

Agroecology Policies to Promote Sustainable Development: A Study of Agroecological Projects Implemented by NGOs Working with Indigenous Communities in Latin America

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Introduction

“Leave No One Behind” (LNOB)¹ is the objective of the 2030 Agenda and Sustainable Development Goals (SDGs), proclaimed by the Chief Executive Board in 2016. The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)² was approved by the General Assembly in 2007. The United Nations and international community are likely to listen to the voices of marginalized populations such as minorities and indigenous peoples. It can be claimed that their value system, traditional knowledge and farming methods are of particular interest to anthropologists. Such local knowledge is also vital in discussions of agroecology, a discipline developed by agronomists, biologists and ecologists in Western academia (e.g. Wezel et al. 2009, Gliessman 2015). Agroecologists worry that the current global agricultural and food crisis directly threatens human existence. Unprecedented levels of environmental degradation are feeding into multiple crises associated with climate change. The negative impact of inadequate resource and land management can be still averted if agroecological thinking is adopted and made mainstream in the global management of sustainable food systems. Traditional knowledge and ecological science can complement each other and provide a pathway from current capitalist monocultural farming towards sustainable agroecosystems. To achieve this, it is important to critically examine the interdisciplinary nature of agroecology and the lack of social aspects of its research.

Agroecology is a significant international discourse, and it is at the forefront of the design and implementation of sustainable development projects. The Food and Agricultural Organization of the United Nations (FAO)³ insists on the necessity of agroecological principles for policy-making and project implementation. The FAO claims that the concept of agroecology – the application of ecological principles in order “to optimize interactions between plants, animals, humans and the environment” – is an effective approach to deal with the global challenges of food security and climate change⁴. Agroecology is becoming increasingly recognized as an advantageous alternative to intensive agricultural practices in policy debates around sustainable food systems. Understanding socio-ecological systems can contribute to the conservation of the environment and bio-cultural diversity, thus one could assert that agroecology is indispensable for the promotion of sustainable development.

This work is aimed at researching agroecology as a tool for collective action and as a framework for policy design to improve indigenous peoples’ livelihoods. In order to explore “development models” that genuinely propose to support indigenous knowledge and small-scale farming, we must acknowledge that indigenous livelihoods are heavily dependent on natural ecosystems, and indigenous communities protect and coexist with and in their

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1 United Nations Sustainable Development Group, “Universal Values Principle Two: Leave No One Behind,” 2030 Agenda.

2 Further information is available on the website of the United Nations Department of Economic and Social Affairs, Indigenous Peoples: “United Nations Declaration on the Rights of Indigenous Peoples”.

3 The FAO Headquarters in Rome hosted the First International Symposium on Agroecology for Food Security and Nutrition in 2014, and the Second International Symposium on Agroecology: Scaling up Agroecology to Achieve the SDGs in 2018 (FAO official website).

4 FAO, “Agroecology Knowledge Hub: Overview,” official website.

surrounding environments through agroecological practices. Firstly, this paper will explain the concept of agroecology and “culturally appropriate interventions” to point out that agroecology is highly relevant to anthropological discussions of development and conservation. Secondly, it will examine the debates concerning agroecology and sustainable development, and the relationship between agroecological principles in policy-making and the concept of food sovereignty. Subsequently, it will argue that agroecology is a much debated subject in Latin America, especially as its idea pertains to agriculture and food policies. I will discuss the agroecology movement, alongside my own case studies of agroecological projects implemented by NGOs working with indigenous communities in Mexico and Brazil. The latter case studies are based on online research and my field visits to the state of Chiapas in Mexico, and the regions of Acre and Mato Grosso in Brazil. It could be argued that NGOs have not only gained the trust of indigenous communities, but that they have also played a significant role in leading the international agroecology movement. As such, the study proposes that agroecological projects can be adopted by diverse indigenous communities, and agroecology deserves further academic treatment from a social scientific perspective.

Thinking about Agroecology and “Culturally Appropriate Interventions”

As an alternative to industrial agriculture, agroecology is increasingly practiced for the well-being of humanity and greater bio-cultural diversity. Examples of agroecological practices include, planting of trees, forest restoration, ecological farming, home gardening, and eating locally grown food. These practices can protect local food systems, traditional agriculture, and the environment. The global agroecology movement is against the use of chemical fertilizers, pesticides, and genetically modified organisms (GMOs), which are promoted by the agri-food industry. Agroecologists cannot accept intensive farming, which hinders the practice of agroecology.

Altieri and Rosset (2017) claim that agroecology is not about agricultural input, but is rather a matter of process and principles. This process constitutes the integration of modern science and indigenous knowledge⁵, and the examination of socio-economic and environmental context is crucial for the dissemination of agroecological principles. Therefore, Altieri and Rosset argue that academic disciplines such as anthropology and ethnobotany are significant for the understanding and development of agroecology. Francis et al. (2003: 100) interpret agroecology as “the integrative study of the ecology of the entire food system, encompassing ecological, economic and social dimensions”, for the purpose of offering a practical, academic and educational framework to understand “the wholeness and connectivity of systems” to pursue sustainable agriculture and food systems. They claim that agroecological research should examine the distinctiveness of each place, and requires interdisciplinary cooperation between the fields of anthropology, sociology, economics, environmental sciences, and ethics.

