

**ORIGINAL ARTICLE**

# Indigenous knowledge and implications for the sustainable development agenda

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**Abstract**

With the adoption of the 2030 Agenda for Sustainable Development, the international community committed to address a great number of challenges. Among those emphasised by the SDGs, some are highly relevant for indigenous groups. Education, poverty, access to justice and climate change are only a few of the issues affecting indigenous people's lives. Yet, indigenous groups are not passive actors. Despite being at the mercy of climate hazards and misleading political decisions, the knowledge system they have developed throughout the centuries has helped them to successfully respond to ecological and development challenges. By exploring indigenous cultures and their knowledge systems in greater depth, this article aims to understand how the sustainable development agenda can benefit from these different forms of traditional knowledge. More particularly, it will attempt to explain the main notions in which traditional knowledge is rooted and analyse means of knowledge maintenance and transmission. It will then explore the relationship between indigenous knowledge, sustainable practices and land and resource management, as well as climate change adaptation and disaster risk reduction strategies. These ideas will be supported by a discussion on the need to guarantee indigenous people full access to land and justice in order for them to fully realise their rights. The conclusion reflects on the importance of fostering an integrated system of knowledge in which indigenous groups are involved in knowledge sharing practices and decision making processes.

## 1 | INTRODUCTION

Almost 20% of our planet is home to some 370 million indigenous people, described as 'first' or 'original' people with an historic and cultural bond with the land or territories in which they live (UNESCO, 2016a; UN, 2010). For centuries, they have been subject to invasion and oppression and have often seen their knowledge eclipsed by Western knowledge, imposed on them by Western institutions. For indigenous communities worldwide, maintaining their rights, traditions and knowledge in a system that is still dominated by Western worldviews has been a constant struggle. Yet,

many have managed to survive by adapting in different ways to adverse climate conditions and creating sustainable livelihood systems. Their diverse forms of knowledge, which are deeply rooted in their relationship with the environment and cultural cohesion, have allowed many of these communities to maintain a sustainable use and management of natural resources, protect their environment and strengthen their resilience, whilst facing new and complex circumstances.

Awareness of indigenous populations' sustainable way of living, together with the deterioration of the conditions of the planet, have recently developed the interest of the international community in indigenous knowledge and practices. Indigenous knowledge has thus become a sort of 'remedy for many of the problems [caused] by development strategies during the last decades' (Agrawal, 1995, p. 420). Disciplines such as ecology, biodiversity and environmental conservation, land and natural resources management, health and education are among those that are impacted by the use of this knowledge system (Agrawal, 1995, 2002; Nakashima, Galloway Mclean, Thulstrup, Ramos Castillo, & Rubis, 2012; Warren, von Liebenstein, & Silkkerveer, 1993).

## 2 | INDIGENOUS PEOPLES AND INDIGENOUS KNOWLEDGE

In 1986, José Martínez Cobo, Special Rapporteur of the Sub-Commission on Prevention of Discrimination and Protection of Minorities, provided an innovative definition of indigenous people, stating that 'On an individual basis, an indigenous person is one who belongs to these indigenous populations through **self-identification as indigenous (group consciousness)** and is **recognized and accepted** by these populations as one of its members (**acceptance by the group**). This preserves their sovereign right and power to decide who belongs to them, without external interference' (UNDESA, 2004, p. 2). By giving the term 'indigenous' such a high connotation of empowerment, José Martínez Cobo has shed light on the active engagement of indigenous groups worldwide. They have become a symbol of self-identification, self-determination, sovereignty and resilience in the fight for social justice. Indigenous groups are, indeed, constantly fighting and lobbying for their right of access to their lands. Additionally, they are advocating for the preservation and transmission of their knowledge and traditions and for the right to have their voices heard at the national and international levels. The perspective of indigenous people as active agents of change underscores this article.

The idea of empowerment embedded in the definition of indigenous people is also echoed in the definition and significance of their knowledge. Indigenous, traditional or local<sup>1</sup> knowledge means the knowledge and know-how that are unique to a given society or culture. Cultural traditions, values, beliefs, rules and taboos and worldviews of local people are embedded in this knowledge (AIPP, IWGIA, & SDC, 2012; Dei, 1993). It is indeed the backbone of their social, economic, scientific and technological identity (Odora Hoppers, 2001).

