

# The Sharing Way Annual Project

## Hunger for Change; Environment for Life

### Climate Change and Hunger

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#### Climate change and human vulnerability

The Sharing Way launches its 2009 campaign at a time when the world is undergoing sweeping environmental and social transformation. Human development is nearing a crest, beyond which the cumulative effects of man-made climate change will alter the fundamental relationship human beings have with the earth. The environmental conditions for agriculture around the world have remained fairly constant over the centuries. However, as a result of climate change we are entering into an era of great uncertainty. The sheer volume of greenhouse gas emissions coupled with the rapid pace of environmental degradation has threatened our collective ability to ensure the security of food production on a global level. Undeniably, the beginnings of crisis are already palpable as we enter into the post-Kyoto Protocol era – the alarm bells are sounding in various regions of the developing world.

The warming of the earth will profoundly change the way agriculture is done in our lifetime. Increasing temperatures will lead to changes in the frequency, amount and location of precipitation across the globe while altering the duration of growing seasons. Climate change will also increase the occurrence of extreme weather and floods in some regions of the globe while increasing the frequency of droughts in others. Considerable portions of arable land will be submerged under flooding and rising sea levels or lost to soil erosion. What is becoming clear is that the industrialized world, responsible for the majority of carbon-dioxide emissions, will not bear the brunt of the environmental consequences. The harshest penalties are already being dealt to regions in the developing world, communities that have contributed the least to environmental degradation. In 2006, the number of chronically hungry and malnourished people climbed past 850 million to 980 million in 2007, with the projected number to increase to 1.2 billion by 2017 (Brown, 2009). Hunger and poverty are relentless, driving ordinary people to extremist ideologies and military conflict. Without the most basic means to provide food for their families and communities, the fabric of human society is weakened at its most fundamental level.

Climate change significantly influences agriculture and land use, which directly impacts global food security. Agriculture not only produces the food the world consumes, but it also provides a source of livelihood for 36% of the world's population (in the developing regions, this total can reach two-thirds of the workforce) (Food and Agriculture Organization, 2008). Deteriorating agricultural capacities in much of the developing world drive crop prices up as supply levels shrink and more food has to be purchased from abroad. Social change then follows swiftly after ecological change because as societies lose their capacity to adapt to these severe challenges, communities are plunged into poverty and hopelessness. Knowing this, stabilizing food production in a changing climate becomes essential to conceptions of social justice in the 21<sup>st</sup> century.

Climate change illustrates how many smaller decisions can run together into a current that moves in the lives of others across the world. As climate change progresses, our inability to envision an alternative for this defining crisis will come from the underdevelopment of our imaginations, our inability to empathize with those suffering through action will become our spiritual poverty. Yet even as we take stock of the damage done to the earth as a result of the never-ending expansion, consumption and exploitation, an alternate world is emerging: one of sustainability, responsibility and community.

Many strategies that can adapt to or mitigate the effects of climate change are already available or within technological reach. Building resilience and capacity among communities in the developing world means giving support to viable methods of increasing and sustaining food production. Projects TSW Campaign supports are actively engaging the sources of food insecurity, nurturing a new dispensation where the hunger is for justice and the gospel can transform human relationships across the world.

## **Improving soil productivity & fertility**

Soil degradation – the loss of soil fertility – is directly impacting the ability of farmers to produce food across the developing world. As a result of long-term use of chemical fertilizers, erosion, and nutrient depletion farmers can no longer produce the crop yields necessary to sustain their families and communities. As arable land in developing regions of the world comes under great environmental stress, countries are already losing the capacity to produce food for their own citizens. A diminished food supply causes food prices to increase significantly, ensuring that social upheaval follows in the wake of land degradation.

In the face of rising food prices many developing countries are experiencing large-scale food riots as their populations voice their distress. The rising prices of staple foods such as rice, cornmeal and wheat in countries as far apart as Mexico, the Philippines and Egypt have led to protests and demonstrations against state governments. Food can make up to three-quarters of consumer spending in some poorer countries, and once food becomes inaccessible there is a slim margin for survival (“Chaos Spreads,” 2008). Overall, the UN estimates that food prices have risen 65% since 2002, with grain rising 42% last year alone (“Chaos Spreads”, 2008). While food prices are rising on a global level, many regions in Africa and Asia are losing agricultural productivity because of environmental change. Some estimates predict that Southern Africa will lose more than 30% of its maize crop and South Asia 10% of its regional crops by 2025 (“Climate could Devastate Crops”, 2008). The trend is clear: as the world’s population grows, its ability to produce food is decreasing.

