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*Food First*

**Smallholder Solutions**  
*to Hunger, Poverty and Climate Change*

*Authors: The article is by Eric Holt-Giménez, Ph.D, Executive Director, Food First/Institute for Food and Development Policy, and Annie Shattuck, Policy Analyst, Food First.*



## Executive Summary

With the worsening of the global food crisis, general international agreement has emerged regarding the importance of smallholder agriculture in the battle against hunger and poverty. However, public debate has been highly restricted and increasingly dominated by conventional, market-led, and corporate approaches to aid and agricultural development. These positions call for a return to the World Trade Organisation's Doha Round, a new "Green Revolution" and the spread of biotechnology to the countries of the Global South. In global and national policy circles, these "business as usual" approaches are eclipsing many proven, highly effective, farmer-driven agroecological and redistributive approaches to agricultural development.

Sustainable, smallholder agriculture represents the best option for resolving the fourfold food-finance-fuel and climate crises. Although conventional wisdom assumes small family farms are backward and unproductive, agroecological research has shown that given a chance, small farms are much more productive than large farms. Small, ecological farms help cool the planet and provide many important ecosystem services; they are a reservoir for biodiversity, and are less vulnerable to pests, disease and environmental shock.

Just as small farms can be more productive and environmentally beneficial, there is also strong evidence that small farm communities can be far superior to large, mechanised operations for improving rural livelihoods. However, this potential is thwarted because smallholders are systematically disenfranchised of their basic human rights and dispossessed of their wealth and basic resources. If smallholders are to be the social and productive base for ending hunger in the Global South, then the rights of smallholders—especially women—must be ensured. Ensuring smallholder rights and the equitable distribution of resource entitlements in the

countryside not only implies increasing the levels of aid and investment flowing to smallholders, it implies the redistribution of public investment in agriculture, including land reform.

The role of the state (and donors) in setting and supporting this agenda will be key. There is need for strong and effective public policies to tackle inequality, support smallholder farmers and protect the right to food. This will entail ensuring the redistribution of resources and land towards the poorest members of society and smallholders. Governments need to massively increase support to smallholders through sustainable practices. For instance, through helping them protect and preserve their farming practices and resources: increasing extension support and agroecological research and design.

The Right to Food —an international agreement that aims to hold states legally responsible for ensuring access to food and food producing resources; and the call for Food Sovereignty —a political concept designed to democratise food systems in favour of the poor; are essential components in creating the conditions for sustainable agricultural development. Encouragingly, the Right to Food is broadly recognised, and people's movements for Food Sovereignty are widespread and growing rapidly. Food sovereignty proposes that people, rather than corporate monopolies, make the decisions regarding our food systems.

Africa is central to any lasting solution to hunger on the planet. Because the majority of sub-Saharan Africa's hungry people come from poor farming families cultivating two hectares or less —and because over 80 percent of the continent is still rural — the challenge of ending hunger and poverty on the continent is necessarily an agrarian question.

Most of Africa's farmers are women, with unequal access and weak claims to productive entitlements, making gender a profound issue running through all agrarian questions.

The African food crisis has revived official calls for a new “Green Revolution”. But there is a need to learn lessons from the first green revolution, which swept across Asia and Latin America from the 1970's onwards. This has largely been credited with causing severe environmental damage and deepening poverty and inequality among smallholders and the landless. This new push is spearheaded by the Bill and Melinda Gates Foundation which has pledged \$3.2 billion to African agriculture. With so much new money being channelled into African agriculture (this being the biggest such push for a long time) the imperative must be to ensure this is spent in a way that builds on previous evidence and responds to the current triple crises of climate, food and fuel. Some 53 percent of the Gates Foundation's agricultural development funding goes to technological research and development, like creating new commercial hybrids and GMOs (genetically modified organisms). But there is an urgent need to support new and already existing agroecological solutions, and to look carefully at the many ways in which conventional Green Revolution technologies and GMOs could actually undermine their development. A major project of the Gates Foundation is AGRA —the Alliance for a Green Revolution in Africa. But AGRA brings together the same social and technological assumptions from the original Green Revolution, with the worry that we might be repeating mistakes and recycling blunders.

Despite the crisis of agriculture on the continent, there is no lack of agroecological success stories in Africa. The continent abounds with documented experiences in which ecological agriculture enhances access to food. Contrary to commonly held assumptions, numerous studies have found that ecological practices do not result in any loss of productivity. The productivity of ecological agriculture frequently exceeds that of traditional farms, and even matches that of many conventional, high external input farms.

The IAASTD (International Assessment of Agricultural Knowledge, Science and Technology for Development) advocates reducing the vulnerability of the global food system through locally based innovations. It calls for

redistributing productive land to the rural poor and restructuring the food system in favour of smallholders. The IAASTD found that the causes of hunger and low productivity were overwhelmingly social, rather than technological in nature. Many proven agroecological practices for sustainable production increases were already widespread across the Global South, but unable to scale up because they lacked supportive trade, policy, and institutional environments. This is why IAASTD recommends improving the conditions for sustainable agriculture, rather than promoting technological fixes.

Improving the conditions of sustainable, smallholder agriculture requires development policies that prioritise rights, livelihoods and resiliency in the countryside. These policies demand and reinforce equitable and democratic management in all spheres of the food system —from local to national.

Development policies that prioritise rights, livelihoods and resiliency need to be grounded in the right to food, food sovereignty and agroecology. They generate solutions to the crises that work in the interests of the majority: the smallholders and women farmers in the Global South. These priority areas include:

- Sustainable increases in food production by increasing agrobiodiversity, agroecological resiliency and by creating equitable and sustainable options for processing, trade, consumption and recycling; farmers will increase control over processes of innovation and diffusion;
- Improving rural livelihoods by improving savings, local markets and economic institutions, and creating value added opportunities throughout the value chain in a redistributive manner that especially favours women;
- Increasing and protecting smallholder's access to food and food-producing resources (land, credit, water), as well as ensuring they receive and retain social and economic benefits from conservation;
- Mitigate, remediate and help smallholders adapt to the four-fold food, fuel, financial and climate crises.

**These four priority areas are cross-cut by three foci:**

#### **Structural Focus**

- Enhance local and intraregional trade opportunities while regulating and protecting key national food sectors;
- Create affordable credit and market protection for smallholder farmers and agroecological farming;
- Ensure access and protection of seeds, land, water, local resources, fair wages and environmental benefits;
- Allocate public spending toward public goods (storage facilities, access to means of communication, regional and local markets, credit, insurance and extension services) rather than simply inputs and fertilisers.

#### **Technical Focus**

- Enhance agrobiodiversity, sustainable production, conservation and climate resilience;
- Create appropriate technologies and farmer-led processes to adapt and spread technologies, agroecological practices and market information at appropriate scales;
- Ensure farmers' control over these processes, their affordability and accessibility, as well as their transparency and accountability. Ensure a balanced and equitable approach to climate resiliency.

#### **Social Focus**

- Enhance local and intraregional exchanges of experience and information, as well as opportunities and mobility for women. Enhance the power of farmers and women's social movements, organisations, and local democratic institutions;

- Create local-regional farmer organisations and institutions, and opportunities for locally-owned businesses and rural employment;
- Ensure smallholder voices are heard in development institutions and in open, transparent, public debates on food, particularly national, inter-ministerial committees for food security, climate and development issues.

**These areas and foci can be used to generate policy recommendations that are specific to national and local contexts. Some cross-cutting recommendations include:**

- Public funding for agroecological research and extension.
- Equitable access to land and food-producing resources.
- Focus on the rights, access and potential of women farmers.
- Maintain and support locally controlled, diverse seed systems.
- Trade policies must protect human rights.
- Create and ensure access to fair markets through mechanisms like strategic grain reserves, marketing boards, etc.
- Support and strengthen local farmer organisations.
- Recognise the basic human rights of farmers and peasants.
- Support for agroecological agriculture that helps farmers adapt, build resilience to, and mitigate climate change.
- Support informed public debate, transparency and accountability to democratise development.

Policies, however, are lifeless without a political commitment to social change—the essential condition for ending poverty and hunger. It is unlikely that hunger will ever be tackled without the enthusiasm, creativity and sheer social force of the world's smallholders. Unless smallholders are at the forefront of the coming agrarian transformations, these changes will not be sustainable or equitable, and will be ultimately unviable. None of the recommendations of this report will have a chance of significant implementation unless there is a substantial shift in political will within national governments and the world's multilateral institutions. This shift will come about when the political cost of not shifting is greater than the cost of supporting the status quo. This turn of events is made possible through the power of social movements.





# Introduction

*“The way the world grows its food will have to change radically to better serve the poor and hungry if the world is to cope with a growing population and climate change while avoiding social breakdown and environmental collapse...”*

– **Executive Summary, UN International Assessment of Agricultural Knowledge, Science, Technology for Development**

With the worsening of the global food crisis, general international agreement has emerged regarding the importance of smallholder agriculture in the battle against hunger and poverty. The World Bank's 2008 Development Report on Agriculture, the U.N.'s High Level Task Force on the global food security crisis 'Comprehensive Framework for Action', the Alliance for a Green Revolution for Africa (AGRA), and the International Assessment of Agricultural Knowledge Science, and Technology for Development (IAASTD) all call for an increase in agricultural aid, research and investment, and a renewed focus on smallholders in the Global South. This welcome shift is long overdue.

However, public debate regarding just what kind of aid, research, investment and smallholder participation is needed to revive agriculture and end hunger has been highly restricted and increasingly informed by conventional, market-led, and corporate approaches to aid and agricultural development.<sup>1</sup> The failure of the recent food summits to reach substantive agreement on causes and solutions to the food crisis has privileged the existing status quo. On one hand, this has resulted in extensive land grabs for agofuels (e.g. U.S. and European firms) and for food export to affluent but land-poor countries (e.g. Saudi Arabia, South Korea). On the other hand, massively-financed campaigns for a new Green Revolution, i.e. supply-driven agricultural development, including genetically-engineered products, are being targeted at smallholders. In global and national policy circles, these approaches are rapidly eclipsing many already existing and highly effective farmer-driven, agroecological and redistributive approaches to agricultural development.

Many of these agroecological and farmer-driven approaches have been documented and endorsed in recent reports from the United Nations Environment Programme, the United Nations Conference on Trade and Development (UNCTAD) and the IAASTD, as well as in peer-reviewed studies by prominent scientists in the industrial North and the Global South and in-depth books cited in this report. There has also been a steady stream of broad-based pronouncements by farmers' federations and non-governmental organisations, calling for food sovereignty and a fundamental shift in the way our food is produced and consumed. These actors advocate reducing the vulnerability of the global food system by building-in social, economic and ecological resiliency. This approach is consistently grounded in locally based social processes of innovation and food sovereignty. They call for redistributing productive land to the rural poor, restructuring the food system in favour of smallholders, and international support for small-scale, agroecological agriculture.

The global food, fuel, financial and climate crises—and the struggles over how to respond—are all catalysts in what may well be a global agrarian transformation of historic proportions. Food and agriculture systems in

the Global South will be especially affected over the next decade, with profound consequences for the rural poor and world food security. Because no solution to the crises of hunger and poverty is conceivable without the broad-based participation of the world's smallholder farmers, ground-level social initiatives must play a determining role in the outcomes of these transformations in Africa, Asia and Latin America. The international call for Food Sovereignty from the *Vía Campesina*, the campaign for African Agroecological Solutions to the food crisis spearheaded by ROPPA (Network of Farmers' and Agricultural Producers' Organisations of West Africa) and COPAGEN (Coalition for the Protection of African Genetic Patrimony) of West Africa, as well as the ground-level work of PELUM (Participatory Land Use Management network) in East Africa, the *Campesino a Campesino* Movement of Latin America and the Farmer Field Schools of Asia, all reflect the southern groundswell of advocacy and practice working to transform the global food regime into locally-based food systems that are more sustainable, resilient, equitable and secure.

Discerning the responses to the food crisis that reinforce the status quo from those approaches that lead us towards greater resiliency and socially equitable transformations is not always easy. How do we decide whether or not to support legislation that conditions much-needed aid on the acceptance of genetically-modified seeds? When and where do the use of fertilisers and hybrids lead to greater farm resiliency, and when do they simply open the door to the colonisation of the local seed industry by multinational oligopolies? Are "climate-ready" and "biofortified" seeds a lifeline to the poor or an industrial Trojan horse for genetically engineered crops? When do programmes for technological improvement serve to support desperately needed structural changes in pricing and supply policies? When are they a poor proxy for land reform? And when are public-private partnerships actually win-win propositions? Can smallholders be protected from the northern land grabs sweeping the Global South? Can contract farming really reduce rural poverty? What are the opportunities and risks for smallholders in the face of the growing political and financial power of the new Green Revolution?