Perfecto and Vandermeer (2018: 224) consider agroecology to be a form of ecological science, and their explanation comprised of the following dimensions: (1) science which can offer the understanding of agroecosystems; (2) traditional knowledge involving agroecological practices; (3) political movement which influences policy-making; (4) and local natural systems. As agroecology is a multidisciplinary subject, Perfecto and Vandermeer claim that this type of framework is necessary for understanding and maintaining agroecosystems. Furthermore, Gliessman (2015) argues that agroecology should be considered the entire food system, including production at farms, distribution process, and consumption of households. Gliessman points out that the industrialization of agriculture and commodification of food caused various social issues – such as inequality, hunger, environmental degradation – and the impact from such industrial agriculture has been studied by ethnobotanists, anthropologists, and rural sociologists. These analyses demonstrate that holistic approaches are required to

5 The concept of indigenous knowledge is often referred to as traditional ecological knowledge (TEK). TEK can be interpreted as “a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment” (Berkes 1993: 3).

understand the concept of agroecology – harmonious interactions between humans, non-human species and their surrounding environment – which can be considered a scientific discipline, and a practice as well as social movement (e.g. Wezel et al. 2009, Rosset and Altieri 2017).

Indigenous peoples have contributed extensively to the world's agricultural diversity, and their livelihoods are heavily dependent on natural ecosystems. The majority of remaining biodiversity is located in indigenous peoples' territories, and speaks to their traditional stewardship (Kalafatic n. d.). Unsurprisingly, the depletion of this environment amid growth-oriented forms of economic development impacts indigenous peoples negatively. In addition to this, it is important to note that Latin American indigenous communities have had a significant impact on the global dissemination of agroecological knowledge (Altieri and Toledo 2011).

Certain human interventions based on agroecological principles could both enhance species diversity and increase productivity. For instance, indigenous cassava management and associated cultural practices could diversify cassava production (Rival and Mckey 2008). Fukuoka's (1975) natural farming methods could yield more rice and crops than any other Japanese farms without damaging the environment. Similar cases can be found elsewhere throughout the world, and anthropologists and ethnobotanists have made significant contributions to the study of agrodiversity and indigenous knowledge. Researchers engaged in ethnobotany contend that the idea of socio-cultural diversity and biological mechanisms are interlinked, and that this kind of ethnobotanical knowledge should be considered vitally important in decisions of sustainable development (Daly et al. 2016).

Sillitoe (2006) discusses the significance of indigenous knowledge in the field of development. He points out that anthropologists have made substantial contributions to research on indigenous knowledge such as farming systems; however it is a recent phenomenon to consider indigenous knowledge and participatory approaches in development studies. Sillitoe (2006: 6) insists that anthropological holistic approaches are necessary to understand people's needs, which in turn promotes "culturally appropriate interventions". As agroecological practices form a significant part of indigenous knowledge, these "culturally appropriate interventions" should be associated with agroecological farming systems. Traditional farming and agroecosystems require holistic approaches to be examined, and therefore it can be maintained that anthropological research is indispensable for understanding the concept of agroecology.

Sillitoe (2006: 2) argues that "cross-culturally informed" studies and interdisciplinary research, involving both scientific and indigenous knowledge, are essential and mutually beneficial. Historically, the value of indigenous knowledge has been underestimated in relation to scientific knowledge. Universal theoretical science and particular cultural contexts are both necessary in discussions of development agendas. Indigenous knowledge derives from local culture, which is associated with a "dynamic mix of past 'tradition' and present invention with a view to the future" (ibid.: 1). People's views on the environment, health matters, and lifestyle choices are formed by various traditions and histories rooted in local culture. Therefore, it is important to examine indigenous knowledge when discussing development. Sillitoe (2006: 2) claims that "repetitive practice" is considered "formally transmitted knowledge". In addition to this, he argues that this practice has evolved through constant revision across generations. Furthermore, Sillitoe maintains that it is often the case that communities share indigenous knowledge more than scientific knowledge.

Protecting cultural diversity is essential for the conservation of the world's biodiversity. Places which have more languages and cultures tend to have greater biodiversity (Durning 1992, Maffi and Woodley 2010). Biocultural diversity can be a result of the co-evolution of humans and nature, and indigenous knowledge and farming practices have played a vital role in the conservation of biocultural landscapes and natural resources (Pimbert 2018). This demonstrates that cultural diversity and agro-biodiversity go hand in hand.

