watersheds;
- Upgrading of irrigation and drinking water systems to reduce water losses and improve strategies to ensure impartial delivery to users;
- Removal of sediments from reservoirs for increased water storage;
- Reuse of wastewater, and rainwater harvesting;
- Conservation and restoration of ecosystems that store water and regulate basins and catchment areas;
- Recover ancestral production practices;
- Change zones, calendar, patterns and variety of crops to those with lower water demand and/or increased resistance to drought;
- Use soil improvement techniques;
- Use weather and climate forecasts;
- Use of agroforestry systems; and
- Promote agro-ecological and sustainable farming practices that conserve natural resources and livelihoods.

Adaptation plans should consider the Integrated Water Resources Management (IWRM) approach because it is based on the idea that the different uses of water are related and suggests that the unit of water management should be the watershed. IWRM argues that water management is related to the management of other resources such as land and to the sustainability of ecosystems. Additionally, IWRM seeks equity in development, participation of all stakeholders, consideration of gender, communication, knowledge management, and transparency, to achieve responsible and conscious water management.

Adaptation to climate change depends on cultural changes, practices and habits, as well as the ability to accept and share potential losses and successes. Water resource management and climate change adaptation must balance water demand and supply in an uncertain and changing situation (UNESCO, 2008).

To move from an impulsive approach to a planned adaptation process, changes need to be made in institutions and practices, so that they can respond to climate change. It is essential to consider scientific information, evaluate necessary adaptation measures for all regions, and recognize the shared responsibility of all stakeholders, to be able to address public policies designed to tackle climate change (Torres, 2010).

Box 4.1

"Indigenous peoples inhabit the planet's most fragile ecosystems, such as tropical rain forests, deserts, moors, mountains and islands, among others, constituting the groups most vulnerable to the effects of global warming. The impacts generated by climate change threaten our Mother Earth, culture, environment and livelihood.

These changes are the result of a Western model of development, based on a voracious capitalism. Industrialized countries are responsible for these changes that are profoundly affecting Mother Earth."

(The Qollasuyo Declaration, La Paz, Bolivia, 19 March 2008)

4.3 Vulnerability of indigenous peoples in the context of climate change

4.3.1 Specific effects in relation to the livelihoods of indigenous populations

Climate change is a threat to the survival of indigenous peoples worldwide, even though they contribute little to greenhouse gas emissions. In fact, indigenous peoples are essential for many ecosystems within their lands and territories, and they are an active part of them. Therefore, it is imperative to improve their resilience. Additionally, indigenous peoples interpret the effects of climate change and react to them in creative ways, drawing on traditional knowledge and other technologies to find solutions which may help society at large to cope with impending changes (UNPFII, 2008: 2).

Today, more than 370 million indigenous people in 90 countries share the challenges that climate change and global policies bring to their territories. These people generate the smallest ecological footprint yet they have not been taken into account in making decisions concerning this issue (Ulloa, 2008).

The effects of climate change on indigenous peoples are manifested at two levels: the specific environmental consequences in their territories, and the implications of global discourses and policies in the representations, policies, conditions of autonomy and spaces for indigenous participation. Consequently, any action must include these two dimensions to generate strategies that include diverse perspectives on climate change adaptation. This involves knowing how indigenous peoples perceive these changes and their effects on their territories.

Climate change has affected small-scale agricultural practices, impacting crop diversity, as well as local food production processes, reducing their quantity and quality, threatening food security. Human relationships with nature have also been affected, as there have been changes in social and ritual activities that are connected to natural rhythms, calendars and cultural practices related to environmental cycles.

For indigenous peoples, the effects of climate change are more evident due to their specific circumstances:

- Indigenous people's higher levels of interaction with nature and its resources;
- The fragility, biodiversity and endemism of many ecosystems where they live; and
- The loss of territories, forced displacement, violence and ignorance of their rights.

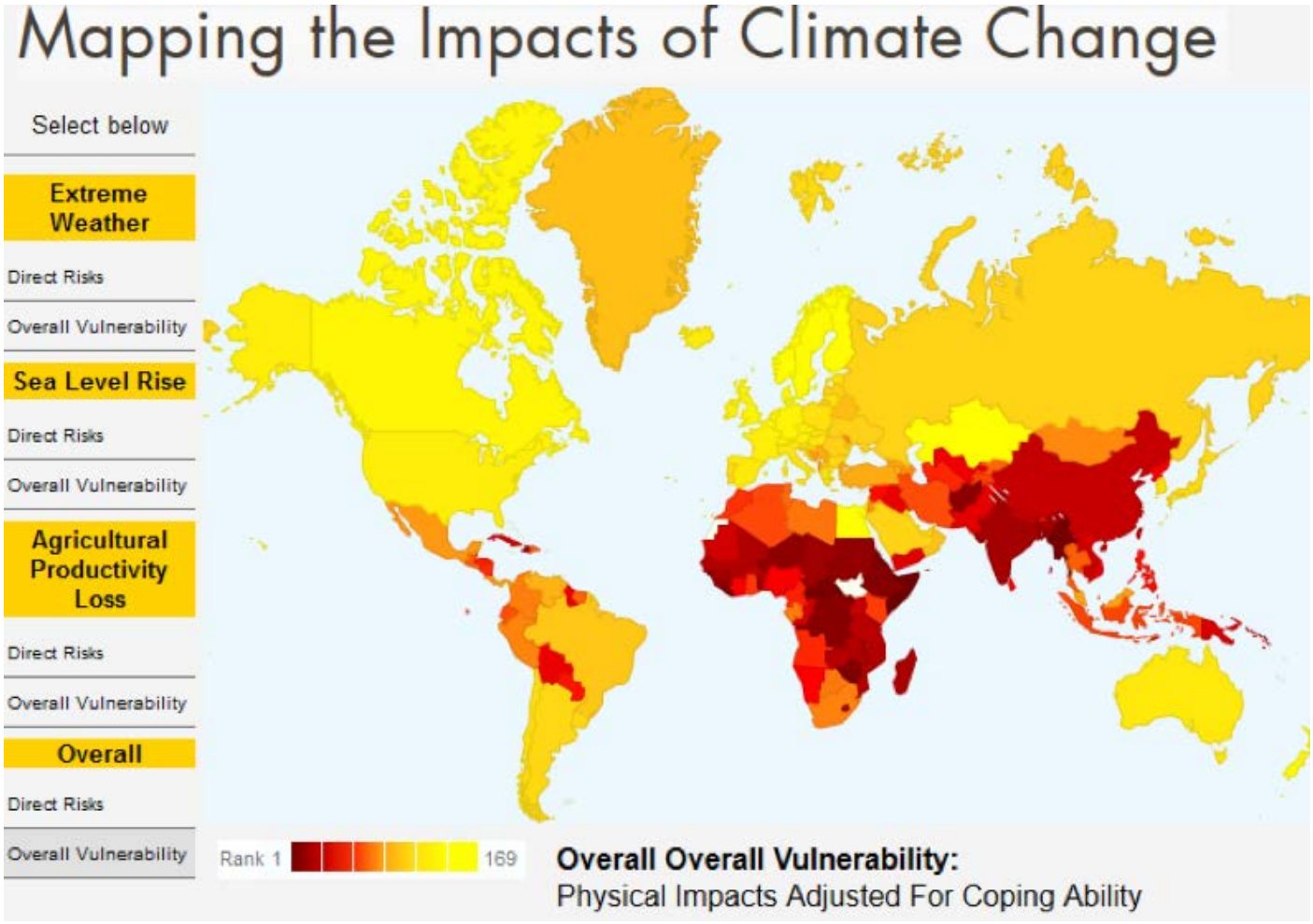
Box 4.2: Some recent articles on the impact of climate change on indigenous peoples

Bolivia: water people of Andes face extinction

FPW Feature: Indigenous Peoples' Stories of Climate Change

National Climate Assessment Report 2014 – Indigenous Peoples, Lands, and Resources section

Figure 4.3: Map of vulnerability to the impacts of Climate Change



4.3.2 Geographical areas and populations most affected

To get a rough idea of the impact of climate change globally, see the map of possible impacts, prepared by David Wheeler, which can be found in his article 'Quantifying Vulnerability to Climate Change: Implications for Adaptation Assistance' (Wheeler, 2011).

In this paper, David Wheeler quantifies and presents an accompanying data set showing the vulnerability of 233 countries to three major effects of climate change (weather-related disasters, sea-level rise and reduced agricultural productivity). The effects of climate change have been and will be worse in underdeveloped countries and small island states, those least able to adapt to climate-related disasters. Figure 4.3 displays the effects of climate change examples by sector in tabulated form.

4.3.3. Overall impact on the economically backward sections

One of the worst consequences of the current global production and consumption model is the pressure applied on ecosystems. Most of the economically challenged rural population in the world (about 370 million) live in resource-poor, highly heterogeneous and risk-prone areas. The poorest sectors are often located in arid or semi-arid areas and mountains and hills that are ecologically vulnerable, increasing their exposure to the negative impacts of climate change (Conway, 1997). In the past decade, more than 700,000 people have lost their lives due to natural disasters and

Box 4.3: Detail maps on climate change impact

To get a better idea of the impacts by region or country, you can access the following website, where you will find an interactive map:

http://www.cgdev.org/page/mapping-impacts-climate-change

These maps display country rankings for four dimensions of climate impact: Extreme Weather, Sea Level Rise, Agricultural Productivity Loss and Overall Risk and Vulnerability.

about 90 percent of them were citizens of developing countries. It is estimated that by the 2020s, the net increase of people subjected to water-related risks due to climate change will be between 7 million and 77 million. For the second half of the 21st century, the possible reduction of water availability and increased demand caused by population growth is estimated to affect between 60 million and 150 million people, according to the Report of the Intergovernmental Panel Climate Change 2007 (Cimadamore, Alberto and Héctor Sejenovich, 2010).

One of the main challenges is how to tackle climate change and poverty simultaneously. Adaptation to climate change requires a comprehensive approach. The systemic nature of the problems requires the formulation of alternatives that aim to combat poverty by implementing structural solutions, re-examining the relationship between human society and the environment, and changing general consumption patterns.

4.4 Specific technologies of indigenous peoples, sustainability and learning

4.4.1 Vision and practices of indigenous communities

Although indigenous peoples share the same philosophy on water, there is no single model for water resources use but multiple alternatives and ways of managing that change from region to region and over time. The common element in these different forms of management is "respect for water." Water resources are not considered a commodity but a living part of nature, a living being to interact with (Solón, 2007).

Indigenous people in the Andean States, believe in collective ownership of water, within an appropriate legal and social system. They have managed to ensure the sustainability of ecosystems since time immemorial and their knowledge of water management must be preserved, respected and recognized.

Indigenous people in Africa, Asia and other parts of Latin America who are traditional farmers, have developed and/or inherited complex farming systems located in hostile environments. These systems have been ingeniously managed, allowing small farming families to solve their subsistence needs in varying environmental conditions without relying on modern agricultural technologies (Denevan, 1995). Their traditional methods of agriculture provide remarkable resilience to continued economic and environmental changes in agro-ecosystems, and contribute substantially to food security at local, regional and national levels (Netting, 1993).

”Climate change will affect earlier and more intensely the poorest developing countries, although they are the ones who have contributed least to cause the problem. Their low income hinders adaptation funding, so that the international community has an obligation to support adaptation to climate change. Without such support, there is a serious danger that their development is undermined.”

- Stern, 2007

Photo: unmultimedia.org

Solving the problem of variable returns is crucial for the survival of farmers living in marginal environments where agro-climatic conditions are a challenge. In many parts of the world, farmers have gradually adapted to local conditions with experimental knowledge-based farming systems.

4.4.2 Review of traditional adaptive technologies

Recent research suggests that many farmers prepare for climate change to minimizing losses in productivity through the use of local drought-resistant crops, water harvesting, intercropping, agroforestry, timely weeding, incorporating traditional herbs into their diet, and a series of other techniques. Therefore, it is necessary to re-evaluate indigenous technologies as key information on adaptive capacity (Altieri, 2002).

Some of these mechanisms of adaptation to climate change used by indigenous and traditional farmers are presented below (Altieri and Nicholls, 2008):

- **Multiple systems or polycultural crops:** Crop diversification, growing a variety of crops in different spatial and temporal arrangements, is an important risk-management strategy in small farming systems. This allows crops to reach acceptable levels of productivity even under conditions of environmental stress. Polycultures exhibit greater stability and fewer losses during a drought compared to monocultures.
- **Using local genetic diversity:** Many farmers exploit diversity by planting different varieties of one crop at the same time in the same field. There are crop varieties that have specific morphological and physiological traits that make them resistant to dry environments. For example, in dry areas of West Asia and North Africa, barley is the only feasible crop, especially the varieties that have been grown for centuries. Genetic diversity also provides security to farmers against crop diseases, especially pathogens, which can be increased by climate change.
- **Promotion and collection of wild plants:** In many developing countries, the rural sector is still dependent on wild plants that grow around crops, for a significant portion of their livelihood (Altieri et al., 1987). In some African agro-pastoral[2] societies the collection of edible leaves, berries, roots, tubers and fruits in times of drought is a food diversification strategy. In Mexico, species of native plants are grown for dietary, medicinal and fuel purposes. In many regions farmers leave certain species of weeds in the fields as an alternative food source when crops are destroyed by hail or drought.
- **Agroforestry systems:** Agroforestry is the incorporation of trees or shrubs in the agricultural system to benefit from the interaction between trees and crops. Many farmers grow crops in agroforestry arrangements using the cover of trees to protect crops from extreme fluctuations in microclimate and soil moisture. Trees reduce the temperature, wind speed, evaporation and direct exposure to sunlight, and intercept hail and rain. Examples may be found in coffee agro-ecosystems in Chiapas, Mexico (Lin, 2007); and in palm plantations in north-eastern Brazil that serve as shade for rice, maize, cassava and bananas, or cashew plantations that provide shelter to sorghum, peanuts and sesame seeds (Johnson and Nair, 1985).
- **Mulching:** Many farmers plant cover crops as live-mulch or spread straw in newly sown fields to reduce radiation and heat levels, and to prevent moisture loss and absorb the kinetic energy of rain and hail. When night frost is expected, some farmers burn straw or other waste materials to generate heat and produce smoke, which traps radiation.
- **Soil management and increased organic matter in soil:** Organic matter increases the

[1] *Agro-pastoral is the combination of agriculture with the breeding of domestic animals in the same unit of production.*

capacity of soil to absorb moisture. Spreading organic waste on the ground protects it from the impact of rain, avoids drying up of soil, increases infiltration of rainwater and reduces run-off. The soil's water storage capacity increases. Farmers practise crop rotation, green manure, cover crops and composting to increase organic matter in the soil.

- **Vegetable gardens:** Vegetables are an important source of food for farming families because of their high nutritional value. In the Andes, the main obstacle for production is sudden changes in temperature. One technique to reduce these risks is to plant organic gardens in greenhouses (with adobe walls and stone ceiling, or agricultural plastic or polycarbonate as covering) to create an artificial microclimate. Other methods include: the *biohuertos* - open fields with stone fences which absorb heat during the day and release it at night; the use of hedgerows (with bushes planted on the perimeter); and underground greenhouses - gardens in a soil with a depth of half a metre to obtain a thermoregulatory effect (PACC Perú, 2014).
- **Use of natural indicators for weather forecasting to reduce production risks:** A study by Chisadza et al. (2014) in the Limpopo river basin, Zimbabwe identified three broad categories of Indigenous Knowledge Systems (IKS) indicators for forecasting climate and weather, namely vegetation, astronomical and insects/animals. The study indicates that forecasts using IKS indicators also influence key water resources management decisions at the subsistence farming level. Birdsong, frequently flying bats, morning dew and high-intensity heat are examples of IKS indicators for imminent rains. Recognising such indicators allows the farmer to, for example, know when is a good time for rainwater harvesting. The water collected can then be used for domestic purposes. This example shows that such key decisions by subsistence farmers can influence their food and water security status. While communication of scientific forecasts is well supported by various media and institutions, IKS indicators are the preserve of individual community members. However, there is a clear gap in the levels of knowledge across community members, which can be addressed through training and information sharing (Chisadza et al., 2015).

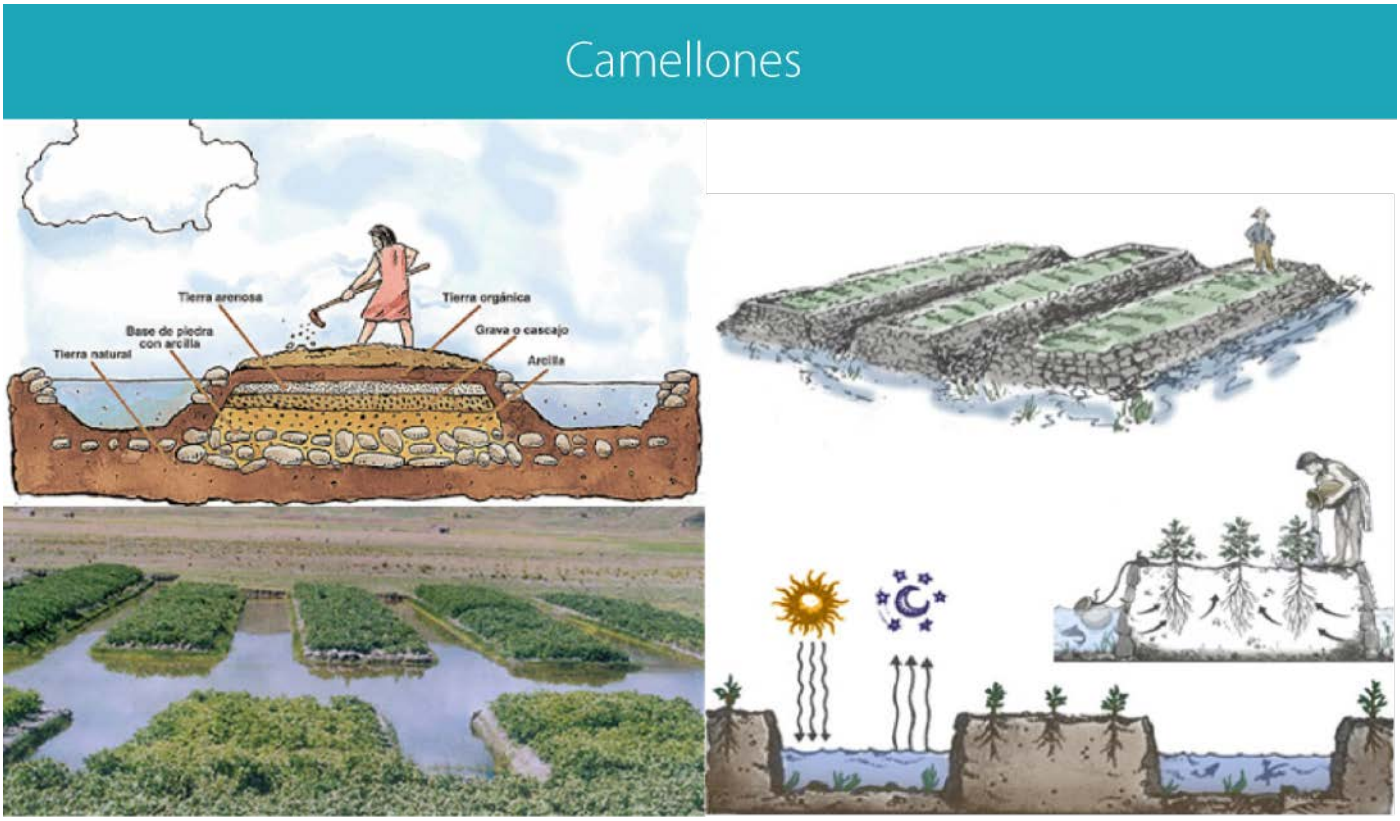
Group exercise 4.1

The participants divide into groups; if it's a globally diverse group, split them based on the region or the country they represent.

Participants are asked to review various traditional technologies that are utilized in their country or region. Discuss whether those traditional practices and technologies have ever been considered in national policies and projects.

Sustainability methods for adaptation of the indigenous and traditional farmers to climate change are highlighted below. These systems are well-suited to their particular environment, make use of local resources, and are small-scale and decentralized. They tend to conserve the natural resource base and show resilience to environmental change (Altieri and Nicholls, 2008):

- *Camellones* (ridges) agriculture
  - ***Chinampas* of Mexico:** Ridged agriculture is a food production system used by the Aztecs in the Valley of Mexico, but it can also be found in China and Thailand. This Mesoamerican agricultural technique is known as *Chinampas*, or islands consist of raised platforms (from 2.5 to 10 metres wide and up to 100 metres long) that were built with mud from surrounding wetlands or shallow lakes. The floor of the platform was enriched with organic matter produced by aquatic plants and sediment and deposits from the reservoirs. Farmers favoured polycultural production and encouraged the growth of fish in the canals in between the platforms. Using relatively small amounts of animal manure, the Chinampas have proved to be self-sufficient with high levels of productivity.
  - ***Waru-Warus,* Titicaca:** Researchers have discovered remnants of 'furrowed fields' in Bolivia, Colombia, Ecuador, Peru, Suriname and Venezuela (Denevan, 1995). These systems consisted of raised beds built on seasonally flooded savannas and mountain slopes. In Peru, these pre-Columbian technologies, known as *Waru-Warus*, are surrounded by ditches filled with water, and they can produce bumper crops despite floods, droughts and frosts, which are common at altitudes of nearly 4,000 metres. The combination of raised beds and channels regulates the temperature, extending the growing season and achieving higher productivity.

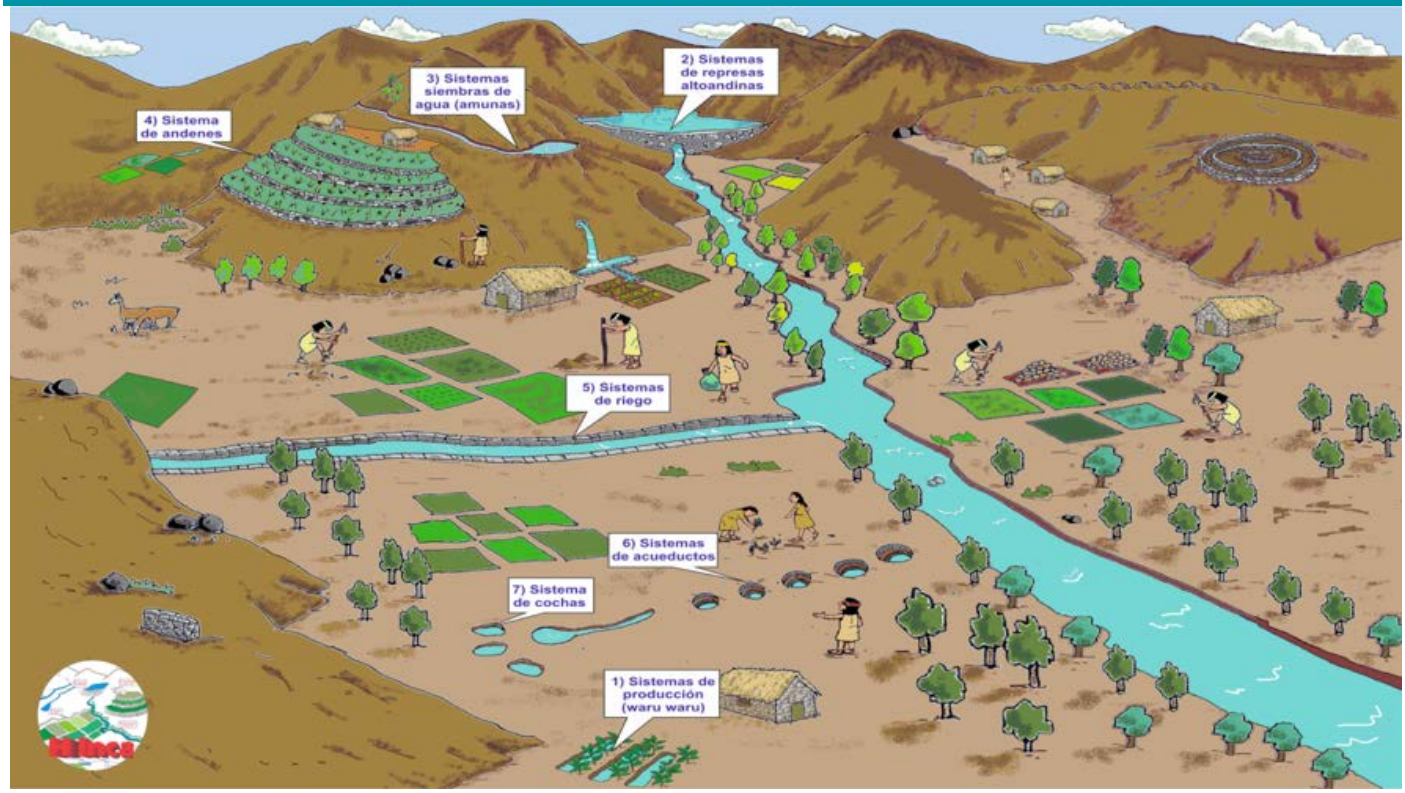


- Agriculture with vertical farming systems
  - The development of agricultural technology in the Andes resulted in the division of the Andean environment into agro-climatic bands according to altitude. Each band is characterized by specific practices of field and crop rotation, terraces and irrigation systems, as well as the selection of animals and the varieties of crops (Brush et al., 1981). The pattern of verticality derives from climatic and biotic differences related to geographical and altitudinal location. Farmers maintain a number of plots located in different altitudinal belts to reduce the frequency of loss and minimize the risks of frost and drought.
- Water harvesting in dry environments and groundwater recharge
  - The semi-arid regions are characterized by erratic rainfall, low-nutrient soils and high temperatures, posing serious threats to crop productivity, especially when water supply is inadequate. Water deficit conditions, caused by drought, are common in these areas and the situation is more dramatic due to climate change. The challenge is to capture the water and make it available for crops in times of scarcity. Many farmers have developed innovative water-harvesting systems that capture and leverage the limited rainfall. Some of these traditional water-harvesting systems are described here.
  - In **southern Tunisia** rainwater is collected, concentrated and quickly transferred to cultivated areas, minimizing losses by evaporation and percolation (Hill and Woodland, 2003). For this purpose, dams (*tabias*), consolidated by retaining walls of dry stone, are progressively located on the slope to block the eroded material from the sides of the valley. This sediment is levelled to form farmlands called *Jessour*. Rainwater trapped behind these dams recharge the ground water aquifers.
  - These sites are managed collectively according to local customs. Under these systems, water is regarded as common property. The rainwater harvesting on the hillside helps increase infiltration and groundwater recharge. The *tabias* are equipped with various types of drainage, which promote efficient water distribution and allow some flexibility in extreme weather changes.
  - In semi-arid areas of **North America**, where water is the main limiting factor, the experiences of Seri, Pima and Papago Indians offer local options for rainfall-fed agriculture. They cultivate desert plants which have low water needs and high nutritional content. They have developed agricultural techniques such as handmade channels, terraces, berms and other forms of run-off retention (Nabhan, 1979).
  - The most common agricultural practice is the management of sporadic, torrential rains for crop production. Channels, terraces, sprinklers and landfills serve to collect water run-off from a basin, in a strategically located field, breaking the erosive force of incoming water. The Papago traditionally watered their fields and valleys with water from intermittent streams created by storms (Nabhan et al, 1982). Crops that the Papago produce grow fast enough to prevent loss of crops in times of prolonged drought.
  - In **Mexico**, the Mezquital Valley is inhabited by the Otomi ethnic group. These farmers use three types of topography for agriculture: gullies (canyons), slopes, and flatlands. During the wet season, water washes the soil from the slopes and gullies of the hills to the lowlands, where water and sediments accumulate (Johnson, 1982). With their detailed knowledge of soil, topography, vegetation and water movements, the Otomi build embankments to trap rainwater and collect sediments. The best place for constructing an embankment is right in the path of the waterflow. This kind of

dam is called *Atajadizo*. The placement of stones and maguey plants is crucial for the construction of levees and fields need to fertilized regularly with manure to improve the soil.

