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Indigenous Agrobiodiversity and Governance

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Indigenous Peoples have the right to self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social, and cultural development. —Article 3, United Nations Declaration on the Rights of Indigenous Peoples (2008)

Abstract

This chapter addresses agrobiodiversity as experienced by Indigenous Peoples in the context of current policy and legislation, and aims to broaden understanding of how current agrobiodiversity governance impacts Indigenous Peoples worldwide. To date, the ability of Indigenous Peoples to determine agrobiodiversity governance has not been fully recognized, and thus is not covered explicitly by international policy and legislation. This chapter develops a biocultural perspective to expand the inclusion of Indigenous Peoples' practices regarding agrobiodiversity—one that takes into account their worldviews and rights. It reviews the epistemological and political barriers that inhibit recognition of the distinct characteristics and relevancy of Indigenous agrobiodiversity; these barriers must be overcome before a research agenda can be advanced that truly contributes to the development of a consistent policy for agrobiodiversity use and *in situ* conservation. It also analyzes policy and legal instruments related to Indigenous agrobiodiversity in both international and national contexts. At the global level, self-determination for Indigenous Peoples has been recognized. Still, work remains to ensure that the role and contributions (past and present) of Indigenous Peoples to agrobiodiversity are recognized globally and nationally. Proper recognition and protection are necessary for the development of more robust approaches to a broad definition of agrobiodiversity governance, which will contribute to overcoming worldwide hunger and malnutrition.

Introduction

Researchers and nongovernmental organizations (NGOs) have increasingly documented and highlighted the valuable contributions of Indigenous farming

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practices to the potential of sustainability involving agrobiodiversity, as well as to the use and conservation of genetic resources pools (see also Chapters 6 and 8). This trend stands in stark contrast to the modernization and development programs of the past and their continuation in many places to the present day. Such programs have mistakenly assumed Indigenous Peoples' agrobiodiversity knowledge and cultivation practices to be misguided, often treating them as "backward" (e.g., the recurring treatment of Indigenous swidden farming and agrobiodiversity as old fashioned and unsustainable). At the same time, agroecological and ethnoecological evidence have demonstrated the valuable insights of Indigenous knowledge in diverse areas such as environment, medicine, health, cosmetics, and nutrition (Berlin and Berlin 2015; Brush et al. 1981; Dutfield 2010; Hayden 2003; Magalhães et al. 2011; Pati et al. 2014; Posey et al. 1984; ten Kate and Laird 1999). Once Indigenous knowledge was seen as providing useful ecological information (e.g., hints of the presence of valuable biochemical compounds in plants), applied researchers and bioprospecting missions targeted this knowledge and associated resources for collection, scientific validation, and commercial exploitation. Still, to date, Indigenous Peoples and their contributions to agrobiodiversity have not been recognized for their full value, even though substantial (albeit partial) changes have been registered in governance initiatives, such as the Convention on Biological Diversity (CBD), the International Treaty for Plant Genetic Resources in Forestry and Agriculture (ITPGRFA), and the Nagoya Protocol.

The biocultural framework offers a culturally appropriate approach to document, recognize, and guarantee the rights of Indigenous Peoples on their practices, innovations, and traditional knowledge (Nemogá 2016) and is used in this chapter to rethink agrobiodiversity governance. The distinctive characteristic of the biocultural framework is the recognition and respect for the worldviews of Indigenous Peoples as they interact with their ecosystems, which often include food-producing landscapes with high agrobiodiversity. Programs and local conservation initiatives in Andean ecosystems, inspired by this framework, have developed the notion of Indigenous biocultural heritage, which acknowledges ancestral practices and customs (IIED 2016; Swiderska 2006; Swiderska et al. 2009). The concept of biocultural heritage has the potential to orient practical actions for *in situ* conservation of agrobiodiversity (Argumedo and Pimbert 2006), although significant challenges for implementation remain, (e.g., Indigenous governance and community inclusivity in complex initiatives involving a wide range of social actors).

In undertaking the research and documentation of agrobiodiversity in the lives of Indigenous Peoples, the biocultural approach stresses the need to recognize the customary laws and land rights of Indigenous Peoples and local communities as well as the community worldviews that give meaning to community practices and relations with the environment (Nemogá 2016). This approach has been used to document cultural diversity as well as to orient biological conservation initiatives (Gadgil et al. 1993; Gavin et al. 2015; Gorenflo

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et al. 2012; Infield 2001; Maffi 2005). It needs, however, to be advanced further to influence policy and legislation of biodiversity on diverse levels. Here, I focus on overcoming the insufficiencies currently associated with the majority of international and national policy and legislation frameworks (see also Chapter 13), which threaten agrobiodiversity of Indigenous Peoples with erosion and misappropriation. These difficulties are partially explained by epistemological barriers and political interests that deserve critical attention.

Indigenous Agrobiodiversity: Challenges and Conflicts

Indigenous Extensive Family and Community: The Epistemological Barrier

Posey (1999b) pointed out epistemological barriers that hinder academic researchers and development agents from attaining true understanding and respect for the ways of living and knowledge of Indigenous Peoples. Perspectives could vary between two different types of relationships and understandings about nature that affect the agrobiodiversity field. The first encompasses large-scale production and urban market-oriented contexts that rely on a techno-economic approach that separates humans and nature. This separation is instrumental to postulate neutrality and objectivity in the knowledge creation process. For the researcher, detachment from the object of study is a key requirement: nature, as the object, is assumed to be characterized, fragmented, and analyzed into component parts so as to permit control over their functioning and to use them productively. This perspective underlines a rational understanding and controlling of nature for economic exploitation; in large-scale agriculture, for example, seeds are reduced to a raw input for agribusiness.

The second embodies a nature–human unit that embraces intimate interrelationships between Indigenous People and their seeds, other living organisms, and landforms. In terms of an Indigenous worldview, Posey (1999b:4) states:

> Knowledge of the environment depends not only on the relationship between humans and nature, but also between the visible world and the invisible spirit world.

Humans are intrinsically intertwined with nature, and the practice of mutual relations of coexistence generates knowledge about plants, animals, and other local components of nature, such as climate (see Chapter 7; Nemogá 2016; Pierotti 2011). From Indigenous Peoples' perspectives, respect, intimacy, and ceremonies characterize their experiential interactions with seeds and the natural world, rather than detachment and the quest for rational control of nature (Machaca 2016).