These are not rhetorical questions, but urgent issues being faced daily by policy makers, development practitioners and resource-poor farmers.

The fast pace of the private-public development arena and the urgency of building a broad-based grassroots movement to respond to the food crisis in sustainable and equitable ways, point to the need to establish reliable guidelines that help inform our work, advise development practitioners, and support smallholders. In order to unlock the tremendous transformative power of the countryside, these guidelines must be based on actually existing, farmer-led agroecological approaches. They must steer our efforts in line with the FAO Voluntary Guidelines for the Progressive Realisation of the Human Right to Food, and towards the social, environmental and economic resilience of food systems. Guidelines should help us support sustainable solutions to the four-fold food, fuel, financial and climate crises, while reinforcing transparency and accountability within the institutions that advance those solutions. They must help us take firm steps towards Food Sovereignty: the democratisation of food systems in favour of the poor.

This paper will introduce a Livelihoods, Rights and Resiliency Guidelines matrix (see Annex One for the Guidelines matrix) that uses sets of key questions to address structural, technological and social issues of agricultural development. Questions are designed to guide discussions that identify and assess actions, projects, programmes, initiatives and policies in relation to the food, fuel, financial and climate crises. The guidelines seek to help operationalise approaches to agricultural development and the food crisis that are grounded in the political concept of food sovereignty, juridically expressed in the legal right to food framework, and informed both by traditional agricultural knowledge systems and the science of agroecology.



## Smallholders: The face of poverty, the hope for agriculture

Approximately 2.5 billion people in poor countries live directly from agriculture – farming crops and livestock or relying on forestry or fisheries<sup>2</sup> – and 1.5 billion people live in smallholder households.<sup>3</sup>

Some 470 million small farms – 85 percent measuring less than two hectares<sup>4</sup> – still produce more than half of the world's food supply and in many cases their share of global production is growing. In Latin America, about 17 million peasants, farming over one third of the total cultivated land have average farm sizes of about 1.8 hectares, produce 51 percent of the maize, 77 percent of the beans, and 61 percent of the potatoes for domestic consumption.<sup>6</sup>

In Asia, some 200 million rice farmers cultivate small plots of rice, providing the bulk of the rice produced by Asian farmers. More than 70 percent of India's milk is produced by households who own only one or two milk animals.<sup>7</sup>

These figures are tremendously important because most of the food produced by smallholders is consumed locally by the poor and working classes. Smallholders feed the poor—including themselves—because they consume much of what they produce.

### Box 1

#### Agroecological Agriculture – Some Definitions

In the most basic sense, agroecology is “the application of ecological concepts and principles to the design and management of sustainable agroecosystems”.

Agroecological agriculture can cover a broad range of approaches, including sustainable agriculture, ecological agriculture, eco-farming, eco-agriculture, low-external-input agriculture, organic agriculture, permaculture, and biodynamic agriculture.

In general, these terms all refer to roughly the same thing. They all try to use natural processes and eliminate or significantly reduce the use of external inputs, especially the more toxic and widely contaminating ones (e.g. poisons and transgenic seeds). Organic agriculture can thus be seen as a specific instance of ecological agriculture, in which chemicals are rejected entirely. Permaculture and biodynamic agriculture are, in turn, specific types of organic agriculture. Sustainable agriculture is often used as if synonymous to ecological agriculture, but also gets used by proponents of conventional agriculture for systems that use chemicals, but which they claim will endure for a long time without damaging the environment. In this report we will interchange the terms *ecological agriculture* and *agroecological agriculture* to refer to farming systems that:

- make the best use of nature's goods and services as functional inputs
- integrate natural and regenerative processes, such as nutrient cycling, nitrogen fixation, soil regeneration and natural enemies of pests into food production processes
- minimise the use of non-renewable inputs (pesticides and fertilizers) that damage the environment or harm the health of farmers and consumers
- makes better use of the knowledge and skills of farmers, improving their self-reliance, and, make productive use of people's capacities to work together to solve common management problems, such as pest, watershed, irrigation, forest and credit management.

Source: Pretty, Jules and Richard Hine, 2001, “Reducing food poverty with sustainable agriculture: a summary of new evidence.” Centre for Environment and Society, Essex University. Altieri, Miguel, 1995, “Agroecology: the Science of Sustainable Agriculture”. Boulder: Westview Press.



*Kate Holt/Shoot The Earth/ActionAid*

In some instances, they remain poor and hungry, not necessarily because they do not produce enough to eat, but because they lack storage facilities and sell much of their harvest when prices are low. They frequently run out of food stocks before the next harvest, and are forced to buy back their grains at inflated prices. This keeps them chronically poor and hungry, and illustrates why simply increasing productivity might not solve poverty or hunger. However, smallholders represent the best opportunity for redistributive wealth creation. Stabilising smallholder economies combined with stable yield increases of food crops on millions of the world's small farms will have a profound impact on poverty and food availability at the local and regional levels.

Although they produce most of the world's food, small farmers and landless workers are among the most economically disadvantaged groups in the world. Resource-poor smallholder families make up 75 percent of the world's poor and half of the undernourished. Three-quarters of Africa's malnourished children can be found on small farms.<sup>8</sup> According to the World Bank's 2008 World Development Report, new investment in agriculture in Africa will not only help meet the demand for food, it will boost the continent's overall economic growth. The Bank calls for raising the average amount of agricultural investment from its present four percent to ten percent of public expenditure.<sup>9</sup> This is a welcome change from an institution that for decades has imposed structural policies that virtually strangled peasant agriculture. Clearly, any successful strategy to reduce hunger and poverty must include smallholder farmers and landless labourers. However, the way this investment is implemented, the technologies it adopts, the sectors it supports and the structural conditions under which new agricultural investment is realised will determine whether or not this new effort will truly benefit the poor. What is the best way to improve smallholder agriculture and rural livelihoods? This report answers this question from the perspective of people-centred, rights-based, sustainable agriculture.

## Women smallholders: Doubly Disadvantaged.

Women produce 60-80 percent of the food that is consumed locally in developing countries<sup>10</sup> but our broken food system leaves rural women doubly vulnerable: once as consumers with disproportionately fewer resources with which to buy food, and again as resource-poor producers vulnerable to climate hazards and volatile markets. Women are the poorest and the hungriest: seven in ten of the world's hungry are women and girls.<sup>11</sup>

The injustices and inequalities in the chains of production and distribution are compounded by gender inequalities for a majority of agriculturalists. In many instances, women are responsible for the production of food for local consumption, while men produce crops for earned income, or migrate to urban areas in search of paid work. Additionally, their gendered roles as care givers ensure that women are responsible for supplementing the family's needs when earned income is insufficient. Women often provide for their families before themselves, even opting to eat less or not at all. Yet land tenure systems not only favour large owners, but customary laws also limit women's access to land by privileging ownership by men.<sup>12</sup> Shockingly women own only around one percent of land on average.<sup>13</sup>

Women are often invisible in the design and implementation of government and donor agricultural projects alike; this means that women agriculturalists have even less access than their male counterparts to the few extension and subsidy programmes available to small-scale producers. Rural women receive less than ten percent of the credit provided to farmers<sup>14</sup> and women farmers in Sub-Saharan Africa also benefit from only seven percent of farm extension services<sup>15</sup>. Meanwhile girls are usually the first to be pulled out of school in times of crisis<sup>16</sup>. These factors have left women particularly vulnerable among already disadvantaged small-scale agricultural producers.

### Responses to Food Crises: The 'Green Revolution'<sup>17</sup>

Despite evidence that exposes its severe, social, economic and environmental shortcomings, much international aid and agricultural investment are still skewed towards bringing a new 'Green Revolution' to the Global South.<sup>18</sup> But the new Green Revolution is not only likely to repeat past mistakes, in today's atmosphere of simultaneous food, financial, and climate crises, those mistakes may come with even higher consequences. It is necessary to not repeat the past mistakes and to learn from these going forward.

## Box 2

### The "Hunger Gap"

In rural Ghana each year, the "hunger gap" looms. In need of cash at harvest time, farmers are compelled to sell their produce cheap to itinerant traders. Unfortunately, such sales are usually done at give-away prices since farmers sell when they are really in need and local prices are low. Later in the year community members have to travel to other markets to purchase similar grain at exorbitant prices, creating a "hunger-gap" through the long months of summer.

In 2004, ActionAid commenced work in these vulnerable communities to establish community Grain Banks, to be managed entirely by the beneficiary communities.

Small farmers were able to sell their grain to the grain bank, at transparently agreed upon prices, ensuring grain stayed in the local food system. In May, as the painful hunger-gap loomed, farmers began to buy food from the grain bank at reasonable prices. According to Madam Hawa Abdulai of Banu Community,

*"When we realised that most households were beginning to experience hunger, a meeting was again held to agree on the price at which the maize was to be sold. The price agreed upon was slightly higher than the purchase price to ensure that our seed capital was not lost and the same time ensure that we gradually increased our stocks. Had it not been for the Grain Bank, most of us would have moved out of the communities during 2006 as a result of the severe food shortage we experienced. The prices of food in the larger markets were so high that it was simply not affordable."*

## The failure of conventional approaches

The traditional, high-input agriculture which has dominated agricultural development practice for the last half century has shown itself largely unable to meet the needs of resource-poor smallholders. This is because resource-poor farmers cannot afford it, nor do they have access to the infrastructure (irrigation, roads, inputs, access to credit and markets, etc.) necessary to make it work. Furthermore, even many smallholders who have been using small amounts of chemical fertilisers and pesticides have allowed their soils to deteriorate to the point that the use of such fertilizers has become only marginally profitable at best. And recent increases in the price of fertilizers could easily force many smallholders out of the fertiliser market, thereby sharply decreasing their productivity once again. The indirect effects of subsidised fertiliser are that farmers stop amending their soils with organic matter because it is easier to apply fertiliser. When the subsidies dry up—as they invariably do—farmers are left with soils that are so inert that they can't even grow a good green manure to restore fertility. At that point with neither chemical fertiliser nor green manures being feasible, we could easily witness a famine across Africa like nothing we have ever seen before.

Source: Roland Bunch in Holt-Giménez, Patel, and Shattuck, *Ending Africa's Hunger*, 2009

The Bill and Melinda Gates Foundation – one of the key drivers of the new 'green revolution' - strategy for agricultural development has some worrying elements in it. According to the foundation:

"In order to transition agriculture (sic) from the current situation of low investment, low productivity and low returns to a market-oriented, highly-productive system, it is essential that supply (productivity) and demand (market access) expand together and that production systems use natural resources efficiently and help farmers manage their risks... [this] involves market-oriented farmers operating profitable farms that generate enough income to sustain their rise out of poverty. Over time, this will require some degree of land mobility and a lower percentage of total employment involved in direct agricultural production... We are uniquely focused... on 150 [million] smallholder households in Sub-Saharan Africa... that have the potential to transform agriculture at scale."<sup>19</sup>