- In **Zimbabwe** dryland farmers have benefited from water-harvesting systems. Stone terraces catch and direct the flow of water so that it can infiltrate the soil and fill underground tanks. The terraces also trap grass seeds and vegetation, creating shelters that act as protective barriers. Most of the water is channelled into a seasonal unsealed reservoir to promote efficient water infiltration into the soil rather than storing it on the surface. When necessary, water can be siphoned into a storage tank (Reij et al., 1996).
- In many parts of **Burkina Faso** and **Mali** there has been a revival of the old water-harvesting systems known as *Zai*. *Zai* are 20- to 30-centimetre pits that farmers dig in rocky, barren land. These pits are then filled with organic matter which attracts termites, which dig channels thus improving the soil structure so that more water can infiltrate and remain in the ground. The pits collect and concentrate water efficiently. Farmers plant millet or sorghum in the *Zai* interspersed with trees. The use of *Zai* allows farmers to increase yields and improve their food security.
- In **Peru** *Qochas*, which are rainfed storage systems for surface and subsurface water, can be of natural or artificial origin. A *Qocha* is essentially a depression in the ground (artificially created or built on a natural lagoon), that can be flooded during rains and can support farming on its slopes. Some of these lagoons can be built to harvest rainwater for use during dry spells, while others can be built with channels to allow water to infiltrate the soil, thereby recharging the aquifers (PACC Perú, 2014).

Qochas



Nor Yauyos Cochas: National System of Protected Natural Areas, Peru

– Also noteworthy are the *Amunas*, which have pre-Hispanic origins and represent a complex system of water conservation by using artificial trenches, pools and walls that prevent the rainwater fromrivers during the dry season. This hydrogeological and sociocultural system allows effective and functioning community participation of the people so they can work together in an organized way to ensure that water is available for everyone (Alencastre, 2009).

As seen in these examples, traditional farmers in many rural areas have found ways to adapt to changing and/or challenging environments by developing diverse and resilient systems. Many of these agricultural systems around the world serve as models of sustainability that offer examples of adaptation measures that can help millions of rural residents to reduce their vulnerability to the impact of climate change.

The challenge is mobilizing this knowledge so that it can be applied in the restoration of areas that are already affected, or to prepare rural areas that will be impacted by climate change in the near future. Emphasis should be put on involving farmers directly in such innovative projects through 'farmer to farmer networks'. Other key issues include the consolidation of local research and development capabilities that enable local community empowerment. It requires organizing people in projects that promote resilience to climate change using traditional knowledge and skills (Altieri and Nicholls, 2008).

4.4.3 Relevant experiences of projects with public participation and international cooperation

There are a number of projects designed to promote initiatives of adaptation to climate change. Some of them are mentioned here as a benchmark for initiatives that retrieve and adapt the ancestral knowledge of indigenous communities, with support from NGOs, international cooperation, and local and national government agencies.

The Climate Change Adaptation Programme of Peru (PACC in Spanish) is an initiative of bilateral cooperation between the Ministry of Environment (MINAM) and the Swiss Agency for Development and Cooperation (SDC). Peru has an extremely diverse climate; it has 22 of the 32 climatic conditions found around the world, and is one of the most vulnerable to the effects of climate change. This programme operates in partnership with the regional governments of Apurímac and Cusco, and was created to respond to this threat. The PACC is facilitated by a team led by Helvetas Swiss Intercooperation, and some universities in Peru and Switzerland are collaborators. (PACC Perú, 2014).

The PACC operates in the Andean rural territory which is inhabited by the most vulnerable population, peasant families practising subsistence and livestock farming, whose livelihoods depend on natural resources and are most impacted by the effects of climate change.

The beneficiaries of this programme are 8,000 families living in two watersheds (Huacrahuacho and Mollebamba). Although the concept of climate change does not exist in their language, they are increasingly aware of the phenomenon as they are subject to it in their daily lives. Community members, organizations and institutions add their knowledge to respond to climate change.

In **Mexico** in the region of the Mixteca, a mountainous area of limited rainfall and heavily eroded soils, the Center for Integral Small Farmer Development in the Mixteca (CEDICAM) developed a project in 1989 to reforest large areas and build contour trenches on the slopes of springs and wells to recharge aquifers that feed these water sources (Altieri et al., 2006).

In the same region of the Mixteca, the programme 'Water Forever' has been active since 1988. This project recognizes that the root of the problem is not only to provide water for inhabitants' needs, but also to ensure that water extraction does not completely deplete groundwater supplies and that access to water is fair to all groups of society. Water harvesting is used at the household level, and there are also several water-harvesting techniques for ecological restoration of watersheds. The focus of this project is to consider the water problem as part of a bioregion (basin), and to take into account the hydrogeological experience of local cultures. The technological solution adopted includes pre-Hispanic, colonial and modern technologies, creating a hybrid approach (Toledo and Solis, 2001).

In **Africa**, in **north-western Tanzania**, the pilot soil conservation and agroforestry programme established a project to develop conservation tillage systems for small farmers. The farmers minimize soil disturbance caused by ploughs and animal-drawn subsoilers, or digging small channels in the ground for water infiltration, and using hoes to build small depressions similar to *Zai* (Mwalley and Rocktrom, 2003). This system allows conservation tillage and soil preparation before the rains, a critical opportunity in semi-arid areas where 25 percent of the rains may fall in the first storms.

4.5 World view and traditional knowledge as an alternative remedy to climate change

4.5.1 Local power and social organization against climate change

Climate change and its current effects are the result of long term environmental changes caused by both natural and man-made factors. The discourse of globalization has led to environmental degradation. In response, new proposals regarding the environment and human society are emerging, coming from those who demand more pluralistic and democratic rules of social coexistence (Leff, 2005). From this point of view, indigenous peoples and their intertwined relationship with their territories can be considered as forms of interaction with nature that allow them to formulate alternatives to the dominant vision of economic globalization, while, simultaneously, offering climate change adaptation strategies that are the need of the hour.

Indigenous peoples, like other local people (peasants, urban dwellers, communities of African descent, among others), have established political spaces for concerted action. They generate their own relationship with their environment and through networks of reciprocity and solidarity, define autonomous agendas and proposals, which can be coordinated with national and global development policies and climate change programmes (Escobar, 2005, Arce and Long, 2000).

4.5.2 The role of public policies: An organized action between society and the State

From the experiences and lessons learned from programmes and projects related to climate change, such as the PACC Perú, some key factors for effective management of adaptation have emerged (Angulo, 2014):

- It is necessary to have a scientific knowledge base, but local knowledge should be recognized and valued in order to identify specific impacts and effects of climate change. This involves developing a body of research on various subjects, with interdisciplinary methodologies to address the multidimensionality and mainstreaming of problems triggered by climate change. This information can serve as a basis for public strategies and actions.
- Another key aspect is the ability to generate political and social arrangements to take action to reduce the impacts of climate change. This implies influencing the formulation and/or strengthening of public policies on climate change, which should be linked to local, regional and national development plans. In turn, there must be a binding relationship with public investment and other funding sources, such as multilateral and bilateral cooperation funds to ensure the realization of these policies.
- It requires having the means, i.e. available technology, skills and resources to strengthen climate resilience and adaptation. Access to training, technical assistance and investment projects of local government is also essential.
- It is important to assess the impact of the action. This requires measuring the degree of adoption of adaptive practices. The indicators can be measured in the short term of a project's duration, or by the extent of human and ecosystem adaptation, which are long-term indicators that need to be integrated into larger systems monitoring vulnerability and adaptation. This action provides tangible evidence for public decision makers to ensure appropriate scaling of adaptation measures to climate change.

In addition, basic social and institutional conditions are needed, i.e., strengthened social organizations to support the effective management of adaptation; institutions with technical and

managerial capabilities to provide information and knowledge; and closer attention paid to social demands caused by climate change.

To facilitate the adaptation processes, closer collaboration between scientific and academic communities, political decision makers, managers and promoters of development is required.

Discussion questions

In a developed world with new technologies and modern tools, we are talking about integrating traditional and indigenous knowledge. Is it a challenge?

How should we practically apply this traditional knowledge? Should it be just among the indigenous communities and/or should it be applicable depending on the place and situation?

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MODULE 5

Water conflicts and indigenous peoples

Learning Objectives

LEARN OR BETTER UNDERSTAND

- **Key drivers for conflict between indigenous and non-indigenous water users and state-based water authorities;**
- **Negative effects of industrial and non-industrial water users on water use and access by indigenous peoples;**
- **Actors and sectors that are especially prone to water-related conflicts with indigenous peoples;**
- **Different types of conflicts experienced by indigenous peoples related to the right to water; and**
- **Principles and approaches for planning actions and strategies that can be used to ensure recognition of indigenous people's rights and prevent conflicts between indigenous peoples and other water users.**

5.1 Introduction

Conflicts between indigenous peoples, state authorities and other private water users over the use and management of water resources are prevalent around the world. Conflict can take on many forms; from the exclusion and marginalization of indigenous perspectives and representation in water management, to community direct action and protest, to threats and physical violence directed at indigenous activists or community leaders opposing water uses that threaten their communities and livelihoods. Such conflicts are driven by water uses across a range of sectors, from mining and industrial agriculture to hydropower dams and large-scale infrastructure, as well as non-industrial uses such as conservation and tourism. Conflicts are an important threat to many indigenous peoples' fundamental rights and well-being, but can also have significant impact on the development and operation of water-use projects and operations.

5.2 Drivers of water conflicts

Approximately 90 percent of global energy production is water intensive, placing large demands on water resources for the conversion process (Berggren, 2014). Global energy consumption is expected to rise by 41 percent from 2012 to 2035 (IEA, 2014). At the same time, ¬¬the world population consumes more minerals and metals than ever due to population growth, changing lifestyle in developing countries and consumption patterns driving increase in demand (e.g., for mobile phone batteries). These raw materials require great amounts of water for their extraction, and the demand is increasing steadily. In combination with other industry needs, it will put increasing pressure on the world's scarce water resources. The global water demand is projected to rise by 55 percent by 2050 (OECD, 2012).

Much of the world's remaining unexploited minerals and hydroelectric energy sites are located in environmentally and socially sensitive areas, many of which lie on land inhabited by indigenous peoples. Evidence shows that indigenous peoples bear disproportionate costs of many of these projects. Projects are often conducted without consultation, depriving them of opportunities to influence outcomes, or without any compensation, and indigenous peoples' lack of established relations with state authorities increases the risk of being excluded from negotiations and decision-making (Barber & Jackson, 2014). However, with indigenous peoples' concerns gaining worldwide visibility (UNDRIP, 2013) and greater international recognition of their distinct rights and interests, governments and companies are increasingly pressured to work to prevent negative impacts from exploitation or destruction of water resources due to industrial and non-industrial activities.

There are many factors which give rise to potential conflict over the right to water. In indigenous societies, water is often vested with great cultural significance as well as economic importance. Many indigenous belief systems view water as a sacred and symbolic entity, while aquatic resources constitute an essential source of food and livelihoods for indigenous communities. Ownership and management of river and wetland systems in indigenous communities is governed through complex institutions that are integrated with local cultural practices and belief systems.

Indigenous systems for water resource management tend to take a holistic approach. The importance, use and governance of groundwater, fresh water, oceans, lands, forests and other elements of the environment or ecosystem are often interrelated and indivisible. Indigenous conceptions of water and other natural resource rights are at odds with non-indigenous systems for

managing the ownership and use of water and land, based on legally conferred rights of alienation and exclusion. Similarly, water's cultural, environmental and economic values tend to be integrated in indigenous world views; which contrast with state-based, technical and managerial conceptions of water as having competing commercial, environmental, recreational and cultural values, each of which can be independently assessed and evaluated.

Conflict around water use and management occurs in the context of a history of dispossession of indigenous peoples from their territories, land, rivers and resources, and of their systematic exclusion from water management institutions and processes. Patterns of unequal distribution of access to water are a legacy of colonialism, and growing resource scarcity means that indigenous peoples face increasing pressure and competition with other water users. Freshwater ecosystems are among the most degraded in the world, and their water use has been marked by extensive mismanagement, including over-allocation of water licences, regulatory failures and an absence of holistic basin or ecosystem-level planning.

In many jurisdictions, state recognition of traditional ownership of land and water is absent or insufficient. Where traditional rights are recognized, they are often limited to cultural uses and non-commercial resource use. Laws and policies governing water empower state-based water authorities to control and regulate water resources, and prioritize 'mainstream' management approaches, frameworks and values over those of indigenous peoples.

5.3 Types of conflict-prone water uses

5.3.1 Industrial sectors

Some industries and sectors are more prone to causing conflicts with indigenous peoples. A global study by Jiménez et al. (2015) found 384 cases of documented conflicts between industrial water users and indigenous peoples from 1960 to 2014. More than half of the conflicts are linked to only two sectors - hydropower infrastructure development and metal ores mining (31 percent each) [see Figure 5.1]. Of these cases, only a small share of the projects had secured indigenous peoples' cooperation or approval, while a scant 8 percent had put in place compensatory or remediation measures. Up to 31 percent were operating despite indigenous opposition, with almost two out of three of these conflicts having at some point experienced a violent phase. These conflicts are an important threat to many indigenous peoples' basic rights and well-being, but they also have significant impact on the development of projects and on operations. More than a third of the projects were suspended, under examination or even cancellation, entailing great economic losses for the industry and governments.

The conflicts identified are not distributed equally among regions. Almost half of them (more than 48 percent) took place in Latin America and the Caribbean and 26 percent in Asia. The Arab region in particular, had a much lower level of recorded conflicts between industrial water users and indigenous peoples than the other regions, with only seven conflicts identified during the 54-year period. There are many possible reasons for these regional differences. The comparatively few conflicts in some regions may, for example, reflect differences in the legal recognition of indigenous peoples and their rights granted by the states, different levels of self-organization of indigenous peoples' movements and different access to venues to claim civil and social rights.

Box 5.1: Deadly threats faced by environmental defenders

In March 2016, indigenous leader Berta Cáceres was murdered in her home in Honduras, ending years of struggle opposing the construction of the Agua Zarca dam (Watts, 2016). Two weeks later, her colleague Nelson García was also shot dead. The Agua Zarca dam was initially proposed following a 2009 military-backed coup d'état in Honduras. Once in power, the new government issued licences to hundreds of environmentally destructive mega-projects, including Agua Zarca and other hydropower dams, flouting a requirement to seek consent from indigenous communities.

The Gualcarque River is considered sacred by the indigenous Lenca people, while also supporting community livelihoods, food and drinking water. The Agua Zarca project is relatively small, but the dam is likely to have severe destructive impacts on the river ecosystem, making life as they know it impossible for the community. The Rio Blanco villagers filed complaints, lodged appeals and organized protests seeking proper consultation in decisions on the project, to no avail. When these tactics failed, they organized roadblocks and other direct action, attempting to force a halt to the project (International Rivers, 2016).

The incidents in Honduras are part of a much wider pattern. Global Witness has documented a shocking 59 percent increase in killings of environmental defenders in 2015 compared to the previous year: the highest annual toll on record, with 40 percent of those killed indigenous people (Global Witness, 2016). Frontline Defenders reported that 45 percent of all killings of human rights defenders in 2015 were linked to the defence of environmental, land and natural resource rights, including those of indigenous peoples (Frontline Defenders, 2016). Recent years have seen a spike in killings specifically relating to hydropower development. Most conflicts relate to the use of land, water and other resources. Murders and killings represent just one end of the spectrum encompassing a broad range of harms against indigenous environmental defenders, from threats of death and violence to criminalization and restrictions on freedom of movement and association.

Mining

Mining (for metal ores, coal, lignite or nuclear ores) is, alongside hydropower dams, one of the industries that have the greatest impacts on indigenous peoples' lives and sovereignty (Vidal, 2009). As a result of mining activities, indigenous peoples have suffered, and are still suffering, "loss of land, short and long-term health risks, loss of access to common resources, homelessness, loss of income, social disarticulation, food insecurity, loss of civil and human rights, and spiritual uncertainty." (Downing et al., 2002, p. 3.)

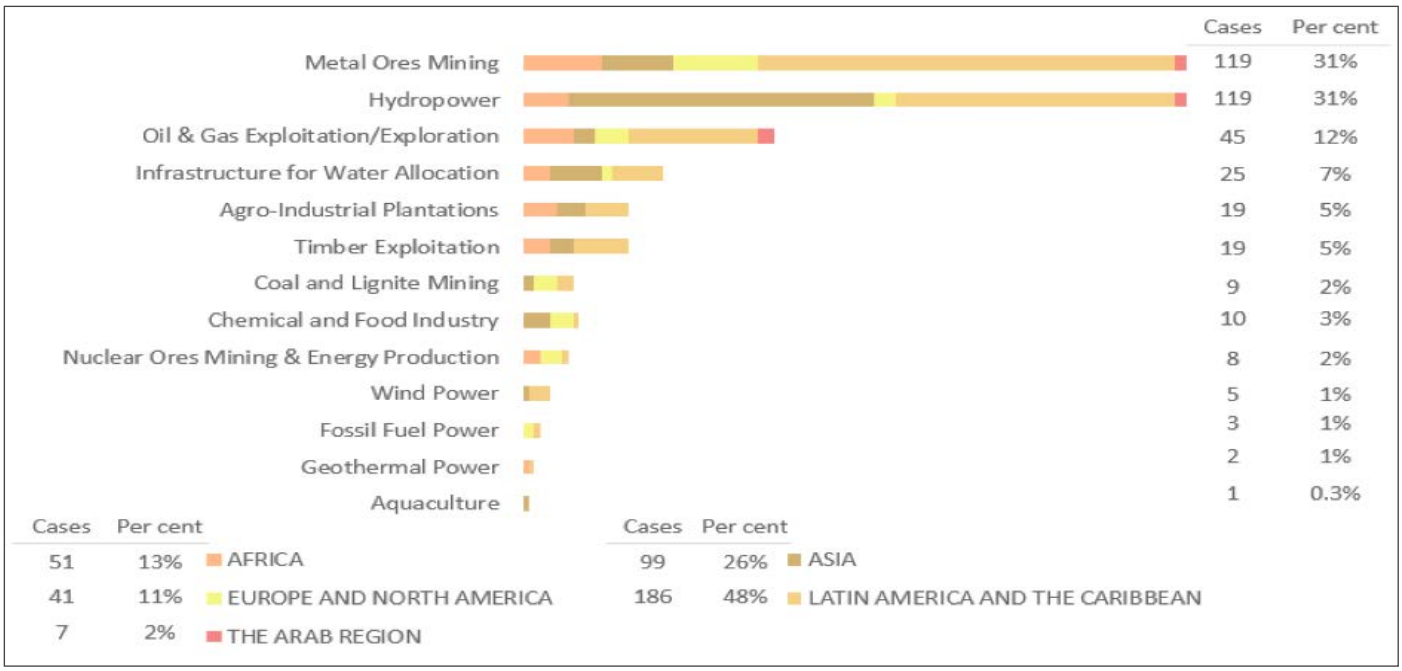
The mining sector requires water as an input throughout the production cycle and generates large amounts of contaminated water because of the extraction and processing of ores. The tailings are often kept in open ponds, and as the Samarco disaster in Brazil showed, the environmental and human impacts of a failure can be devastating (Phillips, 2016). The mining sector is therefore, one of the industrial water users with the highest impact on water quality and water availability for the surrounding environment and people living in the areas close by and downstream from its operations.

For indigenous peoples, who often depend highly on the land and local natural resources, the degradation of ecosystems and water sources threatens their food security, livelihoods and ways of life - in particular when combined with displacement or resettlement (Downing et al., 2002).

Hydropower and infrastructure for water allocation

According to the World Commission on Dams (2000, p. 16), "The experience of indigenous peoples

Figure 5.1. Distribution of conflicts by sector and region (based on Jiménez et al, 2015.)



and ethnic minorities with dam projects is rife with alienation, dispossession both from their land and other resources, lack of compensation or inadequate compensation, human rights abuses and lowering of living standards." The construction of hydropower dams in particular, causes great losses of land and ecosystems due to extensive flooding of some areas for reservoirs and drainage of others. Hydropower generation has major impacts on land use, livelihoods and other traditional instream uses of indigenous peoples.

Large-scale dams are also by far the principal cause of resettlement of indigenous peoples. Due to associated land loss, hydropower dams often involve significant resettlement programmes, and have been linked to involuntary and forced displacement. For indigenous peoples, whose historical connections to land and territories are often deeply interconnected with culture and identity, resettlement can infringe on a wide range of human rights. The experience of resettlement and compensation programmes, especially in developing countries, is a fraught one – experience shows that it is extremely difficult to rebuild livelihoods and community integrity in a new location. Compensation and livelihood support programmes invariably underestimated the resources, long-term commitment and community involvement required for this process.

In addition to the impacts associated with the reservoir and dam site, recent research has shown that broader social impacts of large dams due to changes to ecosystems downstream are often underestimated and not factored into dam planning (Kirchherr, Poulter & Charles, 2016). Destruction of freshwater fisheries and agricultural productivity downstream can further deprive indigenous peoples of important food and livelihood sources, often without any compensation or access to redress.

Oil and gas industries

In 2013, First Peoples Worldwide estimated that nearly one-third of the operations of the 40 oil and gas companies reviewed took place on or near indigenous peoples' territories and that more than 50 percent of the new potential reserves were located close enough to impact indigenous peoples (First Peoples Worldwide, 2013).

Like the mining industry, gas and oil exploration, exploitation and refinement often have severe impacts on the water quality by contaminating watercourses with different types of chemical compounds or heavy metals used in the operations. While oil and gas industries can have profound negative impacts on indigenous peoples' lives, food security, health and sovereignty, there is usually less need for resettlement. Yet, leaks and spills of crude oil on-site and along pipelines cause damage to water and land resources both close to and far away from the location of production.

In 2009, more than 30 individuals were killed in the Peruvian Chaco region in a confrontation between indigenous peoples peacefully protesting oil, gas and gold exploitation on their lands and the Peruvian police force (United Nations, 2009). The struggle of the Ogoni people in the Niger Delta for recognition and reparation of the environmental destruction by Chevron and other oil companies is also a well-known story worldwide, and it is estimated that it will take more than 25 years to clean up the oil spills (UNEP, 2011).

Agro-industry and industrial meat production

"The agricultural sector is the largest and often one of the most inefficient users of water. At the same time, agriculture is also a major source of water pollution." (OECD, 2016) Irrigated agriculture accounts for 70 percent of the global water abstraction (ibid). According to FAO (2016), industrial agriculture is also responsible for 70 percent of all deforestation in Latin America.

Within the global agricultural industry, cultivation of palm oil, for food products and as biofuel, is one of the fastest expanding monoculture crops and it is an important crop for exportation for many tropical countries in Africa, the Caribbean, Asia and the Pacific and Latin America. But soy and sugar cane are also important crops used to satisfy the increasing demand for biofuels (Tauli-Corpuz and Tamang, 2007). As large-scale companies are provided access to extensive land areas, or use them illegally, deforestation and expulsion of indigenous peoples often follows. The water and land ecosystems supporting indigenous peoples' livelihoods and food security are also contaminated or destroyed. Competition over land and water resources creates increasing conflicts with companies and forces indigenous peoples who seek to maintain traditional lifestyles, or wish to live in isolation, to retreat into smaller and smaller areas (Human Rights Advocates, 2016).

Soy beans are also produced on a large scale as feed for livestock and feedstock. Both the production of feed for the animals and the clearing of space for new pastures are primary causes of deforestation. Indigenous peoples in, for example, Paraguay, one of the world's primary meat producers, suffer from displacement, health problems and contamination of their territories and watercourses (Global Forest Coalition & Brighter Green, 2015).