Therefore supporting initiatives aiming to improve the fertility of soil must be a priority for fighting hunger in the context climate change. Enhancing the soil through organic fertilizers include using composting methods and livestock manures. These strategies are viable for small and medium farming systems, and their use lessens dependence on chemical fertilizers. Using biochar -- burned biomass in a low-oxygen environment -- both enriches the fertility of soil and stores carbon, preventing it from being released into the atmosphere. Supporters of this method estimate that if biochar was incorporated into just 10% of the world's arable land, 29 billion tons of CO<sub>2</sub> could be stored (instead of released into the atmosphere) (Scherr & Sthapit, 2009). Promoting non-tillage farming is a way to decrease carbon-dioxide emissions while allowing the soil to retain moisture and avoid erosion, effectively preserving its natural composition (Scherr & Sthapit, 2009). Encouraging farmers to grow perennial grains as an alternative to annual grains reduces the need for fertilizers while lessening greenhouse gas emissions and soil erosion. This is because perennial crops live for at least two seasons and so have a stronger root network, requiring less tilling and chemical fertilizers to grow (Scherr & Sthapit, 2009).

We have seen that restoring nutrients to depleted soil is essential to ensuring soil productivity. But equally as vital is management of the soil by farmers, who are knowledgeable of the composition of their soils and of methods to maintain the fertility of the land. Local knowledge of farming best practices, developed over generations, is essential to bringing about solutions to sustainable food production in the face of soil degradation. Yet vulnerable populations in developing countries often do not have equal access to land, resources or advocacy even as they possess the necessary expertise to farm efficiently on their native soils. Thus social justice, at its core, is not only about material gains for the poor but seeks to empower the vulnerable to live lives free of oppression. The Sharing Way’s approach is not merely to increase a community’s production of food, but also to increase its ability to adapt to change and remain resilient in the face of extreme difficulty. Helping a community develop sustainable agriculture is one factor that can single-handedly reduce its vulnerability to the many challenges that it will encounter within a developing country including economic globalization, military conflict, the HIV/AIDS epidemic, etc. (Lobe, 2007)

## **Agroforestry**

Strategies mitigating the effects of climate change on agriculture are an important response to the present crisis. However, strategies aiming to adapt communities to the challenges of climate change are equally as vital. Integrating managed tree systems into a farmer’s landscape can significantly increase the income of a household while simultaneously stabilizing the surrounding ecosystem. Agroforestry, where trees are planted in and around fields and pastures, produces products (such as medicines),

assists in farming by protecting crops from the wind, provides fodder for animals and maintains the ecosystem by storing carbon as well as fixing nutrients into the soil.

The practice of agroforestry is an important shift in land use practices that moves toward sustainable land management and preserving ecological biodiversity. It was developed in part as a response to the environmental degradation brought on by the Green Revolution, which encouraged the clearing large areas of forest to make room for monocultural croplands. The choice between preserving forest and expanding agricultural production is a false one. Agroforestry techniques demonstrate that food production can be sustainable when the natural biodiversity of the land is harnessed and managed.

Agroforestry's great innovation is to create a self-sustaining system of natural interdependence that produces crops and links farmers to the international market. Using coffee or fruit trees to complement cropland or pasture not only contributes to a farmer's agricultural output but also diversifies their sources of income. This strategy is effective even for the poorest farmers as trees often produce more valuable crops than are grown on fields, trees are more resilient in times of drought and they require less intensive labour to maintain (World Agroforestry Centre, 2009). Thus agroforestry's benefits are threefold for farmers: it increases income, increases food security and helps to maintain the surrounding environment.

As a farmer, the successful integration of trees into cropland or pastureland can bring growth beyond the physical space of your fields – a higher income will contribute to the well being of families and communities. In regions where the HIV/AIDS epidemic is present, improving the nutrition of families will assist them in combating the disease. Reducing poverty will allow families to send their children to school and to afford medical care when needed. The participation of women farmers in agroforestry projects increases their agency and equips them with new skills and resources, reducing their vulnerability (World Agroforestry Centre, 2009).

### **Rainwater harvesting & Micro-irrigation**

What can a farmer do in the face of drought? The water supply, the lifeblood of farming, must be reliable in order for agriculture to be a viable way of life. In regions where drought (man-made and natural) is increasingly common and periods of rain increasingly erratic, many communities find themselves facing great uncertainty even though they may possess the expertise to farm sustainably. Areas in Southern Africa affected by drought are estimated to expand by 60-90 million hectares, causing a loss of \$26 billion USD by 2060 – an amount that exceeds current international aid to the region (United Nations Development Program, 2006).