Similar characterizations of Indigenous worldviews and ways of living are recurrently reported in different parts of the world (Berkes 2012; Lloyd et al. 2012; Plenderleith 1999). For Indigenous People in the Andean region, for

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instance, the notion of *Kawsay* in Quechua "integrates and fuses the natural realm (*pacha*) and the human–social world, in contrast to the separateness of nature and culture in the classical tradition of modern Western thought, including many strands of environmental studies and resource management" (Zimmerer 2012:603). The sensorial interaction of nature guiding Indigenous Peoples' agricultural practices is found in other geographies. Salas (2005:17) describes how Indigenous communities on the Thailand–Myanmar border rely on their sensorial appreciation of the external world, rather than on their rationality when working their agrobiodiversity:

> The classification, selection, conservation, and reproduction of seeds relies on senses: touching and smelling to see whether seeds are healthy, distinguishing the colors of varieties, spotting the particular temperature and quality of the soils where the seed will grow, interpreting signs in the behavior of the birds or the weather.

From the perspective of Indigenous worldviews, intuition and senses rather than reliance on purely instrumental technocratic modes of knowledge take priority when relating to plants and animals. In Western nomenclature, this is a relational ontology or metaphysical holism that describes human–nature relationships as an extensive family or community, including other humans as well as animals, plants, landforms, water bodies, rocks, and deities and agrobiodiversity such as seeds (see Chapter 13; Keller 2009). This approach coincides to a certain extent with the central normative principle of deep ecology regarding the intrinsic value of nature: every action that demeans, disturbs, or affects the integrity of nature also affects humans, because the human species is not conceived as a discrete component, separate from nature (Leopold 1966; Naess 1973).

Indigenous Ways of Living and Land Rights: The Political Conflict

For political reasons, the protection and conservation of Indigenous agrobiodiversity has been limited, as has full recognition of its legitimate creators. Recognizing and defining Indigenous Peoples is politically loaded work. *Indigenous, Native, Aboriginal, Indian,* and *First Nations* are terms with unavoidable political content, because they generally entail collective ancestral rights to land and resources that challenge the political and economic interests of dominant classes within and among countries. The particularities of some countries—where state policies deny the very existence of Indigenous Peoples (e.g., Cuba, Laos) or where Indigenous People govern themselves in autonomous regions (e.g., the Inuit Peoples in Nunavut, Canada)—add tensions to any attempt at a universal definition. In 1993, disagreement within the United Nations Working Group on Indigenous Populations prevented a general

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consensual definition of Indigenous as they worked toward the UN Declaration on the Rights of Indigenous People (UNDRIP) (Daes 1996; UN 2008).

Working criteria for identifying Indigenous Peoples were introduced in 1989. Article 3 of the 1989 International Labour Organization (ILO) Convention No. 169 established objective and subjective factors for identifying tribal and Indigenous Peoples in independent states when specifying the scope of the Convention. Under Article 1b, it defines Indigenous Peoples as "peoples in independent countries who are regarded as Indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonization or the establishment of present state boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural, and political institutions." Ancestral origin from precolonial inhabitants, occupancy of geographic homelands, and social, cultural, and political continuity are factors that can be verified objectively. In addition, Article 1.2 of the ILO 169 includes self-identification as a subjective factor that is fundamental to determine the application of ILO Convention 169. Overall, this Convention provides strategic criteria about Indigenous Peoples and aims to prevent states from denying Indigenous identities within their borders. The element of self-identification is a step forward in supporting the rebuilding of Indigenous nation processes that otherwise would be obstructed by a strict definition. At the same time, the Convention offers objective criteria to prevent false and utilitarian claims about indigeneity by other minority groups within national borders and internationally.

Other international institutions have developed operative definitions. The World Bank recognizes that Indigenous Peoples maintain intrinsic relations with their lands and depend on the use of natural resources (World Bank 1991, 2005); however, its operational definitions include the existence of Indigenous language as an identifier, despite the fact that many Indigenous Peoples have lost their language. Their definitions also require actual territorial links to lands and natural resources, though exception is noted in case of forced severance. CBD's efforts to distinguish clearly local communities and Indigenous Peoples did not succeed in adopting an enforceable distinction (UN 2014a, b). For its part, the Food and Agriculture Organization (FAO) developed multiple criteria to guide its work with Indigenous Peoples, including priority in time of territorial occupation, the perpetuation of cultural distinctiveness (without restricting it to a single cultural aspect such as the language), self-identification, and a past or current experience of subjugation, dispossession, or marginalization (FAO 2010a). Indigenous academics have proposed alternative conceptualizations via the notion of peoplehood as a framework for self-identification (Corntassel 2003). Peoplehood—a concept developed by anthropologists and Indigenous scholars—underpins the connections of Indigenous Peoples with land, spirituality, and language. Further, Corntassel (2003) proposed a flexible definition that centers on self-determination and highlights peoples'

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connections with sacred history, ceremonial cycles, language (spoken or not), and ancestral homelands. Overall, the ILO Convention 169 definition is the most widely accepted in international fora.

The political consensus that only Indigenous People should be entitled to decide on Indigenous membership stands in contrast to national policies and practices. Although countries are moving toward self-identification criteria for census purposes (CEPAL 2014), they endorse different criteria for recognizing Indigenous identities, as demonstrated in Latin America. In Mexico, Indigenous identities were strongly associated with speaking a native language (INEGI 2000, 2003), whereas in Colombia the government exercises the power to recognize the Indigenous status of communities. When there is doubt about the Indigenous identity of a collectivity, Colombian law orders ethnological studies to determine the legitimacy of Indigenous identity (Decree 2164 of 1995, Article 2.1).

Legal and administrative manipulation of Indigenous definitions by states produces an unexpected rise or fall in the Indigenous population. Consequently, Indigenous and mestizo (i.e., mixed ancestry) populations could shrink or expand as a result of administrative measures. In Bolivia, for example, the Indigenous population was set at 62% in 2001 but fell to 40% in the National Census on Housing and Population of 2012, after eight years of Evo Morales's government (INE 2013). Explanations for the 2012 outcome included changes in the survey design, which forced Bolivians to identify with one of the 36 Indigenous nationalities or reject their Indigenous ancestry by choosing none; the mestizo category was not included for self-identification (CEPAL 2014).

Mestizo populations are the result of mixed racial backgrounds and have been targeted by dominant classes for the liberal nation-building projects in Latin America. Marchi (2018) describes how Indigenous identities were denied during the post-agrarian reform of 1917, forcing the adoption of mestizo as a national ethnic identity in Mexico. In a general sense, mestizos have combined European and Indigenous ancestry.[1] In a racist hierarchic structure, mixed people of African and Indigenous ancestry are not considered mestizo. In the majority of the rural agrarian communities in Latin America, Indigenous cultural ancestry is apparent in community social customs, family relations, and agricultural practices, which include cultivation of native seeds inherited from Indigenous ancestors. Despite phenotypical characters, Indigenous surnames, and other objective factors, some mestizos do not self-identify as Indigenous; instead, they willingly reject their Indigenous lineage and self-identify with a monoethnic national culture, such as Bolivian, Colombian, Mexican, Peruvian (CEPAL 2014; De La Cadena 2000; Hernández 2001; Villarreal 2014). Openly

[1] Contrary to Latin America, descendants from Indigenous Peoples and European settlers constitute the Métis nation in Canada. One of the aboriginal peoples recognized under the Constitution Act of 1982, the Métis National Council defines a Métis as "a person who self-identifies as Métis, is distinct from other Aboriginal peoples, is of historic Métis Nation Ancestry and who is accepted by the Métis Nation."

