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Chapter 10

A Latin American Perspective to Agricultural Ethics

Cristian Timmermann[1]

Abstract

The mixture of political, social, cultural, and economic environments in Latin America, together with the enormous diversity in climates, natural habitats, and biological resources the continent offers, make the ethical assessment of agricultural policies extremely difficult. Yet the experience gained while addressing the contemporary challenges the region faces, such as rapid urbanization, loss of culinary and crop diversity, extreme inequality, disappearing farming styles, water and land grabs, malnutrition, and the restoration of the rule of law and social peace, can be of great value to other regions in similar latitudes, development processes, and social situations. This chapter will provide a brief overview of these challenges from the perspective of a continent that is exposed to the consequences of extreme inequality in multiple dimensions and conclude by arguing for the need to have a continuous South-South dialogue on the challenges of establishing socially and environmentally sustainable food systems.

Keywords food ethics, extreme inequality, food production, land use, rural development, agrobiodiversity

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1. Introduction

Latin America is a highly diverse region. In terms of natural environments, we find both the driest desert—the Atacama Desert—and the most biodiverse area in the world: the Amazon rainforest. While the region boasts two major centers of origin, safeguarding an enormous variety of vital landraces for humanity (Kloppenburg 2005), it also maintains some of the largest monocultures of genetically modified soy fields in the world (Arancibia 2013). Culturally, this region in the Americas and Caribbean consists by definition of the countries and dependencies where Romance languages are predominantly spoken (Lolas 2014b). Yet especially in the countryside, this apparent homogeneity is vastly enriched by an enormous number of indigenous languages and regional dialects. The area embraces traditional, mixed, and fused cultural heritages from indigenous communities, colonizing nations, decedents of slaves, and multiple immigration waves. Politically, the region unfortunately shares a long history of abuse of power, disregard for human rights, discrimination, corruption, foreign intervention, and military coups, making it crucial to build trustworthiness in political institutions as the number of disappeared, tortured, enslaved, raped, and murdered people reaches several thousands in most Latin American countries.

Socially, we find mixed progress. A few countries in the region stand out for already having elected some women as heads of state and for having above world average female political representation (Rein Venegas 2013), yet at the same time the region also holds some of the most alarming rates of violence against women in the world (Bott et al. 2012). As far as the representation of indigenous peoples goes, we find similarly diverging images. Although an indigenous president took in Mexico already office in 1858, only a very small number of persons who have identified themselves as members of indigenous communities have been elected as heads of state since. Discrimination and human rights violations against indigenous peoples and people of Sub-Saharan descent is still rampant. The region has had little success in reducing its very high rates of violence and homicides. In terms of urbanization, we find here a number of the largest cities in the Western Hemisphere and also some of the least populated areas of the world. Economically, we encounter a wide spectrum of development stages. Latin America is characterized by having extreme inequality both within and between countries. While Chile and Argentina are listed among the countries with

a very high human development, Haiti remains the only country ranked as having "low human development" in the Americas (Jahan 2016). The differences in income and infrastructure are not only tremendous between rural and urban areas, but even within the same cities.

Regarding food production, as a region Latin America and the Caribbean produce sufficient food to feed their entire population. Unfortunately, despite major advances in addressing the right to food, poverty still makes food inaccessible for the 37 million people (6.1% of the population) who suffer from hunger (FAO 2018). The problems of poverty are further aggravated by the level of extreme inequality in the region, which, together with those in Southern Africa, are the highest in the world (Jahan 2016). Extreme inequality also hinders diverse participation and adequate political representation (Di Castro 2010) and facilitates exploitation, corruption, and unfair competition, with disastrous effects for rural people and the environment. Improving continuous access to adequate food therefore demands solutions of a political nature.