Box 5.2: Case study of the Stung Cheay Areng dam, Cambodia

The Stung Cheay Areng hydropower project is a proposed 108 MW dam on the Cheay Areng River in the Areng Valley in Koh Kong Province, south-western Cambodia. The Areng Valley forms part of the Cardamom Mountains, the largest remaining continuous tropical forest in mainland South-East Asia. Stung Cheay Areng is one of 11 rivers that flow on the Southern Cardamom slopes; it stretches from the Central Cardamoms to the Gulf of Thailand. The Areng Valley is rich in biodiversity and houses a distinctive ecosystem of rainforest, grasslands, swamps and lakes. Approximately 1,500 people live in the Areng Valley; the majority of whom consider the area their ancestral homeland. The valley's inhabitants identify as indigenous 'Chong' and have lived in the area for 400-600 years.

The Stung Cheay Areng dam would destroy ecosystems and endangered species found in the valley, together with the distinct culture and way of life of the valley's indigenous communities. The dam would flood 1,500-2,000 hectares of indigenous lands and sacred forests, and force the displacement of its residents, now living in nine villages. The Chong people currently manage the river, the forest and its resources sustainably according to traditional customs and governance systems. Their lives, beliefs and traditions are intricately connected with the surrounding land and forests. For the local people, the valley is populated by spirit deities, including 'Neck Ta', who inhabits the forest, waterways and wildlife. Forced relocation threatens to destroy the belief systems and unique culture of the Chong people. Resettled villagers would need to adapt to new livelihoods and ways of life, losing traditions and the spiritual ties that are embodied in these practices. The project is also likely to generate further conflicts over access to resources, bringing a flow of outsiders to the area, including workers, land speculators, illegal loggers and new migrants (Mam, 2014).

Chinese hydropower giant, Sinohydro, acquired a concession to develop the Stung Cheay Areng project in January 2014, following withdrawal from the project by two previous developers. In early 2014, Sinohydro launched environmental and social impact assessment studies, bringing them into conflict with local communities. Villagers established a roadblock to prevent company staff and contractors from entering the valley to conduct assessments. The roadblock remained in place for months, with ongoing stand-offs between villagers and company representatives. Despite tensions, community actions remained peaceful, and gained national and international attention.

In September 2014, several community members and activists were arrested and authorities ordered that the roadblock be discontinued. Popular outcry followed these developments. In February 2015, the Cambodian Minister of Mines and Energy announced that the project would be suspended and a decision on its future postponed until the next governmental term in 2018. While this is a victory for the people's campaign, considerable uncertainty regarding the future of the Areng Valley remains.

5.3.2 Non-industrial sectors

While industrial water uses tend to have the most severe impacts on indigenous peoples' right to water, non-industrial uses may also have significant and detrimental effects. Furthermore, emerging challenges such as water scarcity and climate change increase the difficulties indigenous peoples face in having their rights recognized and protected, and their perspectives and values reflected in water management systems and processes.

Conservation, heritage protection and tourism

Indigenous water rights in domestic legal systems tend to be allocated through a narrow lens framed around cultural and social water uses, and do not encompass economic and environmental uses. Indigenous peoples and institutions are regularly excluded from conservation and natural resource protection activities, which are limited to the purview of state authorities. Traditional fishing practices and other indigenous uses of aquatic and riverine ecosystem resources have been limited and banned in some jurisdictions in the name of conservation and environmental protection efforts. Such measures may be implemented due to growing resource scarcity from

a range of pressures, including industrial or commercial activities. Indigenous communities face disproportionate and discriminatory penalization or targeting for their use of threatened or at-risk resources.

Most 'conservation refugees' (Dowie, 2009) are indigenous peoples. Conservation refugees are individuals or communities displaced from their homelands and waterways to make way for environmental conservation and protection projects such as national parks, ecotourism reserves and other protected areas. Despite extensive evidence to the contrary, some conservation advocates argue that full ecosystem diversity can only be maintained in the absence of all anthropogenic activity. This approach has resulted in the criminalization and forced evictions of indigenous peoples living within conservation zones, or severe restrictions on their uses of natural resources forcing them to abandon traditional lifestyles and cultural practices. The stakeholders involved in designating and maintaining conservation zones often include state authorities, but may also encompass private tourism companies and non-governmental organizations.

Climate change

Indigenous peoples and their water rights are recognized as being at severe risk from climate change. The effects of climate change mean many areas are facing increased periods of drought, water scarcity and other changes to weather patterns that determine water availability. Growing pressure on water uses and competition over resources, together with over-allocation of water rights to industrial and agricultural stakeholders, as well as factors such as population growth and migration, create further challenges to ensure the recognition and security of indigenous peoples' rights to water and to mediate and reduce conflicts.

Competing uses of water for agricultural, industrial and energy purposes extend the artificial control of waterways, and change natural flows, in some cases compounding the effects of climate change. Climate change impacts, such as a decline in aquatic and marine resources, increased droughts, floods and extreme weather events, have disproportionate impacts on indigenous peoples and may lead to loss of culture and traditional knowledge.

5.3.3 Transboundary water management

Large-scale development and infrastructure projects have the potential to cause extensive impacts to water resources and the environment which may transcend national borders. Where such projects are developed near country boundaries, or affect shared watercourses, wetlands or other water resources, there can be significant risks to communities in neighbouring countries. Similarly, polluting activities and those involving hazardous substances and waste can have cross-border effects on human health and well-being. Indigenous communities may be particularly vulnerable to the risks posed by transboundary impacts and harm, especially where these occur in rural and remote areas where indigenous peoples live, or affect indigenous land and territories that are treated as vacant or not subject to legally recognized tenure rights.

The issue of responsibility for transboundary harm has been addressed in international environmental law. According to Principle 21 of the United Nations Stockholm Declaration (1972): "States have … the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction." From the duty on states to prevent transboundary harm flows specific due diligence requirements, including obligations to conduct environmental impact assessments, and to notify

and enter into consultations with other states, before conducting any activity that may cause harm to other states' territories. These procedural obligations have been upheld in treaties such as the Rio Declaration, decisions of the International Court of Justice[1] and state practice (McIntyre, 2006). The United Nations Watercourses Convention, which contains specific state obligations with respect to transboundary watercourses, sets out requirements to conduct assessments and to notify and consult with other states around planned uses on shared rivers.

However, existing standards in international law lack binding status, and suffer from implementation and enforcement gaps and oversight mechanisms as well as implementation in domestic legal systems. International law focuses on state responsibilities, but is less explicit on the obligations of other actors, such as the private sector, with respect to affected populations. International best practice and human rights instruments, such as the UN Declaration on the Rights of Indigenous Peoples (2007), UN Guiding Principles on Business and Human Rights establish principles such as public consultation, participation, "Free, Prior and Informed Consent" and access to remedy, including in a transboundary context, yet these are rarely reflected in the national laws and agreements that govern such projects. This can cause conflict between water users and indigenous communities, and enable states, private users and stakeholders to evade responsibility for transboundary harm.

5.4 Impacts driving water conflicts

Changes caused to the water cycle and waterways by industrial and non-industrial actors have far-reaching detrimental impacts on indigenous peoples' lives and territories. A great part of these are directly related to indigenous peoples' access to safe water for consumption and production, and to healthy aquatic ecosystems. Yet, indigenous peoples also suffer from negative impacts and conflicts related to other aspects of their lives. Resettlements, both forced and voluntary, have extensive and long-lasting impacts on indigenous peoples' lifestyles, livelihoods, cultures and identities.

This module focuses primarily on water-related conflicts, but will also discuss some of the major non-water-related conflicts that arise directly or indirectly from water development projects and large-scale water uses. Table 1 outlines the main causes of water conflicts between indigenous peoples and large-scale water users.

While all large-scale water users impact the water resources in some way, the type and scale of the problems they cause varies. The mining sector is one of the industries with the most detrimental effects on water resources, being particularly prone to degrading the water quality and decreasing the water availability. It is also a primary culprit in driving deforestation.

For hydropower development, the most prevalent causes of conflict with indigenous peoples are loss of land and human rights violations, due to poor implementation of 'Free, Prior and Informed Consent'. In addition, the construction of hydropower infrastructure has the greatest impact on the hydro-social landscape and indigenous peoples' traditional instream uses, such as fishing and agriculture (Jiménez et al., 2015).

[1] *The International Court of Justice has opined that states have an obligation to conduct a transboundary environmental impact assessment (EIA) for projects likely to have significant transboundary effects. There is: "a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource. Moreover, due diligence, and the duty of vigilance and prevention which it implies, would not be considered to have been exercised, if a party planning works liable to affect the regime of the river or the quality of its waters did not undertake an environmental impact assessment on the potential effects of such works." (International Court of Justice, 2010).*

Box 5.3: Case study on transboundary harm: dam-building on the Mekong River

The Mekong River originates in the Tibetan Plateau and flows 4,600 km through China, Myanmar, Thailand, Laos and Cambodia, meeting the South China Sea at its delta in Vietnam. The Mekong River Basin is home to approximately 65 million people, of which two-thirds live in rural areas and rely on subsistence fisheries and riverbank agriculture. Many of these are ethnic minority and indigenous peoples, with more than one hundred ethnic groups living within the region. The Mekong is the second most biodiverse river in the world after the Amazon and a hotspot for fish species, containing over 1,000 species. Over one million tonnes of freshwater fish are caught annually in Cambodia and Vietnam; about one-fifth of the world's total inland catch. Fish provide a daily source of protein and nutrition for millions of people along the Mekong and its tributaries.

A cascade of up to 11 hydropower dams is proposed for development on the mainstream of the Mekong River; nine in Laos and two in Cambodia. Two of these projects, the Xayaburi dam and the Don Sahong dam, both located in Lao PDR, are under construction. A 2010 Strategic Environmental Assessment (SEA) (ICEM, 2010), commissioned by the Mekong River Commission, an intergovernmental body which promotes cooperation on the shared use of the Mekong River, predicted severe environmental and social impacts from the proposed cascade of dams. Many of the impacts from proposed projects would have transboundary effects in neighbouring countries. Predicted impacts on fisheries and local agriculture would disproportionately affect the food security, livelihoods, culture and way of life of indigenous and minority peoples in the basin, many of whom are reliant on traditional, river-based subsistence lifestyles.

The SEA found that if the proposed dams are built, Mekong fisheries would be reduced by between 26 and 42 percent, and many fish species would become extinct. The construction of mainstream dams will also lead to an estimated 75 percent reduction in fine sediment load, which will reduce the primary productivity of the Mekong River's coastal areas (ICEM, 2010) affecting riverbank farming and important agricultural areas such as the Mekong Delta in Vietnam. In the short to medium term, the dams will degrade livelihoods of the poorest communities in the Mekong basin and drive significant changes in access and control over essential resources.

The 1995 Mekong Agreement between the riparian governments of Thailand, Laos, Cambodia and Vietnam aims to promote cooperation on the sustainable and equitable use of the transboundary river. Under the Agreement's Procedures for Notification, Prior Consultation and Agreement (PNPCA), Laos was required to conduct Prior Consultation with other riparian states before proceeding with dams on the Mekong mainstream. However, the requirements for consultation do not explicitly require transboundary impact assessments or public participation, leaving affected communities without a voice in decision-making. Construction of the dams has led to a widespread people's movement in opposition to the projects. Local fishing and farming communities, including many indigenous groups, have protested the dams' construction, with days of action and legal cases challenging the project agreements and developers (National Geographic, 2014).

5.4.1 Water for human consumption

Contamination of groundwater and surface water resources is a common source of conflict related to both industrial water users and non-industrial water uses. Degradation of the water quality can be caused by heavy metals and chemical toxins used for extracting, processing or producing, for example, metals, oil and natural gases, or by soil erosion from deforestation to make land accessible for agricultural and forestry industries.

Indigenous communities suffer disproportionately from lack of clean water supply and related sanitation services, due to factors such as their concentration in rural and remote areas, higher levels of social marginalization and exclusion, or living arrangements that fall off the grid or outside of the mainstream. Therefore, degradation of existing water sources by industrial and non-industrial water users can further interfere with or impede indigenous communities' access to safe drinking water and sanitation. It can also severely restrict their access to water for crop production and subsistence farming, leading to contamination of food and impacts on health.

In many indigenous cultures women have a unique spiritual relationship to water and are seen as bearers of specific water knowledge. This is in part due to the intimate relationship between water, childbearing and birth, but women also have the main responsibility for domestic water handling and, in some cultures, for after-life cleansing (Anderson et al., 2011). Therefore, women face particular impacts when access to safe water is compromised, but lack of access to clean water is also linked to overall higher rates of health risks, morbidity and mortality.

5.4.2 Water for livelihoods

Many indigenous peoples lead lifestyles that are highly dependent on the natural resources in the areas where they live. Changes in flood and drainage patterns of rivers, streams and lakes can have extremely negative effects on the water available for indigenous peoples' to utilize for navigation and transport. It also affects the availability of fish, shellfish and other water animals and plants that can be an important source of food and income, and provide materials for traditional production of utensils and handicrafts.

When watercourses are redirected through infrastructure development to satisfy the water needs of industries or urban centres, it can cause flooding of indigenous peoples' farmland or leave them unable to sustain traditional agricultural systems and irrigation schemes because of lack of water. Through extraction of large quantities of water to use in production, industries can lower the groundwater table or reduce the water flow in streams. These factors often reinforce negative trends in water availability, both for ecosystems and agricultural production, and is exacerbated by reduction in precipitation due to climate change.

5.4.3 Water for the environment

Changes or damage caused to aquatic and marine ecosystems does not only put indigenous peoples' access to food and livelihoods at stake; it can also have severe cultural and social impacts. Indigenous peoples' close cultural and spiritual connection to species, places and resources within their territories makes the loss of aquatic and marine species and ecosystems a threat to their identities (Finn & Jackson, 2011; Mooney & Tan, 2012).

The flooding and drainage of land due to river damming for hydropower production is a classic example of how whole ecosystems, and the services they provide, can be destroyed by water

Table 5.1. Negative impacts on indigenous peoples' water uses and resources

ISSUE	IMPACTS
Water for human consumption	Degradation of quality of groundwater and surface water used for subsistence farming and human consumption, sometimes resulting in contamination of people and food crops
Water for livelihoods	Reduction of surface and groundwater resources, desertification and drought Changes in flood and drainage patterns of streams and rivers, causing loss of agricultural land and reduction or interruption of fishing, aquaculture and transportation
Water for the environment	Disruption of marine and coastal environments, including wetlands and mangrove areas Degradation or destruction of freshwater ecosystems or ecosystems of special importance to the water cycle (i.e. glaciers, wetlands) Loss of aquatic and marine species
Sociocultural water uses	Disruption of sociocultural and traditional water uses
Water-related disasters	Disruption and displacement of human settlements due to hydrological phenomena, intentional and unintentional (flooding, erosive waves)

development interventions. Diking of wetlands is a common method to gain access to new land to give space for urban sprawl or for agriculture, diverting the water needed for maintaining habitats and allowing plant and animals to thrive and reproduce. The worldwide reduction of glaciers due to climate change is also causing rivers to dry up, leaving communities and environments devastated.

Radical upstream changes in rivers also affect the transportation of nutrients and sediments to coastal zones and can therefore lead to far-reaching negative impacts on marine and coastal ecosystems. These changes can threaten the identities, livelihoods and food security of indigenous peoples, and non-indigenous populations living many kilometres away.

5.4.4 Sociocultural water uses

Dominant practices in water use and management prioritize certain uses of water, with social and cultural implications. Industrial purposes are often favoured over private or community uses, rationalized by the prerogatives of nation building and economic development. Such uses include dam building, hydropower generation, irrigation for commercial agriculture, and the development of bulk water distribution networks and infrastructure, as well as other practices which entrench centralized systems of water management and perspectives of water as a tradable resource or commodity.

Dominant practices and interventions can impinge on local indigenous water users to hegemonic effect, intentionally or unintentionally, which can amount to a form of social and cultural assimilation. This is exacerbated when such developments are pushed forward in the absence of the right to

''Free, Prior and Informed Consent' ' for affected indigenous communities, or rights to information, consultation and public participation. Protection of procedural rights is essential to ensure the protection of the substantive element of the right to water, and the meaningful consideration of alternatives (Knox, 2015). Indigenous water management systems can provide diverse means of meeting water use and distribution needs that are appropriate to and not disruptive of local contexts and identities.

5.5 Non-water conflicts

5.5.1 Involuntary resettlement and displacement

Many large-scale developments and water uses – both industrial and non-industrial – prompt the involuntary displacement and resettlement of communities. Most commonly, resettlement can occur due to the construction of large-scale infrastructure and energy projects that are deemed to be of public benefit or national interest, such as hydropower dams, mining projects or the creation of protected areas involving the displacement of people. Resettlement can occur as part of a formal resettlement plan and programme, such as communities who are relocated to make way for a dam reservoir. In addition to formal programmes, however, many more communities are 'informally' displaced, through the loss of access to resources that sustain food security, livelihoods and way of life, and as a consequence of natural disasters caused by changes in watercourses and natural protective barriers. Informal displacement is often unrecognized and not compensated.

Resettlement is an extremely difficult and fraught process whenever it occurs (Scudder, 2006). Experience shows that it can take generations to rebuild livelihoods and social cohesion in a new location, particularly in the context of a community's transition from a subsistence-based to a cash-based economy. Without adequate resourcing, planning and full participation of the resettled population, resettlement efforts are often doomed to failure, and can lead to entrenched poverty and social disintegration. For indigenous peoples, resettlement can have devastating implications. Indigenous lands, territories and waterways often sustain spiritual and ancestral relationships that are central to a community's culture and identity. Losing these ties can mean the loss of shared identity, language and other cultural and social practices of a group. The Declaration on the Rights of Indigenous Peoples proscribes resettlement of indigenous communities unless as a measure of last resort, and where possible, with the prospect of repatriation and return.

5.6 Ways forward

Imposing state-based or non-indigenous frames and approaches on indigenous stakeholders will not create efficient or effective outcomes for water planning and management and can produce conflict. At the same time, indigenous positions on water management are situated within or alongside, and necessarily informed by, non-indigenous norms and systems. Indigenous expertise and knowledge of lands and waters are essential in addressing existing damage and degradation to freshwater systems as well as developing strategies for emergent challenges, such as climate change. It is imperative that water management enables the space and processes for exchange of ideas and dialogue between indigenous and non-indigenous perspectives on the nature, meanings and value of water, as well as equitable sharing, use and preservation of its cultural, economic and environmental benefits.

Table 5.2. Non-water-related impacts and conflicts

AREA	IMPACT
Disruption of local economies and livelihoods	Negative impact on community economies Areas made unproductive for non-mining uses through erosion Depletion of agricultural and pasturelands Degradation of ecosystem services important to local livelihoods
Social conflicts and health issues	Social conflicts and distress within communities Introduction of social threats (i.e. drug dealing, prostitution, criminality, illegal exploitation activities) Pressure on local community infrastructure, organization and social/cultural changes Introduction of non-local diseases Other health problems, potentially resulting in human losses or chronic diseases Impacts on neighbouring communities – transboundary impacts
Disturbance of settlements, displacement and resettlement	Noise and vibration disturbing human settlements Consented resettlement Resettlement under distressing conditions Forced or unconsented displacement
Degradation of ecosystems and ecosystem services	Deforestation and loss of habitat and species (i.e. loss of fish species) Adverse changes in soil quality (i.e. salinization) Degradation of ecosystems of special interest (i.e. natural reserves, pristine ecosystems) Degradation of air quality
Damage to cultural or religious heritage	The impacts and conflicts cause disturbances to : Historic buildings and archaeological sites Sites of importance for folklore, legends and myths Cultural heritage and sacred or ceremonial sites Sites used for the collection of materials for ceremonies or other traditional uses
Violence and violations of rights	Violation of agreements after previous consultation with communities Violation of territorial rights Human losses in violent protests (demonstrations, use of force, etc.) Human losses in accidents Extinction of indigenous groups or peoples

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Photo: Uttam Kamati

MODULE 6

An intercultural approach to Integrated Water Resources Management

Learning Objectives

LEARN OR BETTER UNDERSTAND

- **What is an intercultural approach?**
- **How can it be applied?**
- **Why is it important?**

6.1. What is an intercultural approach?

An intercultural approach is a process that aims to recognize and integrate indigenous peoples' rights, knowledge, perspectives and interests in any planned action, including legislation, policies and projects, by creating spaces for their meaningful participation and continuous dialogue between all parties. Key components include:

- Implementation of 'Free, Prior and Informed Consent' (FPIC);
- On par and inclusive access to and exchange of knowledge and information;
- Recognition and inclusion of existing governing bodies and authorities of the indigenous peoples; and
- Recognition of different value systems related to water and water resources, including cultural, spiritual and traditional uses.

6.2 Why an intercultural approach?

As has been described in previous chapters, indigenous peoples suffer disproportionally from human rights abuses and benefit less from development, and the conflicts with, in particular, industrial water users, which can have far-reaching impacts. At the same time, indigenous peoples hold important knowledge that can increase the environmental, economic and social sustainability of water projects.

When a water and sanitation project is planned that impacts rural indigenous peoples' communities, lack of knowledge of cultural and social values poses the greatest obstacle to a sense of ownership by the communities and to sustainable interventions. Imposing technical and/or management solutions that are not culturally and socially suited and acceptable may condition the intervention's success, and result in:

- Imposition of non-sustainable water governance organizations (Lockwood, 2002);
- Resistance against imposed norms of 'good governance' (e.g. equality and inclusion) (Lockwood, 2001; OPS & GTZ, 2006) and monetization of water services (Huertas Díaz, 2011);
- Failure to handle the seasonal migration of many indigenous peoples (Luque et al., 2012);
- Rejection of solutions due to clashes with cultural preferences;
- Non-functioning solutions from lack of knowledge of local environmental conditions and failure to recognize relevant local knowledge;
- Inactive management organizations due to lack of capacities; and
- Incomplete infrastructure installations due to absence of control and monitoring (Tinoco et al., 2014).

Further, disrespect for indigenous peoples' rights can trigger conflicts that may escalate to very destructive stages, including loss of human lives. These conflicts can also have significant costs for the industry, in terms of reputation, costs to financing, construction, operations, breakdown of a company's social licence to operate, and can lead to delays, renegotiation, and even cancellation of projects (Jiménez et al., 2015). Conflicts can be avoided, rights be respected and benefits be distributed more equitably by integrating an intercultural approach from the outset of the project or intervention.

6.3 The core principles of an intercultural approach

The intercultural approach is based on a set of core principles that underpin all activities and strategies. These are: respect, flexibility, inclusion and long-term commitment. The principles aim to establish an enabling environment for collaboration and on-par dialogues that ultimately generate trust among the parties.

6.3.1 Respect

Lack of respect towards local culture is a recurring theme highlighted by indigenous peoples in problems associated with water and sanitation projects. The abuse that indigenous communities around the world have suffered on numerous occasions, as well as a history scarred by conflicts, wars, marginalization and lack of respect for their human rights, have resulted in low levels of trust in external institutions among indigenous communities. The long history of development assistance based on short interventions, without continuity or sustainability, has also contributed to erosion of credibility and trust for development organizations.

Box 6.1: Traditional governance systems

The structures of authority of indigenous peoples can look quite different in different settings. In the *Miskito* and *Sumu-Mayangna* communities involved in the Transcultural Transparency research project, the fundamental authority was the community assembly, as well as authorities such as the Elders Council, the community arbitrator/judge (*Whita*) and the supervisor of natural resources (*Síndico*). In addition, there was the Territorial Government, instituted recently, which was responsible for the governing of one indigenous territory (Tinoco et al., 2013).

Among the Bolivian *Ayamara* people the highest authority is the *mallku* who governs several communities that together form an *ayllu*. But decisions are taken in the *ayllu* assemblies. Second to the *mallku* is the *jilaqata*, followed by the *alcaldes comunales*, which have specific tasks related to their respective neighbourhoods (Choque, 2001).

Respect for indigenous peoples and for ethnic minorities can be shown at various levels, for example, through official recognition of their rights and authority structures (see Box 6.1), and by ensuring the proper implementation of the 'Free, Prior and Informed Consent' (FPIC). However, their values, interests and aspirations as equals must be taken into account.

6.3.2. Flexibility

Research shows that communities often accept proposed projects and interventions, either because they are afraid of rejecting an opportunity of investment into the community, or because they expect to obtain secondary benefits from the intervention, even if it does not exactly meet their needs (Tinoco et al., 2014). Although most projects provide different opportunities for communities to express their needs and concerns, they often do not have the capacity to take decisions and to influence substantial aspects of the project. On many occasions, participation exercises are mainly processes of informing the community, geared to justify the intervention, and to persuade them to accept and approve it.

Therefore, the flexibility to change the scope, methodology and outputs of a project or intervention is essential to create an appropriate and effective application of an intercultural strategy. The inclusion of the community in a position where it can substantially influence all phases of the project cycle, from its formulation through its implementation and monitoring, contributes to empowering that community as a manager of the project interventions – and beyond.

6.3.3 Inclusion

Like all societies and social groups, indigenous peoples struggle with internal inequalities related to, for example, sex, age and differences in abilities and economic opportunities. Even if indigenous women often hold specific knowledge and roles related to water (see Box 6.2), their interests and visions of water management or projects are constantly under-represented (Anderson et al., 2011; Wirf et al., 2008). At times, indigenous leaders are the designated ambassadors and spokespersons of the community because they are fluent in the majority language or are well educated. This does not, however, always mean that they are able to represent the interests of the community as a whole, nor do they replace other indigenous authorities or spaces for decision-making.

To avoid reinforcing these inequalities, it is important for projects and interventions to find ways to involve and reach the diverse groups within the community, and not be limited to the most accessible leaders and official representatives.

Figure 6.1. Participation and inclusiveness
Source: Waterlex, as an input to the HRBA to the IWRM manual, 2016

Box 6.2: Gender roles

Women play a distinct and important role with regard to water in many indigenous cultures. This role can range from a sacred one (Anderson et al., 2011), to one of being more devoted to preservation and use of domestic water sources, and to other productive activities such as traditional fishing (Akiwumi, 2003). This is in part due to the intimate relationship between water, childbearing and birth, but women also have the main responsibility for domestic water handling and, in some cultures, for after-life cleansing.

