Food Sovereignty: A Framework for Assessing Agrarian Responses to Climate Change in the Philippines

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▸ Heckelman, A., & Wittman, H. (2015). Food Sovereignty: A framework for assessing agrarian responses to climate change in the Philippines. *ASEAS – Austrian Journal of South-East Asian Studies, 8*(1), 87-94.

INTRODUCTION

The Philippines is one of the foremost countries affected by climate change, with increasing incidence of super typhoons, droughts, floods, and changing rain patterns — all of which exacerbate existing food insecurity, poverty, and ecological degradation (United Nations University & Alliance Development Works, 2014; Yumal et al., 2011). In response to these challenges, the development and diffusion of adaptation and mitigation strategies are necessary to enhance agrarian resiliency. Our ongoing research involves the assessment of food sovereignty pathways in Ecuador, Brazil, Canada, and the Philippines. Here, we report on our progress in using food sovereignty principles to develop an assessment framework for climate resiliency and food security among a network of smallholder agrarian systems in the Philippines. The objective of this research project is to analyze how and to what extent these smallholder farmers are enhancing their livelihoods; responding to loss and damage incurred due to climate change; and serving as catalysts for climate change adaptation, mitigation, and overall resiliency through farmer-led agricultural development initiatives.

The *Magsasaka at Siyentipiko para sa Pag-Unlad ng Agrikultura* (Farmer-Scientist Partnership for Agricultural Development, MASIPAG) is a national Filipino farmer-led network engaging in agroecological strategies to promote the sustainable use and management of biodiversity through farmers' control of genetic and biological resources, agricultural production, and associated knowledge (Medina, 2009). Since MASIPAG's establishment in the 1980s, the network has grown from 50 farmers to an estimated 35,000 farmers today. Our team is working with MASIPAG to assess the degree and scope of their effectiveness in facilitating livelihood resilience, especially in the context of climate change.

The challenge with this research lies in capturing the range of complex and interrelated dimensions encompassed in agrarian systems. Another challenge is developing new methodological approaches to empirically measure the outcomes of dynamic agroecological strategies and their overall impact on climate resiliency and food security. In response, we propose a systems-based approach built on the principles of 'food sovereignty' as a framework for investigating these dynamics and assessing their impact on both food security and climate resiliency.

www.seas.at doi 10.14764/10.ASEAS-2015.1-6

In the Philippines, an estimated 17 percent (16.4 million) of Filipinos do not meet their nutritional requirements and basic needs (Food and Agriculture Organization, 2012). A quarter of the population (24.2 million) lives in poverty (World Bank Group, 2012) and poverty is most severe and widespread among indigenous peoples and small-scale farmers (International Fund for Agricultural Development, 2009). Contributors to poverty and food insecurity include land reform policies dating back to 1988 that have been ineffective at breaking up and redistributing privately owned lands acquired during Spanish colonialism (Bello, 2001); multinational agricultural companies that are expanding industrial palm oil, banana, and pineapple plantations (Franco & Borras, 2007); and large-scale gold and copper mining operations that are destroying landscapes and watersheds (CEC-Philippines, 2012). These factors perpetuate a cycle of landlessness and poverty among farmers and contribute to the ongoing concentration of wealth and power in the Philippines (Ballesteros & de la Cruz, 2006; Borras, 2007).

Major reports (De Schutter, 2010; McIntyre et al., 2009; United Nations Conference on Trade and Development, 2013), high profile case studies (Altieri & Koohafkan, 2008; Bachmann, Cruzada, & Wright, 2009; Holt-Giménez, 2002), and reviews (Altieri, Funes-Monzote, & Petersen, 2012; Lin et al., 2011) suggest that in order to address worsening inequalities, limited resources, and degrading ecological conditions while improving climate resiliency, agrarian systems should facilitate effective social processes for community empowerment as well as exhibit high levels of diversity, synergy, recycling, and integration. These studies credit the smallholder farmer sector for enhancing resiliency by effectively adapting to and mitigating climate change through increased use of local varieties, water harvesting, diversified and intercropping agroforestry, soil conservation practices, farmer-breeding practices, and a series of other traditional techniques. However, little empirical assessment has been made of the potential of diversified and small-scale agrarian systems to achieve food security and sustainable livelihoods through climate change adaptation and mitigation (CCAM) strategies, and there is a lack of consensus on how to assess and measure the effectiveness of such strategies.