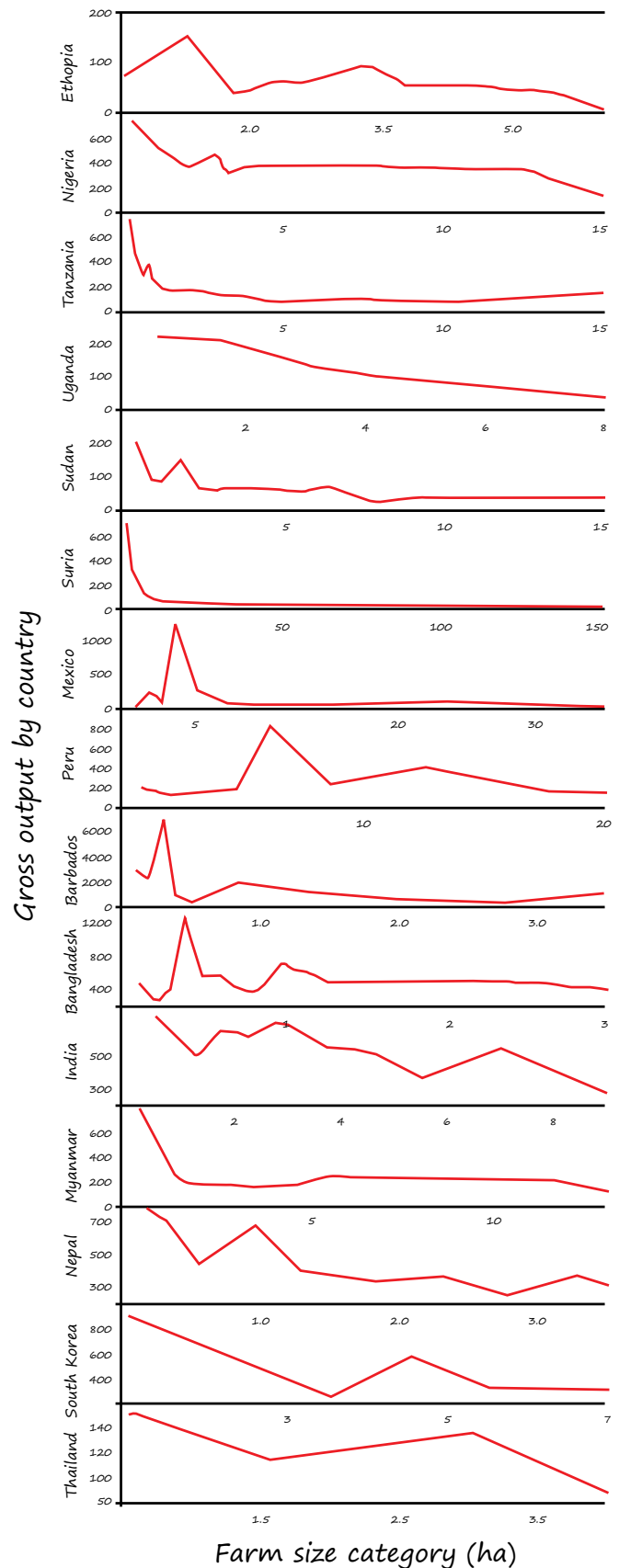
"Land mobility" and "lower agricultural employment" are euphemisms for significant numbers of smallholder farmers no longer working the land. As it did in the first Green Revolution this could result in the loss of their livelihoods, massive migration and more poverty. Agriculture is a significant source of employment in much of the developing world. In Uganda, for example, self-employment in agriculture—essentially the small farm sector—accounts for 70 percent of all jobs. Only 5 percent of Ugandans have permanent, formal employment.<sup>20</sup> In Malawi, 85 percent of the population depends on agriculture for work.<sup>21</sup>

Shifting labour from rural to urban sectors may have worked in the industrial North in the 20th century, but there is no new burgeoning industrial sector, no new manufacturing sector to employ displaced farmers and workers, and nowhere for farm workers or the newly landless to go except for the sprawling slums around urban centres in the developing world. Moreover the world can no longer afford to follow this same development paradigm going forward. This 20th century industrial paradigm ignores the benefits (poverty alleviation, improved ecosystem services, resilience, carbon storage, etc) of diverse, small-scale production that are becoming increasingly important to confronting the challenges of the modern world. The world needs more, not fewer, smallholders.

However, the conditions for sustainable, smallholder farming must drastically improve if they are to provide society with the multiple functions of ensuring sustainable food production and dignified livelihoods, cooling the planet, resource conservation and maintaining biodiversity.

While the productivity gains of the Green Revolution are credited with averting hunger, questions must be raised about the overall efficiency of this model in feeding the world when we look at the rise in the numbers of hungry people in the world between 1970 and 1990—the two decades of major Green Revolution advances. At first glance it looks as though the Green Revolution made huge progress, with food production up and hunger down. The total food available per person in the world rose by 11 percent over those two decades, while the estimated number of hungry people fell from 942 million to 786 million – a 16 percent drop. This was apparent progress. But these figures merit a closer look. If China is eliminated from the analysis, the number of hungry people in the rest of the world actually increased by more than 11 percent, from 536 to 597 million. In South America, for example, while per capita food supplies rose almost 8 percent, the number of hungry people also went up, by 19 percent. It is essential to be clear on one point: it is not increased population that made for more hungry people—total food available per person actually increased—but rather the failure to address unequal access to food and food-producing resources. In South Asia there was 9 percent more food per person by 1990, but there were also 9 percent more hungry people. The volume of output alone tells us little about hunger. Whether any strategy to boost food production will alleviate hunger depends on how the benefits from that production are distributed.<sup>22</sup>

The industrial model of agriculture has actually deepened the divide between rich and poor farmers. In the 1960s, at the beginning of



The relationship between farm size and total output in different countries (after Cornia 1985)

the first Green Revolution, the Rockefeller and Ford Foundations promoted industrial-style agriculture through technology “packages” that included modern varieties (MVs) of seeds, fertiliser, pesticides and irrigation. The high cost of these purchased inputs deepened the divide between large farmers and smallholders because the latter could not afford the technology. In both Mexico and India, studies revealed that the Green Revolution’s expensive “packages” favoured a minority of economically privileged farmers, but put the majority of smallholders at a disadvantage, and led to the concentration of land and resources. In fact, a study reviewing every research report published on the Green Revolution over a thirty-year period all over the world—more than 300 in all—showed that 80 percent of those with conclusions on equity found that inequality increased.<sup>23</sup>

This suggests that if we wish to build a development model for agriculture that is more equitable and tackles poverty while preserving the environment then the redistribution of land and resources, a fair and stable market and sound agroecological management in order to be sustainable will all be vital ingredients.

So what are the alternative models that can be followed to deal with the food, fuel and climate crises? The social, economic and environmental superiority of farmers’ agroecological systems as compared to conventional, are dramatic. The superior resilience of sustainable farms when subjected to extreme weather hazards (such as drought and hurricanes); their enhanced ability to capture carbon (and cool the planet); their provisioning of well-balanced diets; and, yes, their ability to produce more food per hectare than conventional farming methods, have all been measured in a wide diversity of ecosystems around the world—particularly in the Global South, where the need is greatest. The rest of this paper will explore this further.

## *The Productivity of Small-Scale, Sustainable Agriculture*

For years critics claimed that ecological agriculture might be able to address environmental concerns, but couldn’t produce sufficient food to sustain an exploding human population. Such skepticism was understandable—the Green Revolution had been widely credited for “saving a billion people from starving. The social upheaval and environmental damage it provoked were generally ignored or under-emphasised.

Critics of sustainable agriculture, such as geographer Vaclav Smil, political scientist Robert Paarlberg and the conservative Hudson Institute’s Dennis Avery see ecological agriculture as a “liberal fetish” that would bring hunger and ruin to millions. Such concerns would be valid if agroecological methods were as unproven or unproductive as portrayed by critics. However, besides the thousands of years of small-scale and family agriculture that developed and field-tested the antecedents of many modern sustainable practices, over the past 40 years a significant amount of scientific literature has compared “conventional” and “sustainable” agriculture. What were valid and important doubts among some scientists about sustainable agriculture four decades ago have since turned into a “New Myth” that ignores this accumulated scientific work and regards as “common knowledge” the unsubstantiated claim that yields from sustainable agriculture are insufficient to feed the human population.

A study from the University of Michigan recently took on the myth that sustainable agriculture cannot feed the world. The study looked at 293 examples comparing alternative and conventional agriculture from 91 studies. The researchers were able to demonstrate that current scientific knowledge simply does not support the idea that a switch to organic and sustainable agriculture would drastically lower food production and lead to hunger. Instead, they found that even under conservative estimates, organic agriculture could provide almost as much food on average at a global level as is produced today (2,641 as opposed to 2,786 kilocalories/person/ day after losses). In what these researchers considered a more realistic estimation, ecological agriculture could



actually increase global food production by as much as 50 percent— to 4,381 kilocalories/person/day. The Michigan study also evaluated the nitrogen availability generated solely by green manures (crops grown to be incorporated into the soil for their nutrients) as opposed to nitrogen from synthetic sources. Based on 77 studies they found that assuming that green manures could be planted on the current agricultural land base in between food crops, during winter fallow, or as a relay crop, 140 million Mg of N could be fixed by green manures each year. In comparison, the global use of synthetic nitrogen fertilisers in 2001 was 82 million Mg, or 58 million Mg less than the theoretical production of green manures. These results suggest that, in principle, no additional land is required to obtain enough useful nitrogen to replace the current use of synthetic nitrogen fertilisers.<sup>24</sup>

Another review of 286 sustainable agriculture projects in 57 developing countries, (in which 8.98 million farmers adopted agroecological practices on 28.92 million hectares) examined improvements in food production. Of the projects with reliable yield data, the average per hectare increase in food production was 93 percent. The authors found that these increases generally occurred through one of four mechanisms: “(i) intensification of a single component of farm system; (ii) addition of a new productive element to a farm system; (iii) better use of water and land, so increasing cropping intensity; (iv) improvements in per hectare yields of staples through introduction of new regenerative elements into farm systems and new locally appropriate crop varieties and animal breeds”.<sup>25</sup>

Although the conventional wisdom assumes small family farms are backward and unproductive, research has shown for decades that if total output is considered rather than yield from a single crop, small farms are much more productive than large farms.<sup>26</sup> In terms of pounds per hectare, integrated farming systems in which the small-scale farmer produces grains, fruits, vegetables, fodder and animal products, can produce 4 to 10 times more than single crop monocultures on large-scale farms.<sup>27</sup> The productivity of small farms producing polycultures of beans, squash, potato and fodder is higher in terms of harvestable products per unit area than

farms growing just one crop with the same level of management. Yield advantages for polycultures, called “over-yielding,” range from 20 percent to 60 percent, because polycultures reduce losses due to weeds, insects and diseases, and make more efficient use of the available resources of space, water, light and nutrients.<sup>28</sup>

This confirms what farmer-practitioners have known for decades and what many researchers now recognise: there is an inverse relationship between farm size and output, (see figure one) – which can be attributed to the more efficient use of land, water, biodiversity, labour and other agricultural resources by small farmers. Several studies also confirm the superior technical efficiency of low-external input and organic systems.<sup>29</sup> In overall output, the small, diversified farm produces much more food, even if measured in dollars. Even the US, census data shows that the smallest two hectare farms produced an average of \$15,104 per hectare and netted about \$2,902 per hectare. The largest farms, averaging 15,581 hectares, yielded \$249 per hectare and netted about \$52 per hectare.<sup>30</sup>

## Environmental Performance

The superior environmental performance of small-scale ecological agriculture has been demonstrated consistently in diverse systems the world over.<sup>31</sup> Small, ecological farms are a reservoir for biodiversity,<sup>32</sup> help

### Box 4

#### Shifting towards more sustainable methods: case study from Bangladesh

ActionAid’s European Union funded Food Security for Sustainable Household Livelihoods (FoSHoL) Project in Bangladesh has helped farming communities to become food secure through seed production, crop diversification and technical training. The project is supporting 34 farmer alliances in various districts.

ActionAid provided technical skills on cultivating crops, enabling farmers to increase their agricultural production and increase the fertility of the soil. Rice production has increased by up to 9 per cent using what is called ‘Integrated Crop and Pest Management’ methods, including the use of farmyard manure, quality seeds and mixed cropping.

Pesticide use has dropped by 75 percent while fertilizer use has been reduced and replaced by farm-yard manure and other local organic manures, leading to significant savings on these previously costly inputs.

“My knowledge of land use, cultivation techniques, and agricultural bio-diversity has vastly improved,” said Shaikh Muhammad Farid, 25, who is one of nearly 1000 smallholder farmers benefiting from the project, and who was introduced to growing medicinal plants to complement his cultivation of seeds and vegetables.

“I do not need to work as a farm labourer in other people’s fields for money - my improved farming has increased my income,” adds Farid.

“My own land combined with leased land from another community group now sufficiently meets the food, medicinal and other needs of my family. Earlier, my annual income from jute and rice was Tk 20,000 (200 GBP) – it has now increased to Tk 60,000 (600 GBP),” says Farid, who plans to use his extra income to send his son to school.

Farmers in the project have also been helped to process their seed and access markets in order to sell their crops. They are now distributing their seed under their own brand label called “FoSHoL Seed”.