6.3.4 Long-term commitments

It is common for indigenous communities to face difficulties in their relations with administrative structures and state authorities. In many cases there is mutual mistrust about intentions and capacities. At the same time, it is generally recognized that community water management cannot be sustainably carried out in isolation, without regular, structured backing by the responsible authorities. The presence in the community of support agents, beyond specific actions, and beyond mere construction of infrastructure, is a fundamental factor for the sustainability of interventions (Lockwood & Smits, 2011).

This calls for projects and interventions to support the establishment of long-term institutional relationships between local organizations and the responsible institutions (e.g. municipalities) as a mechanism for continuous backstopping. It is very important to avoid the tendency towards abandonment after the period of intervention. Engagement by state authorities beyond the period of infrastructure construction, and a long-term commitment to communities by development agents and government authorities, build relationships of trust and understanding, which are especially valued by indigenous peoples.

Elements to foster include:

- i) Effective involvement of state authorities throughout the project as well as in the continuous operation of the service;
- ii) Capacity-building and communication about the state's administrative structures, obligations and the rights of citizens to the communities and peoples; and
- iii) Creating spaces for continuous dialogue between indigenous communities and government authorities.

Group discussion question - challenging argument

Which of the four 'core principles' of the intercultural approach is likely to be the most challenging to take into account throughout an intervention?

Give examples from your own experience!

6.4 The intercultural dialogue

According to the Committee of Experts of the ILO Convention No. 169, a "permanent dialogue at all levels, as required by the Convention, [will] contribute to preventing conflict and building an inclusive model of development" (ILO, 2009, p. 38).

An ongoing dialogue between stakeholders is the channel for the processes of the intercultural approach and the basis for creating mutual respect and understanding. A non-hierarchical dialogue, where different perspectives and aspirations are considered equal, is fundamental to generating respectful relations between the actors. It is also required for the integration of the communities' knowledge and scientific knowledge throughout the project; allowing the project to respond to complex problems in a holistic and contextually appropriate way, as solutions are formulated with those who are most affected by the problem and have most knowledge of the specific setting

(SENASBA, 2011). For an effective intercultural dialogue, it is key to:

- Respect indigenous customs, cultures and authorities related to decision-making, organization and internal communication. This can include, for example, a focus on consensus decision-making and collective solutions which require more time for dialogue and discussion. To hold numerous meetings and talks, with diverse community groups and institutions, is crucial to ensuring a mutual understanding of the values, priorities and practices that need to be supported to develop sustainable access to water and sanitation services. In practice, to recognize the time that this process requires is vital. It is also important to open up channels for communication, via local mechanisms and traditions, for an initial process of getting to know each other using adequate spokespersons or authorities who are recognized by the community.
- Ensure inclusive settings and methods for the dialogue. General meetings are not always the most suitable way to generate open communication, since there can be cultural restraints on the free expression of certain groups. This is especially important to consider when seeking the impressions of social groups that may be less powerful in the community, such as women or youth.
- Use appropriate language. Experience shows that translating is not enough; technical jargon needs to be interpreted into the way the community communicates and reflect how messages and knowledge are conveyed. Working with facilitators who are fluent in the local language, and if possible recognized within the community, is key to establishing smooth communication among the parties. Women and elderly persons usually suffer from language barriers.
- Use appropriate methods of communication. Because much of the knowledge of indigenous peoples is transmitted orally, and illiteracy is often higher than the national average, it is important to not think exclusively of printed materials as the only way to transmit information. Ways of visualizing information and the use of oral presentations are important. Information must flow in both directions, both to and from indigenous peoples in such a way that their knowledge is properly understood.


Photo: Kamal Pasha

6.5 How to integrate an intercultural approach in the IWRM/ water management project cycle

According to an evaluation of a set of governance programmes in the water and sanitation sector, advantage is gained by combining investments in infrastructure with broader support for the governance of the services and the support structures (Kjellén & Cortobius, 2013). Independent of the type of water infrastructure, this provides organizations with the capacities to maintain their services, ensuring sustainability and appropriation of these systems. Integration of intercultural approach in each stages of the project cycle is described in this section.

6.5.1 Start of project

Free Prior Informed Consent

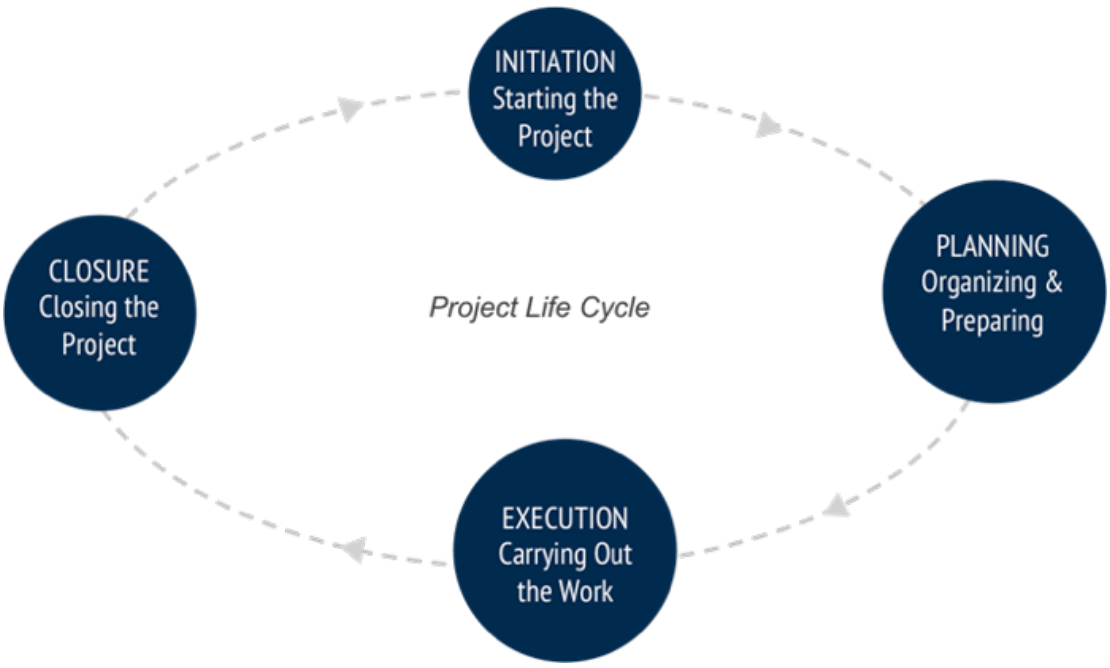
Both the ILO Convention No. 169 and the UN Declaration on the Rights of Indigenous Peoples recognize indigenous peoples' right to own and control their land, and to own, use and manage the natural resources on that land.

The cost of participatory processes with indigenous peoples must be included as part of the planning process, taking into account potential differences between decision-making processes.

Participatory stakeholder analysis

Many indigenous peoples and communities have their own governance structures and draw on important allies that do not form part of the water sector, such as human rights advocates, indigenous peoples' networks and federations, and the ministries responsible for indigenous peoples' rights. These actors often fall outside of the standard stakeholder analysis since they are not traditional actors of the water sector, yet they have expert knowledge about working with indigenous peoples and tend to have greater credibility. Further, at the local level religious authorities may play a central role in the life and organization of communities.

Figure 6.2. Standard project cycle



A participatory stakeholder analysis is therefore an important tool to understand which different types of actors are relevant to link up with, at the national, district and local level, including government agencies, international organizations, traditional, civil-society and religious organizations, associations, and private companies.

Participatory study of practices, uses, world views and aspirations related to water resources

Lack of prior knowledge about indigenous peoples' beliefs and values related to water resources and water resources management can contribute to the failure of an intervention. Often studies have been done *a posteriori*, seeking explanations to the resounding failures of some projects, above all in sanitation. It is important that such prior studies become normal practice, necessary for working with indigenous peoples. Relating to both water resources and services, key issues to reflect in these studies include:

- Practices and uses (cultural, production, harvesting, consumption and household, etc.);
- World views, spiritual and cultural relations and norms;
- Formal and informal owner and user rights' systems and systems of governing; and
- Aspirations and preferences related to the development of these resources and services.

When carrying out these studies the involvement of indigenous peoples' communities and organizations as subjects in research, not as objects, is fundamental to initiate the process to generate trust, mutual understanding and dialogue among the parties. In this context, different actors may play complementary roles, involving academic institutions and non-governmental organizations.

Ensuring good communication and flow of information

To enable indigenous peoples' communities and organizations to influence the project planning, priorities, objectives, etc. it is important to establish channels of communication from the initiation of the project scoping. Preferably information about ideas, potential funding and outlines should be shared with the communities as early as possible.

Indigenous communities, like any other, are not free of internal conflicts or of the risks that community elites might monopolize project benefits. It is not unusual for indigenous peoples to complain of a lack of representativeness and commitment from their leaders. For proper project implementation, it is essential to be aware of communities' internal tensions, calibrate them in dialogues with the communities, and ensure that there is equitable and inclusive participation in decision-making.

6.5.2 Planning phase

Gain approval by indigenous authorities

Indigenous peoples and communities often have several types of authorities with administrative structures for their territories, alongside other indigenous authorities with specific competencies. The approval and permission of these authorities, and of the communities, is an important factor to demonstrate respect and ensure a good start for the project. On occasion, insufficient knowledge of the specific institutional fabric in indigenous territories, or the relations between mandates of different authorities, results in institutional misunderstandings that can seriously affect the project's success.

Integrate indigenous peoples' interests and priorities in the project management structure

For an intervention to be able to secure human resources and budgets related to indigenous peoples' participation and inclusion, these aspects need to be visible throughout the management structure from the outset. This includes:

- Search for and use of disaggregated data in the baseline as much as possible;
- Incorporate objectives, targets and indicators related to participation and inclusion, but also social, spiritual and customary (including heritage) interests;
- Include water for traditional cultural purposes in water allocation assessments; and
- Develop monitoring and evaluation systems that track progress and results (disaggregating the information).

Develop acceptable management structures

The values of indigenous communities regarding individual rights and governance models may diverge from the values promoted by water projects. These contradictions add complexity to the challenge of taking advantage of existing governance structures. Community water management structures must be designed with, and accepted by, the peoples. This may entail, at least in the short term, suspending some standard principles of good governance for water organizations, like majority ruling and gender equity. Principles considered to be fundamental for the proper operation of these systems can only be introduced through dialogue between the parties. Imposing a certain type of management body may lead to inactivity and even dismantling shortly after the end of the project.

Furthermore, the organizations need to be integrated, with the traditional local, district and national authorities and governance/management organizations.

Adapt technology to the local context

When predetermined types of infrastructure are imposed by projects, this may be a reason for failure, either because the technologies are poorly adapted to the local context, or because the potential users do not accept them. The special relationship that many indigenous communities have with their land is associated with a profound knowledge of its ecology, the local water resources (amount, seasonality, quality, etc.), and local practices that may be very effective for issues such as drinking water treatment (e.g. using native plants to filter water), water source rehabilitation and adapted irrigation techniques. This also includes the use of different water sources for different purposes, and how to reuse water.

This cumulative body of knowledge generally referred to as Traditional Ecological Knowledge (TEK), passed on through generations, should be respected and built into any project when designing improved services. (Please see chapter 4)

Develop strategies to ensure participation by women and vulnerable groups

In most cultures women bear the main responsibility for managing water in the home, which is why it is important to ensure that their knowledge, perspectives and interests are included and considered in decision-making. Moreover, studies by, for example, the International Water and Sanitation Centre (IRC) and the World Bank have shown that community water and sanitation

projects designed and implemented with women's full participation are more sustainable and effective (WSP & IRC, 2000).

The promotion of non-discrimination is common practice in development programmes, especially in relation to gender inequality. Yet, as discrimination exists within indigenous communities and organizations, as in all societies, a great deal of sensitivity needs to be applied when working towards increased equality. Other groups that should be considered include the elderly, youth and children, and persons with disabilities or 'non-normative' expressions of gender and/or sexuality. It is important to develop targeted strategies to ensure their participation and equitable enjoyment of the benefits.

6.5.3 Implementation phase

Community participation in construction work and community contracting

There are different degrees of possible community involvement in the construction of infrastructure. At the basic level, community members can be trained, in order to later be hired as part of the construction crew. This generates skills in the community and often pride, as a Miskito woman, trained as a brick mason, put it: *"Now we are skilled workers … we used to be the community counterpart; now we can be contracted."* (ILO, 2012, p. 50)

Another possible methodology involves engaging the community to supervise infrastructure and give the final approval (prior to acceptance and final payment), ensuring their participation and control over the infrastructure that has been installed. There are experiences with community management of contracting, whereby the community itself is responsible for the entire process of contracts for and supervision of the infrastructure (see Box 6.4).

Establishment of an appropriate payment system

When using a water supply system, it is the cost of the service, maintenance of that system and water treatment, and not of the water itself, that is being charged for. Nevertheless, the fact that a resource can be captured and its provision commoditized can be a huge cultural change, in particular to indigenous peoples, which not everyone is willing to accept. Moreover, there are many households without continual cash income, for whom having to use money to pay any fee becomes a major obstacle. In this context, two types of alternatives stand out:

- i) Flexibility regarding payment, allowing payment in kind (animals, harvested produce, etc.)

Box 6.4: Community empowerment to manage construction work

In the Panama MDG-F programme indigenous communities were trained to implement 'community contracting'. In community contracting, the community negotiates a contract, generally on infrastructure construction, with a governmental institution, private company or a development programme. As the community negotiates the contract the traditional relationship of provider-recipient is changed to a partnership, empowering the community by increasing self-esteem and generating greater social cohesion. It also ensures a strong sense of ownership of the project and the infrastructure, while retaining many of the skills needed for maintenance in the community. The social auditing exerted by the community also ensures the quality of the infrastructure. However, as in all participatory processes, community contracting requires substantial time and support (ILO, 2001).

For more information see: http://www.ilo.org/public/english/employment/recon/eiip/download/community_contr.pdf

which the water management body can then sell or exchange for the goods and services it needs, or the possibility of paying by providing community work in kind; and

- ii) Collaboration with government authorities to design a level of subsidy and support for communities according to their socio-economic situation.

6.5.4 Project finalization and Sustainability

Ensure an adequate system for ownership of infrastructure

Problems with ownership begin with the perception that initiatives are 'actions by outsiders', for which no responsibility for subsequent maintenance is perceived. Along with the problems with the sense of ownership of the project, which must be worked on from the very beginning, comes the issues of the formal ownership of the infrastructure. Indigenous peoples have generally had difficulties in acquiring formal recognition of land ownership, and collective ownership. Many indigenous peoples' ownership systems are based on collective property, and this is important to keep in mind when siting the infrastructures as well as in determining the management structures and the distribution of responsibilities. Failure to manage these aspects may compromise project results. It is particularly important to have clarified these aspects at the time of handing over infrastructures and initiating the use of the system.

Supervision with the participation of the authorities

As indigenous communities are often remote and face obstacles managing outside contacts, the setting lends itself to abuse and low-quality construction. This makes it important to provide adequate supervision of the process, despite logistical difficulties, and to include the local authorities who will ensure that the service carries on in the future. At the same time, the involvement of the community as overseers throughout the process of intervention is of equal importance.

On more than a few occasions, a well-defined project, even with important elements of community decision-making and participation, has ultimately failed due to lack of supervision and deficient implementation. The use of 'community contracting' (see Box 6.4) can be one way to engage the community in social auditing and monitoring, but it is also recommended to include specific objectives, resources and time within the project for post-construction support.

Systematic analysis and transmission of experiences

There is a shortage of systematic analyses of experiences from water projects working with indigenous communities. The lack of systematic information is partially the result of a general tendency to only highlight successes, combined with the political sensitivity of certain aspects of the interventions in this field, which limits the possibilities for learning from prior experiences. Projects should therefore be strongly encouraged to ensure that methods, activities and valuable experiences (good and bad) are documented, analysed and disseminated within and beyond the project and implementing actors. A thorough process for including the indigenous peoples' communities and organizations in the production, validation and dissemination is central.

It is recognized that support from authorities and service providers for community water management must continue, for any type of community (Jiménez & Pérez-Foguet, 2010; Lockwood & Smits, 2011). Since indigenous people cope with the same technical, management and leadership challenges and problems as any other communities they too require support.

6.6 Further reading

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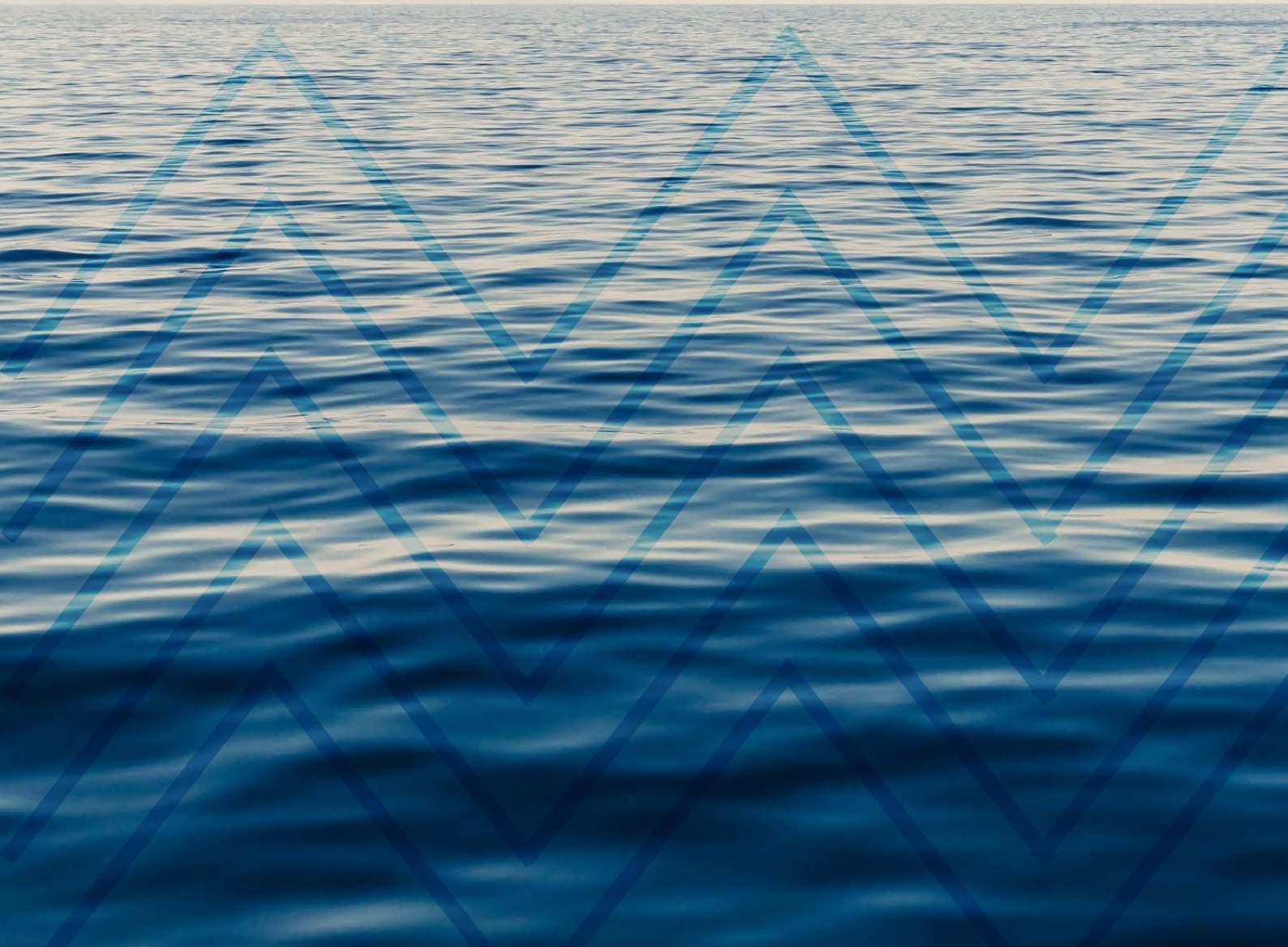
Facilitator's Guide



Introduction

The facilitator's guide aims to provide the necessary tools to carry out and facilitate the training courses of "indigenous peoples in sustainable water management". Facilitator has the freedom to tailor the programme to suit specific target audience, geographic location and time duration. The facilitator helps participants to collaborate as they explore a topic or issue. The goal is to encourage participants to think productively and ultimately to articulate key ideas, to ask vital questions, to disclose the experiences and facts, to find solutions, and/or to identify productive actions. This guide will help the facilitators to prepare a more interactive training programme that foster participants engagement.

Learning objectives of the training course on indigenous peoples and IWRM

The training course based on this materials will provide participants with:

- Basic knowledge on Indigenous and traditional people, their value systems and water conflicts and challenges they face, and their role in IWRM in achieving sustainable development;
- A platform to share knowledge and case studies on integration of traditional knowledge into IWRM;
- The knowledge on rights of indigenous people in international law;
- Knowledge development on incorporating traditional knowledge in adaptation to climate change;
- An understanding on intercultural approach to IWRM; and
- Training modules, a facilitator guide to train water managers and stakeholders to enhance participation of indigenous people and integrating traditional knowledge into IWRM

Session plan for a training programme

The six modules in the training manual has a consequential order that interact with each other. The facilitator is free to choose and arrange the course programme as he/she thinks it preferable and appropriate to the audience and the time frame of the programme, though the session description and the sample course programme given below is for five days' training. The sample course programme below shows possible arrangements of modules in each session covering the entire training materials. The suggested session plans will give a basic understanding to the participants and brainstorm around indigenous peoples and water related issues in the very first day and gently go into the other Modules. The time period is 5 days including one field day to a location that showcase any related case studies.

The Training of Trainer programme that verified the materials is an online course which uses quizzes and individual exercises/ assignments included in this facilitators' guide. Few case studies from several countries gathered through individual assignments are also included as a part of the facilitator guide.

Sample course programme – Face to Face Training

<table>
<tr><th>Day and time</th><th>Day 1</th><th>Day 2</th></tr>
<tr><td>Time slot 1</td><td>Registration</td><td>Recap of the day 1/ day 1 evaluation</td></tr>
<tr><td>Time slot 2</td><td>OPENNING SESSION welcome speech, guest speaker/s presentations</td><td>Module 03: Water and sanitation issues faced by indigenous communities</td></tr>
<tr><td></td><td>Coffee break</td><td>Tea break</td></tr>
<tr><td>Time slot 3</td><td>Get to know the participants and facilitators
(Group Integration)</td><td>Module 03: Cultural Belief systems and perceptions on water and sanitation</td></tr>
<tr><td>Time slot 4</td><td>Module 01: Definition of indigenous peoples and recognizing the importance of their participation in achieving SDG</td><td rowspan="2">Group work 02: Mapping the stakeholders and water, sanitation issues faced by the indigenous peoples (based on identified IPs during the Group work 01)</td></tr>
<tr><td>Time slot 5</td><td>Module 01: Integrated Water Resources Management</td></tr>
<tr><td></td><td>Lunch</td><td>Lunch</td></tr>
<tr><td>Time slot 6</td><td>Group work 01:
Recognizing indigenous peoples in the country or region represented by the participants</td><td>Module 04: Traditional knowledge and indigenous technologies in a changing climate context</td></tr>
<tr><td>Time slot 7</td><td rowspan="2">Module 02: Indigenous rights in International law</td><td rowspan="2">Group work 03: Group discussion on traditional knowledge and Indigenous technologies and presentations</td></tr>
<tr><td>Time slot 8</td></tr>
</table>

Introduction and concept	Module, key concepts presentations	Start and recap

<table>
<tr><th>Day 3</th><th>Day 4</th><th>Day 5</th></tr>
<tr><td>Recap of the day 2/ presentations from the group work</td><td>Recap of the day 3, Field visit explanations</td><td>Recap of the day 4/ day 4 evaluation</td></tr>
<tr><td>Module 04: Traditional knowledge and technologies continued</td><td>Field visit with questions and discussions</td><td>Module 6: Implementing an intercultural approach in IWRM continued</td></tr>
<tr><th>Coffee break</th><th>Tea break</th><th>Coffee break</th></tr>
<tr><td>Module 05: Conflicts among indigenous people and non-indigenous groups</td><td rowspan="2">Field visit with questions and discussions</td><td>PLENARY SESSION
All facilitators – Plenary discussion on integrating indigenous community participation, and knowledge in achieving SDG6; questions and answer</td></tr>
<tr><td>Module 05: Water conflicts impacts on indigenous peoples and importance of fulfilling indigenous rights</td><td>Closure – course evaluation and issuing certificates</td></tr>
<tr><th>Lunch</th><th>Lunch</th><th></th></tr>
<tr><td>Group work 04: Assessing a selected conflict situation in relate with Indigenous rights</td><td>Field visit with questions and discussions</td><td rowspan="3">Free evening</td></tr>
<tr><td rowspan="2">Module 6: Implementing an intercultural approach in IWRM</td><td>Summarising the observations</td></tr>
<tr><td>Arrival back to the venue</td></tr>
</table>

Group work and plenary	Field work and other events

Sample course programme – Online Training

The course is structured by modules. Each module will run over 1.5 weeks (or it can be allocated according to the content of each module), during which course participants must read the basic contents and participate in suggested activities.

2 days	Opening: Introduction to Cap-Net´s Virtual Campus, Participants Presentations
5 days	Module 1: Introduction and general concepts on Indigenous People and IWRM
10 days	Module 2: Human Rights, Indigenous Rights and Gender Perspective
7 days	Module 3: Indigenous Peoples' Access to Water and Sanitation
10-12 days	Module 4: Traditional Knowledge and Indigenous Technologies in Water Management in a Climate Change Context
10-12 days	Module 5: Indigenous Peoples and Water Conflict Management
8-10 days	Module 6: Implementing an intercultural approach in IWRM
3 days	Participants feedback and course closure

In all 6 modules, participants are expected to:

- Read basic contents;
- Participate in the modules´ forum discussions;
- Participate and work on the individual exercise (not all modules may have an exercise);
- Respond –by the end of the module- a set of multiple choice questions; and
- Optional: Participate in a live session.