Moreover, Pimbert argues that indigenous knowledge systems of local communities need to be carefully examined in policy-making decisions. It is often the case that policy makers do not consider the significance of the holistic nature of indigenous knowledge systems, which involve their own unique aesthetic, ecological and economic

values as well as biocultural landscapes (Posey 1996, Posey and Dutfield 1996). These traditional knowledge systems should be preserved as a whole – knowledge systems including languages, spirituality, customary practices and local institutions – all of which are intimately bound up with one another (Pimbert 2018). As such, agroecological policies require holistic approaches in understanding what can be at times highly complex and inter-connected knowledge systems and worldviews.

Policy Debates Concerning Agroecology and Sustainable Development

The current global food system is an imbalanced one. According to the World Health Organization (WHO), in 2016, more than two billion people suffered from micronutrient deficiencies and 815 million people were chronically hungry. Despite this, 1.9 billion people were overweight, and obesity rates have almost tripled since 1975 (WHO 2017). Both the issues of food scarcity and unhealthy diets are discussed by the international community in the search for solutions.

Regarding nutritional matters, agroecological thought can offer new insights into the promotion of healthy diets, food production, and consumption. We are all facing nutritional and ethical dilemmas, such as whether we should buy cheaper and less healthy industrial food products or expensive and healthier organic food produced by small-scale farmers. Likewise, governments and policy makers go through similarly complicated decision-making processes with respect to the global market and food crises – i.e. whether to pursue industrial agriculture or agroecology.

It is controversial for the international community to discuss whether agroecology and small-scale farmers can feed an ever-increasing population – a population that will rise to an estimated 9 billion people by 2050. Large-scale industrial agriculture, science, and technological innovation have been considered necessary measures to feed the world, according to multinational corporations such as Monsanto and others (Monsanto 2019, Tilman et al. 2011, Godfray et al. 2010). By contrast, various studies show that small-scale farmers are capable of producing food for the majority of the world's population. Research shows that over 570 million farms exist across the world; more than 90% of them are family farms, and approximately 84% of all farms are smaller than 2 hectares (Lowder et al. 2016). In addition to this, it is estimated that 75% of the world's ecological damage has been caused by industrial agriculture, and that these figures tend to be neglected or concealed in the public mainstream (cited in Shiva 2015). The negative impact of GMOs has been reported and discussed by the international community (e.g. Pollan 2008). Regardless of small-scale farmers' strong presence in agriculture worldwide, their work is often underestimated and undermined by the international community (Pimbert 2018).

Family farmers, indigenous peoples, forest dwellers, nomadic pastoralists, and artisanal fishers have been excluded from policy debates concerning development issues, agriculture, and the environment (Chambers 2008). Moreover, women have been the most marginalized, while representatives of agribusiness and large-scale farms have been actively involved in policy-making processes for years (Pimbert 2018). In fact, the dominant paradigm of industrial agriculture and the Green Revolution has led to the collapse of food systems worldwide. In reality, women are the world's primary agriculturalists and food providers (Shiva 2015). Shiva argues that notions of caring, sharing, well-being, healthy diets, and conservation are significant across women-centered food systems, and women make the most substantial contributions to equity in food distribution, and the creation of healthy dietary culture. This demonstrates just how intrinsically reliant food security is on women's involvement. The role of women in food systems is thus significant for the policy debates concerning agroecology.

The FAO and its partners published the *Tool for Agroecology Performance Evaluation* (TAPE) in 2019, with the aim of measuring various functions of agroecosystems to achieve the Sustainable Development Goals (SDGs), food security, and zero hunger by 2030. The FAO recognizes that agroecology has a wide variety of interpretations, and discusses the 10 elements of agroecology – i.e. diversity, co-creation and sharing of knowledge, synergies, efficiency,

recycling, resilience, human and social values, culture and food traditions, responsible governance, circular and solidarity economy – for the evaluation of “agroecological transitions”⁶.

According to FAO’s report titled *The Future of Food and Agriculture: Trends and Challenges*, the organization’s vision is to achieve “a world free of hunger and malnutrition and one in which food and agriculture contribute to improving the living standards of all, especially the poorest, in an economically, socially and environmentally sustainable manner” (FAO 2017: 3). The report also states that the world should take holistic approaches towards sustainable food systems. Existing examples of effective approaches include agroecology, agroforestry, conservation agriculture, and climate-smart agriculture. These farming methods derive in large part from indigenous and traditional knowledge.

Indigenous populations are coming to be considered increasingly significant in policy-making decisions. The FAO now recognizes the necessity of reflecting indigenous peoples’ voices in agriculture and food policies, since the organization has begun exploring the links between agroecology and indigenous food systems. In 2015, the FAO organized a meeting with 20 indigenous peoples’ representatives from various geographical regions, and published the *Indigenous Food Systems, Agroecology and Voluntary Guidelines on Tenure* as the outcome document. Alongside FAO staff, other participants were members of the United Nations Permanent Forum of Indigenous Issues (UNPFII), International Fund for Agricultural Development (IFAD), International Land Coalition (ILC), NGOs, political leaders and academics. During the meetings held over two days, they discussed among other things, agroecology, nutrition, and traditional food systems.