“Before the FoSHoL project, smallholder farmers never got a fair price for their produce and seeds but with the organized marketing by farmer alliances, the income has increased,” says Mr Awwal, President of Farmers Alliance in Kurigram. “The quality of the rice seed is so good that now the seed companies are interested in buying our vegetable and other food seeds.”



protect valuable ecosystem services,<sup>33</sup> and are less vulnerable to pests,<sup>34</sup> disease<sup>35</sup> and environmental shock.<sup>36</sup>

While sustainable agriculture has frequently been dismissed by the international agricultural research centres as “lacking science”, the fact is that the practices of many small-scale ecological farmers have been racing ahead of industrial science’s understanding of sustainability for some time. The science of agroecology, developed through close ecological observation of traditional farming systems, has become the science for sustainable agriculture. Agroecologists have documented remarkable management practices around the world in which farmers restore and improve farm ecosystem functions. These practices have resulted in stable, high-yielding food production, soil and water conservation, and the enrichment of agricultural biodiversity. By studying the ecological principles at work behind these practices, agroecologists have been able to learn and contribute to the practices of sustainable agriculture worldwide.

In general, traditional and small-scale farmers grow a wide variety of cultivars. Many of these plants are landraces grown from seed passed down from generation to generation, and are more genetically heterogeneous than modern cultivars. This reduces farm vulnerability and enhances harvest security in the face of diseases, pests, droughts and other stresses. In a worldwide survey of crop varietal diversity on farms involving 27 crops, scientists found that considerable crop genetic diversity continues to be maintained on farms in the form of traditional crop varieties, especially of major staple crops.<sup>37</sup>

In most cases, farmers maintain diversity as insurance in the face of social, economic and environmental unpredictability. Many researchers have concluded that this varietal richness enhances productivity and reduces overall yield variability. For example, studies by plant pathologists provide evidence that mixing of crop species and or varieties can delay the onset of diseases by reducing the spread of disease carrying spores, and by modifying environmental conditions so that they are less favourable to the spread of certain pathogens.<sup>38</sup> Recent research in China, found that four different mixtures of rice varieties grown by farmers from fifteen different townships over 3000 hectares, suffered 44 percent less blast (a fungal disease) incidence and exhibited 89 percent greater yield than homogeneous fields—without the need to use chemicals.<sup>39</sup>

It is crucial to maintain areas of peasant agriculture free of contamination from GMO crops, as traits important to indigenous farmers (resistance to drought, food or fodder quality, maturity, competitive ability, performance on intercrops, storage quality, taste or cooking properties, compatibility with household labour conditions, etc.), could be eliminated by GMOs whose transgenic qualities (like herbicide resistance) are not relevant to farmers who can’t afford or don’t use agrochemicals. Under this scenario, risk will increase and farmers will lose their ability to produce relatively stable yields with a minimum of external inputs under changing environmental conditions. Transgenic crops are contaminating the world’s centres of genetic diversity, putting the planet at tremendous ecological risk.<sup>40</sup> The social impacts of local crop shortfalls, resulting from changes in the genetic integrity of local varieties due to genetic contamination is already underway in the Global South.<sup>41</sup>

Agricultural land is a major provider of ecosystem services like pollination, water filtration, erosion control, soil fertility and regulation of water and climate systems.<sup>42</sup> Small scale organic systems and industrial agriculture are not equal in this regard. One study estimated the total economic value of ecosystem services in organic agriculture systems in New Zealand ranged from US \$1,610 to US \$19,420 per hectare annually. Ecosystem services from conventional fields ranged from US \$1,270 to US \$14,570 per hectare annually. The non-market value of ecosystem services in organic fields ranged from US \$460 to US \$5240 per hectare annually versus US \$50-1240 in conventional fields.<sup>43</sup> Sustainable agriculture systems help “internalise” many of the external costs in agriculture,<sup>44</sup> providing services that will become even more essential in the face of a rapidly changing climate. Externalities from industrial agriculture threaten to swamp productivity gains in much of the world: more than 18 percent of China has become desert due to land degradation<sup>45</sup> at a cost of \$31 billion a year.<sup>46</sup> The

total environmental costs of agriculture (externalities) in the U.S. add up to between \$5.7 to \$16.9 billion every year<sup>47</sup>; in the UK it is \$3.7 billion a year.<sup>48</sup>

## Small farms Cool the Climate and Build Resilience

*“Simply cranking up the fertiliser and pesticide-led production methods of the 20th Century is unlikely to address the challenge [of hunger]. It will increasingly undermine the critical natural inputs and nature-based services for agriculture.”*

**- Achim Steiner, UN Under-Secretary General and Executive Director, UNEP.<sup>49</sup>**

Agriculture is now recognised as both contributing to and suffering from the negative effects of climate change. Farming accounts for as much as 32 percent of greenhouse gas emissions, if deforestation is included.<sup>50</sup> Agriculture is directly responsible for 13.5 percent of global greenhouse gases<sup>51</sup> through emissions of Carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide — a gas with 296 times the warming power of CO<sub>2</sub>.<sup>52</sup> These result from extensive cultivation, large cattle operations and the production and application of synthetic fertilisers. Deforestation, largely for industrial agriculture, constitutes another 18 percent of global emissions.<sup>53</sup>

Climate change poses enormous threats to food production. A new study in *Science* warns of widespread hunger under even moderate climate change scenarios.<sup>54</sup> The authors predict the high temperatures of extreme summer heat waves will become the norm. The study predicts heat waves will stress crops, stretch water resources thin, and cause major crop failures. Previous studies have warned that yields could drop precipitously and climate-related disasters, like floods and hurricanes, will take their toll on the food supply as well. The most dramatic, devastating changes are expected to be in the tropics and sub-tropics regions that already house the vast majority of the world's poor and hungry.<sup>55</sup> According to various studies, cited in a paper by the Director General of the International Food Policy Research Institute, Joachim von Braun, by 2080, agriculture output in developing countries may decline by 20 percent due to climate change, and yields could decrease by 15 percent on average.<sup>56</sup> The number of hungry and under-nourished in Africa may rise to 359 million by 2050. Yields from rain-fed farming in some African countries could fall by up to 50 percent by 2020, and by up to 30 percent in some central and South Asian countries by 2050, according to the Intergovernmental Panel on Climate Change.<sup>57</sup> One thing is certain: climate change will disproportionately hurt the women, children and families already hardest hit by the food and economic crises.

Severe climate-induced events are called “hazards”. Even at low increases in global temperature, hazards can occur in the form of intense storms and droughts, heat waves, freezing spells and forest fires. The higher the average global temperature change, the higher the likelihood that global climatic changes become irreversible, making agriculture so hazard-ridden that in many parts of the world it may become impossible to sustain farm livelihoods. Unstable weather and extreme weather hazards are already increasing world-wide and are especially dangerous for rain-fed agriculture, farmers on steep, fragile hillsides, farms with shallow soils and agriculture in the low-lying delta regions—in other words, for the smallholders that make up the majority of the world's farmers. Whether or not an extreme weather hazard is disastrous depends not only on the intensity of the hazard itself, but on the level of vulnerability of the people who experience it. If the *level of vulnerability* is high, even a low-intensity



Agriculture's contribution to climate change, broken down, is as follows:

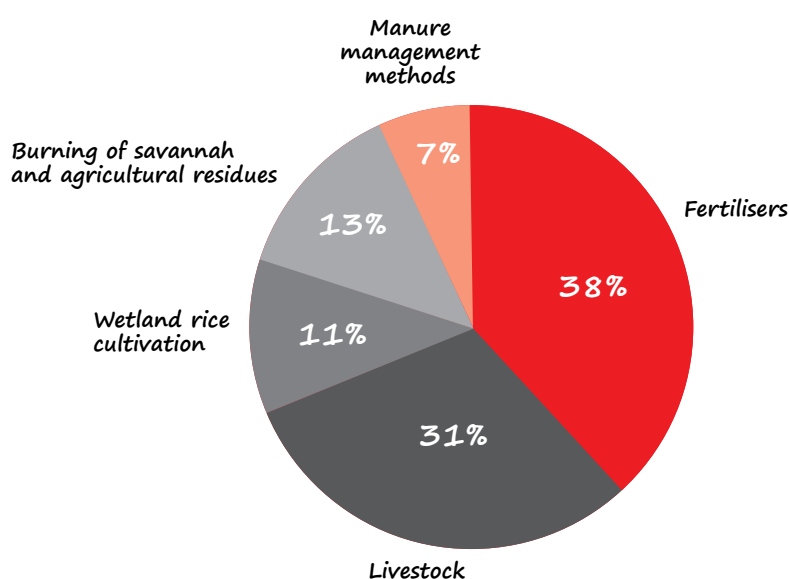


Figure 2

hazard can result in a climate disaster. When farmers are poor and hungry, have too little agricultural land, farm unprotected soils with poor water access and low agrobiodiversity, even a low-intensity hazard —like a heat wave, cold snap, or a three-week delay in the rainy season—can have devastating consequences.

Will genetic engineering save us? Unfortunately, the high likelihood of multiple, overlapping, unpredictable hazards precludes the ability of a single, transgenic “drought-resistant” or “virus-resistant” crop to protect agriculture from the destructive impacts of climate change. A drought-resistant variety might save a crop in the unusual year in which *only* drought limits production. But when drought is accompanied by some combination of floods, heat waves, cold snaps or new pest outbreaks, these “climate-ready” seeds will be impacted. Studies carried out by the Australian government indicate that the new “drought-resistant” seeds from the Centre for Maize and Wheat Improvement (CIMMYT) actually *under-produce* local varieties in good years.<sup>58</sup> In the long run, “one problem-one gene” technologies are a poor mitigation option because it will be impossible to find, isolate and insert all the genes needed to deal with the multiple hazards resulting from climate change. It will also be impossible to insert climate-ready genes into all of farmers’ crops. If one or two “climate-ready” seeds begin dominating production it will reduce agrobiodiversity and undermine whatever existing agroecological resiliency farmers had to climate hazards in the first place. What is urgently needed is not a few designer seeds, but integrated agroecosystem management that builds in environmental resilience in the face of complex and unpredictable climate hazards.

At the Multistakeholder Dialogue on the Green Revolution in Africa called by the U.N. Special Rapporteur on the Right to Food in Luxembourg on December 2008, participants agreed that helping farmers cope with climate change will require action in three main areas: *remediation*, *mitigation* and *adaptation*. From the perspective of farming, Remediation addresses the causes of climate change by reducing agriculture’s impacts on the climate. Mitigation measures must reduce impacts of climate change on agriculture. Adaptation strategies are designed to improve farmer’s ability to respond to climate change.<sup>59</sup> When formulating coping strategies to address agriculture and climate change, we need to ask some very basic questions:

- How will the strategy or technology *remediate* the problem? Does it actively reduce agriculture's contribution to global warming by reducing carbon and nitrous oxide emissions (e.g. by building soil and biomass reserves and by maintaining low levels of petroleum consumption)?
- Will it *mitigate* the impact of climate events on agriculture? Does it reduce farmers' vulnerability in social, economic and environmental terms? Will it increase their environmental resistance to the impacts of climate events? Will it increase their ability to recover (resilience) from the event? Does it enhance and protect their agro-biodiversity, ensure their rights over seeds and protect their access to land and water? Will it increase their market power?
- How will the approach reinforce farmers' capacity to quickly and constantly *adapt* to unpredictable changes in climate, weather, and agro-ecosystems functions? Does it develop a dependence on expensive, hard to get or slow to develop inputs? Or does it strengthen quick, flexible, independent responses? Does it enhance local management practices for agrobiodiversity and ecosystem buffering? – (De Schutter 2009)<sup>60</sup>

Small, biodiverse, ecological farms have a positive effect on climate remediation because small farmers usually amend their soils with organic materials that absorb and sequester carbon better than soils that are farmed with conventional fertilisers. Around four tons of carbon per hectare is stored in organically managed soils.<sup>61</sup> Researchers have suggested that the conversion of 10,000 small- to medium-sized farms to organic production would store carbon in the soil equivalent to taking 1,174,400 cars off the road.<sup>62</sup>

Further climate contributions by small farms accrue from the fact that most use significantly less fossil fuel in comparison to conventional agriculture. This is mainly due to a reduction of chemical fertiliser and pesticide use, relying instead on organic manures, legume-based rotations and habitat diversity practices designed to enhance the populations of beneficial insects. Farmers who live in rural communities near cities and towns and are linked to local markets, reduce the energy costs and the emissions associated with transporting food thousands of miles.

The “one problem—one gene” approach *potentially* addresses only mitigation (drought-resistant GMOs are still several years away from being released), while

## Box 5

### Measuring Farmer's Agroecological Resilience to Hurricane Mitch

Small-scale ecological farms can help buffer against the natural and man-made disasters associated with climate change. For example, a range of simple agroecological practices help confer drought resistance: increased soil carbon from composting and green manures correlates to increased water retention in the soil. Practices like live velvetbean (*Mucuna pruriens*) mulch and conservation-tillage helps hold moisture in the soil. Contour ditches can help increase absorption on hillsides. Indigenous seed varieties have proven again and again to out-perform their hybrid cousins in bad years.