These realities bring about a number of problems and opportunities for addressing social justice and protecting the environment. In this article, I can only focus on a few of the most notorious challenges for the region and their ethical issues: the problem of extreme inequality and the struggle for food sovereignty (section 2); the pursuit of agroecology and the problem of coexistence in agriculture (section 3); the challenges of securing adequate food (section 4); the mission of maintaining diversity (section 5); and the need to make food systems more resilient (section 6). As a conclusion (section 7), I defend the necessity and benefits of a South-South dialogue.

2. Food Sovereignty and Extreme Inequality

A series of trends have triggered great discontent among food producers and consumers on how agricultural policies and trade agreements are being created and on how the law is being enforced. People are particularly worried about large-scale land-grabbing, a lack of consultation on agricultural and food policies, the violation of land workers' rights, the loss of heritage varieties, and insufficient space for alternative food production methods (Baquedano Jer and Larraín 2015). Farmers' organizations in Latin America have been

particularly strong in organizing themselves and raising their voice. A major movement pursued by these farmers is the fight for food sovereignty (Altieri and Toledo 2011).

The concept of food sovereignty consists of a series of demands, in seeking a right to produce food, to participate in the design of agricultural policies, to end systematic violence in rural areas, to empower farmers (especially female and indigenous farmers), to improve rural infrastructure, and to provide fairer access to land, water, loans, and technical assistance (Nyéléni Forum for Food Sovereignty 2007, Via Campesina 1996). To realize food sovereignty, a series of reforms must be implemented, some of which will encounter fierce opposition, as is the case of the redistribution of resources and the democratization of decision-making mechanisms (Barkin and Lemus 2016).

With regards to the redistribution of resources, it is self-evident that food cannot be grown without land and water. Yet especially under extreme inequality, these two resources are being seized at grand scale, threatening the existence of smallholders. Water is becoming increasingly scarce not only because of increasing demand for it, but also due to lower precipitation rates caused by climate change (McMichael 2017). Land-grabbing must be broadly understood to identify the different factors that contribute to the reduction in the number of farms (Giraldo 2018). One form of land-grabbing is the large-scale acquisition of land and waters for investment purposes and as foreign reserves. A second form of land-grabbing is changing the use of the land, particularly to move from food production for the local population to the production of export cash crops, most alarmingly the cultivation of soy for animal feed and crops for biofuels. According to 2014-2015 numbers, 52% of land under cultivation in Argentina was used to grow soy, of which 96% was exported (Leguizamón 2016). Here we should also consider the effects that the production of drugs and the war against them is having on the region. The cultivation of coca, cannabis, and poppies demands vast areas of land, water, and labor. The criminalization of drug production brings the destruction of these cultivars and pushes drug cartels to take new lands for their production, usually expelling, tormenting, or even murdering non-complying farmers. In 2014, the cultivation of coca bushes alone occupied a total 132,000 hectares in Bolivia, Colombia, and Peru, while the same year 110,000 hectares were eradicated (United Nations Office on Drugs and Crime 2016, annexe v). As a comparison, to visualize the magnitude of

such areas, the cultivation of 141,000 hectares of vineyards make Chile one of largest wine producers of the world, providing legally protected jobs and paying taxes (ODEPA 2018).

The rural population often feels that they are not sufficiently and adequately consulted on agricultural policies (Carro-Ripalda, Astier, and Artía 2015). Food sovereignty advocates claim that agricultural policies mostly favor large landowners and multinational corporations, and that such policies need to be redesigned so that they also benefit smallholders. This would require a right to protect local markets and prohibit the use of particular technologies, especially genetic modification (Nyéléni Forum for Food Sovereignty 2007). A special concern is how these technologies end up putting farmers in a position of dependency, with debt as a common consequence, ultimately obliging farmers to sell their land and labor. Inadequate agricultural policies have caused a number of Latin American countries that once had a strong tradition of being food-exporting countries to become net food-importing countries over the last decades (Lara Cortés 2001). In 2012 Mexico, for example, had to import approximately 30% of maize, 58% of wheat, and 82% of rice to cover domestic needs (Escalona-Aguilar et al. 2015).