Participants will also have access to other (optional) recommended readings, videos, and web links.

Participants expected dedication and certification

Usual time required to dedicate is a minimum of 4 hours a week. This is estimated on the basis of 1 hour per day (4 days a week), or two connections per week, each one of 2 hours. In total, this should add to 40 hours for the full course, in line with a 5-days face to face course. However for more detailed studies, participants may have to spend more time on reading and researching the literature in their own countries which could help uplifting their knowledge.

Session/ module outlines

Each and every modules/sessions and suggested group work are elaborated here with specific questions and instructions for the trainers. Duration allocated for the each module might be slightly varied and can be average of two hour. It also depend on the weight that trainers wants to give for each module in their specific trainings. Therefore the facilitator should be flexible to adapt the content and manage time without harming the flow of the training and content they intend to deliver.

This Module outlines provide a description separately required for each session for online training or a face to face training. Sample quizzes and exercises also given here with links to additional reading materials. There are group work introduced separately and also some optional exercises suggested for each module. Trainers can select and design their own way to accommodate exercises appropriately.

MODULE 01

Introduction and general concepts on Indigenous People and IWRM

Learning objectives and expected outcomes

At the end of this session, participants will be able to learn and understand:

- Who are the indigenous and traditional peoples?
- What is Integrated Water Resources Management?
- The role of water in indigenous value systems
- Water and sanitation challenges faced by indigenous peoples
- How indigenous peoples and traditional knowledge are important and reflected in the Sustainable Development Goals

Requirements for the session

- Presentation equipment: overhead projector and laptop
- Writing board with flipchart on it, white board and permanent markers
- Color cards as required
- Well-prepared PowerPoint presentations for the module

Time allocation

- Presentation: 40 minutes
- Discussion: 20 minutes for brainstorming question, or questions and answers
- Total session time: 1 hr
- Exercise: this module is linked to the Group work 1

Short summary/ key points

This training course provides a framework for more inclusive and equitable management of water resources, taking into account the rights and knowledge of the world's indigenous peoples.
Module 1 defines some core concepts and looks into the importance of water for indigenous communities, as well as into the necessity of integrating indigenous peoples' rights and knowledge into water management plans and decisions in all areas inhabited by, or culturally important to, indigenous and traditional peoples.

Brainstorming questions or discussion topics during the session

Integrated water resources management concept itself reflects the participation of all stakeholders in water management decision making. Therefore, the indigenous and traditional people are also part of it, but we have especially recognized the need for more awareness on indigenous peoples and the involvement of traditional knowledge which is targeted through this training materials and course. Express your opinion on - Why is it still important to pay special attention to the voices and concerns of indigenous people in water management decision making?

Recommended readings

- IWRM tutorial by Cap-Net: http://www.cap-net.org/wp-content/uploads/tutorials/iwrm_tutorial/mainmenu.htm
- IWGIA on the three most widespread definitions of indigenous peoples: http://www.iwgia.org/culture-and-identity/identification-of-indigenous-peoples
- Sustainable Development Goals and SDG indicators: https://sustainabledevelopment.un.org/sdgshttp://unstats.un.org/sdgs/

Additional reading

- Cap-Net UNDP training manual on a Human Rights-Based Approach to IWRM: http://campus.cap-net.org/en/course/a-human-rights-based-approach-to-iwrm-2017-edition-hrba17/

Recommended videos

- AIPP on Indigenous Peoples and the SDGs (video): https://www.youtube.com/watch?v=7CNmjGfp2lE&feature=youtube
- Water is Life - Indigenous Perspectives on Water https://www.youtube.com/watch?v=keRf2_Dc0No
- Canadian example on effect of water project without consent of traditional people: https://www.youtube.com/watch?v=Arnqpnm70Ng

Group work 1

Recognizing indigenous peoples in the country or region represented by the participants

This is a simple assignment which will take 20 minutes. Divide the participants into group based on the continent or country they represents, and ask them to recognize the indigenous communities and areas they inhabit.
(This will later continue with Group work 2)

MODULE 02

Human Rights, Indigenous Rights and Gender Perspective

Learning objectives

By the end of this module, participants should be able to understand, that:

- The international law framework and the international human rights law can be used to protect indigenous peoples' rights
- Indigenous people have the right to own, use and control their water resources, as well as the right to participate in public-decision making,
- No use of their natural resources can be operated without their free, prior and informed consent,
- Indigenous peoples' rights have legal value and some protection mechanisms exist at the UN level, and
- Gender perspective should be considered in the implementation and compliance of indigenous people's rights, because indigenous women can be particularly vulnerable among indigenous communities.

Requirements for the session

- Presentation equipment: overhead projector and laptop
- Writing board with flipchart on it, white board and permanent markers
- Color cards as required

Time allocation

- Presentation with brainstorming questions and exercises integrated into the session in the middle of the presentations 1 hr and 15 min
- Small exercises/ brainstorm questions are expected to be conducted in the session for more practical understanding

Short summary/ key points

The second module presents that indigenous people's rights are recognised under international law, and more specifically international human rights law. That means that in addition to the possible entitlements described at national level, indigenous peoples can claim their rights (e.g. the right to self-determination) under international and regional HR protection systems. Indigenous peoples' have the rights to own, use and develop water resources and to participate in IWRM. Finally, this module presents the main protection mechanisms of the rights of indigenous peoples at the UN level, and insists on the importance of protecting the rights of women and girls in indigenous institutions.

Set of brainstorming questions

- Why are indigenous peoples' rights and indigenous peoples' knowledge of water resource management in general not being taken into account with regards to interventions in water resources?
- Which and whose interests might be affected in building modern water infrastructures (e.g. dam and canal construction)?
- Why are indigenous technologies that are often sustainable (i.e. cost effective and adapted to climate variations) not used frequently to develop innovative technologies for water exploitation? What are then main obstacles?
- How can the right of self-determination and the principle of 'Free, Prior and Informed Consent' that people enjoy under international law, be used in project management and IWRM?
- Do IWRM and the fulfilling of indigenous rights go parallel or conflict with each other?
- Are there any conflicting situations in applying traditional knowledge in water management and ensuring water supply for all (i.e. achieving SDG 6)?
- Are there profound linkages between the economic value of water and traditional water management systems? Can indigenous technologies provide (financial) benefits to the public society and the private sector?

Challenging argument to discuss in groups or online discussion forums

The efforts of the (international) development community should promote the interests of the wider society over the interests of small communities that are not integrated in the society, and who do not participate in decision making, and can be evicted to safeguard the development of other communities.

Recommended readings

- Overview of The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) adopted by the General Assembly in 2007: http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf
- McGregor, D., 2012. Traditional Knowledge: considerations for protecting water in Ontario. The international indigenous policy journal 3:11: http://ir.lib.uwo.ca/cgi/viewcontent.cgi?article=1080&context=iipj
- Groenfeldt, D., 2006. Water development and spiritual values in Western and Indigenous societies. In R. Boelens, M. Chiba, & D. Nakashima (Eds.), Water and Indigenous peoples, knowledges of nature (pp. 108-115). Paris, FR: UNESCO.
- Report of the Special Rapporteur on the situation of human rights and fundamental freedom for indigenous people, E/CN.4/2003/90 (2003): http://ap.ohchr.org/documents/alldocs.aspx?doc_id=3409

Recommended websites

- https://www.iwgia.org/en/iwgia-partners/67-african-commission-on-human-and-indigenous-peoples-rights-achpr-working-group-on-indigenous-peoples-wgip
- https://www.iucn.org/content/indigenous-women-most-vulnerable-climate-change-key-agents-change
- https://www.theguardian.com/world/2017/mar/16/new-zealand-river-granted-same-legal-rights-as-human-being
- https://www.ohchr.org/EN/NewsEvents/Pages/Meetings.aspx

Recommended videos

- http://www.thewaterchannel.tv/media-gallery/6013-lower-omo-local-tribes-under-threat
- http://www.thewaterchannel.tv/media-gallery/2083-defending-water-rights
- https://www.youtube.com/watch?v=XMKYybtUJ-o

Photo: Faraz Naqvi

MODULE 03

Indigenous peoples' access to water and sanitation

Learning objectives

At the end of this session, participants will be able to understand:

- The basis of setting water quality guidelines and effluent quality standards;
- The effluent and water quality standard that has been internationally accepted; and
- How to set the water quality objectives and its importance.

Requirements for the session

- Presentation equipment: overhead projector and laptop
- Writing board with flipchart on it, white board and permanent markers

Time allocation

- One hour in total
- 40 min for presentation and 20 min for questions and answers

Short summary

The content of the chapter covers the situation overview on access to water supply and sanitation in indigenous communities. There is no solid statistics on percentage of access, but the available literature shows the comparatively lower access considering ethnic minorities and Indigenous peoples altogether and proves they are more marginalized. The module also talks about the cultural beliefs systems and associated failures of securing the land rights which hinder the progress of achieving water and sanitation targets, and highlight the need of participation by IP stakeholders in water supply and sanitation projects and also in water management. This last part on participation will open the context into the module 6 which will present the approaches to IP participation in detail.

Brainstorming questions

- Are there any conflicting situations in applying traditional knowledge in water management and ensuring water supply for all (i.e. in achieving SDG 6)?
- Does capacity development for indigenous communities help them face these challenges related to lack of access to clean water and sanitation?
- Should the state government prioritise fulfilling the rights of the indigenous peoples and reduce inequalities?

Individual or group exercises specifically relevant to Module 3

Assignment 1: Acquiring the ground knowledge

In addition to the content and literature in module 3, are there any facts and figures that you have encountered in your work with indigenous or traditional communities? Please share with us briefly stating the name of the project, community and geographic area you have worked with. Also, kindly include if any links to available reading materials, publications or newsletters.

Assignment 2: Discuss on the below statement with examples from your own experiences or knowledge in your country or region.

"Indigenous peoples' participation is crucial in achieving universal access to water and sanitation. The challenges are enormous: including appropriate technology provision, ensuring management of provided systems, maintenance of facilities, overcoming taboos and complying with cultural perceptions. Would the business as usual work? Would the usual community participation techniques applicable? How should the state and government involve in ensuring Indigenous peoples' access to water and sanitation? Do we have the capacity?"

Recommended readings

The UN Sustainable Development Goals for Water and Sanitation: How should Australia respond within and beyond its borders?
http://www.gci.uq.edu.au/filething/get/13644/UN%20Sustainable%20Development%20Goals%20for%20water%20FINAL%20July-2.pdf

Recommended websites

- http://www.worldbank.org/en/topic/sustainabledevelopment/projects/operational-documents?teratopicexact=Water+Supply+and+Sanitation&qterm=&lang_exact=English&docty_exact=Indigenous+Peoples+Plan
- Human Rights Watch (2016). Make it Safe: Canada's Obligation to End the First Nations Water Crisis. https://www.hrw.org/report/2016/06/07/make-it-safe/canadas-obligation-end-first-nations-water-crisis
- How to provide sustainable water supply and sanitation to Indigenous Peoples. Netherlands for the World Bank Blog post on: https://nl4worldbank.org/2016/12/06/how-to-provide-sustainable-water-supply-and-sanitation-to-indigenous-peoplesexact=Water+Supply+and+Sanitation&qterm=&lang_exact=English&docty_exact=Indigenous+Peoples+Plan alternate site https://nl4worldbank.org/2016/12/06/how-to-provide-sustainable-water-supply-and-sanitation-to-indigenous-peoples/

Group work 2

Mapping the stakeholders and water, sanitation issues faced by the indigenous peoples

This assignment is based on the group work 1 and will take another 30 minutes. In the same groups, ask participants to identify water and sanitation issues faced by the indigenous communities that they have recognized. Do stakeholder mapping as of steps given below.

Mapping IP stakeholders in access to water and sanitation services

In separate groups engage training participants to do the following on flip charts:

1. List key stakeholders involved in water and sanitation services in IP communities;
2. List the roles of each stakeholder category involved in water and sanitation services in IP communities;
3. Identify the level of influence by each stakeholders to fulfill water and sanitation needs of IP communities; and
4.Present and discuss with the whole team on stakeholders roles and influence which fulfill or inhibit access to water and sanitation.

Stakeholder	Importance	Interest	Influence
	High/Medium/Low		

Photo: photoshare.org

MODULE 04

Traditional knowledge and indigenous technologies in water management in a climate change context

Learning objectives

- Increased awareness of the impacts of climate change on indigenous populations and water management;
- Increased knowledge and appreciation of traditional water management technologies in general and for adaptation to climate change; and
- Reflect on the role of indigenous organizations and the State in implementing water-related adaptation strategies to climate change.

Requirements for the session

- Colour cards;
- Manila papers;
- Permanent markers;
- Sticker dots in three colors; and
- Flip board

Time allocation

- One hour in total
- 40 min for presentation and 20 min for questions and answers

Short summary

The content of the Module 4 covers the basic knowledge on climate change and its impact especially focusing on indigenous and traditional communities. The aim is to understand how the indigenous peoples are affected due to climate change related impacts and how the traditional knowledge can be effectively used to adapt and be more resilient to the impacts. The module presents some literature and case studies about indigenous and traditional knowledge as tools/ technologies/ methods in adapting to climate change. This is a vast area and comprised of documented or undocumented knowledge globally, therefore module 4 presents only a brief overview of selected cases of technologies used by various indigenous communities around the world. The module facilitator can choose the cases according to his audience/ target group or find relevant local case studies

Brainstorming questions

In a developed world with new technologies and modern tools, we are talking about integrating the traditional and indigenous knowledge. Is it really a challenge? How best can we practically apply this traditional knowledge? Should it be applied only among the indigenous communities and/ or depend on the place and situation?

Individual or group exercises/ brainstorming questions relevant to Module 4

Assignment 1: Acquiring the ground knowledge

Participants are asked to review various traditional technologies that are utilized in their country or region. Discuss whether those traditional practices and technologies have ever been considered in national policies and projects.

Assignment 2: Challenging argument

In a developed world with new technologies and modern tools, we are talking about integrating the traditional and indigenous knowledge. Is it really a challenge? How should we practically apply these traditional knowledge? Should it be just among the indigenous communities and/ or applicable depend on the place and situation?

Recommended readings

Additional reading on climate change: Cap-Net training manual on climate change and IWRM
Weathering Uncertainty: Traditional knowledge for climate change assessment and adaptation

Recommended websites

- Australian cases on use of indigenous knowledge in water planning : http://www.environment.gov.au/water/publications/capturing-indigenous-knowledge-water-management-processes-wudjuli-lagoon-case-study-ngukurr
- Canadian research paper on indigenous knowledge for protecting water in Ontario: http://ir.lib.uwo.ca/cgi/viewcontent.cgi?article=1080&context=iipj

Recommended video

FPW Feature: Indigenous Peoples' Stories of Climate Change

Group work 3

Instructions for the group work

Identify the country/ region/ metropolitan area/ river basin or smallest unit that participant can be divided into groups. (Working on the same groups as Group work 1 and 2) the group division can be done even before the training and displayed in a separate board to save time. Idea is to put together the participants from similar geographical setting to facilitate deeper understanding on analysis of specific problem.

Questions to the group:

- Present a selected case study on indigenous technologies in adapting climate change;
- Discuss the unique characteristics and role of IP communities in ensuring sustainable water management; and
- Discuss on how the traditional knowledge can be effectively used to adapt and be more resilient to the climate change impacts.

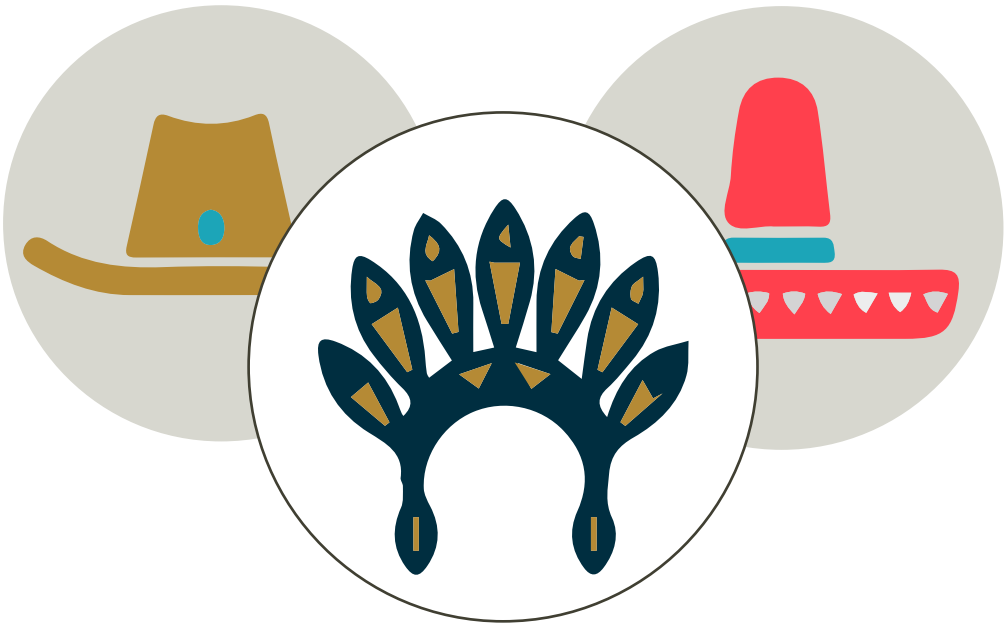


Photo: Danny Victoriano

MODULE 05

Water conflicts and indigenous peoples

Learning objectives

At the end of this session, participants will be able to:

- Understand key drivers for conflict between indigenous and non-indigenous water users and state based water authorities;
- Be aware of the negative effects of industrial and non-industrial water users on water use and access by indigenous peoples;
- Identify actors and sectors that are especially prone to water related conflicts with indigenous peoples;
- Understand different types of conflicts experienced by indigenous peoples related to the right to water; and
- Consider types of actions and strategies that can be used to ensure recognition of indigenous people's rights and prevent conflicts between indigenous peoples and other water users

Requirements for the session

- Presentation equipment: overhead projector and laptop
- Writing board with flipchart on it, white board and permanent markers
- Color cards as required

Time allocation

- Presentation: 40 minutes
- Questions and discussions: 20 minutes, questions can always go together with the presentation to make it a more interactive session

Short summary

Conflict can take on many forms from the exclusion and marginalization of indigenous perspectives and representation in water management, to community direct action and protest, to threats and physical violence directed at indigenous activists or community leaders opposing water uses that threaten their communities and livelihoods. Such conflicts are driven by water uses across a range of sectors, from mining and industrial agriculture to hydropower dams and large scale infrastructure, as well as non-industrial uses such as conservation and tourism. Conflicts are an important threat to many indigenous peoples' fundamental rights and wellbeing, but can also have significant impact on the development and operation of water use projects and operations. The

goal of this module is to examine the context, causes and nature of conflicts between indigenous peoples and non-indigenous water users, through the lens of indigenous people's rights and the right to water. Participants will understand and analyze the range of actors and types of water management impacts which produce conflicts, while identifying emerging issues, priorities and challenges. Participants will also consider the types of actions and strategies that are needed to ensure recognition of indigenous peoples' rights into integrated water resource management and prevent conflicts.

Brainstorming questions for the session

Drawing on the case examples in the compulsory reading and/or the recommended videos, please comment on the following questions:

- What are some of the fundamental drivers of conflict between indigenous and non-indigenous water users? Why do you think certain sectors are especially prone to such conflicts?
- What do these conflicts tell us about differences in value systems and the exercise of power in decision-making on water resource management?
- What tools and approaches can be used to ensure protection of indigenous peoples' rights and mediate and prevent conflict in water resource use and management?
- Encourage participants to share examples of any case studies or examples that you have experience of or know about to illustrate your answers.

Recommended readings

- Jiménez, A., Molina, M. F. & Le Deunff, H. 2015. Indigenous peoples and industry water users: Mapping the conflicts worldwide. Aquatic Procedia 5, 69 - 80.
- Jiménez, A., Cortobius, M., & Kjellen, M. 2014. Water, sanitation and hygiene and indigenous peoples: a review of the literature. Water International 39(3) 277-293.
- Global Witness, On Dangerous Ground (website and report): www.globalwitness.org/en/campaigns/environmental-activists/dangerous-ground
- International Rivers, A River of Impunity: The Situation for Environmental Defenders Opposing Hydropower Projects: (website and submission) www.internationalrivers.org/resources/a-river-of-impunity-the-situation-for-environmental-defenders-opposing-hydropower-projects
- Asian Indigenous Peoples Pact, Indigenous Knowledge and Customary Law in Natural Resource Management (2011): http://aippnet.org/indigenous-knowledge-and-customary-law-in-natural-resource-management-2
- Cultural Survival Quarterly Magazine Issue 29-4 Water Rights and Indigenous Peoples (December 2005) [see articles for case studies]: www.culturalsurvival.org/publications/cultural-survival-quarterly/29-4-water-rights-and-indigenous-peoples
- World Commission On Dams. 2000. WCD Thematic Reviews Social Issues I.2. Sharing Power: Dams, Indigenous Peoples and Ethnic Minorities. Cape Town: WCD.
- Report of the Special Rapporteur on the rights of indigenous peoples, James Anaya. Extractive industries and indigenous peoples (2013)

Recommended websites

- Asian Indigenous People's Pact: http://aippnet.org
- United Nations Special Rapporteur on the Rights of Indigenous Peoples: www.ohchr.org/EN/Issues/IPeoples/SRIndigenousPeoples/Pages/SRIPeoplesIndex.aspx
- International Rivers: www.internationalrivers.org

Recommended videos

- Cambodia: Fight for Areng Valley: http://vimeo.com/110822073
- The Battle at Standing Rock: www.theatlantic.com/video/index/507728/solidarity-standing-rock
- Berta Cáceres, 2015 Goldman Environmental Prize, Honduras: www.youtube.com/watch?v=zh9Sn9oJR94

Group work 4

This group work combines the content covered mainly in Module 2 and Module 5 and provides the participants opportunity to assess a certain situation and look at it from different angles.

Suggestion 1: Assessing a given conflict situation/ commenting on a given situation

Did you follow the current debate about the construction of the Dakota (US) pipeline which could violate the human right to water, and the right of indigenous peoples to practice their cultural traditions? Did you listen to the different actors involved, to base your opinion on the project? (e.g. UN special Rapporteur on the rights of indigenous peoples (Victoria Tauli-Corpuz, see recommended websites), Pope François, Barack Obama, Donald Trump).

- What do you think about the implementation of this pipeline? Is it in the federal/national public interest to protect indigenous rights here? Why?
- Is it the role of the media to make indigenous activists visible and indigenous voices audible? What do you think of the thousands of protesters at the Standing Rock? Please give us some comments about your thought and links with chapter 2. https://www.youtube.com/watch?v=jFSqxk67bco https://www.theguardian.com/us-news/2017/feb/15/pope-francis-dakota-access-pipeline-native-americans http://www.truth-out.org/news/item/38251-the-human-right-to-water-at-standing-rock

Suggestion 2: Researching on and assessing a situation where indigenous rights are not fulfilled

This is suitable for more specific lengthy courses related to Chapter 2 and 5 or for online courses. You can assign it as individual or group exercises. Identify a real water related situation associated to indigenous peoples' rights from your country or others countries which took place recently (e.g. Brazil, Kenya, India, US).

If possible, please include web links to newspapers with articles referred to that specific situation. It may be a small or a big case, for example referring to access to water for domestic uses, livestock, extensive agriculture, mining extraction, pollution, conflicts between users, spiritual/religious value, or international water course. If you find some videos on YouTube or a news channel, please share them.

Consider this news from the angle of the protection of indigenous peoples' rights in international law. Identify in the story you selected, the indigenous rights that are threatened or violated according to the international standards (ILO Convention and UNDRIP Declarations). Although the information provided may not be comprehensive, please discuss based on the given materials.

MODULE 06

An intercultural approach to Integrated Water Resources Management

Learning objectives

By the end of this module participants are expected to learn/better understand:

- What is an intercultural approach?
- How can it be applied and implemented?
- Why is it important?

Requirements for the session

- Presentation equipment: overhead projector and laptop
- Writing board with flipchart on it, white board and permanent markers
- Color cards as required

Time allocation

- Presentation: 40 min
- Questions and discussions: 20 min

Short summary

An intercultural approach is a process that aims to recognise and integrate indigenous peoples' rights, knowledge, perspectives and interests in any planned action, including legislation, policies and projects, by creating spaces for their meaningful participation and continuous dialogue between all parties. In this module we will go through the different components of an intercultural approach to IWRM, and will learn about the challenges for its implementation and the added value that comes out of its realization.

The goal of this module is for participants to acquire the knowledge and practical tools needed for the implementation of an intercultural approach to IWRM.

Brainstorming questions for the session

Which of the four 'core principles' of the intercultural approach is likely to be the most challenging to take into account throughout an intervention?

Give examples from your own experience!