In October of 1998, Hurricane Mitch ripped through Central America causing over \$5 billion in damage, killing 11,000 people, and leaving hundreds of thousands hungry and homeless. After the hurricane farmers and researchers from the Campesino a Campesino movement set out to measure how well their agroecological farms held up to the storm compared to their conventional neighbors. Farmers and farmer-promoters held workshops and trainings, and traveled to 360 communities in Nicaragua, Honduras, and Guatemala to find out how well each farm resisted Mitch's destruction and how quickly each were bouncing back. The study measured nearly 1000 pairs of neighboring agroecological and conventional farms. Agroecological farms had 30-40 percent more topsoil after the storm than their conventional neighbours, greater soil moisture, and about 20 percent more vegetation. Ecological farmers had a 49 percent lower incidence of landslides. Differences in severe erosion also tended to rise with increasing storm intensity, indicating increasing resistance to increasing rainfall (up to a threshold of extremely steep slopes.) Predictably, ecological farmers suffered fewer economic losses due to the disaster, and in some cases, even made money because food prices went up after the hurricane.

Source: Holt-Giménez, Eric. 2001. *Measuring Farmers' Agroecological Resistance to Hurricane Mitch in Central America*. London: International Institute for Environment and Development

agroecological approaches are already helping smallholders remediate, mitigate and adapt to climate change.

Any solution to climate change must reduce the economic vulnerability of the rural poor in order to succeed. It is important to realise that the vulnerability of people to climate disasters is socially produced: that is, pushing the world's farmers to precarious farming conditions is the result of decisions taken in the market, in government and in global institutions. But just as vulnerability is socially produced, sustainability is the result of human decisions. We can *decide* to build resiliency, equity and sustainability into our agricultural systems by changing the present structural conditions that reduce resiliency, to those that will allow equitable, sustainable food systems to flourish.

## Sustainable Livelihoods

Small farms are more productive, yes, but increasing production is not the only goal of agriculture—and is certainly not the sole strategy to end hunger. In addition to provisioning adequate food, farms must also generate wealth for the overall improvement of rural life—including better housing, education, transportation, local business diversification and more recreational and cultural opportunities.<sup>63</sup> Just as small farms can be more productive with the right support from government and others, there is also strong evidence that small farms are far superior to large, mechanised operations in terms of reducing poverty and inequality.<sup>64</sup> Evidence of this pattern has been well documented since industrial agriculture began. Walter Goldschmidt's classic study of agriculture in California's San Joaquin Valley in the 1940s compared areas dominated by large corporate farms to areas still dominated by smallholder farmers.<sup>65</sup> In towns surrounded by family farms the wealth generated in agriculture circulated among local businesses. There were more local enterprises, paved streets and sidewalks, parks, churches, clubs, newspapers, schools, higher overall employment and more vibrant community life. In communities near large, mechanised farms, small towns died off. In these corporate farm towns, agricultural wealth was siphoned off to larger cities. Today, the siphoning of wealth that Goldschmidt observed in the 1940s continues unabated. As corporate agriculture advances further into the developing world, social inequities—the root cause of hunger—increase.

The wealth extraction that Goldschmidt described in the 1940s can also work in reverse. Revitalising local food systems and smallholder farming re-creates wealth in rural communities, forming the basis for sustainable livelihoods. The Landless Workers Movement of Brazil (MST) is a grassroots organisation that helps landless labourers to occupy and settle idle land under a clause in the Brazilian constitution that states land must serve a social function. According to researcher Peter Rosset, "When the movement began in the mid-1980s, the mostly conservative mayors of rural towns were violently opposed to MST land occupations in surrounding areas. In recent times, their attitude has changed. Most of their towns are very depressed economically, and occupations can give local economies a much needed boost. Typical occupations consist of 1,000 to 3,000 families, who turn idle land into productive farms. They sell their produce in the marketplaces of the local towns and buy their supplies from local merchants. Not surprisingly those towns with nearby MST settlements are better off economically than other similar towns, and many mayors now actually petition the MST to carry out occupations near their towns".<sup>66</sup>

However, smallholders - our best hope for ending hunger and poverty - are systematically deprived of their human rights and basic resources, worldwide. The work of improving rural livelihoods and ending hunger includes ensuring the rights of smallholders - especially women - worldwide. The Right to Food, a human right that puts legal responsibility for ensuring access to food and food producing resources with the State, and the call for Food Sovereignty, a political concept designed to democratise food systems in favour of the poor, are essential components in creating the juridical and political conditions for sustainable agricultural development.

# Creating the Conditions for Sustainable Agriculture

## The Right to Food

As Nobel-laureate Amartya Sen pointed out nearly 30 years ago, the issue of entitlements over land and resources is central to combating poverty and hunger.<sup>67</sup> The entitlement approach to combating hunger “concentrates on the ability of people to command food through the legal means available in the society, including the use of production possibilities, trade opportunities, entitlements *vis-à-vis* the state, and other methods for acquiring food”.<sup>68</sup> The notion of securing and ensuring entitlements is captured again in present-day declarations on the Right to Food as articulated by the office of the United Nations Special Rapporteur on the Right to Food:

“The right to adequate food is a human right, inherent in all people, to have regular, permanent and unrestricted access, either directly or by means of financial purchases, to quantitatively and qualitatively adequate and sufficient food corresponding to the cultural traditions of people to which the consumer belongs, and which ensures a physical and mental, individual and collective fulfilling and dignified life free of fear.

The right to adequate food is realised when every man, woman and child, alone or in community with others, has the physical and economic access at all times to adequate food or means for its procurement.”<sup>69</sup>

### Box 6

#### The Right to Food

The right to be free from hunger is a fundamental human right. The 1948 Universal Declaration of Human Rights, the International Covenant on Economic, Social and Cultural Rights (ICESCR), and the Convention on the Rights of the Child among others, all uphold the right to food. The right was legally defined in the UN Committee on Economic, Social and Cultural Rights (1999) as: ‘the right of every man, woman and child alone and in community with others to have physical and economic access at all times to adequate food or means for its procurement in ways consistent with human dignity.’

The ICESCR outlines three specific responsibilities of the state: to respect, protect and fulfill the right to food. The first two imply that governments must ensure that neither the state nor individuals take any action that deprives people of the means to feed themselves. The responsibilities to respect and protect are fundamental to understanding the legal right to food - which is often falsely interpreted as the right to receive food or food aid. The obligation to fulfill the right to food means that governments must facilitate access to food and food producing resources, and where access is not possible by one’s own means, governments have a responsibility to provide it directly. In 2004 the General Council of the FAO laid out a road map for implementing the right to food. The guidelines specifically mention land reform, access to and sustainable management of resources, and sustainable agricultural development.

The human right to food is universally accepted (it has been accepted by 155 countries) and legally binding, but is routinely violated by national and international policy. In what former UN Rapporteur Jean Ziegler called ‘schizophrenia in the United Nations system’ (Ziegler 2008), international financial institutions promote economic policies that systematically violate the right to food, while institutions like the World Food Programme and UNICEF work to alleviate hunger. The same is true of states. National trade and investment policies routinely destroy people’s ability to feed themselves in contradiction to international human rights commitments and development goals.

Despite tooth-and-nail resistance from the World Bank and others, the right to food is making legal headway. Activist groups and NGOs are working towards the justiciability of the right to food. Justiciability - when violations can be brought to court, and victims can be compensated for damages - is essential to implementing the right to food. In addition to international efforts, 22 countries have now included an explicit mention of the right to food in their constitutions.

Source: FAO. 2004b Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security. Rome: Food and Agriculture Organization of the United Nations.

Ensuring the equitable distribution of entitlements in the countryside not only implies increasing aid and investment to smallholders, it implies the *redistribution* of public spending for agriculture. In relation to the food crisis, Olivier De Schutter, the U.N. Special Rapporteur on the Right to Food has alerted African nations regarding the allocation of public spending and the importance of “levels of support going to public goods rather than, or in addition to, support going to inputs such as seeds and fertilisers... Public goods that contribute to agricultural development and are currently under-supplied in many countries include storage facilities, access to means of communication and therefore to regional and local markets, access to credit and insurance against weather-related risks, extension services, agricultural research and the organisation of farmers in cooperatives”.<sup>70</sup> The redistribution of public good includes redistributive land reform - the redistribution of land and land-based resources *downwards* and outwards, horizontally, towards the greatest number of the poorest members of society.<sup>71</sup> When done properly, redistributive land reform has been found to be efficient at creating jobs, increasing productivity, improving livelihoods and triggering broad-based economic development—China, Cuba, Taiwan, Japan and South Korea are examples. In Brazil, the cost of creating a job in the commercial sector is 2 to 20 times more expensive than giving land to the head of a household, and land reform beneficiaries earn on average five times the income landless workers do. Absence of reform or non-egalitarian land reform (such as the market-led land reforms of the World Bank) tend to re-concentrate rather than re-distribute power and resources in the countryside, exacerbating poverty and hunger.<sup>72</sup>

## Food Sovereignty

*“Food Sovereignty is the right of individuals, communities, and countries to define their own agricultural, labour, fishing, food and land policies, which are ecologically, socially, economically and culturally appropriate to their unique circumstances. It includes the true right to food and to produce food, which means that all people have the right to safe, nutritious and culturally appropriate food and to food-producing resources and the ability to sustain themselves and their societies”*

**– International Planning Committee for Food Sovereignty**

Encouragingly, broad-based movements for food sovereignty - literally, people’s self-governance of the food system - are widespread and growing rapidly. First defined by the international peasant federation Via Campesina as “people’s right to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems,” food sovereignty proposes that people, rather than corporate monopolies, make the decisions regarding our food.

Food sovereignty is a political condition to achieve food security (the latter term is usually employed by governments, the UN’s Food and Agricultural Organisation and the World Food Programme) because it proposes horizontal *control* over food: from production and processing, to distribution, marketing and consumption.





Graeme Williams/Panos/ActionAid

Food Sovereignty is an alternative policy directive to liberalised industrial agriculture. Whether applied to countries in the Global South working to re-establish national food production, farmers protecting their seed systems, or rural-urban communities setting up their own marketing systems, food sovereignty aims to democratise our food systems.

While food security is more of a technical concept, and the right to food a legal one, Food Sovereignty is essentially a political concept. Both the Right to Adequate Food and Food Security emphasise the economic access of individuals or households to food. The Right to Food additionally focuses on the economic access to food-producing resources. Food Sovereignty also applies a rights-based entitlements approach. It includes aspects of the rights of access to food-producing resources as well as the right to food and availability of fair markets. It can be seen as a new blueprint for agricultural and rural development policies.

Creating the social, political and economic *conditions* for sustainable agriculture is a necessary step in the fight against hunger. Scaling up sustainable smallholder agriculture from being the alternative to the norm requires removing the structural obstacles holding smallholders back.

The ability to unleash smallholders' potential is nowhere more challenging than on the continent of Africa, where colonial legacies - and modern neo-colonial realities - favour external, rather than local or national control over food systems. Further, with the food crisis, industrial agribusiness is focusing on Africa not only as an area of new investment and extraction (*Vis* the agrofuels boom and the push to spread GMOs), but as a test case of its global legitimacy.

## The Case of Africa

Africa is central to any lasting solution to hunger on the planet. Whatever happens in Africa - or doesn't happen - will have a profound effect on the world's food systems. Successes or failures in Africa reflect the potential or the limitations of the global food system to serve the interests of the world's poor. If the global food system doesn't work for Africa, then it doesn't work for the world. In this sense, ending hunger in Africa is not simply a "global challenge" for the world's governments. Just as the persistence of poverty in Africa is a challenge for the global economic system, the food crisis is a challenge to the dysfunctional global food system. The stakes on the continent are high in human, environmental and geo-political terms.

Because the majority of sub-Saharan Africa's hungry people come from poor farming families cultivating 2 hectares or less - and because over 80 percent of the continent is still rural - the challenge of ending hunger and poverty on the continent is necessarily an agrarian question. Africa's agrarian questions concern land, labour, markets, technology and politics at local, regional, national and international scales. Because the majority of

### Jane Mnthali, Malawi: the positive impacts of shifting to manure

"I'm happy I'm in this farmers group because I no longer have to beg for school fees from my relatives," said Jane Mnthali, sixty, married with five children from Gongona Village in Rumphidistrict.