According to the guideline report, the FAO outlines the necessity of increasing the representation of indigenous peoples within the FAO and other relevant institutions such as UNPFII. In addition to this, the FAO makes clear the necessity of facilitating more dialogues between indigenous peoples and the private sector in order to support the market involvement of indigenous food products, which have high nutritional values. Traditional food related knowledge and practices can be effective approaches to tackling issues concerning food insecurity and malnutrition, and therefore the FAO insists on the necessity of developing educational schemes for better understanding, and more effective preservation of indigenous peoples’ food systems. Included in the umbrella term of “food systems” are indigenous peoples’ forest knowledge and biodiversity, and so the FAO promises to start working on an indigenous peoples’ forests initiative. The representatives of the indigenous peoples insist on their willingness in supporting FAO designs and policy implementation based on these agroecological principles.

The FAO claims that agroecology can serve as a means of achieving national and international development targets, including the objectives of the Paris Climate Agreement, Convention on Biological Diversity, and the United Nations Convention to Combat Desertification. The organization recently published a report titled *FAO’s work on agroecology: a pathway to achieving the SDGs* in 2018. As agroecology uses a multi-dimensional and holistic approach to development, the report discusses the necessity of integrating various disciplines and sectors in processes of agroecological transitions. In this regard, one could argue that the study of agroecology is anthropological.

Agroecological policies are connected to policies made in agriculture, socio-economic, and environmental sectors. As a result, policy decisions in these other sectors should naturally be dialogue with one another too. Alongside public awareness campaigns, a diverse range of sectors need to be involved in the formation of regulations and laws that promote agroecological practices. The report states that the FAO can give guidance on agroecological policy-making and help donors and the private sector in networking. Furthermore, the FAO has made significant contributions in mobilizing funds and resources, and the organization put a strategic focus on knowledge sharing. The idea of co-creation of knowledge is an important part of agroecological thinking – which combines traditional knowledge with multi-disciplinary science. The FAO contends that farmers should be central to innovative knowledge sharing systems concerning agroecology, with the aim of promoting diverse healthy local diets. The

6 FAO, “Agroecology Knowledge Hub: The 10 Elements of Agroecology,” official website.

report clearly states that agroecological policies value “local food heritage and culture” (FAO 2018: 11). It is important to note that this type of livelihood approach has been advocated by anthropologists such as Scoones (2009), Chambers and Conway (1992).

The Concept of Food Sovereignty

Pimbert (2018) argues that the concept of food sovereignty can act as an alternative paradigm within current movements of increasing democratization: protecting people’s rights, spaces, and capacity to determine their own models of food production and consumption. Agroecology and biocultural diversity are significant concepts in the discussion of food sovereignty, with the aim of conserving traditional farming, landscapes, and socio-ecological systems. Pimbert refers to biocultural diversity as “the interrelated biological, cultural and linguistic diversity” including local knowledge, practices, and institutions (ibid.: 2). In addition to the notion of diversity, Pimbert claims that decentralization and dynamic adaptation are significant subjects to be examined in the pursuit of food sovereignty and agroecology. Pimbert asserts that these ideas are highly transformative concepts, which are in keeping with Bourdieu’s claim that “political subversion presupposes cognitive subversion” (cited in Pimbert 2018: 37, Bourdieu 1982: 127–128).

Discourses on the topic of food sovereignty were first initiated by the international peasant community, *La Via Campesina* at FAO’s World Food Summit in 1996, and it was then insisted that “food sovereignty is a precondition to genuine food security”⁷ (cited in Pimbert 2018: 3). *La Via Campesina*⁸ was established in 1993, and has become the largest transnational agrarian movement supported by around 200 million farmers, and 182 grassroots and national organizations around the world. The movement promotes the concept of food sovereignty as a way to uphold and spread social justice and oppose agricultural policies and agribusinesses which are extremely harmful to the environment and social relations. It also insists on the necessity of agrarian reform to protect small-scale farming systems, local seeds, landless peasants, and indigenous communities.

Gender equality is another significant item on their agenda, with the movement claiming that the neoliberal and patriarchal food system has historically marginalized women despite the fact that 70% of the world’s food is actually produced by women. Furthermore, *La Via Campesina* promotes agroecology and local food consumption to further environmental and socio-economic sustainability. As such, agroecological approaches propose food systems based on short value chains linking food security and sovereignty within the same geographical region (Sabourin et al. 2018).

Pimbert argues that self-organizing grassroots networks have made significant contributions in the promotion of agroecology, food sovereignty, and biocultural diversity. Their collective action involving the accumulation of knowledge and research is creating a new form of material culture, which can impact institutional as well as policy changes (Hess 2005, Pimbert 2018). Peasants, pastoralists, and indigenous peoples, by nature of their work, are often part of associations or affinity groups, and an increasing number of peasant-led research and innovative networks have been formed for the specific purpose of disseminating agroecology knowledge globally (Pimbert 2018). Examples of these networks discussed by Pimbert include the *Campesino a Campesino* movements in Central America and Cuba, Brazil’s Landless Worker’s Movement, Grassroots networks for food sovereignty and biocultural diversity in India, Indonesia, Iran, and Peru (as examples of transnational networks).