Indigenous knowledge is a complex, complete, dynamic and practical system with scientific and logical validity (Bates, 2009; Battiste, 2002; Sillitoe, 1998). It 'represents generations of creative thought and action within each individual community, as it struggles with an ever-changing set of conditions and problems' (Warren, 1996, p. 3). The strong contextual and cultural connections make indigenous knowledge an essential part of indigenous peoples' lives as it provides the necessary means for their survival. Separating indigenous knowledge from its socio-cultural context becomes meaningless and dangerous, as it may lead to misleading interpretations and misuse of this knowledge (McCall, 1988; UNESCO, 2009).

### 2.1 | *Buen vivir* as an alternative for progress

The increasing interest of the international community in indigenous knowledge situates its systems as 'possible alternative[s] for progress' (Briggs, 2005). This is the case, for instance, of the notion of *buen vivir*, derived from the reaction of Latin and Central American indigenous groups to the negative impact of development strategies on their people and territories. The idea of *buen vivir*, which literally translates as living well, encompasses a set of values and norms that is shared by different indigenous communities worldwide and represents a new conceptualisation of development which comprises aspects such as the rights to land and resources, culture, identity and self-determination (Gudynas, 2011;

Tauli-Corpuz, 2005; UNPFII, 2010). These elements have increasingly constituted the basis of indigenous peoples' resistance against policies and projects which have negatively affected their populations. Community and communitarianism, the harmonious and interdependent relationships between human-nature-universe and notions of equality and complementarity are some of these values (Cunningham, 2010b; Gudynas, 2011; Mollo, 2011). The main reference for natural and cultural property is not the single individual, but the community as a whole. The members of indigenous communities reach and maintain harmonious relationships through a system of equality and respect for all, particularly women and elders, since they are the primary holders and transmitters of traditional knowledge. Other essential conditions related to the well-being of indigenous groups are sufficient food, strong values of caring, reciprocity and solidarity, freedom to express identity and to practise one's culture, and a safe and non-polluted environment (UNPFII, 2010).

The efforts made by indigenous communities worldwide to promote and legitimise the notion of *buen vivir* have resulted in the adoption of regional, national and local perspectives which differ slightly, despite sharing some common principles and values (Cunningham, 2010a,b; Gudynas, 2011; Mollo, 2011; UNPFII, 2010). For instance, in Latin America, the idea has been considered by academics, indigenous leaders, communities and politicians as a guiding principle for a new regimen of development that incorporates the vision of indigenous peoples as well as their traditional knowledge and must be carried out in a collective way (Cunningham, 2010a; Gudynas, 2011; Gudynas & Acosta, 2011). The notion of living well has become so strong in the region that Bolivia and Ecuador have included the concepts of *suma qamaña* and *sumak kawsay*,<sup>2</sup> respectively, in their constitutions. Nevertheless, despite the great contribution of the notions of living well to aspects such as social organisation and economic structure, more efforts are needed to transform these into the whole society's way of living.

## 2.2 | Systems of knowledge transmission

### 2.2.1 | The family and the community

Indigenous knowledge is a 'living process to be absorbed and understood' (Battiste, 2002, p. 15). It is passed on from generation to generation. Factors such as age, gender, experience, political power and occupation influence knowledge transfer. This may generate different systems within the same community and affect a person's quality and quantity of indigenous knowledge (Briggs, 2005; Grenier, 1998; Scoones & Thompson, 1994).

Indigenous groups conceive education as a learning for life experience (Kanstrup-Jensen, 2006). Thus, they ensure the preparation of the individual to fully become a member of their community through approaches based on learning by doing (Preston, 1975, 1982 in Ohmagari & Berkes, 1997), consisting of observations, actions, and interactions with both adult members of the community and the environment (UNESCO, 2009). Experiential learning, such as practical demonstrations, and oral approaches, storytelling, myth narration, metaphors, or songs are also typically used (Battiste, 2002), which makes indigenous languages vital elements for the survival of indigenous knowledge.

In indigenous communities, women and elders play a special role (Ramphela, 2004; Tebtebba Foundation, 2009). They are not only the main caregivers, but also the custodians of traditional knowledge, culture and biological diversity (Cunningham, 2010b; Howell, 2003). Elderly people are the custodians of indigenous knowledge and consequently one of the most valuable sources of transmission (Dweba & Mearns, 2011). In successful education initiatives, such as the Alaska Rural Systemic Initiative, they play a central role in instructional planning, curriculum design and programme implementation in culturally responsive schools. Additionally, they are responsible for carrying out knowledge transmission activities in cultural camps (Barnhardt, 2008; Barnhardt & Kawagley, 2005).