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or subtly, mestizos deny their Indigenous genetic and cultural background because of the social and racial prejudice associated with the Indigenous being identified as poor and backward people. Mestizos live and want to live more aligned with the predominant social, economic, and cultural patterns promoted by the liberal state. The extent of self-identification as Indigenous can be an indicator of success or failure of the assimilationist policy for de-Indianization through old and new Christianization enterprises.

What is relevant in this discussion is that ethnicity influences Indigenous agrobiodiversity in diverse ways. Mestizo family farmers have been found to be more inclined to adapt agrotechnological packages (e.g., high-yield seeds, fertilizers, and financial credits) and are generally more connected to market exchanges by selling their labor power or their produce outside their communities. In Chiapas, for example, Brush and Perales (2007) found that mestizo families were more integrated into the market than Indigenous Mayan families. Additionally, the ethnic affiliation of Indigenous and non-Indigenous families was more explanatory of maize race distribution than environmental factors because "significant differences exist between the two ethnic groups in the distribution of maize races, types, colors, and seed systems, and the ethnic differences are significant regardless of environment" (Brush and Perales 2007:219).

Morphological and agronomic differences in maize were previously correlated with different communities as well as linguistic groups and still continue to demonstrate these associations among certain Indigenous Peoples. For example, two distinct maize races have been found to correspond to two different Mayan groups: the Tzotzil and Tzeltal (Perales and Hernández 2005).

In summary, Indigenous Peoples should not be conflated with mestizo farmer communities. Estimates of the extent of the Indigenous population in Latin America include 826 Indigenous Peoples (i.e., collectives once termed Indigenous or ethnic groups), totaling 44.8 million individuals and accounting for about 8.3% of the total population in 2010 (Mato 2016). That year, estimates regarding the representation of the Indigenous population in each country varied substantially, from 0.5% in Brazil to 62.2% (2001 data) in Bolivia (CEPAL 2014). Notably, a national census does not always accurately include Indigenous Peoples in urban settings. Thus, these figures cannot be taken as absolute, since they reflect diverse and shifting administrative criteria in each country. However, the existence of at least 826 recognized Indigenous Peoples in this part of the world highlights the wealth of knowledge, practices, innovations, and plant diversity that need to be protected and conserved. For the purposes of discussing Indigenous agrobiodiversity, the definition in ILO Convention 169, including objective and subjective criteria, serves as an important reference for the usage in this chapter. Alternative definitions from Indigenous scholars have not reached universal consensus and will continue to be challenged in international fora as lacking legal support.

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With this backdrop, let us now discuss a definition of agrobiodiversity that captures Indigenous worldviews.

Defining Indigenous Agrobiodiversity

Many definitions of agrobiodiversity are limited to a biological perspective. To overcome the inherent limitations of a strictly biological approach, I argue that agrobiodiversity must also be framed in terms of Indigenous epistemologies:

- Humans must be understood as part of an extended relational community of animals, plants, and spiritual entities.
- The connection between biological and cultural diversity is essential.

Agriculture can provide "balance for well-being through relationships not only with people but also with nature and deities" (Posey 1999b:5). Indigenous agriculture also brings a different sense of connection to the territory, plants, and animals, as Salas (2005:20) illustrated:

> So territory and this Indigenous [swidden] practice are inextricably linked. This is what the Karen mean when they say that swidden agriculture is a way of life.

Moreover, what external observers see as "pristine nature," "wild," or "primitive" in Indigenous landscapes is actually mediated by human action. "Wild" and "wilderness" are inappropriate terms for plant and animals in Indigenous territories; these terms "imply that these landscapes and resources are the results of 'nature' and as such have no owners—they are the 'common heritage' of all humankind" (Posey 1999b:8). By extension, the external observer assigns no value to Indigenous knowledge associated with biodiversity and assumes that it is free for collection and exploitation.

In this context, Indigenous agrobiodiversity can be defined as the diversity of plants, animals, insects, microorganisms, landform, and deities and their interactions with peoples who self-identify as descendants of those who inhabited their territories since precolonial times and who retain some of their social, economic, cultural, and political institutions. As such, it is not restricted to plant material, generally termed traditional (folk) crop varieties. Agrobiodiversity is embedded within a biocultural framework that includes Indigenous epistemologies and customary law as they emerge from ancestral productive practices of peoples that preserve and nurture meaningful and sacred interrelationships with nature (Nemogá 2016).

Disregarding Indigenous Peoples in Agrobiodiversity

Although researchers have documented crop genetic diversity preserved in Indigenous territories by native peoples' practices (e.g., Bellon 1991; Brush 1995; Perales and Hernández 2005; Zimmerer 1997), the use of the distinctive

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term *Indigenous* (in the sense of ILO Convention 169) to indicate ancestral people in their territory is barely found in the descriptions and studies of agrobiodiversity in the American hemisphere. An ad hoc de-Indianization of the Indigenous population occurs when the term *farmers* (or campesino or peasants) is broadly applied to native people who keep alive the core of ancestral agricultural practices in Andean or Amazonian territories. For example, Canahua-Murillo (2016) describes the project Ingenious Systems of World Agricultural Patrimony in Puno, Peru, as aiming to understand the evolution and adaptation to the environment of the rural Andean societies. Although the communities under study are the descendants of prehispanic Aymara and Quechua peoples, Cahahua's description speaks of peasant communities rather than Indigenous communities. This de-Indianization is apparent in rural landscapes, as evidenced by the Peruvian agricultural census of 2012: in three out of four communities surveyed, the use of the Indigenous languages Quechua or Aymara was common, half of the communities had Indigenous traditional authorities, and three of every five communities obtained their land via ancestral inheritance (CEPAL 2014). In Andean agrobiodiversity studies, language, belief systems, and ancestral relations to the territory were not underlined as ethnic identifiers, but generalized as features of an Andean population hardly different from mestizo Spanish-speaking communities, or "campesino communities."