Jane shares 3.5 hectares of land with thirty other women in Gongona village where they grow food using an agroecological approach.

Jane has been involved in the women's group from the beginning, in 2005, when it was just small. "Back then, nobody had enough food to keep them throughout the year," she said. "Now I've got 2,500 kgs of maize in my store," she said proudly. This year, with good rains and added compost, the harvest will take them right through for the next 12 months.

The women are making their own compost, with a mix of manure, ash and crop residues. Adding manure to the soil has improved productivity. "People understand the importance of compost now and they're using it more – it's very important." At the moment, she's growing tomatoes and maize irrigated by water channels across the fields using a treadle pump from the river. The women decided to buy the pump so they could irrigate the land during the dry season, giving them an extra harvest.

"We needed to grow more so that the maize would take us through to the end of the year," she said. They are now achieving this.

She said her hopes for the future were to provide her children with a good education, build a house and have plenty of food. "I'm getting there," she said.

ActionAid, 2009

Africa's farmers are women, and because they have unequal access to productive entitlements, these agrarian questions are profoundly gendered. These concerns are not just about feeding people, but about changing the present conditions of production that keep the rural poor from feeding themselves. Africa's agrarian questions are not adequately addressed by simply introducing new technologies or asking, "What is the role of African smallholders?" Because of the great diversity of smallholder agro-ecosystems on the African continent, we also need to ask what *kinds* of technologies, markets, resource use and ownership rights will suit Africa's diverse agricultural transformations. And, we need to ask, *who* will lead these transformations? This last question is especially important because, as a result of decisions regarding the food, fuel, and economic and climate crises, Africa's smallholders are increasingly falling victim to new grabs for land, water, markets and genetic resources. Will the food crisis usher in a new era of rural debt, contract farming and agricultural exports for foreign food and energy needs? Or will the crisis provide an opportunity for new agrarian models of development and food sovereignty? In Africa, the struggle to eliminate hunger is the struggle for the future of agriculture.

### *The Return of the Green Revolution in Africa*

For two and a half decades the Consultative Group for International Agricultural Research (CGIAR) invested 40-45 percent of their \$350 million/yr budget in an unsuccessful effort to spread the Green Revolution across Africa.<sup>73</sup> Supporters of the Green Revolution offer multiple explanations for its failure to raise yields on the continent, among them Africa's exhausted soils, inadequate infrastructure, poor governance and declining support for African agriculture. They claim the Green Revolution "bypassed" Africa, and the CGIAR's failure to eradicate hunger on the continent is due to lack of proper implementation of the Green Revolution model. Critics of the Green Revolution maintain that Africa can't be blamed for its actual conditions and that the failure is with the Green Revolution's model itself.<sup>74</sup>

In 1997 then newly-appointed president of the Rockefeller Foundation Gordon Conway published “The Doubly Green Revolution: Food for All in the 21st Century” in which he called for a new, high-yielding Green Revolution based on equity and sustainability. Rockefeller’s attempt to re-launch the Green Revolution in Africa in 1999, made little headway until June of 2006, when it co-sponsored the African Fertiliser Summit with the New Partnership for Africa’s Development (NEPAD) in Abuja, Nigeria. Representatives from 40 African governments, African and multilateral development banks, the CGIAR and agribusiness executives discussed strategies for modernizing African agriculture. A month later, the Foundation rolled out its strategy in “Africa’s Turn: The New Green Revolution for the 21st Century”:

- Promotion of hybrid and genetically-engineered seeds and chemical fertilisers
- Training of African agricultural scientists for crop improvement
- Market development
- Local agro-dealer distribution networks
- Infrastructure investments
- Agricultural policy reforms

Two months later, the Rockefeller Foundation partnered with the Bill and Melinda Gates Foundation to launch The Alliance for a Green Revolution for Africa, AGRA - the non-governmental organisation designed to implement the ideas of the “Doubly Green Revolution” and the strategies in “Africa’s Turn.”

While AGRA adopted the first Green Revolution’s technological paradigm - prioritising genetic crop improvement and fertiliser applications as the central pillar of their strategy for agricultural improvement - it also added variations that reflect new developments within the CGIAR, the seed and chemical industries and the global finance sector. This time a broader array of traditional African food crops will be included in the technological mix. Micro-finance and loan guarantees to state and commercial banks will provide credit. The project is establishing a powerful advocacy arm to influence the policies of African governments. AGRA is making a special effort to reach women - both as farmers and as researchers. Its “integrated soil fertility programme” will use “smart subsidies” to increase the application of chemical fertilisers of four million farmers by 400 percent to 30 kg/ha/yr.<sup>75</sup> This is to be accompanied by instruction on how to build up and conserve soil organic matter. While AGRA’s Programme for Africa’s Seed Systems (PASS) is not now distributing genetically engineered seeds, AGRA has made it known that it will consider introducing GMOs in the future when regulations are in place. Meanwhile, AGRA’s training programmes are steadily preparing African crop scientists in biotechnology.<sup>76</sup> Further, AGRA’s main benefactor, the Bill and Melinda Gates Foundation, along with the Yara, Monsanto and Syngenta Foundations, support African biotechnology institutions such as the African Harvest Biotech Foundation, the African Agricultural

## Box 8

### The Gates-AGRA Machine

Over a five year period 2006-2011, AGRA and the Gates Foundation anticipate spending \$3.2 billion to fight hunger in Africa. Some 53 percent of the Gates Foundation’s agricultural development funding goes to technological research and development, like creating improved crop varieties. In 2008, over 40 percent of their agriculture grants went to projects promoting and developing seed biotechnologies. With \$3.2 billion committed to agricultural development, the Gates Foundation’s financial heft is equal to that of a first world government. (At the recent G8 meetings U.S. President Obama promised \$77 million dollars for the CGIAR... Gates has pumped a staggering \$123 million into the system in the past 18 months alone). The Foundation has given \$317 million to the World Bank for agriculture and \$90 million dollars to 24 major African think tanks for policy work, as well as millions of dollars to aid and development policy groups in the U.S

Source: Patel and Shattuck, Ending Africa’s Hunger, 2009



ActionAid

Technology Foundation, the International Service for Acquisition of Agricultural Biotechnology Applications, and the African Agricultural Technology Foundation, in a concerted push for GMO research and promotion.<sup>77</sup> This work focuses on genetically engineering crops for high vitamin content, pest resistance, drought and weed tolerance. Within the larger Green Revolution scheme, these projects and AGRA are mutually reinforcing: as one prepares the scientists, the other prepares the biotechnology; as one establishes seed distribution networks, the other releases GMOs.

Whether AGRA can revive and re-fit the Green Revolution and solve the problem of hunger in Africa is yet to be seen. The effort, the largest in over three decades, raises a number of questions:

- Can the Green Revolution incorporate successful, already existing agroecological alternatives when formulating its strategy for Africa?
- Can farmer's voices be made more prominent in the design of projects? Why are individual farmers being consulted after the programme has already been designed? The democratic representation of farmers' organisations in agricultural development, especially key projects like AGRA will be critical. As will ensuring that farmers can set their own development and agrarian agendas.
- How will the Green Revolution protect the agroecological biodiversity of smallholders? How will it avoid

the old Green Revolution's "monoculture trap?" As the evidence above shows this will be a key area to tackle.

- Can the Green Revolution protect farmers' rights to their native seeds and ensure a robust, in situ conservation of these seeds and the knowledge of how to cultivate them?
- If credit is only available for commercial seeds and fertilisers - which are bought and sold as commodities - how will the Green Revolution ensure the sustainable restoration of those aspects of healthy agroecosystems that are not commodities, like soil organic matter, agro-biodiversity, non-commercial and non-food crops and refuges for beneficial insects?
- Supporting self sufficiency in grains is vital but beyond this can the Green Revolution strengthen farmers' food sovereignty and help set up food systems that work in favour of the poor?
- Can the Green Revolution put in place principles and mechanisms for social and environmental safeguards? For public accountability and transparency? What role will farmers play in establishing these principles and using these mechanisms?
- How will the Green Revolution address climate justice and the remediation, mitigation and adaptation to climate change? How will it help farmers roll back "land grabbing" for agrofuels and food export?

Despite claims that Africa's new Green Revolution will now benefit women and conserve soils, if the same paradigms and structures of the old Green Revolution remain intact, the biggest unanswered question is: How will AGRA avoid reproducing the errors of the past?

## Box 9

### Low-Cost Innovations: The System of Rice Intensification

Among the most spectacular cases of agroecological innovation is the System of Rice Intensification developed in Madagascar. Scientists at the International Rice Research Institute have for many years maintained that the rice plant is genetically capable of producing a maximum of less than 10 tons per hectare (t/ha) of grain. Modern varieties usually peak out at about 8 t/ha, even with high nitrogen applications. Nevertheless, farmers in Madagascar, on some of the most depleted, acidic soils in the world, have been achieving yields of 5–10 t/ha, and occasionally even 15 t/ha. And they are achieving these yields with no use of chemical fertiliser and minimal use of irrigation water.

The System of Rice Intensification has since spread to rice producing regions around the world. Farmers in Myanmar were introduced to the system in 2001 through a local NGO operating farmer field schools. Participating farmers tripled their yields without expensive inputs or irrigation. The SRI began to spread farmer to farmer, carried by nothing more than farmers' enthusiasm. Farm families saw their net income rise eight-fold due to production increases and low input costs. Five years after SRI was introduced in Myanmar, the system had spread to nearly 30,000 farmers.

Kabir, Humayun and N. Uphoff, 2007, Results of disseminating the System of Rice Intensification with Farmer Field School methods in Northern Myanmar. *Experimental Agriculture*. 43(4):463-476. Uphoff, N. 1999. Agroecological Implications of the System of Rice Intensification (SRI) in Madagascar. *Environment, Development and Sustainability* 1: 297–313.

### African agroecological solutions

Social movements in Africa are vital and active, working on concrete solutions in the fields, and concrete policy changes for governments, to bring about food sovereignty. There has been no lack of agroecological success stories in Africa.<sup>78</sup> The System of Rice Intensification (SRI) developed in Madagascar has raised yields as high as 8/T/ha and spread to a million farmers in over two dozen countries.<sup>79</sup>

In 2008 the United Nations Conference on Trade and Development in conjunction with the United Nations Environment programme (*UNEP-UNCTAD capacity-building Task Force on Trade, Environment and Development*) released a study entitled *Organic Agriculture and Food Security in Africa*. The study, prepared by Rachel Hine and Jules Pretty, University of Essex and Sophia Twarog (UNCTAD), begins by acknowledging

that “[d]espite global pledges... the number of people suffering from hunger has increased every year since 1996.” Through the analysis of 15 programmes promoting and implementing the transition to sustainable organic farming in East Africa, the study shows that, in the words of Supachai Panitchpakdi, Secretary-General of UNCTAD and Achim Steiner, Executive Director of UNEP, “organic agriculture can be more conducive to food security in Africa than most conventional production systems, and... it is more likely to be sustainable in the long term”.<sup>80</sup>

In every case examined, access to food was enhanced by the transition to organic farming. In spite of the widespread association of organic agriculture with lower yields, the study found that the conversion from traditional low chemical input farming to organic practices did not result in any loss of productivity. In fact, as the farms became more established, productivity well exceeded that of traditional farms and even matched that of conventional, high input modern farms. Farming household food security was enhanced not only by increased quantities of readily available calories, but also by the income generated through sale of the surplus produce resulting from the conversion to organic. Local communities also experienced direct benefit from the increased supply of fresh organic products.<sup>81</sup>

Not surprisingly, the transition to organic farming practices has an overwhelmingly positive effect on the natural environment. The programmes studied promoted a highly sustainable and ecologically integrated model rather than a simple substitution of chemical inputs with organic fertilisers. By harnessing natural biological and ecological processes to increase production, 93 percent of

## The Tigray Project – A Case Study in Sustainability

In Northern Ethiopia, a region severely affected by drought, famine, soil erosion, and poverty, a small sustainable agriculture project has helped farmers nearly double their yields while reducing chemical fertiliser use by almost a third. The Tigray Project started in 1996 in just four communities. It has since spread to 65 districts. According to a report by the Swedish Society for Nature Conservation Tigray’s systems are “based more on biological diversity – particularly the rich knowledge and agrobiodiversity of the farmers – and ecosystem services than on fossil fuel”.