The importance attributed to indigenous women and elders by indigenous societies does not reduce the challenges nor improve the conditions of these specific groups. Most of the time, indigenous women are underestimated and find themselves in a vulnerable position (Gururani, 2002; Ramphela, 2004; Rocheleau, 1991; Schmink & Gómez-García, 2015); whereas, in the case of elders, the growing inter-generational gap often culminates in resistance to the acquisition of traditional practices (Ohmagari & Berkes, 1997; Rocheleau, 1991). The invisibility of women and the inter-generational gap are affecting the ability of indigenous communities to maintain their knowledge. This has severe consequences for younger generations as it weakens their social capital, which may reduce, in turn, their ability to respond to ecological and socioeconomic challenges (Ford, Pearce, Duerden, Furgel, & Smit, 2010). Initiatives at the

national and international levels that promote gender equality and aim at closing the inter-generational gap are key to thwarting this knowledge loss.

### 2.2.2 | Formal schooling

So far, we have discussed indigenous knowledge transmission as a 'family and community affair', but what happens to indigenous knowledge when indigenous children access formal education? Research has demonstrated that the past and current conceptualisation of formal education systems under Western or national norms that promotes homogenisation rather than plurality has resulted in an unquantifiable amount of indigenous knowledge loss since the beginning of the 20th century (Mato, 2015; Stavenhagen, 2015). Among the factors identified as responsible for the Westernisation of the education system are curricula which usually lack contextual relevance and devalue indigenous knowledge (Barnhardt & Kawagley, 2005; Maurial, 1999; UNESCO, 2009); assessment strategies (Barnhardt & Kawagley, 2005); faculty attitude (Radoll, 2015); and teaching methodologies, such as the language of instruction (Batibo, 2009; Wongbusarakum, 2009). In relation to this, it is worth mentioning that 40% of the population worldwide do not have access to an education in their mother tongue. This is particularly true for indigenous populations who are often left behind, since they do not fully enjoy their rights to have an education in their own language (UNESCO, 2016b; UN, 2010).

There have been attempts to include or restore indigenous knowledge and practices through formal schooling in many regions of the world. Intercultural universities in Latin America (Mato, 2008; Schmelkels, 2004) and the Alaska Rural Systemic Initiative (Barnhardt, 2008; Barnhardt & Kawagley, 2005) are two successful examples. Both demonstrate the positive impact of education initiatives that are characterised by dialogue, power balance in the decision making process and mutual respect between the different parties involved. They represent what indigenous peoples are asking for in terms of formal schooling reform, i.e., a culturally-appropriate education with inclusive school curricula reflecting cultural diversity, recognising indigenous languages, and using alternative pedagogical approaches based on different knowledge systems and worldviews (Aikman, 2011; Stavenhagen, 2015). This is the case of Guatemala where indigenous groups set the right to receive a bilingual and intercultural education as a precondition for the peace process in the country (UNESCO, 2016b).

These examples show that education can be both the cause of and the potential cure for the loss of indigenous knowledge (UNESCO, 2009). In the Agenda 2030, having a relevant education for indigenous children means that curricula and classroom practices can no longer ignore indigenous knowledge (Breidlid, 2016). It is therefore crucial to develop and implement education initiatives that aim at integrating knowledge systems and to find a balance among them. These types of initiatives will provide precious 'insights into ways by which we can extend the scope of our education systems to prepare all students [...] to make a fulfilling and sustainable life for themselves' (Barnhardt, 2008, p. 114) and consequently for their communities. Besides the fact that some countries, such as Paraguay, are making progress in improving the quality of education for indigenous children by adapting their national policies, curricula and pedagogical practices (UNESCO, 2016b), governments, educational institutions and indigenous communities need to increase their joint efforts to develop and implement reforms, create more intercultural and inclusive education systems, and empower indigenous peoples.

## 2.3 | Putting indigenous knowledge into practice

### 2.3.1 | Sustainable practices and land and resource management

For indigenous communities, territories are vital, as it is here that social, economic, cultural and environmental activities take place. Sustainable production and consumption practices as well as resource conservation and management techniques are among these activities, mainly based on traditional knowledge and customary systems of governance (Cunningham, 2010a; Hiwasaki, Luna, & Shaw, 2014).