Paradoxically, even researchers working within a framework for cultural reaffirmation describe native communities as peasants, Andean, or Andean–Amazon peasants rather than as Indigenous (Ishizawa 2010, 2016; Machaca 2016). One illustration of how the term campesino is preferred is the Andean Project of Campesino Technologies (PRATEC in Spanish), whose vision is expressed as the recuperation of campesino technology, not Indigenous technology. This is noteworthy because PRATEC's initiative and vision center is the "revitalization of collective ceremonies associated to the recuperation of Andean wisdom for the cultivation of agrobiodiversity" (Machaca 2016:353). PRATEC's cultural affirmation emphasizes a general Andean culture, rather than the Indigenous cultures that domesticated and preserved the diversity of crops and languages in the Andean–Amazonian region (Shepherd 2010:632).

The blurred description of Indigenous Peoples contributes to the neglect of the role of Indigenous Peoples' agrobiodiversity. This is the case when Indigenous identities are described under a general descriptor instead of distinctive Indigenous Peoples. Activist organizations and scholars choose to use the term "Andean identity" despite focusing on Indigenous technologies, belief systems, knowledge, and the agricultural practices of native peoples. There are also abundant studies where the subjects of study are specifically mestizo communities, though the authors' preference for naming communities as mestizo or Indigenous could be contested (De La Cadena 2000). As suggested by Abbott (2005), the conflation of ethnicity with indigeneity—and I would add with general identifiers like *Indigenous farmers*, *campesinos,* or *peasants*—"simplifies

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the multifaceted origins of landrace varieties in the Americas, limiting our options for conservation programs" (Abbott 2005:199). Such fusion obscures the distinctive Indigenous culture and Indigenous Peoples' contribution to major crops for food and agriculture.

Postmodern trends add to vanishing Indigenous categories. Through a postmodern lens, Indigenous agriculture and cosmologies are seen as remnants associated with nonreal campesinos (or as a romantic Indigenous characterization). The category of Indigenous Peoples is "socially constructed, not innately given" (Sawyer and Terence-Gomez 2013:9). Postmodern scholars have built a consensus where culture is an academic no-no (Shepherd 2010:629); they emphasize Indigenous identity as a fluid, changing, hybrid cultural assemblage (Sawyer and Terence-Gomez 2013). One result is the hybrid mestizo–Indigenous notion that engulfs Indigenous identities and deconstructs Indigenous ways of living, thus obscuring their role in the generation and preservation of agrobiodiversity.

The neglect of Indigenous agrobiodiversity is manifest when the recognition of traditional knowledge underlines traditional farmers' rights without specific attention given to Indigenous Peoples' rights to their plant varieties and knowledge; a substantial change is required in policy on conservation of agrobiodiversity to recognize Indigenous ways of living, their cosmology, knowledge, and belief systems, and the interconnectedness with their territory and agrobiodiversity. As will be described, up to now, policies and legislation on protection and conservation of agrobiodiversity have excluded a distinctive protection of Indigenous Peoples' agrobiodiversity.

Challenges Posed by Policy and Legislation on Indigenous Agrobiodiversity

International Level

Viewed historically, Indigenous collective and inalienable rights to land, territory, resources, and cultural integrity were ignored within the human rights framework. Although post–World War II human rights instruments postulated equality and freedom for all human beings, this conception of human rights, based on liberal principles, did not establish special protection for Indigenous Peoples. The Universal Declaration of Human Rights (1948), the adoption of the International Convention on the Elimination of All Forms of Racial Discrimination (1965), and the International Covenant on Civil and Political Rights (1966) all focused on individual civil and political rights: rights to autonomy, dignity, physical integrity, freedom, and security, among others, were applied to individuals but not to Indigenous Peoples as collective subjects.

In 1957, as the Green Revolution was at its zenith with its emphasis on the adoption of high-yielding varieties, agrochemicals, and mechanization

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for agricultural development (see also Chapter 6), ILO Convention 107 advocated the full integration of Indigenous Peoples to mainstream agricultural production. Later, in 1989, when world consensus was coalescing around the triumph of liberal democracy and the end of history, the ILO approved a new Convention (No. 169) that recognized Indigenous and tribal peoples' collective rights in independent countries. In its preamble, the Convention acknowledged "the distinctive contributions of Indigenous and tribal people to the cultural diversity and social and ecological harmony of humankind." The ILO Convention 169 entered into force in 1991 and, as of 2017, has been ratified by only 22 countries (ILO 2017). It explicitly identified the need to overcome the assimilationist orientation of ILO Convention 107.

Thus, ILO Convention 169 was the first international legal instrument that incorporated collective rights on lands, resources, cultural identity, and the duty to consult with Indigenous Peoples on projects that affect their territories or livelihood. Although this Convention did not refer to agrobiodiversity specifically, it commits its parties to recognize and respect Indigenous Peoples' path to development consistent with their social, economic, cultural, and political institutions and irrespective of their legal status. This protection is developed in other articles referring to their lands, own way of living, and system of beliefs. Article 2 established that states' actions shall promote "the full realization of the social, economic, and cultural rights of these peoples with respect for their social and cultural identity, their customs and traditions, and their institutions." With regard to control of their economic, social, and cultural development, article 7 includes the right "to decide their own priorities for the process of development as it affects their lives, beliefs, institutions, and spiritual well-being and the lands they occupy or otherwise use." In addition, article 13 stipulates that governments respect the culture and spiritual values of Indigenous Peoples' relationships with their lands or territories and clarifies that Indigenous territories cover the total environment of the areas which they occupy or otherwise use.

A decisive turning point in international law evolved in the 1990s regarding plant genetic material and biodiversity in general, when the FAO adopted Resolution 3 (in 1991), acknowledging sovereign rights of countries to their plant genetic resources. In 1992, through the CBD, the entire international community (except the United States) approved the principle of sovereign rights of countries of origin instead of the common heritage of humankind on biodiversity. Recognition of the sovereignty rights of countries of origin was a reaction to the inapplicability of the 1983 FAO International Undertaking on Plant Genetic Resources for Food and Agriculture, which conceded that all plant genetic resources were the common heritage of humankind, including plant varieties protected by intellectual property rights. However, countries that provided the bulk of plant genetic resources were unable to counteract the tendency led by some European countries and the United States to expand intellectual property rights on plant germplasm. Intellectual property rights

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had an early development in the United States with the Plant Patent Act of 1930 (for asexual reproductive plants) and the Plant Variety Protection Act of 1970 (for sexually reproductive plants). Some European countries developed a special regime for plant breeders' rights formalized through the International Union for Protection of New Varieties of Plants (UPOV) Convention of 1961, modified in 1978 and 1999, that is now in large part global in reach with 79 countries now participating.