Recommended readings

- JIMÉNEZ, A., CORTOBIUS, M. & KJELLÉN, M. 2014. Working with indigenous peoples in rural water and sanitation: Recommendations for an intercultural approach. Stockholm: SIWI. http://watergovernance.org/resources/working-with-indigenous-peoples-in-rural-water-and-sanitation/
- JACKSON, S., TAN, P. L., MOONEY, C., HOVERMAN, S. & WHITE, I. 2012. Principles and guidelines for good practice in Indigenous engagement in water planning. Journal of Hydrology, 47457-65;
- JIMÉNEZ, A., CORTOBIUS, M , KJELLEN, M. "Water, sanitation and hygiene and indigenous peoples: a review of the literature". Water International, 39:3, 277-293, Available here free to download: http://www.tandfonline.com/doi/abs/10.1080/02508060.2014.903453
- Participatory Tools for water planning: http://www.sswm.info/category/planning-process-tools/decision-making/
- JIMÉNEZ, A., MOLINA, M. F. & LE DEUNFF, H. 2015. Indigenous peoples and industry water users: Mapping the conflicts worldwide. Aquatic Procedia, 5 69 - 80. Available here free to download: http://www.sciencedirect.com/science/article/pii/S2214241X15002874
- Guide for Community Contracting to execute public works and manage services (ILO). http://www.ilo.org/global/topics/employment-intensive-investment/publications/WCMS_544490/lang--en/index.htm

Recommended websites

- International Working Group on Indigenous Affairs: http://www.iwgia.org/
- Equator Initiative collects relevant actions and initiatives related to indigenous communities: http://www.equatorinitiative.org/index.php?option=com_content&view=featured&Itemid=902& lang=en
- Cultural Survival Reports for the Universal Periodic Review: Alternative, shadow, and country reports to treaty body committees and the Human Rights Council. These reports detail how a given country is (or is not) respecting the rights of its Indigenous populations in relation to the UN Declaration on the Rights of Indigenous Peoples, and offer recommendations for improvements: https://www.culturalsurvival.org/reports

Recommended videos

Video on a successful experience of water management with indigenous people in Panama:

- https://vimeo.com/52606029 (full)
- https://vimeo.com/61257277 (short)

Plenary session

The plenary will be appointed by the course coordinator to represent different background and experiences. The topic of the plenary discussion is on "integrating indigenous community participation, and knowledge in achieving SDG6" which wrap-up the overall learnings and take home message of this training. This is to reiterate the main discussion points and highlight the practical application part of the concepts learnt during the training.

Field visits

Field visit location should be selected not very far from the meeting in order to be convenient for planning and to allow time for questions and discussions. Arrange all logistics in advance with enough drinks to keep participants hydrated, and also advice participants to prepare with necessary boots, mosquito repellents and necessary things accordingly. Here are three types of locations to select for the field visit:

- A place which could display traditional technologies in water management;
- A place where traditional or indigenous communities inhabit; and
- A place where the historical evidences represent the indigenous technologies in water and resources management, but development intervention have made negative or positive implications.

A questionnaire should be prepared to facilitate the discussions after and during the visit so that the participants can argue and discuss the observations they have made. Participant need to observe the situation and gain indigenous knowledge to participate in the discussion. Since this discussion could be held in the bus it would be advisable to be equipped with a portable microphone as well, if possible.

Planning a workshop and developing training skills

Content:

- What to consider when planning a workshop; and
- Dynamics and energizers/ ice breakers.

This chapter has been designed to support people developing training activities on 'indigenous peoples and IWRM'.

Introduction

Training activities with adult participants have specific needs that have to be considered when planning the event to ensure training objectives are met. Adult learners favour learning by doing, by sharing experiences and by the application of new knowledge in real work environments.

The planning process is a tool that you, as the facilitator, can use to enhance the learning process of the participants.

1.Target group

Considering that training has to be adapted for different audiences, you have to be sure that your training materials address different needs and that they meet the requirements of the trainees' profiles. It is also important to identify the material you will use and anticipate all your needs during the planned sessions. The content of the materials given can be adapted to your specific situation and can be enriched with local knowledge and case studies in order to suit the specific audience.

2.External factors

A good preparatory exercise to do is to project possible training scenarios. Thus, you can try to control external factors that may influence the training event, for example, holidays, weather conditions and political events. This exercise also gives you the opportunity to identify particular opportunities that may come up.

3.Internal factors

It is important to be realistic and plan capacity building according to your strengths and the extra support you are able to raise. Following are some practical tips for planning, conducting and evaluating the training course.

If you plan to replicate your training activity, then you have to work on preparing follow up activities:

1. Meet in groups by regions or countries (depending on the number of participants and the target group you identified for the follow up).
2. Prepare a proposal to run an activity in your region/country or basin level making use of the programme and materials of the training just conducted on IWRM and climate change.
3. You need to identify:
   - The target group;
   - Duration of the activity;

- Establish the contents according to the length and the needs and characteristics of the region or country;
- Identify regional or local speakers/experts;
- Make a list of requirements to run your training activity;
- Identify responsible persons;
- Make a timetable;
- Identify funding; and
- Prepare a presentation to share in plenary.

Before the training

- Set your training objectives.
- Identify and evaluate the training method, and choose the most suitable one for your goals.
- Identify your regional/local counterparts.
- Prepare a budget adjusted to your needs and costs, consider all expenditures and set aside an amount for contingencies.
- Solicit financial support.
- Identify the material developed from expert sources and plan review and integration.
- Address administrative and venue issues (restrooms, breakout rooms for working group sessions, layout of the meeting room, access to internet, air conditioning, connections, evacuation route, etc).
- Decide how you will measure the objectives.
- Try to establish the situation or knowledge of the participants (e.g. use an application form, ask participants to write a motivation or an analysis of the situation in their region).
- Identify the improvements you are aiming for.
- Identify assignment responsibilities.
- Prepare energizers and dynamic sessions while planning the content.
- Make a list of materials and equipment you will need.

During the training

- Assign 'policing' or organizational roles to volunteer participants;
- Assess and address special needs of participants and trainers;
- Make sure material is circulated on time;
- Add interactive sessions to the technical sessions, as practical application of concepts and principles as part of the learning process;
- Plan daily recaps to evaluate the activities and understanding by the participants, but be careful that recaps are not just summaries of presentations; and
- Consider the breaks you need and the way to bring participants back to the session (play music, ring a bell, and turn on/off lights).

After the training

- Measure the achievements of the objectives by the indicators identified;
- Review feedback from trainers and participants. Assess what improvements can be made to the programme, materials or facilitation;
- Review the effectiveness of the chosen training method and allocated time;
- Identify any remaining training gaps, and include them in future plans; and
- Review your financial results.

Some icebreaking / energizing suggestions

Breaking the ice is very important when you are working with adult learners. You are not only responsible for the quality of the material and to guarantee delivery but also for group dynamics. Some icebreakers are presented to help trainers to organize the session, but you can be creative and use your own.

Team building icebreakers

Activity to meet each other (15 minutes)

Divide the meeting participants into groups of four or five people by giving them names according to the issues of the workshop, like lake, river, rain, spring, etc. You can use colours or other references. You can also give the participants a chocolate or candy with different label, so they meet with the people who share the same label of candy.

Tell the newly formed groups the rules and their assignment. Prepare a clear and simple guide to make it easy. The assignment can be something easy, such as to find five things they have in common, that have nothing to do with work (no body parts and no clothing). This helps the group explore shared interests more broadly.

One person (a volunteer) of the group must take notes and be ready to read their list to the whole group upon completion of the assignment. Then ask each group to share their list with the whole group.

Animal card (30 minutes)

This can be used at the beginning of first day for getting knows each other. You can distribute cards with images of animal in pairs, or use opposite cards and ask to the participants to meet with the other person who has the matching card. Each one has to introduce the other participant to the plenary telling something special about the other participant. You can prepare the main question that must be something personal, something that makes him/her special or different. Allow 10 minutes for the pairs to meet and the remaining 20 minutes for introductions to the rest of the group.

The treasure box (30 minutes)

Bring a dark bag or box and ask to the participants to give you something that must be important to them; avoid pencils or pens and instead suggest eyeglasses (in their case), driver's license, rings, watches, etc. When you get all the treasures in the bag, draw one and ask to the owner to say his or her name and to say something personal that very few people know. The group will decide if the information is personal enough to recover the treasure and if not, the participant has to try again. Don't be easy on the person, keep the item until the group is satisfied.

Roll the ball (20 minutes)

Another way to introduce the participants is to bring a small and colourful ball to toss around and to ask the participants to stand up and present themselves one by one, as they catch the ball. Assure that all the participants receive the ball. You can also use the same exercise when the people are tired and ask them to say the name of the person to whom they throw the ball. The one who fails will have to perform a task: sing, dance, or something else that the group decides.

The name game (15 minutes)

Sit the participants in a circle. One of the persons (or a leader) starts the game by saying "Hi! My name is___". Then the person next to the beginner continues by saying "Hi! My name is ___ and sitting next to me is ___". This continues around the circle, until the last person introduces him-/herself and also has to introduce the entire circle! This is a great way to learn names.

Other activities to develop during the workshop

The baby picture game

Each person is instructed before the course to bring a baby picture of him or herself. Collect all the pictures and carefully put them on a large paper sheet on the wall, assigning a number to each picture and prepare a big envelop on the side; keep them there until the last day. The participants must identify each of the participants from their baby picture, linking the number to the name, and put this in the envelope during the workshop. On the last day of the training, the person who guessed the most names and pictures right will win a prize.

Sharing chairs

Everyone gets a chair and sits in a circle. The leader reads out a list of items. If any of them apply to a participant, he or she must move the appropriate number of seats clockwise. For example: 1.

"Anyone with one brother, move one seat clockwise. If you have two brothers, move two seats." 2. "Anyone with black hair, move one seat clockwise." 3. "Anyone over the age of 21, move three seats counter-clockwise." 4. "Everyone wearing brown shoes move one seat." The fun happens when you move, but your neighbour doesn't, and you must sit on his/her lap! Sometimes, you can have three people occupying the same chair!! Make sure you have lots of categories so that everyone gets several chances to move.

Shoe factory

Have the group stand in a large circle shoulder to shoulder. Then have everyone remove their shoes and put them in the centre. After the group has formed a pile with their shoes, the leader directs everyone to choose two different shoes other than their own. They should put them on their feet (halfway if they are too small). The group then needs to successfully match the shoes and put them in proper pairs by standing next to the individual wearing the other shoe. This will probably result in a tangled mess and lots of giggles!

Games specific for water management

Carrying the can

Make some holes of a one edge of a little can (opened tin) and use some 6 threads to raise and carry it. Fill the can with water. Ask some volunteer to represent different institutions like ministry of Agriculture, ministry of water, water supply companies, ministry of health, community etc. Then ask them to carry the can by threads without splitting water in the floor. Then explain and let the audience understand the importance of collaboration neeedamong the team to carry the can carefully. Each thread needs to adjust according to each other positions. You could use this analogy to explain the complex interaction among the stakeholders in water management.

Bingo

Bingo play cards can be arranged in various ways.
Suggestion 1: Prepare picture cards in advance with a pre-designed various arrangement printed on papers to put them together. Distribute the papers and play the cards to open one by one. The participants will mark/cross their relevant pictures on the paper each time the card is opened and whoever is the first to find all on her/his paper and say "Bingo" will win.

Suggestion 2: Find indigenous peoples pictures in some participants' countries and write the continent in front of the picture (or keep it to find by themselves). Distribute the papers to participants. Ask participants to mix up and then start searching a participant from the country which represented by each picture and get sign from him/her. Whoever completes first will say Bingo and win.

Making the Triangle – System Dynamics

Make a circle and ask everyone to identify two other people to remember and target. No one should reveal the people they have selected for the game. Then ask everyone to try and make a triangle with the feet of two people they selected and stop moving once they are done. When you get them started, everyone will try to make the triangle and will have to constantly keep moving. When the game ends in a chaos, you can use it to demonstrate to the participants the complexity of the system and the need for adapting it to suit any changes.

Aqua Republica Serious Game

Aqua Republica is a new online strategic game that helps raise awareness and educate stakeholders on the importance and challenges of managing limited natural resources in the face of multiple and often competing demands in the drive towards sustainable development. This game has been developed by UNEP DHI and there are several versions available; School version, MOSA version and Cap-Net - UNEP DHI version.

This game can be used in many different training situations to understand a complex system and develop arguments on water resources management. This can be used as a team building activity during a long training, which participants can have some free time in the evenings to play. Winner can be awarded with a gift. More information: http://aquarepublica.com/

A screenshot from the game Aqua Republica

Case Studies

Photo: Sourav Karmakar

Case 1

HUMAN RIGHTS AND INDIGENOUS RIGHTS - A CASE STUDY OF DAM-FAILURE AT THE SAMARCO MINE IN BRAZIL

1. Context

Mining operations entail crucial trade-offs between industry and ecosystem services related to freshwater. (McIntyre et al., 2014; Carolina et al., 2016). On 5 November, 2015, Brazil witnessed one of the worst environmental disasters in its history when the dam of Fundão, owned and controlled by Samarco Mineração SA (an international joint venture between Vale and BHP Billiton), burst in Mariana, unleashing a wave of destruction (Tuncak, 2017). Bento Rodrigues, a village in the municipality of Mariana, in the state of Minas Gerais was buried under three meters of mud (Escobar, 2015). The houses and the historical, cultural and natural heritage of the village was inundated by sixty-two million m3 of sludge. The disaster left 19 dead, 3 missing and over 600 homeless (Neves et al., 2016). The tailing slurry mud crossed two federal states through the Doce river and reached the Atlantic Ocean, polluting preservation areas and beaches (Hatje et al., 2017).

2. Cause of failure

The panel that was formed to investigate the failure of the Fundão Tailing[1] Dam attributed it to a chain of events and conditions that occurred shortly after the completion of Starter Dam in 2009. Due to construction defects in the base drain, the dam was so badly damaged that the original concept could no longer be implemented. Instead, a revised design substituted a new drainage blanket at a higher elevation. A change in design brought about an increase in saturation which introduced the potential for liquefaction[2]. As a result of several developments, soft slimes encroached into unintended areas on the left abutment of the dam and the embankment alignment was set back from its originally-planned location. This initiated a mechanism of extrusion of the slimes and pulling apart of the sands as the embankment height increased. By 2015 parts of the dam were already in a precarious state. With only a small additional increment of loading produced by the earthquakes, the triggering of liquefaction was accelerated and the flow slide initiated leading to dam failure(Morgenstern et al., 2016).

3. Impacts

It has been estimated that more than 35 million m3 of mining residues slid down a mountainside, when Fundão dam failed, into the 650 km stretch of rivers Gualaxo do Norte, Carmo and Doce, as shown in Figure 1. These rivers, which were the primary source of water and livelihood for several communities, were transformed into a "sea" of red mud (Hatje et al., 2017). At least 1,500 ha of

[1] Metals mines use tremendous amount of water in the process of grinding up and separating minerals from ore, and leave behind waste rock that has been reduced to the consistency of sand, which is referred to as tailings and deposited into tailings ponds. A tailings dam is the physical structure that holds in, or impounds, the tailings pond, which serves the dual role of containing the ground-rock tailings from the ore-milling and separation process and recycling the water to be reused in processing (Penner, 2014).

[2] Liquefaction is a process whereby a solid material such as sand loses strength and stiffness and behaves more like a liquid. It is a common cause for the collapse of dams holding mining waste, known as tailings, because the walls of these dams are mostly built with dried tailings which consist of a mixture of sand and clay-like mud (Schmitt et al., 2017).

Figure 1: The village of Bento Rodrigues, destroyed by the mine collapse (Photo: Senado Federal, via flickr)

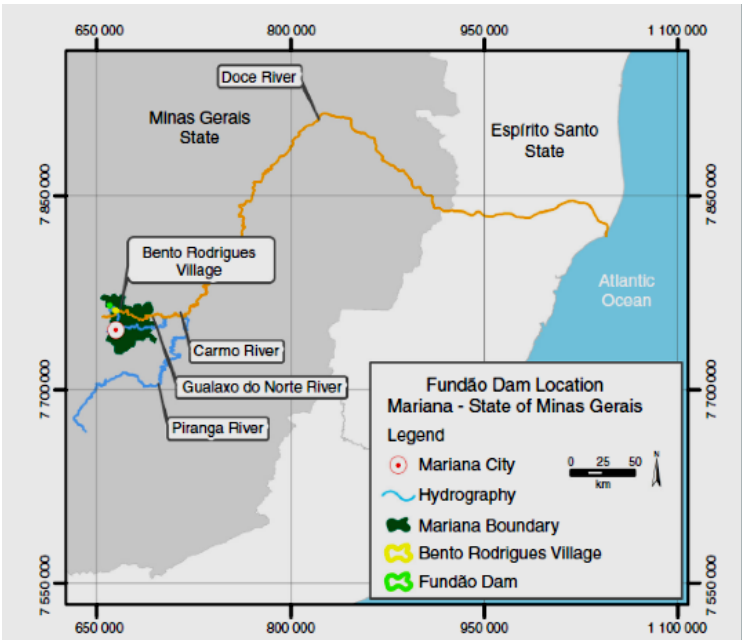


Figure 2: The village of Bento Rodrigues, destroyed by the mine collapse (Photo: Senado Federal, via flickr)

natural reserves and Krenak indigenous land were adversely impacted (Hatje et al., 2017). The contamination left cities without water and economic activities like fisheries and agriculture had to be stopped. Research reveals that the toxicity still continues to destroy aquatic life, flora and fauna (Hatje et al., 2017). According to Federal Public Ministry, at least three indigenous people's territories were affected, besides protected traditional communities such as quilombolas (MPF, 2016)

4. Violations of human and indigenous community's rights

Experts claim that the losses because of the dam failure to individuals, environment and society are immeasurable. Some scientists believe that it might take up to 20 years for the river basin to recover from the pollution caused by the tailing slurry (AGU, 2015). Other researchers are of the opinion that it might just be an irreversible damage (Tuncak, 2017). Some of the violations of the indigenous community's rights as cited in the literature have been delineated below.

- a) According to the Public Ministry of the State of Minas Gerais, some of the human rights abuses and violations are the breach of the right to life, health and family; the right to property and housing; the right to work; the right to water and healthy environment and the right to participate in public affairs (Leitao, 2017).
- b) It is evident from the reporting of the tragedy that both the State and the responsible companies, Vale and BHP Billiton were ill-equipped to deal with an environmental and human disaster of this magnitude. The violations committed by the Brazilian government and the companies are the absence of emergency assistance to victims; the noncompliance with the duty of information; and violation of the rights to water, health, housing, life and physical integrity (OHCHR, 2012; Conectas Human Rights, 2016).
- c) As per Articles 3, 4, 5, 13, 18, 19, 23, 27, 32 of UNDRIP and Article 7 and 15 of the ILO 169 Convention, indigenous peoples must be consulted and represented through their own institution, in conformity with their customs and traditions when resource management projects are applied to them (International Labour Organization (ILO), 1989; United Nations Declaration, 2008). In the case of Samarco project, no evidence was found regarding public participation in the preparation of a contingency plan and delivery of proper guidelines to the communities on the procedures in case of emergency. Preliminary investigations revealed that even an audible alarm system to alert the communities in case of an accident was missing and people did not have training on evacuation strategy (Zhouri et al., 2017).
- d) The breach of the right to information on social and environmental risks, post the dam failure also occurred on several fronts. The municipalities initially took action to cut off the water collection from River Doce as the mud was advancing. However, there are evidences that some cities resumed collection even after there were reports suggesting presence of heavy metal above the limits established by legislation (Conectas Human Rights, 2016; Segura et al., 2016).
- e) Reports also suggest that the fundamental right of the affected individuals and communities to have access to effective administrative and judicial remedies were also violated according to ICCPR , Article 2- 3 a & b and UN Guiding Principles on Business and Human Rights, Principles 22, 25, 26 (UN General Assembly, 1976; OHCHR, 2012)

5. Recovery plan

Samarco, Vale and BHP Billiton, on March 2nd 2016, signed a Framework Agreement, "Term Adjustment of Conduct" with the Federal Government and the Governments of Minas Gerais and Espírito Santo as well as other government entities, with the objective of implementation of measures aimed at the social, environmental and economic recovery of the regions impacted by the Fundão dam failure (Conectas Human Rights, 2016; Tuncak, 2017). The programs reiterate the commitment to repair, restore and reconstruct the damages caused to the surrounding environment and communities. In order to ensure that the remedial actions had legitimacy, the Framework Agreement also created the Renova Foundation, which is responsible for the execution of these programs (BHP, 2016, 2017; Samarco, 2016).

6. Questions for deliberation

- a. How is Krenak community responding to the disaster?
- b. What has been the progress made on the recovery plan? How is the Brazilian Government ensuring the business enterprises meet the minimum international standards of protection of human rights?
- c. Discuss ways in which businesses can build an inclusive, transparent and accessible consultation mechanism to incorporate the demands of indigenous communities and civil society during project planning?
- d. How should businesses be reprimanded for violation of human rights and indigenous community rights? What steps can the affected community take in case their rights are violated?

References

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Case 2

HUMAN RIGHTS AND INDIGENOUS RIGHTS - A CASE STUDY OF OMO RIVER BASIN DEVELOPMENT IN ETHIOPIA

1. Context

The critics of dam and river basin development projects have often indicated the social, environmental and economic impacts including violation of human rights and rights of indigenous communities underpinning these projects. The instances of such violations, displacement of communities and political supression has been rampant in many of these projects in Africa (Carr, 2017). However, these rights violations take an extreme form in the lowermost Omo River basin and northern Lake Turkana region. The Omo River is a lifeline for southwest Ethiopia's indigenous peoples whose food security and economy depend on the river's seasonal flooding and subsequent flood-retreat cultivation of the river banks. The Lower Omo Valley is home to an estimated 500,000 people, a significant number of whom practice traditional agro-pastoralist livelihoods (Hathaway, 2009). At least eight distinct indigenous communities depend on the river's flood cycle within the isolated Lower Omo Valley: the Mursi, Bodi, Muguji (Kwegu), Kara (Karo), Hamar, Bashada, Nyangatom and Daasanech (CESI, 2009). Since 2006, construction of the Gibe 3 hydropower dam project has been underway on the Omo River, and two more dams (Gibe 4 and Gibe 5) are planned. The Gibe 3 dam represents a milestone project in Ethiopia's energy development as it was planned to double the nation's power generation for domestic development (mostly urban and industrial) and to launch the export of electricity to surrounding countries for a planned East Africa energy network supported by international aid. The dam that is 243 m high ranks as one of the tallest dams in the world. It is designed to generate 1870 Megawatts (MW) of electricity (6500 GWh per year) from ten turbines, each with 187 MW capacity(Carr, 2017).

2. The problem

It is projected that the Gibe 3 Dam will greatly alter the flow and reduce the seasonal flooding of the Omo River, which provides up to 80-90% of the flow into Northern Kenya's Lake Turkana. According to official Gibe 3 project documents, more than 21,000 families are directly engaged in flood retreat cultivation on nearly12,000 hectares along the Omo River in the Lower Omo Valley (Carr, 2016). The rights of these indigenous communities or the risks that the Gibe 3 Dam poses to them have not been effectively considered by the Government of Ethiopia (GOE). There are continued concerns that the project shall result in violations of human rights outlined in Ethiopia's constitution (FDRE, 1994) and the UN Declaration on Indigenous Peoples (United Nations Declaration, 2008). The point to be noted here is that if Omo River's seasonal flood diminishes, it will disrupt the entire subsistence economy of the Lower Omo Valley. This will have a dual impact – both on the food security as well as regional peace and security. The mitigation and compensation measures are estimated to be wholly insufficient, depressing the existing subsistence economy and impoverishing a politically vulnerable population (Hathaway, 2009).

Figure 3: Ethnic groups in the tri-nation transboundary region (Carr, 2016)

3. Impacts

- a. It is expected that the Dam would drastically reduce the Omo River's downstream flow and cause drastic decrease in inflow to Lake Turkana (CESI, 2009). This would cause the lake to retreat and lead to the shrinking of near shore fish reproductive habitat that are essential to the survival of thousands of fishing and pastoral indigenous residents. It would also destroy the pristine Omo riverine forest, which is the last of its type in Sub-Saharan Africa and one of the richest remaining wildlife areas of Ethiopia. The destruction of pastoral, agro pastoral and fishing livelihoods would rapidly lead to major humanitarian disaster, with widespread conditions of starvation, disease and spiraling inter-ethnic armed conflict in the tri-nation border region as groups desperately compete for vanishing resources (Oba, 2009; Gil-Romera, Turton and Sevilla-Callejo, 2011; Worku et al., 2014).
- b. There have been three tunnel disasters that have occurred at the 26 km Gibe 2 tunnel project—in 2006, 2007 and 2010. There are evidences of these disasters being associated with seismic occurrences. Experts fear similar threat to Gibe 3 dam and are of the opinion that even if the dam itself remains intact after a seismic event, it is possible that springs, leaks and seepage developing in the adjacent rock abutments could cause a dam failure. This danger stands despite the design precautions taken while building the Gibe 3 dam (Carr, 2016).
- c. The resource distribution, access and availability crisis that has been created due to construction of Gibe 3 dam is leading to transboundary conflicts. This is primarily due to worsening resource deterioration and poverty conditions throughout, continued dispossession fueled by government policies, prolonged droughts and disease outbreaks. There are also reports of upward spiral of violence due to expansion of arms trafficking throughout the region (Carr, 2016). Impacts on social exchange among pastoralists have also been noted in the region (Abbink, 2009). There are also accounts of destruction of riverine forest- based secondary food production for local residents, including wild food gathering, beekeeping, hunting and other activities essential to the survival of the most disadvantaged indigenous communities in the lowermost Omo basin (Carr, 2017). The decrease in flow has also contributed to limited ground water recharge in the dryland plains lateral to the lower Omo River channel, causing grassland deterioration and accelerated desertification. Further, there has been major 'outmigration' by thousands of households in response to their livelihoods collapsing in the Omo riverine and northern lake region.
- d. U.N. and non-governmental aid organizations have assessed a 40% increase in malnutrition throughout the region, with conditions of starvation taking hold in both riverine and regional dry land plains areas. There is escalation in disease incidence and conditions promoting cholera, malaria and dysentery (United Nations (UN), 2010). The heightened salinity of the lake waters is a threat to the availability of potable water for consumption by local residents and livestock. There has been a drastic reduction of fish stocks which is severely affecting indigenous fishing communities.