7 *The World Food Summit Plan of Action* acknowledged that “Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (FAO 1996).

8 *La Via Campesina*, “The International Peasant’s Voice,” official website.

The Agroecology Movement in Latin America

A myriad of traditional farming methods are still practiced in Latin America, and diverse indigenous communities are a large part of the population engaged in maintaining these (Altieri and Toledo 2011). The FAO's (2018) report claims that agroecological approaches to rural development are increasingly becoming mainstream in Latin America. Brazil is one of the pioneers in developing public policies concerning agroecology, which have already made sparked further agroecology policy debates in Latin America (FAO 2018).

Conventional agriculture has been criticized by social movements in Latin America because of its adverse effects on the environment, health, and social equity (Sabourin et al. 2018). As a result, alternative forms of farming such as agroecology and organic agriculture began to be promoted in the 1980s, and subsequently some governments have adopted the concept of agroecology in policy-making since the 1990s (ibid.: 1). Various types of agroecological projects have been implemented by NGOs since the early 1980s (Altieri and Toledo 2011). Altieri and Toledo argue that the agroecology movement in Latin America has been supported by indigenous and peasant communities and progressive governments. Examples of progressive governments can be found in countries such as Nicaragua, which enacted a law on agroecology in 2011; Brazil, which formulated a national policy on agroecology and organic production in 2012; and El Salvador, which proposed a policy supporting agroecology in 2017 (Sabourin et al. 2018).

Altieri and Toledo (2011) discuss the impact of Brazil's Landless Worker's Movement (MST) on agroecological policy debates and education systems. This movement has challenged agrarian injustice by organizing educational activities in Brazil, where 47% of the land is owned by 1.6% of landowners (cited in Altieri and Toledo 2011: 599). As a result of this, 1.5 million members of the MST have adopted agroecological principles as their farming methods, and 12 Agroecology Autonomous Schools have now been established (ibid.: 599). Through these schools, people with knowledge of agroecology can further encourage debates concerning agricultural and food policies, and engage in policy-making. This is undoubtedly one of the reasons why Brazil has experienced the most expansion of agroecological practices in Latin America.

The *Campesino a Campesino* (literally meaning "farmer to farmer") movements began in the early 1970s in Guatemala, and subsequently spread across Mexico, Nicaragua, and Cuba (Pimbert 2018). Pimbert points out that peer-to-peer learning within farms has played a very significant role in the development of local capacity and autonomy, which has empowered peasants in Central America. The grassroots movement of *Campesino a Campesino* is defined as "Farmers helping their brothers so that they can help themselves to find solutions and not be dependent on a technician or on the bank", which is one of the most successful approaches to promote sustainable agriculture in Latin America (Holt-Giménez 1996).

One of the most prominent examples of these agroecology movements can be found in Cuba, where half of the peasant population are members of the National Association of Small Farmers (ANAP), and have adopted their agroecological practices and employ a farmer-to-farmer pedagogy amongst themselves (Altieri and Toledo 2011). Around one hundred thousand families who engaged in small-scale farming were involved in this agroecology movement, and Altieri and Toledo argue that this Cuban case demonstrates that the *Campesino a Campesino* model is the most sustainable both environmentally and fiscally in producing agricultural products. The above agroecological approaches thus highlight the fact that local communities have the capacity to experiment, evaluate, and scale up agroecology on their own by tapping into their grassroots networks.

Altieri and Toledo (2011) argue that the agroecological revolution in Latin America has been promoted by both social movements, and research institutions' investment in theoretical and practical knowledge about agroecology. For instance, *La Sociedad Científica Latinoamericana de Agroecología* (SOCLA – the Latin American Scientific Society of Agroecology) consists of around 360 academics, who have made significant contributions to the development of agroecological science (ibid.: 607). *El Movimiento Agroecológico Latinoamericano* (MAELA – Latin American Agroecology Movement), consists of many NGOs, which have been advocating for transitions to

agroecology. These associations have been active in the dissemination of agroecological knowledge by organizing various events, courses, and field projects. In addition to this, Altieri and Toledo discuss the significance of their publications, including a widely distributed magazine in Spanish and Portuguese called *LEISA revista de agroecología*.

United States-based researchers such as Altieri and Gliessman have made significant contributions to the development of agroecological projects in Latin America (Sabourin et al. 2018). Both of them have worked with universities in Latin America since the 1970s. For example, Altieri coordinated a series of courses on agroecology at the National University of Colombia at Palmira, and Gliessman and his colleagues taught agroecology at the *Colegio Superior de Agricultura Tropical* in the state of Tabasco in Mexico (ibid.: 3). It seems that scientific and practical knowledge of agroecology is becoming increasingly popular; however, in actual fact, the global dissemination of agroecology has been constrained by the powerful institutional and growing economic interests of agribusiness approaches (Altieri and Toledo 2011). Altieri and Toledo insist on the necessity of policy and institutional reform in order to support further research on agroecology, and the implementation of agroecological projects on a larger scale.