Many of the solutions that the project promotes are adaptations of traditional farming techniques that have been employed in the region for thousands of years. Composting, inter-planting and crop rotation are the cornerstones of managing soil fertility in the programme. A variety of techniques, including check dams, contour berms, selective grazing and re-propagation of native grasses are used to decrease soil erosion and better retain water. In some cases the creative management of water resources, through catchments and diversion of runoff, allows farmers to grow two crops annually. Rather than planting one or two staple crops, farmers spread their risk and increase the overall resilience of the farm by using diverse traditional crop varieties and regionally adapted seeds.

The Tigray project has not only been successful in increasing yields of the farms themselves, it has also created new opportunities as a result of better ecosystem services provided by a well managed commons. Gebre Mikael is a farmer in the region who also keeps over 30 bee hives. He has watched the regional production of honey increase over the years as a result of the reforestation and insectary plantings which provide forage for bees. A nursery set up in 2004 has provided more than 50,000 saplings to the communities in the North of Ethiopia. The varieties are carefully selected to be multifunctional - stabilising soil, fixing nitrogen, shading the under story and providing animal forage. Fruit trees from the nursery have become an important source of income for many women who are traditionally barred from plowing fields or using work animals. The project has also created an opportunity for women by introducing the use of starts to expand the variety of viably cultivated crops. Women farmers are encouraged to pre-germinate and tend to nurseries for plants that require a longer growing season.

Dr. Tewolde Berhan Gebre Egziabher of the Tigray Project believes that sustainable agriculture is the future not just in Ethiopia, but in the world. “Organic farming, I am sure, will feed the world. I am also sure that unless organic farming re-expands, the human component of the world will eventually shrink.”

Moberg, Fredrik and Jakob Lundberg, 2007, Ecosystem services-based farming in Ethiopia increases crop yields and empowers women. Sustainable Development Update 7 (6). SSNC, 2008, Ecological in Ethiopia - Farming with nature increases profitability and reduces vulnerability: Swedish Society for Nature Conservation. Edwards, Sue, Arefayne Asmelash, Hailu Araya, and Tewolde Berhan Gebre Egziabher. Impact of compost use on crop yields in Tigray, Ethiopia. Natural Resources Management and Environment Department, Food and Agriculture Organization of the United Nations 2007 [cited February 2, 2009. Available from [www.naturskyddsforeningen.se/upload/Foreningsdokument/Rapporter/engelska/Report\\_international\\_Ethiopia.pdf](http://www.naturskyddsforeningen.se/upload/Foreningsdokument/Rapporter/engelska/Report_international_Ethiopia.pdf).

## African examples of increased yields through ecological agriculture:

- Soil and water conservation in the drylands of Burkina Faso and Niger have transformed formerly degraded lands. The average family has shifted from being in cereal deficit of 644 kg per year (equivalent to 6.5 months of food shortage) to producing an annual surplus of 153 kg.
- In Ethiopia, some 12,500 households have adopted sustainable agriculture, resulting in a 60 percent increase in crop yields.
- In Tigray, Ethiopia, yields of crops from composted plots were 3-5 times higher than those treated only with chemicals.
- Projects in Senegal promoted stall-fed livestock, composting systems, green manures, water harvesting systems and rock phosphate. Yields of millet and peanuts increased dramatically by 75-195 percent and 75-165 percent respectively.
- In Kenya, 500 farmers on some 1000 hectares have seen maize yields improve from about 2 to 4 t/ha following the application of soil conservation, soil fertility and organic agriculture methods.
- A range of biological pest management methods together with legumes, cover crops and green manures for soil fertility improvement resulted in a doubling of beans and groundnut yields from 300 to 600 kg/ha in western Kenya.
- In eastern and central Kenya, smallholder farmers have been trained in natural soil fertility management; integrated environmentally friendly weed, pest and disease protection; on-farm soil and water conservation techniques; and farm level seed conservation, with a resulting 50 percent increase in productivity and 40 percent increase in income.
- More than 1000 farmers in low soil fertility areas in the North Rift and western regions of Kenya increased maize yields to 3,414 kg/ha (71 percent increase in productivity) and bean yields to 258 kg/ha (158 percent increase in productivity) as compared to traditional agriculture, by incorporating soil fertility management, crop diversification and improved crop management.
- Integration of pond fish culture into low-input farm systems with some 2000 farmers in Malawi increased vegetable yields from 2700 to 4000 kg/ha, with the fish ponds producing the equivalent of 1500 kg/ha of fish, a new source of food for households.

Source: Ching, Lim Li, 2009, "Is Ecological Agriculture Productive?" Third World Network, <http://www.oaklandinstitute.org/?q=node/view/499>, accessed August 8, 2009

the case studies showed benefits to soil fertility, water supply, flood control and biodiversity. The organic soil fertility management practices which were employed minimise or eliminate the use of non renewable chemical fertilisers and pesticides, reduce soil erosion, increase soil water retention and bring the water table closer to the surface. This affords farmers a longer growing season and greater resilience to natural fluctuations in weather. Organic farms benefit from increased biodiversity, which provides habitat for predacious insects and pollinators as well as nutrient complementary plant associations. The increased health and diversity of the farm ecology creates a more secure system overall which promotes stability in the regional food supply.<sup>82</sup>

The factors that contribute to the success of organic agriculture in addressing the problems of food insecurity in Africa are intricately interwoven with the very processes of production on regionally adapted organic farms. Whereas conventional high input agriculture relies on costly technologies and chemicals, the shift to successful organic farming depends more on the enhancement of local environmental and social resources. For example, the organic farmer is compelled to form closer connections and alliances with neighbours in order to effectively safeguard their common water and land resources. These stronger community ties lead to a variety of positive results such as the formation of farmers' advocacy groups, cooperatives for collective credit, mutually supportive work arrangements that lower overheads and the sharing of skills and innovations. These enhanced social connections were considered by 93 percent of the participants to be critical to the success of their projects.<sup>83</sup>

The majority of the estimated 200 million people in Sub-Saharan Africa who lack consistent access to adequate amounts of food are small-scale farmers. The challenge then is to enhance marginalised farmers' ability to feed themselves. Because organic agriculture relies on locally available resources rather than costly chemical fertilisers and pesticides, it offers a viable solution. The case study of Manor House Agricultural Centre in Kital,

Kenya, cited in the UN report, describes the experience of the 3,000 farmers who have learned and implemented the bio-intensive methods that are taught and promoted by the centre. The adoption of double digging and integrated pest management increased (sometimes doubling) the vegetable yields of the farmers. Participating farmers were not only able to grow more food for themselves, they also saved money by abandoning the use of chemical inputs.<sup>84</sup> The organic farm systems are less energy dependent and therefore resilient even in the face of rising fuel prices that can be crippling to the high input dependent farm.

## The Emerging Consensus

*“The discourse around food and agriculture that has dominated the past 60 years needs to be fundamentally re-thought over the next few years. New strategies are needed that respond to the daunting challenges posed by climate change mitigation and adaptation, water scarcity, the decline of petroleum-based energy, biodiversity loss and persistent food insecurity in growing populations. A narrowly-focused ‘seed and fertiliser’ revolution will not avert recurrent food crises under these conditions; current models of intensive livestock production will be unaffordable; global and national food supply chains will need to be restructured in light of demographic shifts and increasing fuel costs. Future food production systems will not only depend on, but must contribute positively to, healthy ecosystems and resilient communities”*

**– United Nations Environment Programme rapid response assessment<sup>49</sup>**

The UNCTAD study by Jules Pretty and Rachel Hine is not the only major international report to prioritise smallholder agriculture. The UN Environment Programme’s recent report “The Environmental Food Crisis” examines the rise of further food crises due to environmental collapse and recommends strong support for smallholder centred, sustainable agricultural development. The Intergovernmental Panel on Climate Change recommends practices that are strongly compatible with small-scale sustainable agriculture, like legume rotations, increasing soil carbon stocks, improving soil fertility and intensifying production.<sup>86</sup> But perhaps the most thorough findings came from the *International Assessment of Agricultural Knowledge, Science and Technology for Development* (IAASTD). Designed as a hybrid consultation model based on the Intergovernmental Panel on Climate Change and the Millennium Ecosystem Assessment, the report took four years and consultations with over 400 scientists to complete.<sup>87</sup>

The IAASTD advocates reducing the vulnerability of the global food system through locally based innovations. It calls for redistributing productive land to the rural poor and restructuring the food system in favour of smallholders.<sup>88</sup>



In sum, the IAASTD found that:

- Agriculture involves more than yields: it has multiple social, political, cultural, institutional and environmental impacts and can equally harm or support the planet's ecosystem functions on which human life depends.
- The future of agriculture lies in biodiverse, agroecologically-based farming and can be supported by "triple-bottom-line" business practices that meet social, environmental and economic goals.
- Reliance on resource-extractive industrial agriculture is unsustainable, particularly in the face of worsening climate, energy and water crises; expensive, short-term technical fixes - including transgenic crops - do not adequately address the complex challenges of the agricultural sector and often exacerbate social and environmental harms.
- Achieving food security and sustainable livelihoods for people now in chronic poverty requires ensuring access to and control over resources by small scale farmers.
- Fair, local, regional and global trading regimes can build local economies, reduce poverty and improve livelihoods.
- Greater and more efficient involvement of women and use of their knowledge, skills and experience.
- Strengthening the human and ecological resilience of agricultural systems improves our capacity to respond to changing environmental and social stresses. Indigenous knowledge and community-based innovations are an invaluable part of the solution.
- Good decision making requires building better governance mechanisms and ensuring democratic participation by the full range of stakeholders.<sup>89</sup>



The IAASTD team found that the limiting factors to production, equitable distribution and environmental sustainability were overwhelmingly social, rather than technological in nature. Many proven agroecological practices for sustainable production increases were already widespread across the Global South, but unable to scale up because they lacked supportive trade, policy and institutional environments. This is why IAASTD recommends improving the conditions for sustainable agriculture, rather than promoting technological fixes.

## *Rights, Livelihoods & Resiliency: Building a Framework for Action*

The needs and the reasons for supporting the right to food through an agrarian transition to agroecological, smallholder agriculture in the Global South are clear. The formidable challenges - including strong paradigmatic, institutional and corporate opposition - are also evident. Nevertheless, the best way forward is not always apparent, even with the best intentions. We propose normative guidelines for development decisions based on priorities for improving *rights, livelihoods and resiliency* as a means of achieving the right to food and advancing food sovereignty. This requires more sustainable, equitable and democratic management in all spheres of the food system, starting at the national level. These priorities can be applied to different aspects of agroecological



smallholder agriculture in the face of the four-fold global food, fuel, finance and climate crises.

The focus on rights, livelihoods and resiliency directs solutions to the causes of the four-fold crises as they affect sustainable smallholders in the Global South. We draw our rights-based categories from the seminal studies and the exemplary experiences presented in this report, and ground the framework in the mutually constituting principles of the right to food, food sovereignty and agroecology. A four-fold, integrated, triple-bottom line approach to sustainable agricultural development will prioritise:

1. Sustainable increases in food production by increasing agrobiodiversity, agroecological resiliency and by creating equitable and sustainable options for processing, trade, consumption and recycling; farmers will increase control over processes of innovation and diffusion;
2. Improving rural livelihoods by improving savings, local markets and economic institutions, and creating value added opportunities throughout the value chain in a redistributive manner that especially favours women;
3. Increasing and protecting smallholder's access to food and food producing resources (land, credit, water), as well as ensuring they receive and retain social and economic benefits from conservation;
4. Mitigate, remediate and help smallholders adapt to the four-fold food, fuel, financial and climate crises.

**These priorities can be broken down into areas or foci:**

#### **Structurally**

- Enhance local and intraregional trade opportunities while regulating and protecting key national food sectors;
- Create affordable credit and market protection for smallholder farmers and agroecological farming;
- Ensure access and protection of seeds, land, water, local resources, fair wages and environmental benefits;
- Allocate public spending toward public goods (storage facilities, access to means of communication, regional and local markets, credit, insurance and extension services) rather than simply inputs and fertilisers.

#### **Technically**

- Enhance agrobiodiversity, sustainable production, conservation and climate resilience;
- Create appropriate technologies and farmer-led processes to adapt and spread technologies, agroecological practices and market information at appropriate scales;
- Ensure farmer's control over these processes, their affordability and accessibility, as well as their transparency and accountability. Ensure a balanced and equitable approach to climate resiliency, including mitigation, remediation and adaptation.