SYSTEMS-BASED ASSESSMENT BUILT ON FOOD SOVEREIGNTY

Assessments that only measure crop yield fail to account for important social, political, economic, environmental, and health outputs of an agrarian system. The development of comprehensive assessments that also consider inequality, poverty, hunger/malnutrition, market instability, and ecological degradation that characterize much of the agrarian experience are urgently needed. All of these dimensions and realities necessitate a move toward a more 'systems-based approach' derived from systems dynamics, a methodology for studying and managing complex systems that change over time (Ford, 2010; Meadows, 1972).

The principles of food sovereignty provide a framework for developing a systems-based approach that can assess food security and climate resiliency among agrarian communities. Since its articulation by La Via Campesina in 1996 as the right of local people to control their own regional and national food systems, food sovereignty has emerged as a significant topic in the discourse surrounding climate change. Advo-

cates suggest that food sovereignty initiatives have the potential to create alternative agricultural and food policy models that are better equipped with addressing food insecurity in the face of climate change (Altieri, 2009; Altieri, Nicholls, & Funes, 2012; Chappell et al., 2013; Wittman, 2011). This is because the principles of food sovereignty promote practices that are consistent with resilient agrarian systems like the preservation of genetic and biological diversity to enhance ecosystem service functions, reduced reliance on costly energy intensive inputs, and the linkage of farmer knowledge with political mobilization (Vandermeer & Perfecto, 2012).

The basic principles of food sovereignty provide a starting point in the effort to transcribe this concept into a methodological tool for assessing agrarian systems. The principles in brief are (Nyéléni Forum for Food Sovereignty, 2007):

1. the perception of food as a human right versus a commodity;
2. the value placed on equity and empowerment for all food providers;
3. the emphasis on the social and ecological benefits of localizing food systems;
4. the call for local control over resources and knowledge;
5. the support for local knowledge and protection of community intellectual property rights; and
6. the significance placed on agroecological practices.

A review of these principles reveals the different scales (household to global), factors (policies to local organizations), and dimensions (equity to sustainability) that food sovereignty engages with. Another feature of the framework is that it facilitates an investigation of phenomena affecting management decisions within agrarian communities, such as citizenship, social justice, and nutritional health (Alkon & Mares, 2012; Chappell et al., 2013; Vandermeer & Perfecto, 2012; Weiler et al., 2014; Wittman, 2009). As such, a systems-based assessment built around these principles has the capacity to capture the various dimensions and phenomena that affect the ability of agrarian communities to effectively respond to climate change. As such, our systems-based approach (see Figure 1) aims to address the growing critiques and concerns with assessments that focus primarily on crop production and the biophysical aspects of an agrarian system (Gregory, Ingram, & Brklacich, 2005; Schmidhuber & Tubiello, 2007).

ASSESSING CONVENTIONAL AND AGROECOLOGICAL APPROACHES TO CLIMATE RESILIENT FOOD SECURITY IN THE PHILIPPINES

CCAM strategies are developed and deployed from a range of agricultural models (Holt-Giménez & Altieri, 2013; Kaur, Kohli, & Jaswal, 2013; Loos et al., 2014). For example, the 'conventional' model led by the *International Rice Research Institute* (IRRI) and its national version, the *Philippine Rice Research Institute* (PhilRice), challenges scientists to develop technologies including high yielding and/or genetically engineered varieties (HYV) capable of withstanding climate induced ecological disturbances such as floods, droughts, and salinization (Fedoroff et al., 2010; Ismail et al., 2013). The process of developing and locally testing HYV varieties, and making them available to farmers via commercialization, can take several years. This process is