An armed Turkana man on the shore of Lake Turkana. Locals fear the completion of the Gibe III dam could exacerbate tension in the region between Kenyans and Ethiopians. Photograph: Siegfried Modola/Reuters

4. Violations of human and indigenous community's rights

Policies to effect the Gibe 3 dam is anticipated to violate the U.N.-recognized human right to adequate water and its associated right to livelihood for the indigenous residents living around Omo river basin(UN Human Rights Council, 2011). The United Nations drafted the International Covenant on Economic, Social and Cultural Rights (ICESCR) in the 1950s, in accordance with the Universal Declaration of Human Rights (UDHR)—passed in 1948 by the General Assembly. Both Kenya and Ethiopia have signed and ratified the ICESCR— in 1972 and 1993, respectively. The Articles of the Covenant most relevant to the human rights have been enumerated below(ICESCR, 1976):

- Article 1(2): In no case may a people be deprived of its own means of subsistence.
- Article 2(1): "Each State Party to the present Covenant undertakes to take steps, individually and through international assistance and co-operation, especially economic and technical, to the maximum of its available resources, with a view to achieving progressively the full realization of the rights recognized in the present Covenant by all appropriate means, including particularly the adoption of legislative measures.
- Article 11(1): "The State parties to the present Covenant recognize the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions.

- Article 12 (1, 2): "The States Parties to the present Covenant recognize the right of everyone to the enjoyment of the highest attainable standard of physical and mental health." and "The steps to be taken by the States Parties to the present Covenant to achieve the full realization of this right shall include those necessary for...The prevention, treatment and control of epidemic, endemic, occupational and other diseases."

The construction of the dam began in December 2006 without conducting and environmental or socio- economic impact assessment. The Ethiopian law requires that the assessment be approved prior to major capital projects are undertaken. The assessment began three years after Gibe 3 construction began and Ethiopian Electric Power Corporation (EEPCO) released two environmental and socioeconomic impact assessments (ESIAs), both of which are considered to be fundamentally flawed as the assessment was done only for the vicinity of the Gibe III dam under construction—omitting the entire downstream impact zone in both Ethiopia and Kenya (CESI, 2009).

a. Violation by the Ethiopian Government

Literature reveals that the GOE has blatantly ignored ICESCR recognized human rights in its pursuit of the Omo River basin developments regardless of foreseeable massive scale livelihood and human destruction throughout the region. This is evident from their plan to construct the dam and the associated infrastructure and an electricity export system without taking into consideration the survival needs of the affected indigenous peoples in Ethiopia and Kenya. The impacts on the life and livelihoods of communities due to reduction in flow, retreating of the lake, brutal expropriation of indigenous lands, and eviction of communities from their village and the ongoing denial of their right to political expression or dissent are few of many violations by the GOE. These are in violation with the Articles 40, 41, 44, 90 and 91 of the Constitution of Ethiopia (FDRE, 1995). The failure to conduct a downstream environmental and socioeconomic impact assessment (ESIA) prior to the commencement of the project, inform and consult people prior to the inception of development and implement a valid assessment of the efficacy of 'compensation' or 'mitigation' for the indigenous residents are the other violations by the GOE. Further, a high proportion electricity that is generated by the plant is slated for export and the electricity costs in Ethiopia are also predicted to rise by a minimum of 200 % rendering the disadvantaged Ethiopian citizens with no means to purchase available electricity(Carr, 2016).

b. Emerging human rights violations in Kenya's Lake Turkana Region

The government of Kenya (GOK) is legally bound by the ICESCR treaty to take "deliberate and very specific steps" to ensure the realization of human rights (ICESCR, 1976). Large number of indigenous Kenyan citizens face calamitous level of destruction of their means of survival from the project. The claims by GOK on negotiations with GOE on investigation of the impacts and safety of Kenya's indigenous population till date is only remains on paper. Infact it is reported that they remained hand in gloves with the GOE in execution of the project. The GOK's demonstrated indifference to the plight of its indigenous population around Lake Turkana is in violation of its 2010 Constitution—particularly Articles 43, 69 and 70; Kenyan national legislation; requirements set by the National Environmental Management Authority (NEMA), as well as the ICESCR (National Council for Law, 2010). The widespread pleas by Turkana fishing communities for protection of their fishing rights went on deaf ears. The mention of lake retreat and its impact was not highlighted by the GOK during the consultation process. Instead the consultants in their written report mentioned that their role was to describe the "benefits" of the dam for local the communities (African Development Bank, 2010).

c. International Development Bank collaboration with human rights violations

Carr (2016) in his book highlights that "while the Ethiopian and Kenyan governments are most immediately responsible for the human rights violations underway in transboundary region, the international development banks—particularly the World Bank and the African Development Bank—have been collaborators in these violations" (Carr, 2016). Actions taken by the World Bank and African Development Bank with regard to the Gibe 3 dam and its intertwined developments violate the International Covenant on Economic, Social and Cultural Rights (ICESCR) and other international standards, as well as their own internal operational policies. World Bank required procedures pertaining to dam developments are delineated in the bank's Safeguard Policies and Performance Standards, its Operational Policies series (OP 4.0) and Bank Procedures (BP). These include requirements and procedures concerning environmental and social impact assessment, indigenous peoples, involuntary resettlement, participation and informed consent, and a host of related issues (The World Bank, 1999). It is true that no direct bank funding was finalized for the Gibe 3 dam's actual construction but evidences are there that the two banks AFDB and World Bank have supported the project and its linked developments through a multiplicity of other means. The AFDB has provided more than USD 6 million direct funding for the 1996 Master Plan for development of the 'Omo-Gibe' river basin (Avery, 2010). Likewise, World Bank has also been active in many aspects of the Gibe 3 dam's planning and legitimation, despite its preclusion from funding it directly. The World Bank's support for the project is evidenced in these 2004 comments: "The Omo River is particularly important, both for its large annual flow and its irrigation and hydroelectric potential, and its being one of the principal basins where there is unlikely to be any objection by downstream countries. There is no significant use of the Omo River by any other country and the river enters Lake Turkana within the boundaries of Ethiopia. It should, therefore, be relatively easy to negotiate a 'no objection' from Kenya should that is required for multilateral/bilateral funding" (The World Bank, 2004; Africa Resources Working Group, 2009).

5. Questions for deliberation

- a. The Gibe 3 dam was inaugurated in December 2016. What are the immediate effects of the dam and associated infrastructure on the indigenous community?
- b. Is the dam benefitting the community in any way? What steps are the communities taking to collectively bargain for their rights?
- c. How are the Ethiopian and Kenyan Governments planning to ensure that the interests of the indigenous people are given due consideration?
- d. What suggestions do you have to make for sustainable planning of such projects?

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Case 3

WASH AND HUMAN RIGHTS - SAN COMMUNITY IN TSHOLOTSHO DISTRICT IN ZIMBABWE

1. About San Community

The San, also referred to as Bushmen, are indigenous people of Southern Africa who live in or contiguous to the Kalahari Desert region of Botswana, Namibia, Angola, South Africa, Zimbabwe and Zambia. There are about 113,000 San in the region spread across many different groups, each with their own name, customs, culture, history and language. Literature suggests that these people have been living in this region for more than 20000 years (Mitchell 2010, 2013). Traditionally, the San communities lived in groups of 25-50 people who were linked through marriage, kinship and friendship. They mostly practice hunting and gathering for livelihood. (Sapignoli, 2012). Territoriality is an important behaviour seen among San community (Lee, 1979; Silberbauer, 1981; Barnard, 1992). The San territorial unit is like a socio-ecological system containing natural resources which are accessed by the people for basic living.

Though the Zimbabwe Census has no specific mention about the San community in their report, the 'Regional Assessment of the Status of the San in Southern Africa' estimated that there are about 2,500 Tshwa (San) in Zimbabwe, out of which 1,500 people live in Tsholotsho district (Madzudzo, 2001). They constitute 2 percent of Tsholotsho's population (Madzudzo 2001). The San prefer to use distinct names for self-identification and in Zimbabwe they identify themselves as Tshwa. They speak Tshwao language, which is at a serious risk of extinction.

2. Issues

Water and sanitation

As per 2012 Census, 82 percent of the households in Tsholotsho District had access to safe water. However, in Tshwa settlements 73 percent of the households did not have access to clean water. There are only few operational boreholes and most people walk 3-5 kilometers on a daily basis to collect water. The water is drawn from temporary lakes and dams which are shared with livestock; water holes that are frequented by elephants and puddles formed on the roads. Those who have access to paid boreholes are charged approximately $3 per month for using the water. Maintenance issues are a common problem with the boreholes. Issues related to water quality is also there and the community has no effective method to treat the water. Sometimes, people fetch water from Gariya Dam located on River Gariya; the water quality of which is good when the water level is high but the quality deteriorates during lean season. People often dig shallow as well as deep wells in the river to draw water during non-monsoon season. Sanitation among the community is also a major issue with almost the entire Tshwa community defecating in the open (Hitchcock, Clench and Murwira, 2016).

Figure 4: Map of Tsholotsho District indicating the location of the major San settlements(Hitchcock, Clench and Murwira, 2016)

Health

Health issues in Tshwa communities include HIV/AIDS, tuberculosis, malaria, water-borne diseases, hookworm, tick-borne diseases, sleeping sickness, infant diarrhea and alcohol abuse. The infant mortality rate in the district is moderate (28.23 per thousand live births in 2012). There are clinics in the community and the health status of people have improved over the past decades due to efforts by the government to improve preventative and curative health care. Teenage pregnancy rate is high even when people have fairly good knowledge of HIV transmission and condoms are available for free. The clinics and hospitals also provide Antiretroviral drugs (ARVs) free of charge to the people. The problem of diarrhea is mainly because of poor hygiene practices and lack of proper sanitation facilities in the community. Other diseases that are prevalent are Sexually Transmitted Diseases (STDs) such as gonorrhea and chlamydia and schistosomiasis (bilharzia or snail fever). Malaria is a problem mainly in the rainy season and there have been episodes when the entire village was down with malaria and people had difficulty collecting food or water or working in the fields. People who have worked in the tobacco fields are found to have illnesses related to tobacco poisoning or pesticides (Hitchcock, Clench and Murwira, 2016).

Climate change

Tsholotsho district is susceptible to unpredictable extreme weather events, both droughts and floods due to impacts of climate change. Erratic weather condition is already impacting agriculture production, livestock farming, availability of water for human consumption, fishing, and gathering of natural products like mopane worms, tubers and water lilies. The area in which Tsholotsho District falls is considered to be the driest agricultural area in the country (Moyo et al. 1991). Water bodies in the district include the Nata River and the Gwayi River and a few ponds or pools. Rainfall is low and ranges between 300-500 mm per annum. Droughts are common, and there have been instances of severe droughts in 1933, 1947, and the early 1980s and in 2012 (Hitchcock, Clench and Murwira, 2016).

Other issues

Unequal living conditions like lack of access and rights to land, poor housing and inadequate access to tools, ploughs, seeds, and draught animals were also prevalent among Tshwa. Poverty and hunger is rampant among the people. Since they do not have sufficient resources to produce

enough grains for themselves, they are compelled to work for other people in exchange for food. Education is another matter of concern with children not making beyond primary school. The community also faces discrimination and marginalization and their desire to hold on to their culture, values and tradition comes as a major impediment in mainstreaming them with the larger Zimbabwean community (Hitchcock, Clench and Murwira, 2016).

3. Human and indigenous community's rights

The rights to territories in the Tshwa territorial system are inherited from predecessors. People also establish occupancy rights by colonizing an area which had not been occupied for a substantial period. Customary rights to land is obtained through colonization, long- term association, or seeking permission from other groups. Tenure rights over the water can be obtained by the Tshwa that had invested time and energy in improving the water points like sip-wells (Owomoyela, 2002; Mgadla, 2008).

National

- a. According to Government of Zimbabwe (GOZ), all Zimbabweans are indigenous and there is no separate recognition given to San as a vulnerable or indigenous group nor does it use the term indigenous in its international understanding adopted by the United Nations and the African Commission on Human and Peoples' Rights (ACHPR) who define indigenous peoples as marginalized minority groups whose livelihoods and cultures are threatened (ACHPR, 2005, 2006, Anaya 2009). Instead, the Government of Zimbabwe's Indigenization and Economic Empowerment Act, (2007, Part 1(2)) states that "Indigenization means a deliberate involvement of indigenous Zimbabweans in the economic activities of the country, to which hitherto they had no access, so as to ensure the equitable ownership of the nation's resources".
- b. In November, 2006, Zimbabwe was among the group of African states that asked for clarification of the concept of indigenous peoples, prior to the finalization of the draft United Nations Declaration on the Rights of Indigenous Peoples (UN- DRIP). Zimbabwe later voted in favor of the Declaration on the Rights of Indigenous Peoples when it came up for a vote in the United Nations on September 13th, 2007.
- c. Zimbabwe's Constitution, which was updated in September 2013, contains sections relevant to indigenous peoples. It identifies "Koisan" as one of the 16 recognized languages of Zimbabwe. (Vossen, 2013). The wording of the Constitution promotes equitable treatment, development, and use of the 16 official languages. The Tshwa however are not in agreement to the use of the term "Koisan", mentioning that their language is Tshwao. Other sections of relevance to indigenous peoples are promoting actions to empower "all marginalized persons, groups and communities in Zimbabwe" and the protection of "indigenous knowledge systems, including knowledge of the medicinal and other properties of animal and plant life"; Communal Land Act; Forest Act; Natural Resource Act; Education Act; and Communal Land Forest Produce Act. The Education act specially highlights that "no child in Zimbabwe shall—(a) be refused admission to any school; or (b) be discriminated against by the imposition of onerous terms and conditions in regard to his admission to any school; on the grounds of his race, tribe, place of origin, national or ethnic origin, political opinions, colour, creed or gender (Part II, 4[2]) (Government of Zimbabwe, 2013)."

International

- a. Zimbabwe by voting in favour of UN- DRIP in 2007, has indicated its commitment to ensuring the rights of its indigenous peoples to maintain and strengthen their own institutions, cultures and traditions, and to pursue their development in terms of rights to self-determination.
- b. Zimbabwe is also a signatory to various international conventions relevant to indigenous peoples- International Convention on the Elimination of all Forms of Racial Discrimination (ICERD), ratified in June, 1991; UN Declaration on the Rights of Persons Belonging to National or Ethnic, Religious and Linguistic Minorities (UNDM),adopted in June, 1991; Convention on the Elimination of All Forms of Discrimination against Women (CEDAW),ratified in June, 1991; United Nations Convention on the Rights of the Child (CRC), ratified in 1995; Convention on Biological Diversity (CBD) was ratified in 1994 and African Charter on Human and Peoples' Rights; ratified in 1988.
- c. Zimbabwe has not ratified the Indigenous and Tribal Peoples Convention, 1989 (No. 169), adopted by the International Labour Organization (ILO), the only updated and current international convention on indigenous peoples' rights ((International Labour Organization (ILO), 1989; Anaya 2009).

Rights-based approach

The GOZ does not recognize the concept "indigenous peoples" and instead advocates in public statements and policies what it terms as "indigenization" which refers to localization, empowerment, and expansion of economic opportunities for all Zimbabwean groups considered to have been disadvantaged before independence. However, GOZ does not have a government unit or programme devoted specifically to minority affairs. Many of the hunter-gatherer groups in Southern Africa—including the Tshwa of Zimbabwe—identify themselves as indigenous peoples (Sapignoli 2012; Lee 2013) as they believe that have resided in the area for generations. The also have a history of hunting and gathering, and foraging that is viewed as an important part of their identity. Notwithstanding, marginalization and discrimination has put their culture and identity under threat. A common misunderstanding about rights-based approach is that protecting the rights of indigenous peoples means giving special rights to one group over another leading to unfair situations with respect to the delivery of services and development assistance. It is pertinent to understand that indigenous people are only asking for equitable treatment and not special treatment. They deserve to get the same rights as other groups- the right to representation, the right to organize and take part in the political process, the right to be consulted, and the right to benefit equally from development projects(Hitchcock, Clench and Murwira, 2016).

4. Questions for deliberation

- a. What according to you should be the approach taken by the Government of Zimbabwe to ensure that the rights enshrined within the Zimbabwean Constitution, national acts and international conventions to which Zimbabwe is a signatory, are applied with equal merit to all populations within the country?
- b. Discuss the different context specific gender-based programmes that can be undertaken to improve the socio-economic conditions of the San Community.
- c. Discuss the participatory approaches that can be applied for improving water, sanitation and health situation among the community in the light of climate change.

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Case 4

INDIGENOUS WATER RIGHTS-
QUECHUA PEOPLE FROM CHINCHERO, PERU

1. About Quechuas

Quechua, with a population of around 2.5 million, is the largest indigenous community of South America. The Quechua were among the earliest peoples who were conquered by the Inca Empire, and coincidentally spoke the same language. Here, it is important to distinguish between the indigenous Quechua community from the speakers of Quechua whose population stands at about 10 million (Waddington, 2003). Quechua is not a single tribe and comprise of several indigenous groups like the Q'ero and the Wankas in Peru, the Kichwas and Otavalos in Ecuador, the Ingas in Colombia, and the Kolla in Bolivia. It continues to be a living Andean culture as the Quechua language is recognized alongside Spanish as the national language in Peru since 1969 (Cárdenas, 2007).

2. Water governance in Peru

Water in Peru is governed by the Ministry of Agriculture and Ministry of Health through National Directorial for Water and Sanitation – DNS, National Institute for Natural Resources (INRENA) and Water, Land and Watershed Management National Program – PRONAMACHCS among others (Alegría, no date). The legal framework for water management in Peru is ruled by the General Water Law, 1969 which consists of six major features (Alegría, no date):

- Water resources are property of the State;
- Water rights transfers are prohibited;
- Water authority for quantity issues is within the Ministry of Agriculture; for quality issues authority is Ministry of Health;
- Law is biased to agricultural use (irrigation) and to the coastal region conditions;
- Customary law in Andean region is ignored and not acknowledged; and
- Water quality issues are poorly addressed.

The government authorities have however granted total rights of drinking water supply to the public company SEDACUSCO S.A. They are permitted to draw water from Lake Piuray and the adjacent springs through various administrative resolutions. There is also a parallel system of water governance endorsed by the indigenous communities called the indigenous cosmic-vision that provides a "local indigenous water law and legal water management principles" explained as a common law system based on customary norms which is not recognized by the government (Boelens, Dourojeanni and Hoogendam, 2005). Quechuas regard water as sacred and therefore for them its use is also aligned with the traditional wisdom that forms a part of the Andean culture.

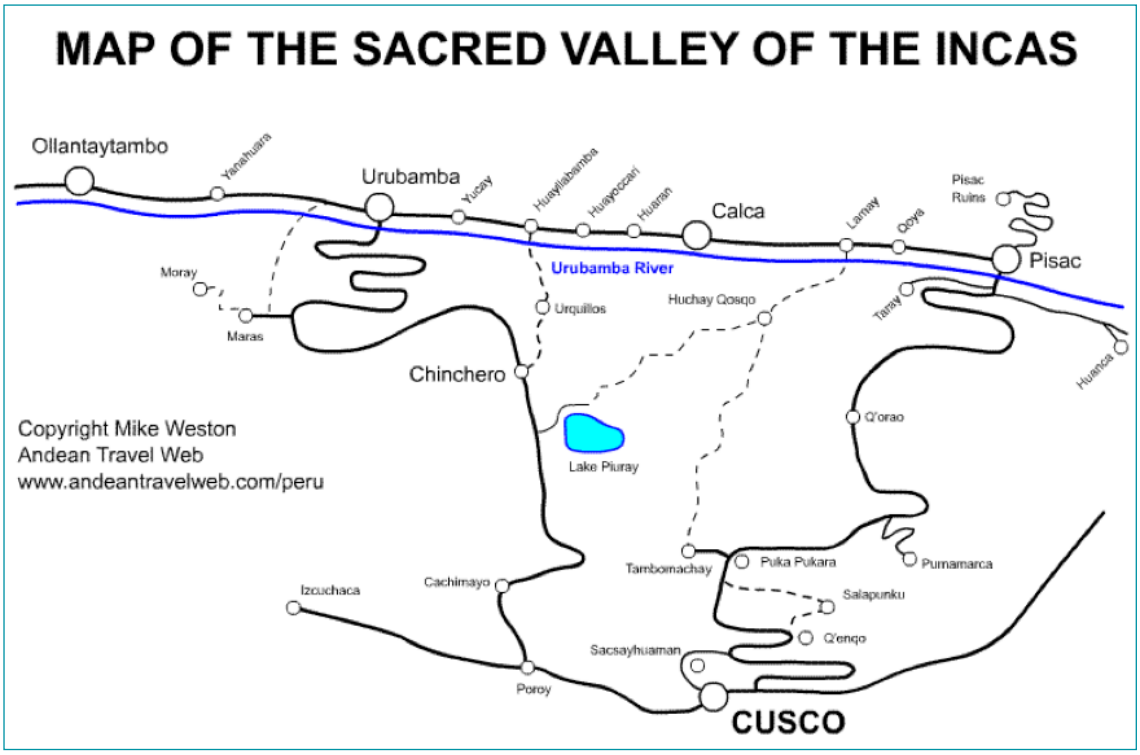
Figure 5: Peru's Quechua minority have endured centuries of hardship but their pride and traditions persist. Photo Credit: Ana Castañeda Cano; Source:https://www.peruforless.com/blog/quechua-cultural-heart-andes

3. The problem

Lake Piuray as shown in Figure 6, and the surrounding area in the district of Chinchero has been the territory of the Quechua since the time of the Inca Civilization. The information related to this is documented in the Cusco departmental file (Cárdenas, 2007).

However, the community is excluded from the drinking water supply from the Lake Piuray. Consequently, they are forced to use water from the springs and dug wells to meet their water requirements (Cárdenas, 2007). The grant of water rights to SEDACUSCO S.A by the government in the year 1970, clearly violates the ancestral rights of the Quechuas. Indiscriminate withdrawal of water from the lake has degraded the agricultural land surrounding the lake. The two major episodes of soil erosion in 1993 and 2000 have rendered the soil unproductive and severely damaged more than 40 hectares of potato and beans growing land. The visits by the affected communities to the water utility for compensation was also in vain. The deprivation due to crop loss further impacted the education with children having to drop out from the schools. The status quo remained even after the intervention by the Mayor as the representative of SEDACUSCO mentioned that they were already paying taxes to the Ministry of Agriculture for the income that they are generating. Ironically, neither SEDACUSCO nor the Ministry of Agriculture are taking the ownership of maintaining the lake and it is still being managed by the community because of their spiritual connect with water. However, a fresh negotiation with the water utility in 2006 led to the creation an 8litres/sec plant for supplying water to 20 communities out of the 70 living in Chinchero district.

Figure 6: Lake Piuray and the sacred valley of Incas



4. Water resources regulations for indigenous peoples

- a. Peru has ratified ILO Convention 169 which provides that governments shall respect the special importance for the cultures and spiritual values of indigenous peoples of their relationship with the lands they occupy or otherwise use. Fundamental is the idea that indigenous peoples, through their traditional means of occupancy and use, are entitled to a continuing relationship with their land and its resources. Further, Article 14 states that, "The rights of ownership and possession of the peoples concerned over the lands, which they traditionally occupy, shall be recognized. In addition, measures shall be taken in appropriate cases to safeguard the right of the peoples concerned to use lands not exclusively occupied by them, but to which they have traditionally had access for their subsistence and traditional activities…."(International Labour Organization (ILO), 1989)
- b. The Indigenous Peoples' Kyoto Water Declaration, 2003, give indigenous communities the right to forming a network that will encourage local communities to protect their water rights. Principle 16 states that "self-determination includes the practice of our cultural and spiritual relationships with water, and the exercise of authority to govern, use, manage, regulate, recover, conserve, enhance and renew our water sources, without interference (Getches, 2005)."
- c. Peru is also a partner in the 'Water Law And Indigenous Rights' (WALIR) programme coordinated by Wageningen University and the United Nations Commission for Latin America and the Caribbean (UN / ECLAC) . The programme aims at informing debates on indigenous and customary rights in water legislation and water policy, both to facilitate local action platforms and to influence the circles of law- and policy-makers. Equitable rights distribution and democratic decision-making and therefore, support for empowerment of discriminated and oppressed sectors, are major concerns (Vincent et al., 2002).

Peruvian government's approach is not concerned with this principle of "consulting" on the indigenous land. The government concessions over water rights are implemented without regard to indigenous community ownership. Today Chinchero faces serious water resource problems caused by the company SEDACUSCO S.A. The indigenous people have taken up the issue with the authorities demanding control of their ancestral land and water resources and collective legal protection, but in vain.

5. Reasons for exclusion from water rights

- From an indigenous point of view, water is consider a living being while the Peruvian government thinks along the lines of hydrological basins. These two approaches contradict each other and disrupt centuries old *"Ayllu "* cosmogony-based perceptions.
- As the water rights were granted to SEDACUSCO S.A by the government to draw water from the lake and springs, with no provision for water supply to Quechua community, the local inhabitants of Chinchero lost access to their drinking water supply.
- Indigenous people lack legal knowledge required for negotiating their water rights and the absence of initiative from the government to apprise them of their legal position, makes them further vulnerable to land degradation and lack of water.
- As far as legal considerations are concerned, Peruvian water policy is based on the General Water Law of 1969, which states that: "All water is, without exception, property of the state. This law is inalienable and irreversible". This means that water rights shall permanently lie with the state.
- While some international organizations such as the Kyoto Water Declaration of March 2003, the ILO Convention 169, as well as the WALIR organization (Water Law and Indigenous Rights) recognize self-determination of ancestral inhabitants with reference to "ownership, control and management of traditional territories, land and natural resources", other entities such as the ICCPR (International Covenant on Civil and Political Rights), perceives self-determination in individual non-collective terms which goes against the indigenous groups who engage in collective negotiations.

6. Questions for deliberation

- a. After reading the case study, what suggestions you would make to the government of Peru to ensure that the rights of indigenous communities are preserved?
- b. How do you think the Quechuas can organize themselves to restore their rights from the government?
- c. How do you think the change in water management culture towards a more efficient, rational use and economic value of water impact traditional peasant and indigenous water management?