Food sovereignty raises important ethical questions. While the right to self-determination may at first seem something one should welcome from an ethical perspective, there are some special considerations about ethical responsibility that need to be attended when environmental resources are in play (Villarroel 2013, Lecaros Urzúa 2013). The resources needed to grow food, particularly water and land, are in limited supply. Moreover, food is a basic human need. Current population size, together with existing land distribution arrangements, make it impossible to be unconcerned about how land is cultivated. People who are not involved in food production have a strong interest in food production systems functioning efficiently and cost-effectively. There is huge political pressure to make food cheap (Patel and Moore 2017). A number of organizations and food activists are also demanding more sustainable farming systems in the interest of conserving the environment and not jeopardizing future food production capabilities (McIntyre et al. 2009). These three societal interests—access to affordable and adequate food, environmental sustainability, and the maintenance of future food production capacities—must be balanced with whatever diverging interest food producers may have.

To defend their interests, farmers' organizations that seek political support will have to advocate for education campaigns to teach the population at large about the true social and environmental costs of food production (Timmermann, Félix, and Tittonell 2018). There is increasing awareness that food production is a sector in which workers are exploited in large numbers and with great intensity (Raynolds 2014). Many are also suffering from the health consequences of agrochemicals. Farmers have first-hand experience with the environmental and health impact of conventional agriculture; it would be unwise and unjust to ignore their testimony.

To improve agricultural practices for people and the environment, two leading agricultural ethicists, Paul B. Thompson (2015) and Michiel Korthals (2004), have defended the use of a deliberative approach to improve ethical decision-making. Inspired by the work of Jürgen Habermas, the principal idea of this kind of approach is to organize meetings with key stakeholders, representing the interests and opinion of experts, consumer groups, farmers, retailers, and environmental organizations, to discuss the concerns and demands of all affected groups, identify priorities, and come to a consensus. Since most the urban populations has lost its connection to food production venues, it is becoming increasingly important for such public deliberations to be linked to education campaigns that improve people's food literacy. Food producers, on the other hand, will have to commit to learning about the nature of problems of collective action, the shared benefits of environmental regulations, the concept of the human right to adequate food, and basic ecological principles. This knowledge is crucial to ensuring that dialogues between experts, consumers, and food producers are built on an adequate understanding of social and environmental needs and challenges. In the Latin American context, it is particularly important to include any affected indigenous communities in such discussions and make sure that discussion forums do not perpetuate historical injustices (Barkin and Lemus 2016). Action needs to be taken against discrimination, and training programs must be established to empower indigenous leaders and historically underrepresented groups so that they can take part in such discussions as peers of equal standing.

3. Agroecology and the Coexistence of Different Farming Styles

A farming system that includes an enormous intellectual and biological contribution from Latin American farmers is agroecology (Altieri and Nicholls 2017). As a principled based approach to agriculture, agroecology seeks to substitute external inputs with locally produced inputs, prevent nutrient run-off, and embed food production units into the larger social and ecological environment (Gómez Echeverri, Ríos Osorio, and Eschenhagen Durán 2017).

There are numerous non-ecological advantages of this farming system. By working with biodiversity, this system allows for wider nutritional diversity among farm workers, thus reducing malnutrition (Altieri 2003). The diversification of crops also distributes work more evenly throughout the year as these farms have multiple harvesting periods. Agroecology can thus offer better year-round employment, improving work quality and reducing the need of a migrating workforce (Timmermann and Félix 2015b). Moreover, a considerable amount of agroecological principles are built upon traditional ecological knowledge, which has been tested over a prolonged period of time (Tittonell et al. 2016). By building on the knowledge of indigenous peoples, agroecology facilitates the recognition of their intellectual standing and contributions (Waldmueller 2015).

Many plants, animals, and insects that provide crucial ecosystem services to agroecological farms are vulnerable to agrochemicals used in conventional agriculture. Moreover, farmers who use organic agriculture methods are only able to sell their produce in specialized markets at a premium rate when their harvests have not been contaminated by residues (especially from genetically modified crops) from nearby conventional farms (Robaey 2016). To allow for the coexistence of both farming systems, regulations must be in place to avoid contamination and maintain the delivery of ecological services.