Approaches to agriculture promoted by the Green Revolution required enormous quantity of fresh water to feed crops, depending on unreplenishable water tables and the diversion of major river systems. From 1950 to 2000, the world's irrigated area increased from 94 million hectares to 276 million hectares after which it suddenly ceased to grow (Brown, 2009). This is an abrupt reminder that the fresh water available for growing the earth's crops is not limitless. Unsustainable irrigation schemes as well as depletion of ground water and river systems have led to widespread land degradation and the need to develop new methods of irrigating crops.

Rainwater harvesting is a long practiced and environmentally friendly method of collecting water to use in irrigating cropland. Gathering water in large quantities during periods of rain and developing a system of filtration allows this water to be used in periods of dryness. Water that would otherwise be wasted is instead utilized for the benefit of the farmer and the stress placed on non-renewable sources of water is significantly reduced. Storing rainwater in large reservoirs also allows aquifers to be replenished and can assist in flood control and erosion prevention (Practical Action, 2008). In regions where rainfall does not occur regularly throughout the year, rainwater harvesting can serve to ensure water security for farmers. Filtering, storing and managing rainwater reservoirs require a degree of technical knowledge on the subject. Thus it is vital to support initiatives that seek to develop the application of rainwater harvesting techniques.

Micro-irrigation is a small-scale, low-cost irrigation system usually used in rural areas to support farmers that do not have access to other means of watering crops. Through relatively simple techniques such as drip irrigation, which delivers water directly to the plant root via a network of plastic tubing, farmers are able to cultivate fresh produce even during the dry season. The delivery of water directly to the soil surrounding a plant has several advantages. It ensures that a minimal amount of water is wasted as runoff or evaporation, making this approach suited to drier regions. Micro-irrigation techniques can

also reduce the growth of weeds because of the limited delivery of water to non-targeted areas on a field (Practical Action, n.d). The inexpensive start-up cost makes micro-irrigation affordable and widely applicable even for farmers in the poorest regions of the world (Asian Development Bank, 2009). Increasing the agricultural produce of a farmer translates directly into higher income and greater self-sufficiency as farmers are able to sell their surpluses. Equipping farmers with a reliable source of irrigation makes them less vulnerable to exploitation and improves the health of the entire family.

### **A call to action**

These strategies, alone or in combination, are among many that are viable for small and medium farming systems. Several of them can also be incorporated into large-scale farming. They are tangible efforts to break from the past and to alter the trajectory of climate change. Naturally, strategies to adapt to the effects of climate change will be tailored to local contexts; there exists no single solution. Yet the Sharing Way's objective will remain unwavering: ensure and increase food production while reducing carbon emissions and preserving existing ecosystems. In doing so, the food supply will be sustainable and stable, avoiding sharp declines in supply and instability in pricing – factors that have led to strife in many parts of the world.

As the alternative narrative of sustainability and responsibility is realized within the developing world, it must also be realized within the developed world in order to truly uproot the present paradigm. Simple actions in our everyday lives allow us to participate in God's redemptive plan to restore justice in relations between people as well as between people and the earth:

- Consumer awareness requires us to be conscious in our choice of meat and dairy products, specifically, the true environmental cost of agricultural production. As consumers, reducing consumption of meat and dairy products would have a significant environmental impact.
- Supporting forest and natural habitat conservation efforts and contributing to incentives for the international community to do so would reduce carbon emissions.
- Efforts to conserve water and reduce greenhouse gas emissions on an individual level could include driving less, using less air-conditioning and producing less waste.
- Consuming locally reduces the distance food products must travel to get to their markets, and so contributes to a reduction in carbon emissions and adds to food security. In fact, the volatility of food prices and rising transportation costs are already leading to the localization of food linkages, bringing the places where food is produced, processed, prepared, distributed and consumed closer together (Slater et al, 2007).

Our greater challenge will be to lend our support to environmentally conscious shifts in public policy and corporate practices, to back initiatives that allow the local agricultural industry to adapt to climate change and to support efforts advocating for the rights of the vulnerable. Canadian Baptist Ministries, with a network of expertise extending to places as far as Kenya, Rwanda, India and Bolivia seeks to be instrumental in this shift. We must choose to be engaged and awake, to empathize through understanding with those who desire intensely to live lives of value for their children and their communities. Men and women who possess a deep humanity in position of scarcity, who yearn for change and renewal in face of constant struggle.

The scope and damage of climate change will dwarf the current global recession. Yet times of economic stress often lead us to reconsider how we've understood ideas of wealth and security. True security is just, sustainable and sheltering. Real wealth is the ability to provide and not to consume. Justice, crisis, wealth, transformation, security, interdependence. The themes that will shape the story of our generation have appeared from within a time of imminent crisis. Our reaction to the dilemmas brought on by man-made climate change will lay the groundwork for viable responses to world hunger for decades to come.