The CBD is a complex agreement with provisions influenced by governments, industry, and environmental organizations. Indigenous Peoples were not directly represented in the making of this international convention, but some of its provisions suggest states' action toward effective protection, respectful use, and suitable conservation of traditional knowledge associated with biodiversity, including agrobiodiversity. In its preamble, the CBD recognized the close interconnection between the traditional lifestyles of Indigenous and local communities based on their biological resources. Additionally, under the approach for *in situ* conservation, the CBD foresees that states shall "respect, preserve and maintain knowledge, innovations, and practices of Indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity." The signatory states are also expected to promote the wider application of traditional knowledge with the approval and involvement of the legitimate holders and to encourage the equitable sharing of benefits that arise. Unfortunately, the fulfillment of the parties' responsibilities was subjected to national legislation without an enforcement mechanism. This lack of enforcement is found in most of the provisions, clarifying that states' commitments are due "as far as possible and as appropriate." Consequently, mostly minor advances have occurred. Though partial in scope, some measures for a more effective maintenance and preservation of Indigenous knowledge and associated resources have been attained in some countries (e.g., Peru and India).

Based on their sovereign rights, several countries individually or in groups have established access regimes to genetic resources. Currently, there are more than 50 access regimes with different levels of application. The Andean community, comprised of four countries today, issued the Decision 391 on Access to Genetic Resources in 1996. As of 2016, the Colombian environmental authority has signed more than 200 contracts on access to genetic resources, with only four designated for commercial application. Other countries in the Andean community have granted a significantly lower number of contracts. Decision 391 was complemented by Decision 486 in 2000 on intellectual property rights, which established the disclosure of origin of genetic material or traditional knowledge involved in patentable invention when such material or knowledge is obtained from Andean countries. Nevertheless, the disclosure requirement of Decisions 391 and 486 have had negligible application in the region and is not enforceable outside Andean jurisdiction.

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As a development of the third CBD objective (i.e., the "fair and equitable sharing of benefits") the CBD Conference of the Parties established, through Decision VII/19, the ABS Working Group in coordination with Working Group on Article 8(j) to develop a special international agreement (UN 2004). As a result, the parties of the CBD signed the Nagoya Protocol (NP) in 2010 that entered into force in 2014. By September 2017, 105 countries have ratified the NP (UN 2017b). This protocol regulates the observation of the two key issues under the bilateral approach of the CBD: (a) the prior informed consent and mutually agreed terms for access to genetic resources and (b) the sharing of benefits that derive from its use.

The NP negotiation process included the discussion of fair and equitable sharing of benefits derived from genetic resources and from innovations, practices, and traditional knowledge. As a result, the NP contains several provisions that protect traditional knowledge (Articles 5, 7, and 12) (Cabrera-Medaglia 2013). In this sense, the NP calls for states to adopt measures to enforce the acquisition of prior informed consent from communities, and that measures are developed to ensure that access to traditional knowledge does not take place without mutual agreement on the terms (Article 16, NP). The NP includes the identification and acknowledgment of customary law in regards to the process of access to genetic resources and traditional knowledge (Article 12, NP). This recognition refers to principles and norms that regulate community life and relations with outside society, which are transferred through generations by Indigenous Peoples. Customary law embraces all aspects of community life: traditional authorities and sanctions, use and management of natural resources, rights and responsibilities of land, spiritual practices and beliefs, as well as traditional medicine practices. The NP needs to be interpreted in line with principles established in additional legal sources, such as the ILO Convention 169 and the UN Declaration on the Rights of Indigenous Peoples of 2007 (analyzed further below).

Plant genetic resources and associated Indigenous knowledge relevant to food and agriculture are within the scope of the NP, as they have not been explicitly covered with special international FAO instruments. However, Articles 4.2 and 4.4 of the NP establish the necessary coordination with relevant international agreements, as long as these agreements support the CBD and NP objectives. Thus, the NP acknowledges the preeminence of specialized instruments regarding specific genetic resources. The most important of these is the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).

ITPGRFA was adopted in 2001 and entered into force in 2004. It includes provisions for benefit sharing derived from the utilization of plant genetic material. Instead of bilateral negotiations between users and providers as in the CBD, with the requirement for prior informed consent and bilateral agreements, ITPGRFA established a multilateral approach, including a facilitated mechanism for all parties to have access to genetic resources with legal certainty.

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Access to the listed plant genetic material in Annex 1 is contemplated through a standardized material transfer agreement that should observe provisions of the ITPGRFA; for instance, Article 12.3 a, d, and g as well as Article 13.2d(ii). Annex 1 includes 35 major crop species and 29 forage crops. The ITPGRFA includes diverse mechanisms for the fair and equitable distribution of benefits arising from the use of plant genetic resources through a multilateral system (Article 13).

The general category of farmers in the ITPGRFA covers an individual farmer or a group of farmers. The general notion of farmers and the discussions about their rights does not, however, include the distinct cultural characteristics of Indigenous Peoples. ITPGRFA refers to Indigenous and local communities (Article 5.1.d) and Indigenous communities and farmers (Article 9.1) in regard to the promotion of *in situ* conservation of wild crop relatives and wild plants for food production and farmers' rights subject to national legislation.

The multilateral system in ITPGRFA regulates access to plant species listed in Annex 1 that are under the administration and control of the contracting parties. Access to those materials is exclusively for food and agricultural purposes; other purposes would fall under general CBD provisions and eventually under NP rules. Additionally, plant material in Indigenous territories and under the control of Indigenous Peoples is not within the scope of the ITPGRFA unless Indigenous communities voluntarily decide to submit them. A case that illustrates this option is the proposed inclusion of potato collections under the ITPGRFA multilateral system by Indigenous communities from the Parque de la Papa in Cusco, Peru (Graddy 2013).

Because of the ITPGRFA's specific role, the recognition and compensation for contributions to Indigenous knowledge, innovations, and practices associated with agrobiodiversity remain subject to national legislation and the bilateral system under the CBD and the NP. NGOs and research institutions may contribute funding directly to smallholder farmers' projects and initiatives. Within the FAO forum, the search for equitable distribution of benefits has been framed in terms of farmers' rights to counterbalance intellectual property rights on plant genetic material. Resolution 5 of 1989 on Farmers' Rights, for example, concentrated on past, present, and future contributions of generations of farmers to conservation, improvement, and availability of plant genetic resources. This Resolution did not, however, make reference to historical contributions, which continue up to the present, of useful plant material and associated knowledge made by Indigenous Peoples. In the 1996 Technical Consultation on the Implementation Framework for Farmers' Rights in Madras, India, the proposed definitions for farmers did not identify Indigenous Peoples but rather farming communities. The recommendations of this Technical Consultation admitted that farmers' rights did not contain the full range of Indigenous Peoples' rights, but that many Indigenous Peoples were in farming communities and must therefore be beneficiaries of farmers' rights (Swaminathan 1996). NGOs present at this meeting identified farming

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communities side by side with Indigenous communities but pointed out that Indigenous communities were the central factor in the debate over farmers' rights and that their rights should thus be protected (Mooney 1996).