For centuries, indigenous populations have been carrying out practices that are adapted to their lands. Among those that they have recognised as viable and sustainable are rotational farming, shifting cultivation, pastoralism, fishing, agroforestry, and hunting and gathering (International Indigenous Peoples' Summit on Sustainable Development, 2002). Sustainable and resilient ways of living are also promoted by the use of multiple resources and a high

diversity of crops, as well as the development of specific techniques and technologies to carry out their activities in environmentally-friendly and cost-effective ways. These have allowed indigenous people to 'ensure food security while conserving the diversity of wild and domestic plants' (Nakashima et al., 2012, p. 57). Indigenous communities also use cosmivision, which refers to the perspectives, conceptualisations and valorisations that determine their worldviews and relationships (OREALC, 2017) and spiritual practices to ensure biological diversity, ecological equilibrium and a healthy environment, as well as hunting and agricultural activities (González, Machaca, Chambi, & Gomel, 2010; Luzar & Frago, 2013).

### 2.3.2 | Land and resource management: Community and women's role and new livelihood strategies

In indigenous societies, the community's central role transforms territories into collective spaces where fauna, flora and human beings live together in harmony. They maintain this harmony through social mechanisms and customary governance structures for the good functioning of relationships and land management (Nakashima et al., 2012) which include forms of labour exchange, such as the *minga* or *minka* and *ranti ranti* in the Andean Region (Cunningham, 2010b) or the *ug-ugbo* in the Philippines (AIPP et al., 2012; UNPFII, 2010); common property management practices, such as the *kaitiakitanga* in New Zealand (Dodson, 2015; Kahui & Richards, 2014); and water and food protection and conservation techniques such as the *godha* and *thagalok* systems used by the Jumma groups in Bangladesh or the *lampisa* system practised by the Pidlisian-Kankanaeys people in the Cordillera region of the Philippines (Tebtebba Foundation, 2009).

Indigenous women, because of their role as custodians of biodiversity, also play a very important role in environmental sustainability and in production, management, preservation and consumption practices (Shiva, 1992). They play a special role in food security and sustainable resource management. For instance, in shifting cultivation practices, women are responsible for 70% of the work, from the initial selection of seeds, to weeding the fields, and gathering, processing, and managing the surplus products (AIPP, IWGIA, FAO, & REGNSKOGFONDET, 2014). They also play a key role in soil and water management (Rocheleau, 1991) and in household gardening (Rubaihayo, 2004; Tebtebba Foundation, 2009). Studies carried out in Laos and India have demonstrated that these practices equip them with a deep knowledge about seeds, crops and plant varieties. This knowledge is then transferred to younger generations, which, once again, highlights the importance of women in the preservation of biodiversity (AIPP et al., 2014).

The communitarian way of living of indigenous people highlights concepts such as reciprocity and collectivity of the economic subject. Hence, for indigenous populations natural resources are not marketable. What they produce is generally used for their own consumption, whilst the surplus is redistributed equally among the community or used in exchanges with other communities (Cunningham, 2010b). But the recent access to markets to sell products and buy goods has changed the way of living of many indigenous groups who now have more opportunities for cash income (AIPP et al., 2014; Tauli-Corpuz, 2005). This has affected their traditional livelihood, with changes in behaviour from community-oriented to individualised and the abandonment of traditional sustainable practices (AIPP et al., 2014; Barkin, 2001; Ford, Smit, & Wandel, 2006; Nakashima et al., 2012). In some countries, indigenous communities have begun to introduce complementary activities, such as ecotourism to increase their life opportunities, whilst at the same time respecting the environment and the cultural diversity of their territories (Azevedo Luíndia, 2008; Barkin, 2001). Those in Bolivia, for instance, have included notions of eco-tourism alongside those of land production and management in the curriculum of the Indigenous Intercultural University of Kawsay (Saavedra, 2008).

### 2.3.3 | Climate change and disaster risk reduction strategies

Indigenous peoples live in the most vulnerable ecosystems. Adverse ecological phenomena that are responsible for climate change and biodiversity loss directly affect their territories. This has negative effects on many social and cultural aspects of their lives. For instance, the great loss of fauna and flora has affected traditional indigenous practices and rituals (Kronik & Verner, 2010; LEAD, 2013; Salick & Byg, 2007), and the increasing shortage of freshwater and food has been responsible for health issues, especially among children (Tebtebba Foundation, 2009). Yet, indigenous peoples have managed to survive in these circumstances, always finding ways to resist and adapt to

environmental changes (Nakashima et al., 2012). Research has recently illustrated the great value of indigenous traditional knowledge, not only in preventing and in mitigating the effects of natural disasters, but also in relation to early warning, preparedness, response and post-disaster recovery (Rautela & Karki, 2015).