Agroecological Projects Implemented by NGOs Working with Indigenous Communities

I conducted fieldwork in Mexico for a year starting July 2014, and in Brazil for half a year between April-September 2016, with the aim of identifying NGOs which implemented successful projects across the most marginalized communities. During my stay in Mexico and Brazil, I learned that indigenous peoples are largely excluded from government and civil society. In addition to this, many indigenous peoples face severe poverty, and I got the impression that those who maintained traditional lifestyles and livelihoods are often discriminated against and considered “inferior” by non-indigenous peoples. I visited many NGOs engaging in a wide variety of fields in community development. I was intrigued by some of the projects implemented by the NGOs working with indigenous communities, as they all appeared to be based on agroecological principles. It is important to note that most people involved in the projects seemed content to me, and appeared to enjoy working together as a team.

In the following section, I will describe three agroecological projects by NGOs that stood out to me: *La Asociación Mexicana de Transformación Rural y Urbana, A.C.* (Amextra) in the state of Chiapas of Mexico; Xingu Program of *Instituto Socioambiental* (ISA) in the state of Mato Grosso of Brazil; and *Comissão Pró-Índio do Acre* (CPI) in the state of Acre of Brazil. As a result of the pursuit of economic development and industrial agriculture, these regions have suffered from environmental pollution, deforestation, and social inequality. The purpose of this section is to demonstrate the holistic nature of agroecological practices by examining how the NGOs and indigenous communities restore damaged ecosystems and social systems.

(1) Amextra in the State of Chiapas of Mexico

La Asociación Mexicana de Transformación Rural y Urbana, A.C. (meaning, the Mexican Association for Rural and Urban Transformation) implements agroecological projects with the aim of promoting the “integral transformation of marginalized communities in Mexico” (Mission statement – Amextra)⁹. Amextra has been particularly active in the state of Chiapas, which is one of the poorest regions in Mexico. Chiapas’ socioeconomic indicators in education, health, housing and income are the lowest in the country, with a poverty rate of 76.2%, and with 31.8% of the population living in extreme poverty (CONENAL 2014). In addition, 36.15% of the population in Chiapas are considered to be indigenous peoples (INEGI 2015).

9 *La Asociación Mexicana de Transformación Rural y Urbana, A.C.* (Amextra), “Mission statement,” official website.

Many indigenous communities engage in subsistence agriculture in Chiapas, and Amextra supports their traditional farming and livelihoods through various agroecological projects, for instance: teaching mushroom cultivation by using corncobs, traditional use of nutrient inputs, ecological and polyculture farming, beekeeping, the construction of rainwater storage tanks, ecological toilet construction, and composting. Amextra has two teams in Chiapas – one in San Cristobal which operates in mountainous areas, and the other in Palenque which supports the rainforest regions.

The San Cristobal team consists of around five professional members of staff, who regularly visit various indigenous communities to work cooperatively to share their knowledge. Their office located in the city of San Cristobal has a small garden, where agroecological experiments including growing a variety of vegetables, and compost sampling take place. The team also shares knowledge about nutrition with indigenous peoples and encourage them to consume local products for healthy living. For example, they teach that traditional maize drink is healthier than Coca-Cola, therefore reducing dental problems among the community.

It seemed important for both the members of staff and indigenous peoples to cook, eat, and have fun together. By doing so, they can discuss project implementation, and local issues and needs. It is worthwhile to note that they get to know each other better through communal activity, which can build mutual trust. This type of communication is not likely to occur when government projects are implemented within indigenous communities. Often these government projects are ineffective, perhaps because they fail to involve the local community. Furthermore, Amextra San Cristobal also places great importance on knowledge sharing with other local NGOs who work in the fields of health and nutrition. They regularly meet to discuss their experiences, effective projects, and local issues for the purpose of improving the livelihoods of indigenous peoples.

Amextra Palenque operates in two places – its city office and in a nearby model village. The Palenque branch organizes various events and workshops to promote agroecological practices in the region. At the city office, people sell vegetables produced through agroecological farming. Their model village has a mosaic of diverse gardens, many bee boxes, and ecological toilets. In addition, it has meeting spaces and accommodation facilities, so that many visitors can stay there to learn about agroecology and other local issues like deforestation. The model village functions as an education center, and welcomes many student volunteers. Amextra Palenque also offers training programs to school teachers, NGO workers, and indigenous peoples to develop their understanding of agroecology.

During my visit, I never once heard the term agroecology mentioned, despite the fact that all of their projects are based on agroecological principles. I therefore interpret that it is not always necessary to use the term agroecology to describe agroecological practices, because the practices themselves inform people what it is through example. People who practice agroecology may be unaware of the term because it is their norm and their way of life. Many agroecological farmers are unaware of the term agroecology but still practice agroecological methods effectively, that is the application of ecological principles – science and traditional ecological knowledge – to agriculture and livelihoods.