Coexistence in agricultural practices and ways of life calls for a series of ethical questions. What is the value of providing room for multiple methods of working the land? Should we support this coexistence even if agricultural land could be used more efficiently? As the efficiency of agroecological farming practices is continuously called into question (Tittonell 2014), defending diversity among farming systems becomes much stronger if we also spell out the different social and ecological benefits of this diversity. One of the strongest advantages of having diverse production systems is that this variety widens the possibilities for participation. About a third of the world's population are smallholders, which makes the

development of farming systems that function with local resources and local know-how a necessity to foster inclusion, assure food entitlement, and improve welfare.

Another approach to defending coexistence in agriculture is to identify any agricultural practice that directly jeopardizes the livelihood of other farmers as a form of harm. Unfortunately, while a non-harm principle is widely accepted, the implications of such a principle are all but clearly defined. Among the most widely accepted forms of harm are spills of agrochemicals in above-normal use concentration, caused for example by leakage or accidents. Yet in practice, especially when the negative effects of such agrochemicals are felt in distant locations or with a significant delay of time, there is a decline taking responsibility and holding parties accountable. It is even more debatable to interpret the reduction of opportunities as a form of harm; for example, when a farm is invaded by pollen from genetically modified organisms from neighboring farms and thereby loses the option of exporting a product to a country with a zero-tolerance policy against traces from genetically modified organisms. Ethics comes into play by assisting in the identification of different notions of harm, in spelling out the importance of reaching a consensus, and in insisting along policy-makers on the need for regulations.

4. Adequate Food

Trade agreements, which have established an economic environment that strongly favors large-scale farms and retailers of processed foods, are having disastrous consequences for adequate nutrition. A radical example is Mexico, with a skyrocketing increase in the rates of obesity and malnutrition after the North American Free Trade Agreement (NAFTA) came to force in 1994 (Loría and Salas 2014). In a number of cases, these obesity rates were justified by claiming that the local population had a genetic tendency for obesity, ignoring the fact that such a development is recent and unprecedented (García-Deister and López-Beltrán 2015).

However, when analyzing the problem of obesity and malnutrition, we should not forget the various factors that influence people's eating behaviors. As justified as the accusations regarding the inadequacy of trade policies may be, these do not fully explain recent changes in eating behaviors. To understand the causes of obesity and malnutrition, we

must look at both individual and social factors; only then can we design effective public policies (Lolas 2014a). Here a number of additional causes can be listed. Extremely low wages, something that to be fair has even been condemned by wealthy trading partners, not only oblige the poorer population to feed themselves with cheap calories but has invited government policies that press farmers to produce food at low costs, often at the cost of workers' rights and the environment. Another factor is the combination of poor education, weak regulations, and deceiving advertisement, which increase the demand for processed food, especially in cases where traditional nutritious recipes are forgotten. The mix between excessive weekly working hours, as we see in Mexico and Chile, and living in large urban agglomerations with poor transportation infrastructure and unsustainable driving habits leaves people with insufficient time to regularly procure food in local markets and to prepare meals that fulfill their physiological needs and social traditions.

In terms of overall food security, despite the fact that significant improvements have been made, climate change, crop failure, slow emergency relief programs, and urban poverty are still responsible for a considerable amount of hunger and malnutrition. The eradication of hunger and malnutrition, as major sources of suffering and impediments for human flourishing, are among the most urgent global tasks. Reducing hunger in the present not only saves massive future human suffering, but also economic costs, which are considerable. In Guatemala, for example, the costs of hunger are calculated to be approximately 11.4% of its GDP (Vivero-Pol and Ramírez 2009). It has been estimated that the costs of eliminating hunger are at least ten times smaller than the cost existing hunger causes (idem).