Twenty years after Resolution 5 of 1989 on Farmers' Rights, an FAO policy document explicitly recognized the past and present adaptiveness and resilience of Indigenous agricultural practices as well as the contributions to "domestication, conservation, and adaptation of genetic resources and agricultural biodiversity at all scales (gene, species, ecosystem, and landscape)" (FAO 2010a:7). Thus, the concept and recognition of Indigenous Peoples as defined in Convention 169 was absent from FAO international instruments until the adoption of the FAO policy on Indigenous and tribal peoples in 2010 (FAO 2010a). This recognition in a policy document shows a formal advance when compared to the Resolution 5 of 1989. However, protection for Indigenous agrobiodiversity has to be sought within the general human rights realm. It was precisely the 2007 UN Declaration on the Rights of Indigenous Peoples (UNDRIP), Article 41, that prompted the adoption of 2010 FAO policy on Indigenous and tribal peoples.

After more than twenty years of work, the United Nations General Assembly finally adopted UNDRIP. The Declaration acknowledges that

> Indigenous Peoples have suffered from historic injustices as a result of, *inter alia*, their colonization and dispossession of their lands, territories, and resources, thus preventing them from exercising, in particular, their right to development in accordance with their own needs and interests.

An important effect of colonization was the intended or unintended omission to properly acknowledge the contributions made by Indigenous Peoples in all areas of human endowment, such as medicine, food, and environment. In this sense, the UNDRIP preamble states that

> respect for Indigenous knowledge, cultures, and traditional practices contributes to the sustainable and equitable development and proper management of the environment.

As a comprehensive international instrument, although not enforceable, UNDRIP recognizes critical issues for Indigenous Peoples (e.g., the right to self-determination included as the epigraph to this chapter). This right is highly relevant because it clearly identifies Indigenous Peoples as subjects who are entitled to collective rights under international law. Rather than a call for secession, this represents the aspirations of Indigenous Peoples: full recognition of the right to remain distinct and to determine autonomously their own economic, social, and cultural path to development within contemporary states and the global context. More specifically, Articles 20.1, 23, and 32 reiterate the right of Indigenous Peoples to decide and control their own development. Article 32.1

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states that "Indigenous Peoples have the right to determine and develop priorities and strategies for the development or use of their lands or territories and other resources." This right covers all aspects and resources connected with Indigenous agrobiodiversity.

UNDRIP is the first international legal instrument that explicitly recognizes the rights of Indigenous People to their seeds and associated knowledge. Article 31 states the right of Indigenous People to "maintain, control, protect, and develop their cultural heritage, traditional knowledge…as well as the manifestations of their sciences, technologies, and cultures, including… genetic resources, seeds, medicine, knowledge of properties of fauna and flora." However, the practical application of these rights faces an insurmountable obstacle, shared in common with the CBD and NP: any effective development in policy or legislation shall be decided by each state "as far as possible and as appropriate." Despite diverse national constitutions embracing Indigenous Peoples' rights, practical application continues to be limited (Mikkelsen 2014). In the following section, I will illustrate this point.

Finally, the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC) of the World Intellectual Property Organization (WIPO) has made very few advances toward an international regime after almost two decades of activity. Its primary contribution has been to provide a wide range of studies and documentation, along with drafting a body of articles. In December, 2016, during its thirty-second session, IGC reviewed the "The Protection of Traditional Knowledge: Draft Articles Rev. 2," which was based on an earlier document from the 31st session, held in September, 2016. To date, IGC has been unable to advance a text for an international instrument to protect traditional knowledge within the intellectual property framework. Indeed, it is uncertain whether such a framework could really protect the collective intellectual rights of Indigenous Peoples in line with their worldviews and consuetudinary law. Critical issues remain contentious. For example, Indigenous spokespersons oppose the extension of principles regarding the common heritage of humankind and the public domain on traditional knowledge once it has been published (Hardison 2016). Additionally, consensus does not exist regarding beneficiaries; one position identifies Indigenous Peoples and local communities as the exclusive beneficiaries while another supports the inclusion of states or nations and even NGOs as beneficiaries. After the 32nd session, delegates from the United States, South Korea, the European Union, and Canada concluded that a long discussion lies ahead before a common understanding is achieved (ICTSD 2016).

National Level

National policies on Indigenous Peoples and rural development have overlooked Indigenous agrobiodiversity. In this section, I illustrate this point with

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examples from Colombia and Peru. By the middle of the twentieth century, in countries like Colombia, Indigenous Peoples were still legally classified as savage, semisavage, or civilized, depending on their level of assimilation, particularly to Christian doctrine.

In Colombia, for instance, the national government designed specific policies to integrate the Indigenous population into agrarian development through the Office for Indigenous Issues, situated within the Ministry of Agriculture and Ranching Industry. In 1958, Law 81 promoted the modernization of agricultural production in Indigenous communities in total disregard to Indigenous subsistence agriculture. Indigenous *resguardos* (collective lands) were targeted to promote agrarian cooperatives or to break them up when the expansion of large private estates was favored. Finally, in 1967 Law 31 ratified the ILO Convention 107 for the "protection and integration of Indigenous and tribal populations."

Created in 1960, the Colombian Institute for Agrarian Reform (*Instituto Colombiano de la Reforma Agraria*, INCORA) was charged with modernizing agricultural production in campesino populations using Green Revolution practices. In 1967, the Colombian government also created the National Peasant Association of Colombia (*Asociación National de Usarios Campesinos de Colombia*, ANUC) as a social movement to promote agrarian reform and to appease rural protest. Initially, Indigenous communities were mobilized with the ANUC, but the union with campesinos did not last too long due to Indigenous worldviews on land tenure. Whereas the campesino movement's struggle focused on access to land for agricultural production, Indigenous Peoples looked to recuperate ancestral territory taken by force in previous decades by private landholders and the Catholic Church. In 1970, Indigenous Peoples from Cauca broke the partnership with ANUC and established the first grassroots Indigenous organization: the Regional Indigenous Council of Cauca (*Consejo Regional Indígena del Cauca*, CRIC). Recuperation of territory went hand in hand with the strengthening of their cultural identity through the revitalization of their language and control of education.

In Peru, similar integrationist policies were more successful. Indigenous identities were systematically excluded from the modern nation-building project. The agrarian reform focused on Andean peasants, rather than Indigenous Peoples, as part of the social policy engineered by the Velasco government (1969–1974) to transform *indios* into market-oriented *campesinos* (Shepherd 2010:631–632).

The de-essentializing gaze, which emphasizes a homogeneous social base, is also found in other parts of the world. In the Southeast Asian country of Laos, for example, the 230 identified ethnolinguistic groups that comprise around 70% of the population, and occupy almost 80% of the territory, are not officially recognized by the government, which prefers the notion of "multiethnic peoples" rather than "Indigenous Peoples" (Dze 2005:31).