#### **Socially**

- Enhance local and intraregional exchanges of experience and information, as well as opportunities and mobility for women. Enhance the power of farmers and women's social movements, organisations and local democratic institutions;
- Create local-regional farmer organisations and institutions, and opportunities for locally-owned businesses and rural employment;
- Ensure smallholder voices are heard in development institutions and in open, transparent, public debates on food, particularly national, inter-ministerial committees for food security, climate and development issues.
- Integration of principles and focus areas can be represented in a matrix of key questions to guide a livelihoods, rights and resiliency approach to institutional direction and programme development.

# Conclusions: Transforming our Food Systems: Ending Hunger and Poverty

*“Progress on the ground [for sustainable agriculture] still remains largely despite, rather than because of, explicit policy support. No agriculture minister is likely to say they are against sustainable agriculture, yet good words remain to be translated into comprehensive policy reforms. Agricultural systems can be economically, environmentally and socially sustainable, and contribute positively to local livelihoods. But without appropriate policy support, they are likely to remain at best localised in extent, and at worst simply wither away...”*

– Jules Pretty et al.<sup>90</sup>

Principles for agroecology and food sovereignty, foci for structural, technical and social change, and guidelines of key questions are all useful tools for supporting a livelihoods, rights and resiliency approach to sustainable agricultural development. However, these tools are lifeless without a political commitment to social change - the essential condition for ending poverty and hunger. Social change is not easy, and two centuries of agrarian transformations and peasant resistance attest to the difficulty of getting smallholders to do things deemed by others to be in their own interest. Nonetheless, not only is it unlikely that hunger will ever be tackled without the enthusiasm, creativity and sheer social force of the world's smallholders, we are unlikely to reverse climate change or develop reasonably sustainable food systems without them. Unless smallholders are in the forefront of the coming agrarian transformations, these changes will not be sustainable or equitable, and will be ultimately unviable. While the IAASTD, UNCTAD and UNEP reports do not specifically call for farmer-led agrarian transformations, none of their recommendations will



have a chance of significant implementation unless there is a substantial shift in political will within national governments and the world's multilateral institutions. This shift will come about when the political cost of not shifting is greater than the cost of supporting the status quo. This turn of events is made possible through the power of social movements.

Ultimately, whatever our framework for development, the most difficult questions are the ones we need to ask ourselves: Are we building strong, farmer-led movements for social change? Are we facilitating the powerful convergence between food sovereignty advocates and agroecological practitioners? Between Northern development strategies and Southern livelihood strategies? In effect, are we part of the farmer-led, agrarian transformation of our food systems?

The following policy recommendations aim to help create the conditions for these sustainable, equitable and essential farmer-led transformations.

## Policy Recommendations

- **Public funding for agroecological research and extension is imperative.** Governments and aid agencies should support research that engages with agroecological processes, not just research with the potential to produce a commercial product. Investment in knowledge-based systems must scale-up.<sup>91</sup> Participatory breeding, on-farm participatory research and increasing local research expertise are essential elements of this effort.<sup>92</sup>
- **Ensure equitable access to land and food-producing resources.** Long-term, flexible and secure land tenure is essential in efforts to alleviate poverty and transition to sustainable agriculture.<sup>93</sup> Pro-poor land reform, not only in terms of property rights, but reforms that ensure that peasants, landless workers and small farmers maintain “effective control” over productive resources, is essential to the realisation of food sovereignty. This can include ceilings on land ownership, restructuring land ownership and market power, and increasing access to inputs and extension, credit and other support services.<sup>94</sup> A moratorium must be put on foreign land grabs and the expansion of industrial agrofuels for export on farmland, rangeland and forests.
- **Focus on the rights, access and potential of women.** Policy priority should be given to women's access to education, information, extension and equitable credit services aimed at improving access to and control over resources for women.<sup>95</sup> Women's rights to land and inheritance must be prioritised. Adequate family laws that provide women with legal recourse and economic opportunity are essential to ensuring full realisation of peasants' human rights, including the right to food.<sup>96</sup>
- **Maintain and support locally controlled diverse seed systems.** Intellectual property regimes must allow for equitable arrangements to deal with traditional knowledge, genetic resources, and community-based innovations.<sup>97</sup> Furthermore, there needs to be a widespread legal recognition of seeds as the collective heritage of humanity and a removal of provisions that restrict farmers from saving seed.<sup>98</sup> Support for farmer-run seed banks and the in-situ conservation of agrobiodiversity should be a priority. The spread of GMO seed should be halted, and support for in-country research on GMOs discouraged.
- **Trade policies must protect human rights.** Governments and institutions must recognise that trade agreements are a means to an end, and must support equitable and sustainable development and human rights. Trade agreements must not undermine the right to food.<sup>99</sup> The market alone cannot address the issues of economic and cultural poverty, hunger and inequality.<sup>100</sup> Nations need the policy space not just to prevent import surges of key commodities, but to develop sovereign food production and support smallholder agriculture with trade and other mechanisms.<sup>101</sup>
- **Ensure access to fair prices and market conditions through mechanisms like strategic grain**

**reserves, marketing boards etc.** In order to reduce price volatility, increase the market power of smallholder farmers and remedy overproduction without subsidising agribusiness, governments and NGO's should support the re-creation of democratically controlled grain reserves and cooperative marketing boards.<sup>102</sup>

- **Support and strengthen local farmer organisations.** Farmer-to-farmer trainings, credit and marketing cooperatives, and cooperative efforts to locally add and capture value to primary farm products are effective ways of improving livelihoods. Governments and aid organisations should offer support services directly to farmer organisations.
- **Recognise the basic human rights of farmers and peasants.** It is important that governments and international law explicitly recognise farmers' and peasants' rights. Peasants and farmers have a right to life and an adequate standard of living, to land and resources to support adequate livelihoods, to traditional agricultural knowledge and seed, to information about agriculture and technology, to biological diversity, to preserve their environment, to traditional agricultural values, freedom of expression, access to justice and the freedom to access and choose markets and prices.<sup>103</sup> Development policies must aim to respect, protect and fulfil these rights.
- **Agriculture must help farmers adapt, build resilience to, and mitigate climate change.** Sustainable agriculture both mitigates and helps farmers to adapt to climate change. As part of climate policies, support measures for smallholders, including, agroecological research and extension, the use of diverse polyculture systems, financial support for reforestation and supporting strong farmer organisations to reduce the economic vulnerability of member families will help farmers adapt to and mitigate climate change. Funds generated for climate remediation projects should, in part, be made available for these activities.
- **Support for informed public debate, transparency and accountability is essential to democratising development.** Farmers and women's organisations should be supported to engage in educational activities and broad-based information campaigns on the crises and their solutions. Informed public debate at local, national, regional and continental levels should be encouraged. Specific, verifiable mechanisms for public transparency and accountability should be put in place for development projects and institutions.



Graeme Williams/Panos/ActionAid

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- <sup>1</sup> Following the rejection of the IAASTD by *CropLife* International (a global federation of industrial seed and chemical corporations), the United States and the United Kingdom refused to endorse the findings of the 4-year study. From that time on, the IAASTD—and any other approach that did not endorse supply-driven agricultural development—were systematically marginalised from official debates on the global food crisis (e.g. Rome and Madrid Food Summits, G-8 and G-20, Summit of the Americas, etc.).
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# Annex One:

## Guidelines for Transformation Matrix

### Livelihoods, Rights & Resiliency Guidelines: Key Questions

	<i>Food</i> Increase/reduce/no effect on productivity, resiliency & rights?	<i>Economy</i> Increase/reduce/no effect on income, stocks, cash flow	<i>Fuel, Land &amp; Water</i> Increase, reduce or no effect on use/cost of fuel, land & water?	<i>Climate</i> Increase/reduce/no effect on remediation/mitigation/adaptation
<b>Structural</b> -trade & aid -credit, price, supply -land, water, labor	<ul style="list-style-type: none"> <li>● <i>Enhances:</i> local and inter-regional markets &amp; trade?</li> <li>● <i>Creates:</i> affordable and accessible credit for agroecological farming? Price floors for peasant agriculture? Locally-controlled grain reserves?</li> <li>● <i>Ensures:</i> local seed protection, land &amp; rights, esp. for women farmers? Living wages? Safety nets?</li> </ul>	<ul style="list-style-type: none"> <li>● <i>Enhances:</i> Family savings?</li> <li>● <i>Creates:</i> local economic institutions?</li> <li>● <i>Ensures:</i> cash flow, fair prices and fair wages?</li> </ul>	<ul style="list-style-type: none"> <li>● <i>Enhances:</i> opportunities for fuel, soil, land &amp; water conservation?</li> <li>● <i>Creates:</i> incentives for local farmers to produce &amp; consume fuel locally? Job opportunities in conservation?</li> <li>● <i>Ensures:</i> protection from industrial agrofuels expansion and food-export land grabs?</li> </ul>	<ul style="list-style-type: none"> <li>● <i>Enhances:</i> local production-consumption chains</li> <li>● <i>Creates:</i> incentives for community forestry &amp; organic farming?</li> <li>● <i>Ensures:</i> capture of benefits stream from carbon-capturing and fuel conservation policies?</li> </ul>
<b>Technological</b> -research -training -dissemination	<ul style="list-style-type: none"> <li>● <i>Enhances:</i> agrobiodiversity? farmer-driven &amp; farmer-led research? farmer-to-farmer training &amp; dissemination?</li> <li>● <i>Creates:</i> affordable, accessible agroecological practices?</li> <li>● <i>Ensures:</i> farmer control over processes of innovation &amp; dissemination?</li> </ul>	<ul style="list-style-type: none"> <li>● <i>Enhances:</i> market information?</li> <li>● <i>Creates:</i> savings clubs, credit associations?</li> <li>● <i>Ensures:</i> equity, parity, transparency of transactions?</li> </ul>	<ul style="list-style-type: none"> <li>● <i>Enhances:</i> existing conservation practices?</li> <li>● <i>Creates:</i> local processes that adapt &amp; generate technologies for conservation?</li> <li>● <i>Ensures:</i> affordability and accessibility, of fuel and conservation technologies?</li> </ul>	<ul style="list-style-type: none"> <li>● <i>Enhances:</i> agroecological management of climate hazards? soil organic matter, biodiversity and carbon capture?</li> <li>● <i>Creates:</i> opportunities for scaling resiliency at the village/watershed level?</li> <li>● <i>Ensures:</i> a balanced approach to resiliency of remediation, mitigation &amp; adaptation?</li> </ul>
<b>Social</b> -women -movements -campaign	<ul style="list-style-type: none"> <li>● <i>Enhances:</i> local and inter-regional exchanges of information? Mobility and opportunities for women?</li> <li>● <i>Creates:</i> organisations and institutions for advocacy and local-regional cooperation?</li> <li>● <i>Ensures:</i> Dialogue transparency &amp; accountability of development institutions?</li> </ul>	<ul style="list-style-type: none"> <li>● <i>Enhances:</i> value-added, vertical integration of value chain? Market flexibility.</li> <li>● <i>Creates:</i> local opportunities for processing and marketing?</li> <li>● <i>Ensures:</i> redistributive tendencies of surplus? Women farmer's control over income?</li> </ul>	<ul style="list-style-type: none"> <li>● <i>Enhances:</i> local institutions for democratic control over resources?</li> <li>● <i>Creates:</i> Idem</li> <li>● <i>Ensures:</i> reduction of food miles? Right of access to land and water?</li> </ul>	<ul style="list-style-type: none"> <li>● <i>Enhances:</i> farmers and women's movements' capacity to internalise climate strategy discussions?</li> <li>● <i>Creates:</i> local institutions and organisations that help build movements for climate justice?</li> <li>● <i>Ensures:</i> widespread public discussion of agroecological strategies for climate resiliency?</li> </ul>

*Authors: The article is by Eric Holt-Giménez, Ph.D, Executive Director, Food First/Institute for Food and Development Policy, and Annie Shattuck, Policy Analyst, Food First.*

**act:onaid**

**ActionAid International**

Postnet Suite 248  
Private Bag X31  
Saxonwold 2132  
Johannesburg  
South Africa  
Tel: +27 11 731 4500  
Fax: +27 11 880 8082  
[www.actionaid.org](http://www.actionaid.org)

*ActionAid fights to end poverty and the injustices that cause it by helping poor and excluded people secure and exercise their rights.*

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**Food First**

398 - 60th Street.  
Oakland, CA,  
94618  
Tel: (510) 654-4400  
Fax: (510) 654-4551  
[www.foodfirst.org](http://www.foodfirst.org)

*Institute for food and development policy*