From an ethical perspective, the priority of fighting hunger is widely defended (Thompson 2010). As a source of suffering, utilitarianism strongly condemns hunger. As a policy recommendation, such reasoning demands that any international agreement only be signed if it also improves the situation of the least advantaged. The right to food is a human right and is defended by most rights-based approaches. Here we should keep in mind that the human right to food not only covers absence of hunger but also a right to adequate food (De Schutter 2011). To do justice to the element of 'adequacy' within food politics, people must have a voice in decision-making and real freedom to choose. It is clear that without a serious commitment to reducing current levels of poverty, the full scope of such a right remains impossible to fulfill (Dieterlen 2003).

Regarding food adequacy, ethics can be a supportive tool to reveal misplaced incentives. Private profit-seeking activities, such as the selling of highly processed foodstuffs with excessive amounts of salty, sweet, or fatty ingredients to trick the consumer's senses (Pollan 2008), can lead to huge profits while inflicting massive costs on public welfare, including individual suffering and public health expenses. Here we can observe a hidden tragedy of commons problem: while the benefits of aggressively selling such foods are fully grasped by private companies, the costs of the corresponding changes in diets are paid by the public at large. Once this outcome is identified as parasitic, proper regulation can be placed to internalize the cost of these business practices, create adequate food labeling, or even prohibit certain industry practices altogether.

5. Seed and Culinary Diversity

Latin America is home to two of the five major global centers of crop origin, contributing to a radical change in the world's food consumption, through the propagation of maize from the Mexican and Central American highlands and potato from the region in and around Southern Peru (Kloppenburg 2005). These two centers, together with later cultural exchanges, have made the region a culinary and agrobiodiversity hotspot. The cultural heritage handed down from our pre-Columbian ancestors, colonizing nations, and former African slaves have led to a huge diversity of culinary and agricultural traditions. This heritage has been further expanded with contributions from more recent immigration waves coming mostly from Europe, East Asia, and the middle East.

This cultural heritage enriches peoples' lives. It also holds a number of under-explored alternatives for sustainable food consumption. The recent popularization of quinoa from its Andean homeland to the world's slow food tables is a well-known example. The region also maintains European traditions that have been falling into disuse on the continent. It also holds a number of potentially sustainable protein alternatives for the future, as we can observe with the still widely consumed edible insects, such as *chapulines* and maguey worms, which were identified by Mexican indigenous peoples (Ramos-Elorduy 2009).

Unfortunately, the stewardship and conservation of this heritage involves massive costs. Landraces holding unique varieties that are crucial for future breeding must be

conserved, requiring the establishment and enforcement of policies that prohibit changes in land use and hinder the introduction of invasive varieties and species. This involves both actual and opportunity costs. Traditional knowledge must be documented, and involvement with traditional practices must be encouraged to avoid the loss of tacit knowledge. Many regions have established special fairs and commemoration weeks in order to popularize local culinary heritage and seed varieties. However, government policies should take care to avoid rapid popularization leading to unsustainable exploitation, thereby endangering the livelihood of the communities that have stewarded these resources and sometimes even driving these resources near extinction.

An important ethical question is how this diversity should be treated. While some communities see this heritage as a gift to humankind, a common heritage, others feel that there are sacred elements that should stay within the community. There is also widespread discontent with the commodification of this heritage, especially when outsiders are the ones profiting from it, as this is perceived as a form of biopiracy (cf. Madrazo Lajous 2011). It is crucial to come to a common agreement on how these resources should be governed, as this would not only help to specify rights but also responsibilities, especially regarding conservation and sustainable use (Timmermann and Robaey 2016). The current situation in which countries rich in biodiversity absorb the majority of the costs of maintaining and developing their traditional landraces and also lose business opportunities caused by halting land use changes, from which ultimately the whole of humanity benefits, is neither fair nor sustainable. A more equitable division of costs is needed since much of this tradition and resources are treated and embraced as a common heritage.