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Case 5

PROJECT JALANIDHI-
WATER AND SANITATION IN KERALA IN INDIA

1. About indigenous community in India

India is home to about 700 tribal groups or *'Adivasis'* with a population of 104 million, as per 2011 census (Census, 2011). These indigenous people constitute the second largest tribal population in the world after Africa. The indigenous communities have always been a victim of development as they are not only displaced but are also not given fair compensation for their lands that are encroached upon for industrialization or infrastructure development. The indigenous people in India are largely categorized as Scheduled Tribes (STs) according to the constitution of the country. Some of them are also clubbed with the Scheduled Castes (SCs). The scheduled tribes alone constitute more than 8 percent of the total population of the country (CSE, 2016).

Census 2011 of India shows that just about 11 percent of tribal households in the country have access to tap water and only three percent households have tap water from treated source. Accessibility to tap water, including those treated, differs widely across the states. Only 17 percent of scheduled tribe households have access to improved sanitary facilities as compared with 44 percent among non-Scheduled Tribe households. The people from the indigenous community in India do not consider open defecation to be unhygienic. Having a toilet next to their bedroom or even close to their house is highly despised by them and is considered to pollute the living space. The modern toilets also does not go well with the practices and beliefs of the people. They believe that human excreta should be discharged as far away from human habitation as possible (Joy and Bhagat, 2016).

2. History of rural water supply in India

The rural water supply in India first got attention with the Accelerated Rural Water Supply Program (ARWSP) in 1972 and became a national priority with the introduction of the National Drinking Water Mission in the mid-1980s. This initiative was later named as the Rajiv Gandhi National Drinking Water Mission and a separate department of Drinking water supply and sanitation was set up under the Ministry of Rural Development in 1999. This also saw the decentralization of rural water supply with its management being transferred to Panchayat Raj Institutions (PRI) which represents a local government body. Now, the rural water supply and sanitation forms the part of Ministry of Drinking Water and Sanitation (MoDWS) (Priya, Ajay and Nayar, 2016).

3. Indigenous community in Kerala

Kerala has a very small segment of tribal population accounting only for 1.14 percent of the State's total population. There are 36 tribal groups in the State, according to the Scheduled Tribes Development Department, 2004-2005. In addition, the Government of Kerala (GoK) has identified

Source: http://www.worldbank.org/en/news/ feature/2013/08/12/india-getting-water-on-tap-in-rural-kerala

five primitive groups that are Kattu Naikar; Chola Naikar; Koragar; Kurambar; and Kadars. Though the tribes are spread throughout the State, 61 percent of them are living in the three districts of Idukki (14 percent) and Palakkad (10 percent) in central Kerala and Wayanad (37 percent) in North Kerala (Priya, Ajay and Nayar, 2016). The tribal population is mainly dependent on water from rivers and lakes which are under threat due to land expropriation or encroachment. Access is also threatened due to indiscriminate pollution and over-extraction. Furthermore, indigenous peoples' water sources are also often diverted to provide safe drinking water to urban areas. Consequently, securing indigenous peoples' right to water might often requires action to secure their rights to their ancestral lands, customary arrangements for managing water, as well as the protection of their natural resources (Joy and Bhagat, 2016).

4. Kerala water and sanitation supply and project Jalanidhi

The responsibility of water supply in the entire State of Kerala, India has been entrusted with the Kerala Water Authority (KWA) which was established in 1984 by the GoK. The major sources of funds for KWA are in the form of grants from GoK and Government of India (GoI) and revenue collected from the supply of water and sewerage charges. In the initial years the projects were highly centralized and had several limitations like inequitable coverage, lack of reliability, poor quality, etc. and was unable to meet community expectations. Responding to these challenges, in the year 2000 the Sector Reform Project (SRP) was launched nationally. The goal of the project was to introduce demand responsive approaches, community participation, and decentralization of powers for implementing and operating drinking water supply schemes (Priya, Ajay and Nayar, 2016).

Kerala Rural Water Supply and Environmental Sanitation Project or Jalanidhi project is a World Bank approved project aimed to assist GoK in improving the quality of rural water supply and delivery of environmental sanitation services to achieve sustainability of investments. Jalanidhi, which began in 2000, has gone a long way in ensuring that rural families in many water-stressed parts of north Kerala receive a dependable supply of piped water in their homes, at a price that even low-income households can afford (The World Bank, 2013). This was achieved through:

- Establishing state capacity to implement a new decentralized service delivery model and building the state's capacity to manage and scale-up the new decentralized model state-wide; and
- Demonstrating that communities can plan, manage, build, and operate rural water supply and environmental sanitation, and finance operation and maintenance costs.

This enabled the communities to come forward and work with technicians to specify their own water and sanitation schemes and build them using mostly community engagement (Priya, Ajay and Nayar, 2016).

Jalanidhi, has also played a leading role in turning Kerala into an Open Defecation Free (ODF) state, by constructing over 39,000 household toilets in 115 Jalanidhi project Gram panchayats across eight districts as part of Swachh Bharath Mission (Clean India Mission), a flagship programme of the Government of India. They have been successful in accessing difficult terrains to build 700 household toilets even in tribal hamlets (Deccan Chronicle, 2016).

5. Highlights of Jalanidhi project

- The project had special provisions to include vulnerable people such as tribal and scheduled caste communities as well as fishing community within the project's ambit.
- Assistance was provided to small groups of households to build and run their own water supply schemes. They were helped to dig new wells or drill bore-wells to draw water from the springs, streams, rivers and lakes.
- Help was also given to build storage tanks and lay down pipes to distribute water to village homes on a cost sharing basis. While the state government bore 75 percent of the capital expenditure, the gram panchayat (village office) paid 10 percent, and the beneficiaries themselves 15 percent.
- Water distribution and collection of tariff is managed by the community members mostly women self-help-groups (SHG)
- The success of the project has helped dispel a number of myths like piped water supply is a privilege only for the rich and that the poor are unwilling to share the capital costs of their schemes, or pay the cost of operations for the water they use.

6. Gender equity and benefits

- Women have benefitted the most with water being available on tap. They no longer have to spend hours collecting water for their homes which gives them free time to work and supplement family incomes.

- Kerala has a tradition of men moving overseas for work. With water management being formalized, many women are taking leadership roles in managing the water supply schemes.
- The improvement in water quality has led to improved health and hygiene and decrease in the instances of diarrhea and dysentery.
- Good leadership- effective running of the project by bearing all maintenance costs, conducting regular water quality tests, holding monthly meetings, and maintaining accounts properly.
- Social benefits- The group has been able to use the money collected from tariff to fund welfare activities like giving scholarships to deserving students and catering to medical expenses of the needy.

7. Legal and policy framework

- Scheduled Tribes in the State of Kerala are protected by the Kerala Land Reforms (KLR) Act, 1962, Restriction on Transfer of Lands and Restoration of Alienated Lands (RTLRAL) Act, 1975, and Prevention of Atrocities Act, 1989 (Asian Development Bank, 2007).
- Under the KLR Act, 1962, Scheduled Caste (SC) and Scheduled Tribe (ST) families are eligible for 50 percent of lands identified as surplus land in the State. The RTLRAL Act, 1975 enacted in 1982 intends to restrict land transfer by Scheduled Tribe members to non-tribal persons, and to restore lands that have been alienated to non-tribal persons (Asian Development Bank, 2007).
- In 2004, the Ministry of Tribal Affairs, Government of India (GoI), instructed all States to consult the National Policy on Resettlement and Rehabilitation (2004) for matters relating indigenous peoples. The Policy provides guideline for the provision of minimum facilities and compensations towards resettlement and rehabilitation of persons displaced by the acquisition of land for public purposes. However, the National Policy on Resettlement and Rehabilitation falls short of the Asian Development Bank's (ADB's) Indigenous Peoples Policy requirements of "the potential vulnerability of indigenous peoples" should be recognized, and "development interventions that affect indigenous peoples should ensure that they have opportunities to participate in and benefit equitably from the interventions" (Asian Development Bank, 2013).
- Directive from the National Commission on Scheduled Castes and Scheduled Tribes to establish Scheduled Caste/Tribe Commission ensures equality of opportunity for indigenous peoples. It aims to ensure that any bank-assisted development interventions which will have any impact on indigenous peoples will be consistent with the needs and aspirations of affected indigenous peoples and compatible in substance and structure with affected tribes culture and social and economic institutions (Asian Development Bank, 2007).

8. Conclusion

Good human and social capital is critical for success of any project. Of the total projects that were implemented, 80 to 85 percent of them are functional. About 50 percent of these are doing well but in places where good leadership is lacking, there is little sense of participation and projects tend to drag. While people have taken the responsibility to run these projects, it also becomes essential that the Gram panchayats act as the monitoring and evaluation agency for effective running of the projects.

9. Questions for deliberation

- a. How did the indigenous communities benefit from the Jalanidhi project on provisioning water and sanitation to rural communities?
- b. Open defecation is a traditional practice among indigenous communities in India. Do you think construction of toilets alone can help in eliminating open defecation?

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Case 6

WATER AND SANITATION ISSUES
FACED BY INDIGENOUS COMMUNITY IN CALIFORNIA

1. Indigenous community in California

California has the second largest number of federally recognized Native American tribes, and according to the 2010 U.S. Census, it is home to the largest indigenous population in the United States (U.S. Census, 2010). There are currently 109 federally recognized Indian tribes based in California (Federal Register, 2013). Further, there are indigenous communities which existed prior to the formation of the United States but are not currently recognized as sovereigns by the federal government. The United States of America has a well-developed legal and regulatory framework governing the quality and provision of water at both the federal and state level. Despite these measures, disadvantaged communities in California disproportionately bear the health and financial impacts of precarious or inadequate access to safe water. Many marginalized communities in the state are exposed to unsafe drinking water, struggle with inadequate infrastructure, face affordability challenges, lack access to meaningful participation in decision-making, and confront threats to their traditional and ceremonial practices (Safe Water Alliance, 2015).

2. Drinking water and sanitation challenges

There are approximately 125 tribal public water systems in California that are regulated by the USEPA (United States Environmental Protection Agency). Two-thirds of these systems are very small, serving fewer than 500 people and one-third serve fewer than 100 people. 83 percent of these water systems rely on groundwater and 17 percent of the systems are using surface water. Nationwide approximately 48 percent of tribal drinking water systems had health violations or other significant reporting violations in 2010 as against an average of 26 percent for all public systems in the United States (US EPA, 2012). 27 percent of the population served by the tribal water systems in California received a violation in a 3-year period ending March 31, 2012 in comparison to 13 percent of non-

tribal systems. The population percentage served by tribal water systems in California that received a health-based violation is 12 percent as compared to 8 percent for nontribal systems (CWC, 2014).

Majority of the residential homes on tribal land continue to rely on onsite wastewater treatment systems or septic systems. Often these septic systems fail due to the lack of maintenance or if there are too many septic systems in an area and the combined effluent resulting from multiple systems is more than can be assimilated into the environment. In most cases, tribal communities are spread over a large area, thus making it impractical from an engineering standpoint to build a centralized wastewater treatment plant. Further, building infrastructure to convey and treat wastewater can be a huge financial burden on tribal communities, reducing the affordability (CWC, 2014).

The IHS's (Indian Health Service's) Sanitation Facilities Construction program provides the largest annual level of funding for tribal water infrastructure (IHS, 2003). However, the amount of funding was cut by 17 percent in the 2012 fiscal year. Similarly, the President's 2013 fiscal year budget for the U.S. EPA contained a 20 percent cut to the Clean Water State Revolving Fund (SRF) and a 7.4 percent cut to the Safe Drinking Water SRF. These SRF cuts disproportionately affect tribes because they do not have loan repayments to offset the cuts like states do. Even when grants and loans can be obtained, the cost of installing and operating a new treatment system may put a large cost burden on a tribal community because of the small number of people to share the costs.

Significant legislative barriers exist for tribes interested in applying for California SRF funds, because the State requires that only State regulated facilities are eligible for funding. Tribal drinking water systems, which are regulated by the U.S. EPA, are thus not eligible for California SRF funds. Operation and maintenance funding is also critical to ensure delivery of safe drinking water and the sanitary operation. Prior to tribal communities receiving funding for infrastructure projects, they must have the ability to operate and maintain these facilities. For many tribal communities, it is not possible to cover the operation and maintenance costs through increased water rates, since tribal water systems are small, have high poverty levels, and lack income sources. Further, there are a few tribal homes which are not connected to a public water system, and these homeowners often use private domestic wells, the water quality and quantity of which cannot be quantified due to lack of information. Homes that are not connected to a public water system are ineligible for the U.S. EPA Drinking Water Tribal Set-Aside funds, unless a proposed project seeks funding to connect these homes to a public water system (CWC, 2014).

3. Legal and policy framework

Safe Drinking Water Act

In order to ensure that safe water is provided, many tribal communities operate a "Public Water System" (PWS), which must comply with the federal Safe Drinking Water Act (SDWA). The SDWA establishes overall minimum drinking water protection standards for the United States. The federal SDWA authorizes the United States Environmental Protection Agency (U.S. EPA) to establish safe drinking water standards and regulate public water systems to protect human health from contaminants in drinking water. The U.S.EPA and delegated states or tribes are responsible for ensuring that public water systems meet certain requirements for water quality, treatment techniques, operator certification, recordkeeping, and reporting. The SDWA authorizes the U.S. EPA to "treat tribes in the same manner as states" for purposes of approving a federally recognized tribe primary authority to implement and enforce drinking water regulations(US EPA, no date) .

Clean Water Act

The primary function of the Federal Clean Water Act (CWA) is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Similar to the SDWA, under the CWA, tribes may attain the same status as states for the purpose of implementing and enforcing the CWA Water Quality Standards program (US EPA, 1972).

Tribal laws

To reflect their concerns about water quality, many tribes have enacted comprehensive water codes that regulate water use and water quality to promote the public health, safety, and general welfare of its community, in accordance with standards established by the tribe and the federal government (CWC, 2014).

Water and sanitation regulations

The United Nations General Assembly and the Human Rights Council have both recognized the human right to water and sanitation and acknowledged that access to clean drinking water and sanitation are essential to the realization of all human rights (UN, 2010). With this important right in mind, the Human Rights Council appointed a Special Rapporteur on the human right to safe drinking water and sanitation ("Special Rapporteur") and established a mandate to examine crucial issues relating to the right to water with an "explicit focus on the most disadvantaged and marginalized [communities] (United Nations Human Rights, no date)."

The human right to water falls under broader economic, social, and cultural rights found in the Universal Declaration of Human Rights (UDHR) and the International Covenant on Economic, Social and Cultural Rights (ICESCR) (United Nations, 1948; UNHR, 1976).The human right to water derives from three core rights of the ICESCR: the right to an adequate standard of living, the right to health, and the right to housing. The Committee on Economic, Social and Cultural Rights (CESCR), in its general comment on the topic, outlines that states should make water available, accessible, affordable, acceptable and of good quality for everyone, and to take necessary steps to ensure access to water. While the United States of America (United States) has not ratified the ICESCR, it supported the recognition of the right to water by the General Assembly and Human Rights Council (United Nations, 2002).

The human right to water is interpreted to fall under the economic, social, and cultural rights enumerated in other treaties including the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), the Convention on the Rights of the Child (CRC), and the Convention on the Rights of Persons with Disabilities (CRPD). Although the United States has not ratified these treaties, by signing them the United States is obligated to "refrain from acts that would defeat the object and purpose of those treaties."

While the United States is not bound by the ICESCR, its legal obligations under the International Covenant for the Elimination of All Forms of Racial Discrimination (ICERD) and the International Covenant on Civil and Political Rights (ICCPR) require it to ensure nondiscrimination (UNHR, 1969). Nondiscrimination is a core principle underlying international human rights and is outlined as an independent right in the ICCPR. The ICERD requires the United States, as a ratifying party, "to prohibit and to eliminate racial discrimination in all its forms and to guarantee the right of everyone, without distinction as to race, color, or national or ethnic origin, to equality before the law" with respect to, inter alia, social, economic, and cultural rights (UNHR, 1969).

Further, the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) affirms that indigenous peoples have the right to the lands and resources which they have traditionally owned or used and "the right to maintain and strengthen their distinctive spiritual relationship with their traditionally owned or otherwise occupied and used lands, territories, waters and coastal seas (United Nations Declaration, 2008)."

4. Conclusion

The obstacles associated with access to safe and affordable water and sanitation challenges in California, particularly related to the indigenous communities are many and complex. It is difficult to make a comprehensive assessment of the number of Californians without safe drinking water and adequate sanitation due to significant data gaps. There is a need for state agencies to coordinate with local counties so that a statewide assessment of water systems and private domestic wells can be made. Further, a discussion is also needed to determine how to assess the population without adequate sanitation. In addition, there is dearth of funding available for annual operation and maintenance costs associated with a new water treatment plant or new wastewater treatment plant that is needed in a small community to ensure its residents have safe water and adequate sanitation. The bright side to this is that there are regulations which are in place for addressing these issues and the administration is currently pursuing the consolidation of the drinking water and surface and groundwater quality programs into a single agency to achieve broader program efficiencies and synergies that will best position the State to respond to existing and future challenges. This initiative will also better restore and protect water quality and public health for disadvantaged communities.

5. Questions for deliberation

- Discuss the barriers to access to water and sanitation for the Native Americans in California.
- How do you think that the social and cultural rights of the indigenous people are impacted due to development and environmental changes?
- Suggest measures that the federal and state government should pursue to ensure universal access to safe and affordable water for all Californians.

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ANNEXES

ANNEX 1

Indigenous and Tribal Populations Convention - C107 (1957) ratification	Indigenous and Tribal Peoples Convention - C169 (1989) ratification
1. Angola (1976) 2. Bangladesh (1972) 3. Belgium (1958) 4. Cuba (1958) 5. Dominican Republic (1958) 6. Egypt (1959) 7. El Salvador (1958) 8. Ghana (1958) 9. Guinea-Bissau (1977) 10. Haiti (1958) 11. India (1958) 12. Iraq (1986) 13. Malawi (1965) 14. Pakistan (1960) 15. Panama (1971) 16. Syrian Arab Republic (1959) 17. Tunisia (1962) **Initial ratification of 107 – automatic denunciation*	1. Argentina (2001)* 2. Bolivia (1992)* 3. Brazil (2003)* 4. Central African Republic (2010) 5. Chile (2008) 6. Colombia (1992)* 7. Costa Rica (1994)* 8. Denmark (1996) 9. Dominica (2002) 10. Ecuador (1999)* 11. Fiji (1998) 12. Guatemala (1996) 13. Honduras (1995) 14. Mexico (1991)* 15. Nepal (2007) 16. Netherlands (1998) 17. Nicaragua (2010) 18. Norway (1990) 19. Paraguay (1969)* 20. Peru (1960)* 21. Spain (2007) 22. Venezuela, Bolivarian Republic of (2002)

ANNEX 2

Vote on Indigenous Rights Declaration

The Declaration on the Rights of Indigenous Peoples (document A/61/L.67) was adopted by a recorded vote of 143 in favour to 4 against, with 11 abstentions, as follows:

In favour: Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Austria, Bahamas, Bahrain, Barbados, Belarus, Belgium, Belize, Benin, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Cambodia, Cameroon, Cape Verde, Central African Republic, Chile, China, Comoros, Congo, Costa Rica, Croatia, Cuba,

Cyprus, Czech Republic, Democratic People's Republic of Korea, Democratic Republic of the Congo, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Finland, France, Gabon, Germany, Ghana, Greece, Guatemala, Guinea, Guyana, Haiti, Honduras, Hungary, Iceland, India, Indonesia, Iran, Iraq, Ireland, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kuwait, Lao People's Democratic Republic, Latvia, Lebanon, Lesotho, Liberia, Libya, Liechtenstein, Lithuania, Luxembourg, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Mauritius, Mexico, Micronesia (Federated States of), Moldova, Monaco, Mongolia, Mozambique, Myanmar, Namibia, Nepal, Netherlands, Nicaragua, Niger, Norway, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Korea, Saint Lucia, Saint Vincent and the Grenadines, San Marino, Saudi Arabia, Senegal, Serbia, Sierra Leone, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sudan, Suriname, Swaziland, Sweden, Switzerland, Syria, Thailand, The former Yugoslav Republic of Macedonia, Timor-Leste, Trinidad and Tobago, Tunisia, Turkey, United Arab Emirates, United Kingdom, United Republic of Tanzania, Uruguay, Venezuela, Viet Nam, Yemen, Zambia, Zimbabwe.

Against: Australia, Canada, New Zealand, United States.

Abstain: Azerbaijan, Bangladesh, Bhutan, Burundi, Colombia, Georgia, Kenya, Nigeria, Russian Federation, Samoa, Ukraine.

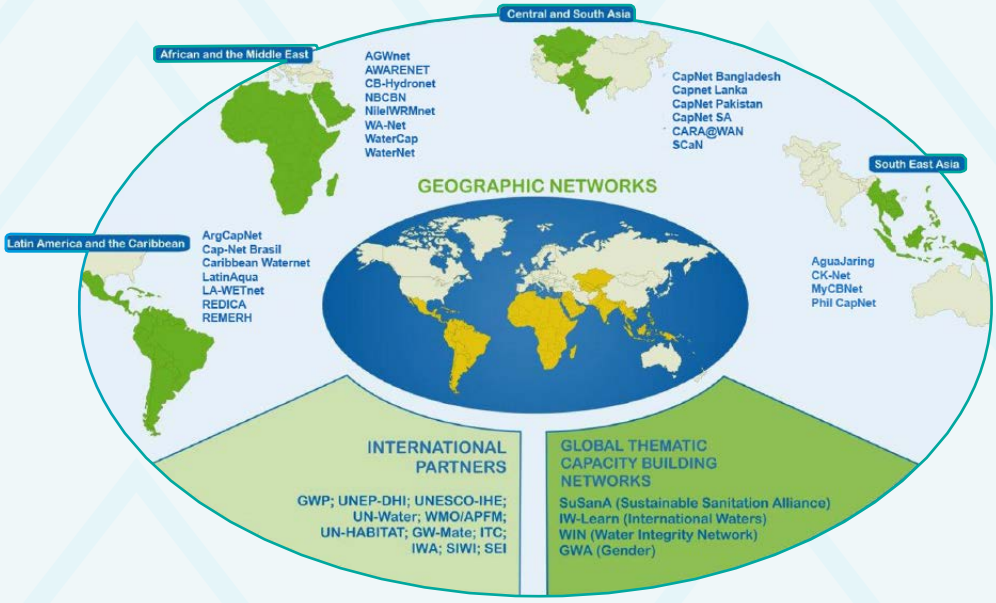
Absent: Chad, Côte d'Ivoire, Equatorial Guinea, Eritrea, Ethiopia, Fiji, Gambia, Grenada, Guinea-Bissau, Israel, Kiribati, Kyrgyzstan, Marshall Islands, Mauritania, Montenegro, Morocco, Nauru, Palau, Papua New Guinea, Romania, Rwanda, Saint Kitts and Nevis, Sao Tome and Principe, Seychelles, Solomon Islands, Somalia, Tajikistan, Togo, Tonga, Turkmenistan, Tuvalu, Uganda, Uzbekistan, Vanuatu.

ANNEX 3

Examples of possible impacts of climate change due extreme weather and climate events, based on projections to the mid- to late 21st century. These do not take into account any changes or developments in adaptive capacity. The 'likelihood' estimates in column two relate to the phenomena listed in column one. (Adapted from IPCC Report, 2007)

Please see the table on the next page.

Phenomenon and direction of trend	Likelihood of future trends based on projections for the 21st century using SRES (Special Report on Emissions Scenarios)	Examples of major projected impacts by sector			
		Agriculture, forestry and ecosystems	Water resources	Human health	Industry, settlement and society
Over most land areas, warmer and fewer cold days and nights, warmer and more frequent hot days and nights	Virtually certain	Increased yields in colder environments; decreased yields in warmer environments; increased insect outbreaks	Effects on water resources relying on snowmelt; effects on some water supplies	Reduced human mortality from decreased cold exposure	Reduced energy demand for heating; increased demand for cooling; declining air quality in cities; increased disruption to transport due to snow, ice; effects on winter tourism
Warm spells/ heat waves. Frequency increases over most land areas	Very likely	Reduced yields in warmer regions due to heat stress; increased danger of wildfire	Increased water demand; water quality problems, e.g. algal blooms	Reduced human mortality from decreased cold exposure	Reduced energy demand for heating; increased demand for cooling; declining air quality in cities; increased disruption to transport due to snow, ice; effects on winter tourism
Heavy precipitation events. Frequency increases over most areas	Very likely	Damage to crops; soil erosion; inability to cultivate land due to waterlogging of soils	Adverse effects on quality of surface and groundwater; contamination of water supply; water scarcity may be relieved	Increased risk of deaths, injuries and infectious, respiratory and skin diseases	Disruption of settlements, commerce, transport and societies due to flooding; pressures on urban and rural infrastructure; loss of property
Area affected by drought increases	Likely	Land degradation; lower yields/crop damage and failure; increased livestock deaths; increased risk of wildfire	More widespread water stress	Increased risk of food and water shortage; increased risk of malnutrition; increased risk of water- and food-borne diseases	Water shortage for settlements, industry and societies; reduced hydropower generation potential; potential for population migration
Intense tropical cyclone activity increases	Likely	Damage to crops; wind throw (uprooting) of trees; damage to coral reefs	Power outages causing disruption of public water supply	Increased risk of deaths, injuries, water- and food-borne diseases; post-traumatic stress disorders	Disruption by flood and high winds; withdrawal of risk coverage in vulnerable areas by private insurers; potential for population migrations; loss of property
Increased incidence of extremely high	Virtually certain	Increased yields in colder environments; decreased yields in warmer environments; increased insect outbreaks	Effects on water resources relying on snowmelt; effects on some water supplies	Reduced human mortality from decreased cold exposure	Reduced energy demand for heating; increased demand for cooling; declining air quality in cities; increased disruption to transport due to snow, ice; effects on winter tourism



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