Adaptation mechanisms are influenced by 'cultural features, social capital, productive practices, and socioeconomic and political situations' (Verner, 2010). Thus, adaptation and coping strategies vary according to indigenous group livelihoods, ecosystems, climate change impacts and threats. Despite these differences, similarities have been found across indigenous groups located in different regions of the world, but experiencing similar weather conditions.

Traditional responses to adverse climate change conditions adopted by indigenous people include: (a) diversification of resources; (b) changes in the varieties and species used; (c) changes in the timing of activities; (d) changes in the techniques used; (e) changes in location; (f) changes in resources and/or lifestyles; (g) exchange with other groups; and (h) resource management. These strategies are not usually employed in isolation, so indigenous communities may use more than one adaptation strategy simultaneously (Salick & Byg, 2007). Examples include the flexibility of resource use, local environmental knowledge and skills, intercommunity trade and multi-cropping systems (AIPP et al., 2012; Berkes & Jolly, 2001). The latter technique helps to minimise the risk of harvest failure, since cultivated crops have different reactions to the consequences of climate change (AIPP et al., 2012).

Concerning disaster risk reduction, the adoption of different strategies by different indigenous groups mainly depends on the natural hazards they experience. Among the strategies observed by researchers are prevention strategies based on weather forecasting and the modification of agricultural practices to limit the damages to crops. Others include construction practices to prevent the population and the livestock from a wide variety of damages (Macchi et al., 2008; Mercer, Dominey-Howes, Kelman, & Lloyd, 2007).

Additionally, the close relationship of indigenous groups with their territories has helped them to use their traditional knowledge to interpret the behaviour of nature and, in this way, forecast weather conditions. Thanks to the ability to read and interpret natural signs, such as animals and plant behaviours, water and sea movement and changes in the celestial bodies, many groups worldwide have been able to survive and prevent the worst destruction from natural hazards (Green, Billy, & Tapim, 2010; Howell, 2003; Orlove, Chiang, & Cane, 2000; Rautela & Karki, 2015).

### 3 | MITIGATION STRATEGIES, LAND RIGHTS AND ACCESS TO JUSTICE

The international community has increasingly recognised the importance of indigenous knowledge for environmental sustainability. For instance, the Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC) identifies indigenous and traditional knowledge as 'major resource[s] for adapting to climate change' and highlights the need for '[i]ntegrating such forms of knowledge with existing practices [to] increase the effectiveness of adaptation' (2014, p. 19). Nevertheless, international acknowledgment has not increased the participation of indigenous groups in decision making processes. Hence, their actions mostly remain ignored and/or when they react to assert their rights, they are often violently stopped (UN, 2010). Additionally, the measures agreed upon at local, national and international levels to mitigate the negative effects of climate change, such as the Kyoto Protocol, have severely damaged indigenous territories, increasing poverty and marginalisation (Tebtebba Foundation, 2009). For instance, the introduction of oil palm plantations for biofuel production in many regions of the world has caused the destruction of millions of hectares of forests on which indigenous communities depend for a living. It has also increased the levels of pollution, the deterioration of indigenous economies and the number of social conflicts between indigenous groups, governments and private corporations (UNPFII, 2007).

The negative effects of mitigation strategies, together with the exploitation of natural resources, the implementation of development initiatives and the pressure of climate change have added further complications to indigenous peoples' battles for their rights (Mollo, 2011). Indigenous well-being is based on the respect for nature and on the access to land, two vital elements around which indigenous peoples organise their lives, not only in terms of economic resources, but also of socio-cultural practices (Mollo, 2011). The preservation of indigenous knowledge cannot succeed without indigenous groups having full control over their lands and resources (Agrawal, 1995; Thomas, 2003). States

worldwide therefore need to reorient their policies to enhance indigenous communities' participation in land management and decision making processes and allow them to obtain free, prior, informed consent on issues related to their lands and territories.<sup>3</sup> If indigenous peoples 'are regarded as dialogic partners, they will become their own change agents through participatory and sustainable development' (Pemunta, 2013, p. 23). Key to this is also the support and recognition by States of indigenous people's customary rights to land and resources (AIPP & NORAD, 2015).

It is also worth noting that a legal recognition of their rights is not enough, as concretising this recognition at the national and local levels remains a challenge (UN, 2010). Even in those countries where laws on land and property rights exist, the State needs to find ways to enable indigenous people to use existing laws to defend their rights and interests, thus guaranteeing their full enjoyment of individual and collective rights.