6. Building Resilient Food Systems: Climatic and Social Challenges

Disruption of the systems we rely upon is inevitable (Kolers 2016). As food is a basic need, increasing the resilience of food systems becomes an issue of social justice, especially since in a region of extreme inequality, price shocks due to scarcity or temporary unavailability will be suffered far more intensely by the poor (Tendall et al. 2015). Two factors make the region particularly vulnerable: extreme weather events and the exponential concentration of people in the major cities.

Historically, the region is prone to natural disasters, as it harbors one of the most active earthquakes regions in the world along the Pacific coast and the Antilles and is vulnerable to weather-related events such as floods, droughts, and, in the Caribbean and Northern Pacific coast of the region, also hurricanes and tropical cyclones. The likelihood of extreme weather events will increase considerably in the future due to climate change. We have reached a point at which human survival already depends upon our undertaking major climate change adaptation strategies due to the ongoing lack of action to halt carbon emissions (McMichael 2017).

One of the clearest and most recent examples of the need to adapt food production to extreme weather events is the case of hurricane Irma, which impacted Puerto Rico in September 2017. The hurricane left 3.4 million people without power, water, or fresh food. The destruction of costal infrastructure and large-scale power cuts, together with the island's strong reliance of imported food, created a national food emergency. This extreme vulnerability is the result of irresponsible and exploitative public policies that are not suited to an island with natural disasters. It has become clear that these regions need to reclaim food sovereignty (Félix and Holt-Giménez 2017). Regions that have redesigned food production on the basis of agroecological principles, and thus reduced their current dependency on imports of food and agricultural inputs, have improved their resilience regarding extreme weather events and price increases, as studies from Nicaragua (Holt-Giménez 2002) and Cuba (Rosset et al. 2011) show. Biodiverse farms are more resilient after extreme weather events and capture far greater amounts of carbon (Altieri et al. 2015), thus helping to adapt to climate change while contributing to its mitigation (Timmermann and Félix 2015a).

As an issue of justice, we ought to keep in mind that the failure to adapt food production to climate change is most strongly paid by the poor, in many cases with hunger. Justice demands that the burdens of climate change be distributed fairly, and the current situation in which the poor—usually people with a far lower carbon footprint—end up paying the highest price in terms of well-being (or with their lives) is clearly ethically unacceptable (Loewe 2013). The vulnerability created by climate change adds one more argument in favor of redesigning food systems in view of increased resilience. As the region will have to undertake massive efforts to adapt food production to climate change, it is crucial that good relations be maintained to exchange knowledge, data, and innovation. Latin American

countries will have to work on common agendas so that they exert pressure as a group to avoid absorbing the full cost of this agricultural transition and advocate for mitigation efforts.

Besides the environmental risks factors the region faces, we can increasingly observe a risk factor stemming from another facet: the social sphere. Latin America is home to some of the largest cities in the Western Hemisphere, which makes the population particularly vulnerable to fluctuations in food supply and prices. Massive agglomerations such as Mexico City, Sao Paulo, Buenos Aires, and Rio de Janeiro, among many others in the region, bring major challenges for food security and sustainability. With their much greater purchasing power, these large urban centers absorb crucial resources needed for food production: water, land, labor, and food needed for land workers (Delgado Ramos 2013).

Agricultural workers, especially those practicing ecological methods, also have an important role as natural resource stewards and providers of ecological services. Agricultural land hosts a number of species, captures carbon, and filtrates air. Moreover, rural inhabitants also act as stewards of environmental resources, hindering or slowing down unsustainable exploitation (Rozzi 2012). These ecological services are rarely remunerated, despite the fact that urban populations are dependent on them.

It has become clear that the current urban-rural relationship is neither fair nor sustainable and that a new arrangement must be found. Logistical challenges favor solutions that foresee an increase in food production within cities in the form of farm towers, allotments, and roof farms (Rydin et al. 2012). If properly designed, such urban food production systems could capture carbon, make use of rainwater and some types of wastewater, recycle nutrients from food waste, and reduce food miles, making cities both more sustainable and more resilient.