Although Colombian and Peruvian governments have increasingly recognized the contributions made by Indigenous Peoples to biodiversity

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conservation at the international level over the last 25 years, the effective protection of traditional knowledge at the national level has been precarious, although Peru introduced specialized legislation. National policy and legislation often reflect a strong private interest, with the support of international capital investors, for promoting monoculture farming techniques and expanding intellectual property regimes on plant germplasm. The access regimes developed under CBD have not evolved toward effective protection of either Indigenous knowledge or agrobiodiversity. In the Andean region, for example, Decision 391 included a transitory provision demanding states to undertake harmonization studies and to establish a positive protection regime. Yet it has been over twenty years since the enactment of the Andean common access regime, and states have not made any significant effort to develop such protection. In Colombia, the opposite is true: the legal framework facilitates undue appropriation of plant genetic material of Indigenous communities by plant breeders or agrobiotech companies.

The current plant breeders' rights regime in the Andean countries, including Colombia, stems from Decision 345 of 1993. The Colombian Law 243 of 1995 ratified the 1978 UPOV, but the Colombian government operates in practice with Decision 345, a regime more like UPOV 1991. The 1978 UPOV version does not cover all plant species and excludes patents on plants. The Colombian government tried to formally ratify the 1991 UPOV version in 2012. However, in 2012 the Constitutional Court declared the unconstitutionality of the Law 1518 of 2012, which approved the 1991 UPOV convention. In its decision, the Constitutional Court considered that the content of the 1991 UPOV Convention could affect the intimate and indissoluble relationship of Indigenous Peoples with their territory and its natural resources. The Court found that this law was approved without fulfilling the duty to consult Indigenous populations and declared it unconstitutional (Constitutional Court Republic of Colombia 2012).

Decision 345 of 1993 clarified that in order to create a new plant variety, the application of scientific knowledge is necessary to improve the plant genetic pool (Article 4). Plant breeders at public universities develop plant varieties that they deliver sometimes free to small farmers. This provision, however, excludes plant varieties obtained through traditional innovations, practices, and traditional knowledge because these are regarded as nonscientific methods. At the same time, the rights of Indigenous Peoples and local communities to landraces, knowledge, innovations, and practices remain without effective protection. The plant material of Indigenous communities is freely available for researchers and professional plant breeders for developing new plant varieties. Seed phytosanitary laws reinforce the plant breeders' regime by imposing limitations to a farmer's right to save seed. The Resolutions 970 of 2010 and 3168 of 2015 of the Colombian Institute of Agriculture imposed restrictions on seed quantities and land extension where farmers could replant the saved seeds. This limitation, via administrative

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measures, violates Article 26 of the Andean Decision 345, which provides farmers with the right to store and sow for their own use, or to sell as a raw material or food the product of the cultivation of the saved seeds. This case illustrates the complete disregard of a national government for the agrobiodiversity of Indigenous Peoples, while at the same time guaranteeing strong intellectual property rights regimes that favor monocultures in large-scale industrial agriculture.

Very few states have established mechanisms to protect Indigenous knowledge and agrobiodiversity. In Latin America, Peru introduced the "Regime for Protecting the Collective Knowledge of Indigenous Peoples related to Biological Resources" by Law 27811. This is a registration system for preventing the granting of patents on genetic resources and Indigenous knowledge associated with plants. The system is a defensive mechanism against patents on Peruvian plants with medicinal properties or cosmetic uses (Nemogá 2013; Ruiz 2011). In India, the "Protection of Plant Varieties and Farmers Rights' Act" issued in 2001 and enforced since 2007, grants direct protection to farmers of their landraces and wild relatives (this is the term formally used in the Indian legislation). This Act recognizes farmers' contribution to the conservation, improvement, and availability of plant genetic resources that plant breeders develop into new plant varieties. Farmers can protect their plant material under the concept of a farmers' variety. A farmer's variety is described as the one that "has been traditionally cultivated and evolved by the farmers in their fields, or is a wild relative or landrace of a variety about which the farmers possess the common knowledge." The Indian Act also includes the category of an extant variety referring to varieties that are in the public domain. The Indian Act contemplates two other categories, the new variety and the essentially derived variety. These two satisfy the needs of professional breeders and companies. While the registration of varieties under the two first categories is not necessarily subject to the criteria of novelty, distinctiveness, uniformity, and stability, the last two requirements need to be fulfilled for successful registration (Ramanna 2003:15–18).

In their applications, the breeders have to reveal the use of plant genetic material provided or taken from tribal communities or rural families and used to develop the new variety. This is a practical and necessary step for making effective the provisions on the sharing of benefits included in the act. By 2013, only 22 out of 748 registers corresponded to farmers' varieties within this system. Koonan (2014) attributes this low registration to the precarious educational background and limited economic situation of poor farmers. The relatively low registration of farmers' varieties in the Indian case could indicate that farmers' rights in *sui generis* systems are more declaratory than practical. In other words, framing farmers' rights under the approach of intellectual property rights is substantially limited in its ability to recognize and compensate farmers for their past and present contributions.

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Final Thoughts on the Recognition and Protection of Indigenous Agrobiodiversity

It will take a substantial effort to shift from conventional understandings and farmers' rights interpretation to full recognition of Indigenous agrobiodiversity governance. Nonetheless, contemporary agriculture would be unthinkable without the diversity of landraces, genetic material, and knowledge that Indigenous Peoples provided in the past and still provide today for food and agriculture. The overall value of Indigenous agrobiodiversity and its origins and ongoing management by Indigenous Peoples are key for innovations in global agrifood systems. This is a challenge in global institutional contexts that assume large-scale industrial agriculture is the main way to overcome hunger and provide adequate nutrition. In a biocultural diversity framework, all biodiversity is valuable in and of itself; likewise, all manifestations of Indigenous use and knowledge of agrobiodiversity have an intrinsic value, and represent the rich variety of human adaptations to diverse environments, including climate change (see also Chapter 7).

The biocultural approach questions the dominant epistemology and research paradigms, thus opening space to include Indigenous worldviews and knowledge systems. It promotes intercultural dialogue and innovative pathways needed to recognize and protect Indigenous agrobiodiversity. Agroecologists and other practitioners of sustainable agriculture should participate in the intercultural dialogue. The biocultural approach can contribute to achieving global recognition of the multiplicity of cases that provide practical demonstrations of the knowledge, traditions, and Indigenous worldview of peoples interacting with their agricultural landscapes. Many of the successful histories are not internationally funded projects led by NGOs, but represent the everyday life of Indigenous Peoples led by their traditional authorities, elders, and leaders (women and men) who practice the teachings of their ancestors. The biocultural approach successfully supported Indigenous claims in Santiago Lachiguiri, Oaxaca, México. Contrary to the federal biodiversity conservation policy, ancestral agriculture (itinerant or swidden agriculture) was reinstated by the Santiago Lachiguiri's General Assembly as a fundamental component for the survival of the Indigenous community as a distinctive people in January of 2009. The community worldview about their relationship with the forest and their ancestral agricultural practices were recognized and protected to guarantee the balance between food production and forest conservation (Marchi 2018). Moreover, biocultural heritage is a pivotal concept of the biocultural approach and has been adopted in different contexts for conducting research *with* and *for* Indigenous communities, and to promote transformative actions with a bottom-up strategy (Nemogá 2018; Toledo et al. 2010). In 2010, the global sourcebook published by Woodley and Maffi (2012) summarized relevant grassroots initiatives on Indigenous

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agrobiodiversity taking place in Kaski (Nepal), Yunnan (China), Kenya, and Colombia.