(2) Xingu Program of *Instituto Socioambiental* (ISA) in the State of Mato Grosso of Brazil

Xingu Program of *Instituto Socioambiental*¹⁰ is implemented by the Canarana branch in the Brazilian state of Mato Grosso, with the aim of conserving the Xingu River Basin and protecting the livelihoods of Xingu people. The head office of ISA is located in São Paulo, and the NGO has been defending the rights of indigenous peoples since 1994. ISA has developed various conservation programs to promote environmental campaigns alongside indigenous communities and other institutions. Xingu Program of ISA supports 26 indigenous communities living in the region, and fosters dialogues between government officials, indigenous and non-indigenous peoples for the purpose of

10 *Instituto Socioambiental* (ISA), “Xingu Program,” official website.

improving indigenous livelihoods. In this way, they help to solve issues around environmental degradation including the Xingu river pollution caused by large-scale soy plantations, and overgrazing due to cattle ranching.

When I visited the association of the Xingu indigenous communities in Canarana, I learned how the NGO and agroecologists were supporting their honey project to acquire organic certification for market engagement in cities. The process of acquiring the certificate is complex, and requires extensive administrative paperwork. With the help of agroecologists, the Xingu program negotiates with the office which gives organic certification to reduce the amount of documentation work for indigenous peoples, and accepts video recording as evidence (Leite 2016). It is important to note that traditional indigenous food is produced through agroecological practices, their products are organic, and NGOs and agroecologists try to promote these ideals amongst government officials and consumers.

The Xingu program coordinates a project called *Rede de sementes do Xingu* (Xingu seed network), which functions as a seed trading and marketing platform. Near the ISA office, there is a house with a large garden which stores a diverse range of seeds, and where nursery plants are grown. The project aims not only to research and collect seeds, but is also involved in planting nursery tree seedlings around the Xingu River, to revitalize the surrounding environment. In addition, the project aims to teach local communities to value the rainforests and bio-cultural diversity through the process of engaging with various seeds and participating in conservation activities. Many students are involved in the project including the maintenance of the garden and seed preservation, as well as research activities.

Alongside the ISA Canarana branch, the following organizations are involved in the Xingu program: *Fundação Nacional do Índio* (FUNAI – National Indian Foundation); *Casas de Saúde Indígena* (CASAI – Indigenous Health Support Center); and *Associação Terra Indígena Xingu* (ATIX – the association which represents all the Xingu communities). In addition to projects concerning the Xingu river and forest conservation, these organizations conduct research on indigenous peoples’ farming and emerging social and environmental issues. These organizations and indigenous communities cooperate with each other to promote agroecological practices across the region.

(3) *Comissão Pró-Índio do Acre* (CPI) in the State of Acre of Brazil

*Comissão Pró-Índio do Acre*¹¹ is an NGO that works for the indigenous peoples of the Brazilian state of Acre. Acre has 15 indigenous groups and some uncontacted people. Other institutions which support these communities are, for instance: the National Indian Foundation (FUNAI); Indigenous Health Support Center (CASAI); *Secretaria de Extensão Agro-florestal e Produção Familiar do Estado do Acre* (SEAPROF – State Department of Agroforestry and Family Farms); *Secretaria de Estado da Educação* (State Department of Education’s Indigenous Education Sector); *Organização de Professores Indígenas do Acre* (OPIAC – Indigenous Teachers’ Association); and *Associação do Movimento dos Agentes Agroflorestais Indígenas do Acre* (AMAAIAC – Association of the Movement of the Indigenous Agroforestry Agents of Acre).

CPI plays a significant role as a leading organization to take collective action by encouraging partnership between these institutions and indigenous communities. In addition to this, CPI organizes various training programs for indigenous peoples and school teachers at its project site in Rio Branco, the capital city of Acre. CPI’s project site consists of farms, ponds, livestock sheds, a library, a computer room, a research center, a craft room, meeting and dining halls, accommodation and offices. It is a place to learn and practice agroecological farming, fishing, and exchange ideas. Furthermore, it is important to note that this site encourages people to be creative through activities such as singing and dancing together, farming, studying, drawing, writing and documenting folk stories and knowledge of plants.

11 *Comissão Pró-Índio do Acre* (CPI), “CPI-ACRE,” official website.

CPI runs a training course every summer between July and August, and a few selected members from all the indigenous communities participate in the course to learn subjects such as agroecology, forest conservation, indigenous medicine, art, writing and reading of indigenous languages and stories, research methods, and indigenous rights. Other participants include many volunteers, students, government officials, staff of FUNAI, researchers, agroecologists and anthropologists. They discuss, eat, learn and have fun together. During the course, the indigenous participants learn how to document their stories, indigenous medicinal plants and traditional farming practices. In addition, each indigenous participant decides their own research topic to take back to their communities in order to investigate. CPI and the participants support the *Movimento Indígena* (Indigenous Peoples' Movement), with the aim of promoting agroecology.