Stimulating urban food production also demands social innovations, and here ethics comes into play. For many urban dwellers, growing food is not a cost-effective way of using their labor and sometimes even resources. We require arguments based on ideas of justice to motivate people to undertake their own share of urban food production as a contribution towards reducing the environmental footprint of the food they consume (Di Paola 2014) and increase the resilience of food systems. As a first justice-based argument to become involved in urban agriculture we can list the importance of doing one's share in increasing the resilience of urban food systems. The stability of political and economic institutions depends

on the maintenance of a civil order. Food insecurity is a major destabilizing factor (Holt-Giménez, Patel, and Shattuck 2010). We thus also draw benefits from stable food supply systems even if we personally are not likely to suffer from food insecurity. In this sense, food security is a public good, and like most public goods its establishment requires our individual contributions. Justice thus demands that we not free-ride but rather do our part to increase the system's resilience. The second justice-based argument appeals to the idea of offsetting our environmental footprint. Urban agriculture is in this sense an attractive offsetting strategy as it is highly visible and thus may lead to multiple replications.

Lastly, to make a system resilient we must learn from past mistakes as a society and identify weak points in the systems we rely upon. Here, knowledge sharing and acquisition become crucial (Tendall et al. 2015). This demands regional cooperation and building local research and development capacities. It requires willingness to cooperate, and for this it is fundamental that past injustices be acknowledged and that peoples work towards building new types of constructive relationships and exploring new opportunities for cooperation.

7. Conclusion: Horizontal Knowledge Transfers: A Dialogue Among Peoples Living in the Same Latitudes

Countries in the Global South have a poor record of exchanging scientific ideas. In particular, there is very little scientific exchange between Africa and Latin America (Mazloumian et al. 2013). A scientific dialogue on social, ecological, and agricultural issues is strongly needed as the countries of the Global South are facing very similar challenges and opportunities. Climate change will have a far worse effect on food security in the countries within the tropics, creating a strong need to make tropical agriculture more resilient to climate change and extreme weather events (Altieri and Koohafkan 2008). Rapid urbanization is becoming a social and environmental challenge in most countries of the Global South (Rydin et al. 2012). These countries will have to learn how to tackle extreme inequalities and their negative effects on social justice and the environment.

While the region faces a number of similar struggles, it also offers many new opportunities. The population is young and open to new ideas. Many nations have not previously had a substantial knowledge exchange, providing an ideal ground for developing

new ideas in cognitively diverse relationships. Ecologically, the Global South offers enormous potential to explore permacultures since in large parts of the region the absence of harsh winters allows for the cultivation of many different crops throughout the year. The similarity of many of the challenges faced by the Global South allows countries in the region to pool intellectual and financial resources to develop common technological and social innovations (Camacho 2008).

The different regions should not, however, depend on intermediaries for such exchanges. Their own necessities and enthusiasm should be sufficient to come up with common research and cooperation agendas. It is crucial that knowledge developed in these regions be used and expanded, which requires the establishment of alternative research networks better suited to incorporate traditional knowledge and provide solutions for the challenges of sustainable development and the optimal use of local resources (Olivé 2004, Gupta 2006, Kelbessa 2015). The success of these efforts will depend on how historic and present injustices are addressed, and on how confident the Global South becomes in re-establishing and recognizing these independent and parallel knowledge systems and cultures, without falling in the conceptual and methodological "traps" that failed to recognize the value of this diversity (Escobar 1998, Álvarez and Coolsaet 2018).

Such a dialogue may allow us to truly incorporate the desire and need of living in harmony with the natural environment into developing agendas to achieve a so-called ecodevelopment that many communities and countries of the Global South strive for (Max-Neef 1992, Gudynas 2011, Leff 2013). Long-term sustainability demands a transformation of food systems to include the conservation and restoration of natural habitats as a central policy goal by encouraging production methods that seek a symbiotic relationship between nature and people, reduce dependency on externally produced inputs and exploitative social and environmental arrangements, are resilient to environmental changes and social pressures, and provide adequate food to both rural and urban populations.

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