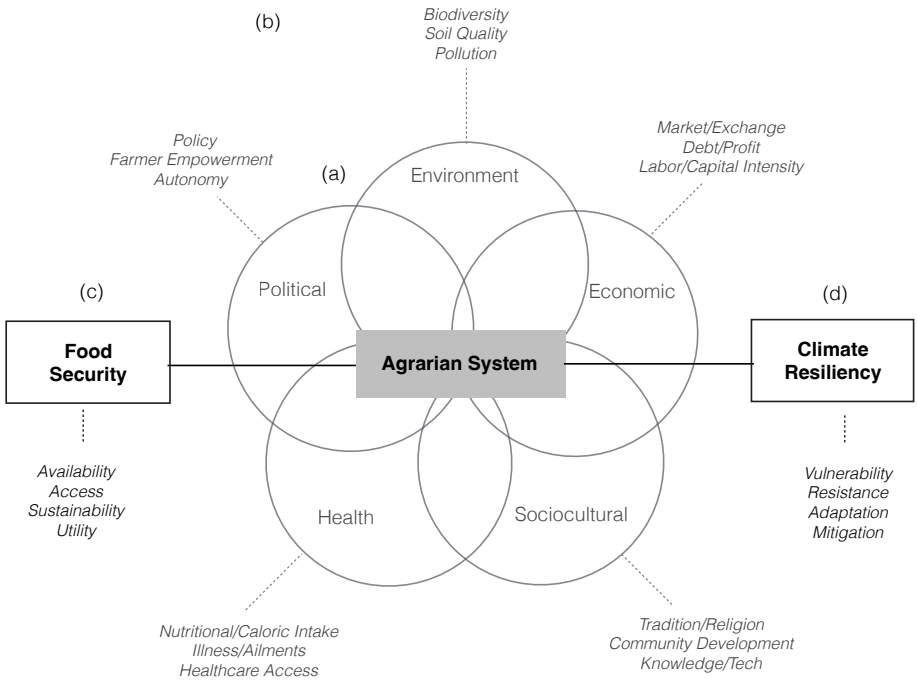

Figure 1: a 'food sovereignty' approach to assessing agrarian systems (own compilation).

costly, both in terms of the investment required for developing and producing new crop varieties and in terms of their subsequent affordability and accessibility to resource-poor farmers (Perfecto, Vandermeer, & Wright, 2009). There are also significant environmental and health costs associated with applying the chemical inputs required to grow these HYV (Frossard, 2002; Kaur, Kohli, & Jaswal, 2013; Perfecto et al., 2009).

MASIPAG advocates an alternative 'agroecological' model for agricultural development (Bachmann, Cruzada, & Wright, 2009). To enhance climate resiliency, this network of farmers, scientists, and NGOs works in concert to collect indigenous (or heirloom) seed varieties and engages in farmer-breeding initiatives to develop crops that are locally adapted to climate-induced conditions such as floods, droughts, and salinization (see Figure 1). These seed varieties are then shared among other farmers in the network via seed exchanges or planned distribution efforts. The network also provides mechanisms for farmers to share agricultural practices and community initiatives, such as intercropping strategies and livestock exchanges to promote genetic diversity (see Figure 2). Diversified livestock and intercropping systems improve soil quality and carbon sequestration as well as provide farmers, along with their families and community, with access to diverse and nutrient-rich diets. However, the productive capacity of agroecological and smallholder systems has been questioned in terms of their ability to feed growing urban populations, in particular because of reduced access to agricultural inputs, limited labor availability for low-input systems, and other resource constraints. Other challenges include the limited access of smallholder

Figure 2: Over 375 rice varieties bred by a single MASIPAG farmer (Photo by Amber Heckelman).

Figure 3: MASIPAG farmer preparing an organic pesticide and fertilizer (Photo by Amber Heckelman).

systems to agricultural infrastructure and consolidated distribution networks (Connor, 2008; International Fund for Agricultural Development, 2013; Seufert, Ramankutty, & Foley, 2012).

Both IRRI and MASIPAG initiatives demonstrate the different ways in which the Philippine agrarian sector aims to improve its capacity to adapt to and mitigate climate change while simultaneously ensuring food security. This illustrates, again, the need to move beyond yield-centered assessments so as to comprehensively account for the range of activities and adequately assess their effect on food security and climate resiliency.

MOVING FORWARD

At present, we are in the first of two phases in the effort to develop our systems-based food sovereignty assessment tool. The first phase involves designing and drafting the assessment tool (survey questionnaire), which involves soliciting feedback from participating agrarian communities and pilot testing the assessment tool in collaboration with MASIPAG. The second phase will utilize the questionnaire to collect data in three agrarian communities comprised of both conventional and MASIPAG farmers, and located in regions susceptible to climate change induced disturbances.

As part of an ongoing multi- and transdisciplinary and multi-country collaborative research project, this paper highlights the challenges of adequately assessing climate resiliency and food security in the Philippines, and proposes a systems-based approach built on food sovereignty principles as a framework for carrying out such assessments. Ultimately, our intention is to increase our understanding of the connection between food security and climate change in the Philippines and to lay the groundwork for identifying pathways to resilient agrarian systems.

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