Education has a pivotal role, since it promotes 'greater decision making and indigenous self-determination' (Aikman, 2011, p. 21). An initiative such as the Communal Justice Programme of the Universidad Mayor de San Andrés in Bolivia, which, since its foundation in 2001 has trained more than 300 specialists in Communal Justice and 8,000 promoters in Human and Fundamental Rights, is an example of a successful programme that aims to inform indigenous populations of their property rights (Mallea Rada, 2008). More programmes will be necessary to increase their opportunities to uphold and realise them.

#### 4 | INTEGRATION OF KNOWLEDGE SYSTEMS AND THE IMPLICATION FOR THE AGENDA 2030

So, far, this article has acknowledged the importance of indigenous knowledge to address global challenges by explaining its meanings, forms and functions; by understanding the ways in which it is put into practice and its implications; and by highlighting the importance for indigenous populations to be able to fully realise their rights. But how can we ensure the effective integration of indigenous knowledge to address the main concerns of the Agenda 2030?

Research has demonstrated that participatory approaches are key to ensure the right and balanced representation of different knowledge systems, particularly of traditional and scientific knowledge. Additionally, these approaches are essential to promote cross-cultural understanding of these knowledge systems whose successful complementarity has been widely documented in relation to climate change adaptation strategies (Kronik & Verner, 2010), the prevention and reduction of the risks caused by natural hazards (Mercer, Kelman, Taranis, & Suchet-Pearson, 2010), and the maintenance of biodiversity conservation (Prakash, 2004). In this regard, researchers have developed participatory frameworks for the integration of traditional and scientific knowledge systems. For instance, the framework of Mercer et al. (2010) combines four specific steps: (a) community engagement, (b) identification of vulnerability factors within the community, (c) identification of both indigenous and scientific strategies to cope with factors affecting the vulnerability of indigenous people, and (d) the development of an integrated strategy. Another example is the one developed by Hiwasaki et al. (2014) regarding the integration of indigenous and scientific knowledge for hydro-meteorological hazards in Indonesia, the Philippines and Timor-Leste. One of its relevant characteristics is the involvement of the community from the outset.

As previously mentioned, participatory approaches allow for the preservation of indigenous knowledge in the communities. They limit the loss of indigenous knowledge and its tragic implications for indigenous communities which are facing issues such as their inability to adapt, prevent and reduce natural disaster in time (Kronik & Verner, 2010). Fostering dialogue and creating partnerships between indigenous populations, civil societies, governments, development partners, management agencies and scholars from different disciplines (Gorjestani, 2004; Krupnik & Ray, 2007; Sillitoe, 1998) are essential for promoting the conservation of indigenous knowledge and the integration of the two knowledge systems. In order for participatory approaches to be successful, both knowledge systems need to be considered as having the same validity and value. Unfortunately, research has pointed out that, even in participatory approaches, power relations are still an issue, with non-indigenous populations tending to present themselves as experts in the field and indigenous population as lacking knowledge (Cockburn, 2015). Therefore, efforts should be made to ensure that the knowledge of all stakeholders involved is treated as equally valid, important and useful.

With the adoption of the new Sustainable Development Agenda, the international community committed to address a great number of challenges, many of which directly affect indigenous peoples' lives. Their knowledge and know-how, deeply rooted in their harmonious relationship with nature and community, have proven to be efficient to respond to some of these challenges. However, it is not enough. Their survival and knowledge systems are under constant threat from environmental hazards and development initiatives. Knowledge loss has already increased the vulnerability and risk for indigenous populations. Mobilising the national and international community is therefore important. Crucial in this regard is the recognition of indigenous peoples and their knowledge as valuable allies in the fight against climate change and sustainable development challenges and in maintaining global biodiversity. In the light of the new Agenda 2030, joint efforts are urgently required to develop and implement suitable initiatives to empower indigenous peoples to uphold and realise their rights and be involved in decision making processes, thus becoming active agents of change.

## NOTES

- <sup>1</sup> In this article, the terms 'traditional' and 'local' are used as synonyms of 'indigenous'.
- <sup>2</sup> *Suma qamaña* and *sumak kawsay* mean living well; in harmony with nature and the universe, with the former laying greater emphasis on the communitarian life (Gudynas, 2011).
- <sup>3</sup> Adapted from the presentation 'New perspectives for IPCC's 6AR: focus on the local' by Valerie Masson-Delmotte, at the international conference *Resilience in a Time of Uncertainty: Indigenous Peoples and Climate change, 26–27 November 2015, Paris, France*.

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