Powerful economic and political forces have permeated Indigenous worldviews and Indigenous ways of practicing agriculture. Indeed, the cultural heritage and identity of many communities have been severely disrupted through the actions of governments, churches, and NGOs. Moreover, Indigenous communities are increasingly immersed—willingly or not—within the global capitalist economy, and their use values are increasingly transformed into commodities for external consumption. At the same time, Indigenous Peoples' open systems for sharing ancestral knowledge and varieties, and for preserving the collective diversity of seeds, are being eroded (IIED 2017). Indigenous Peoples cannot be expected to live in isolation from social and technological changes, subsisting on productive practices and strategies frozen in time. However, the lack of full recognition of Indigenous agrobiodiversity and Indigenous rights on their ancestral territories, cultural identity, and resources will accelerate current trends of cultural erosion and misappropriation.

In this chapter, I have argued that international and national policy and legislation on agrobiodiversity do not effectively address Indigenous agrobiodiversity. Human rights, by contrast, have been more proactive in creating ways to recognize Indigenous agrobiodiversity. Public law has been instrumental for guaranteeing capital investment in agriculture and extractive industries. Economic law, particularly intellectual property law, is essentially designed to protect individual and corporate private interest in market competition. The examples of special laws in Peru and India, with regard to the protection of plants and associated knowledge of Indigenous Peoples via defensive mechanisms within the intellectual property framework, are far from an optimal solution. Though a defensive mechanism is one step forward, it does not fit the UNDRIP recognition of Indigenous Peoples' right "to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions" (Article 31 UNDRIP).

Though human rights instruments have not directly addressed the protection of Indigenous agrobiodiversity, their application via interpretation in international and national court decisions shows some advances. An example is the application of the American Convention on Human Rights and the International Convention on the Elimination of All Forms of Racial Discrimination to guarantee Indigenous territorial rights. The case was brought before the Inter-American Court on Human Rights by the Inter-American Commission on Human Rights in 1998 because the Nicaraguan government did not satisfactorily compensate the Awas Tingni community despite the mandate of its Supreme Court. In 2016, the Inter-American Court granted protection to the collective rights on ancestral lands of the Kaliña and Lokono Peoples against Suriname's protected areas policy. At the national level, the Colombian Constitutional Court has issued numerous sentences protecting the rights of Indigenous and tribal peoples guaranteed by the ILO Convention 169

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and the UNDRIP. A milestone in constitutional jurisprudence was the recognition of Indigenous Peoples as subjects entitled to fundamental collective rights such as the right to the duty to be consulted, the right to their cultural identity, and the right to their territory. Though not directly related to Indigenous agrobiodiversity, these Courts' rulings have supported the traditional subsistence agricultural, hunting, and fishing practices of Indigenous Peoples, and protected their land, culture, and subsistence rights. In countries that have ratified the ILO Convention 169, flexible and extended interpretation of its provisions pressed under political mobilization could help to guarantee and preserve Indigenous agrobiodiversity.

To put into perspective efforts regarding the present and future of Indigenous agrobiodiversity, let us look to FAO policy, which clarifies relationships and acknowledges the diverse cultural systems that sustain natural resources (FAO 2010a:34):

> The inextricable relationship between cultural and biological diversity must therefore be respected, cultivated and promoted, and the rights of Indigenous Peoples over their traditional knowledge and practices must be recognized and, when necessary, protected.

After this statement, however, the very same policy suggests that "access to markets, financial resources, and stable sources of production..." provide the main path to solve poverty and food insecurity that affects Indigenous Peoples. It is not clear how this commitment is compatible with the right to Indigenous self-determination. Market-oriented tools in Indigenous lands can erode cultural values of solidarity and reciprocity, thereby disrupting the social institutions and practices that have maintained the collective pool of biogenetic resources.

The FAO policy on Indigenous and tribal peoples is also overly narrow in formulating research as one of the mechanisms for its implementation. Rather than envisioning how to transform the research paradigm so that it recognizes the inextricable relationships between cultural and biological diversity, it adopts a traditional approach for undertaking studies on the livelihoods of Indigenous Peoples. In addition, the FAO policy fails to overcome the dominant research paradigm that promotes conducting research *on* Indigenous Peoples, rather than *with* and *for* Indigenous Peoples. As envisioned within a biocultural diversity framework, science and technology seldom embrace the values of local knowledge and traditions and very rarely employ the language of rights and control over knowledge and resources (Nemogá 2016).

Other core principles delineated in the FAO policy on Indigenous and tribal peoples (FAO 2010a) should be emphasized as they include self-determination, and cultural and collective rights. Indigenous Peoples' own concerns and priorities must be actively supported when identifying projects and programs that affect their livelihood. Their distinctive cultures should not be threatened

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by open or subtle assimilation measures, and their collective rights to land, territories, natural resources, and knowledge systems should be respected.

This paper focused on Indigenous agrobiodiversity within the large agrobiodiversity governance field to underline the role of Indigenous Peoples' contributions. While governance in this area is central, we cannot dismiss the work of Indigenous and local communities to preserve and enrich agrobiodiversity at the grassroots level. This chapter on Indigenous agrobiodiversity opens the field for fruitful innovative research *with* and *for* Indigenous Peoples. Some suggestions in this direction are:

- Document cases of Indigenous agrobiodiversity practices and evaluate the impact of market-oriented strategies on their preservation as distinct peoples and cultures.
- Establish the relationship between Indigenous agrobiodiversity practices, the protection of their ancestral lands, and the right to self-determination.
- Explore the correlation between cultural, linguistic, and crop diversity.
- Assess the contribution of Indigenous agrobiodiversity to ameliorate poverty, hunger, sustainability, and *in situ* conservation.
- Strengthen legitimate participation of Indigenous Peoples in agrobiodiversity governance at the national and international level.
- Explore the best mechanisms to guarantee Indigenous self-determination, collective land rights, and preservation of their languages and cultures in the context of Indigenous agrobiodiversity conservation and governance.

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