Unlike other states in Brazil, the state of Acre has a department of indigenous peoples' agriculture within SEAPROF¹² with a "pro-agroecology" agenda. While most of Brazil's state institutions face economic difficulties, SEAPROF has a sufficient budget from the World Bank and Amazon Fund, due to climate change initiatives directed at Amazon rainforest conservation. They acknowledge the importance of supporting small-scale indigenous farmers to promote agroecological practices in Acre, which can protect indigenous peoples' livelihoods and food sovereignty.

Discussion and Conclusion

As discussed above, the global agroecology movement is becoming increasingly popular, and agroecology is likely to be considered an alternative approach to development within the international community. The FAO insists on the necessity of agroecological thinking in the formation and implementation of agriculture and food policies. It has thus been active in the global dissemination of agroecological knowledge alongside the academic community and civil society. As local food heritage and culture are a significant part of agroecology, the FAO claims that it is vital to protect traditional farming systems and indigenous peoples' livelihoods. *La Via Campesina* has made important contributions in promoting agroecology worldwide, and it is notable that Latin American states – including their many indigenous communities – have been deeply involved in the movement.

Despite the fact that agroecology is frequently interpreted as a practice and movement, one could argue that the term itself has a strong scientific connotation. The concept of agroecology consists of scientific and local knowledge. The FAO, academic community and various NGOs all use the term in order to discuss development agendas and policies, and so the discourse of agroecology has been developed through intellectual dialogues between them. Furthermore, the term agroecology is used to describe traditional food systems or indigenous peoples' livelihoods (e.g. Gliessman 2015, Perfecto and Vandermeer 2015). The term does not appear often in daily conversation, however, indigenous peoples do use it as a tool to communicate with the international community and political administration. Knowledge of agroecological practices which can sustain bio-cultural diversity is transmitted through the teaching of practices, not through the term itself.

With reference to the anthropology of development, agroecology is increasingly becoming a significant subject through which to understand local knowledge, sustainable development, and food systems worldwide. Challenging growth-oriented development and modernization principles, Gardner and Lewis (2015) insist on the necessity of thinking of alternative ways to development for the well-being of humanity. Anthropologists have studied the livelihoods of marginalized communities including local politics and struggles, and these studies continue to contribute to policy debates concerning development. Gardner and Lewis claim that new forms of solidarity movements such as *La Via Campesina* should be examined to further discuss ideas of development, non-development, or improvement. *La Via Campesina* is promoting the idea of food sovereignty and agroecological practices, and this type of transnational agrarian movement is more likely to be supported by the international community.

12 SEAPROF, "Agricultura Familiar do Acre," official Facebook page.

Kopnina (2012) discusses the anthropology of conservation and environmental ethics. She claims that “ecocentric” and “biocentric” approaches should be considered in order to understand the relationship between humans and nature. Kopnina emphasizes the importance of “intrinsic values” when discussing total ecosystems and non-human species. Contrary to anthropocentric thinking, “biospheric altruism” takes into account intrinsic values, which can transcend human-made boundaries between nature and cultural spheres. In societies which have biospheric altruism, environmental knowledge and ecological values are deeply embedded in their environments.

Furthermore, Kopnina points out that anthropologists have been working with conservation institutions, including World Wide Fund for Nature (WWF). They have made contributions to the preservation of both traditional livelihoods and surrounding environments including plants and non-human species. Thus, Kopnina argues that social and biospheric altruism can be brought together for conservation agendas. I consider Kopnina’s claim useful for understanding agroecological projects. As I have demonstrated in my examination of agroecological projects implemented by NGOs, both indigenous peoples’ livelihoods and their forests are to be protected as a whole system. The well-being of humans and non-human species are both significant in agroecosystems. Thus, I argue that social and biospheric altruism are not in competition, and both approaches are necessary in agroecological thought.

Escobar’s “post-development” paradigm highlights the necessity of well-being approaches to human development (e.g. cited in Hopkins 2012). He proposes the *Buen Vivir* (literally meaning “the good life”) model, which refers to the collective well-being of both humans and non-human species. It is important to note that Escobar is Colombian, and that his contribution to the post-development discourse is a contribution from the “Global South”. As acknowledged by Gardner and Lewis, Escobar’s *Buen Vivir* model is a substantial contribution to anthropology, not least because, as he argues, the discipline has tended to “overlook the ways in which development operates as an arena of cultural contestation and identity construction” (Escobar 1995: 15, Gardner and Lewis 2015: 43).

As agroecology can serve as a tool for collective action and as a framework for policy design to improve indigenous peoples’ livelihoods, I argue that Escobar’s ideas concerning collective well-being should be explored alongside agroecological thought. The global agroecology movement is becoming increasingly popular; agroecology is interpreted in multiple ways, and practiced in many parts of the world. Across these contexts, agroecology is actively participating in the co-creation of cultural diversity and the restoration of damaged ecosystems. Finally, it may be concluded that agroecology merits further investigation to develop the discussion of common-pool resource management. Ostrom’s (1990) theory of polycentric governance in the field of political economy should be integrated with the framework of agroecology, which in turn promotes discussions about people’s agony and attitudes toward the environment, the effects of industrialization, and the world’s disappeared commons.

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