



# WORLD DEVELOPMENT REPORT 2011

BACKGROUND PAPER

## FOOD SECURITY AND CONFLICT

Agriculture and Rural Development Department\*  
World Bank

October 22, 2010

*The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the World Development Report 2011 team, the World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.*

---

\* Authors: Saswati Bora, Iride Ceccacci, Christopher Delgado, Robert Townsend. Contact: Saswati Bora, sbora@worldbank.org

## Abstract

Lack of food has been the source of many past and recent conflicts. Food insecurity has clearly been a factor behind outbreaks of social unrest or worse, yet conflict also has induced notable instances of food insecurity. Conflict often involves competition over control of the factors of food production, primarily land and water. Having more people to feed, more pressure on land and water, more variable climates, and greater price volatility tends to increase stress; it also raises the risk of civil unrest or worse conflict. Countries under the greatest stress often have the least capability to respond. It is critical to break the vicious circle of conflict and food insecurity, especially in rural areas that tend to be poorer and more dependent on agriculture for both food and livelihoods. Food aid is the typical instrument used to limit immediate food insecurity impacts of conflict, and continues to alleviate even greater harm to innocent people in many situations of conflict. Done right, food aid can also assist in better transition to longer-term agricultural productivity growth and local market development. However, it is not likely to be possible to significantly reduce conflict in fragile and poor countries on a sustained basis without significant new investment and partnerships in key areas of agriculture and rural development.

## FOOD SECURITY AND CONFLICT

This note tries to frame the main issues linking food insecurity and conflict, with a view to identifying issues in using food security as an entry point for reducing conflict. Section I addresses food insecurity as a source of conflict. Section II gives an overview of recent trends in food and agriculture that threaten social stability in many developing countries, ending with thoughts on the trigger conditions for violence related to food insecurity. Section III examines how conflict, in turn, exacerbates food insecurity. Section IV discusses food aid as an entry point for addressing acute and chronic food insecurity in conflict regions, and by extension issues in how it can be used more effectively to promote social stability in the longer term. Section V gives recommendations for addressing food security in fragile and conflict-affected countries.

### 1. Issues linking food security and conflict

Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets dietary needs and food preferences for an active and healthy life (FAO 2006). It includes the following dimensions:

- availability: the availability of sufficient quantities of appropriate quality;
- access: access by individuals to adequate resources for acquiring appropriate foods for a nutritious diet on a regular basis;
- utilization: utilization of food through adequate diet, clean water, sanitation and health care to reach a nutritional well-being where all physiological needs are met;
- stability: a population, household or individual must have access to food at all times and should not risk losing access as a consequence of sudden shocks or cyclical events.

Problems with any of these dimensions can lead to food insecurity, while the latter has often been associated with outbreaks of social unrest or more severe forms of conflict. On the other hand, situations of conflict have in many instances been a primary cause of interference with one or more of the dimensions of food insecurity. A vicious circle of conflict and food insecurity makes alleviation of poverty in rural areas of the most vulnerable countries especially intractable. The root cause of conflict is often to be found in competition over the factors of food production, primarily land and water, exacerbated by other troubling trends. Having more people to feed, with less land and water, more variable climate, and greater food price volatility increases stress on livelihoods and food systems. Yet countries under the greatest stress in this sense are often the least able to respond.

Unpacking the links between food insecurity and conflict helps identify entry points for dealing with both; it is critical to breaking the vicious circle, especially in rural areas that tend to be poorer and more dependent on agriculture for both food and livelihoods. Food aid is the typical instrument needed to limit the immediate food insecurity impacts of conflict. Besides the clear humanitarian outcome in its own right, it can help provide a better context for resolving other issues of social discontent. Done right, food aid can also assist in better transition to longer-term agricultural productivity growth that will be essential to finding more stable solutions to root causes of conflict in many rural areas. However, even

food aid can exacerbate conflict under some situations, and used poorly on a recurring basis, it can also exacerbate some of the root causes of social discontent. In agriculture-based conflict countries, the focus needs to be agricultural productivity growth and food security.

Studies on the motives of war have found conflict to be closely associated with underlying factors affecting food insecurity.

- Political studies of the economic motivations of war have argued that conflict was precipitated in some cases by “*greed*” (the desire to control resources) and in others by “*grievance*” (the perception of unfairness by those receiving the short end of contested resources) (Collier 2000, Collier and Hoeffler, 2004).
- Although most of the studies on greed and grievance have concentrated on non-renewable, non-agricultural resources, high value agricultural resources may also be responsible when competing groups fight over access to land and water sources to produce high value commodities like coffee or cotton. For example, the collapse of coffee prices led to a sudden drop in income for small farmers in Rwanda and contributed to the complex forces of causation that contributed to the 1994 genocide (Uvin 1996, Messer and Cohen 2006).
- Countries dependent on primary commodity exports are especially vulnerable to conflicts. Collier states that a country that is heavily dependent upon primary commodity exports, with a quarter of its national income coming from them, has a risk of conflict four times greater than one without primary commodity exports (Collier 2000).
- Using rainfall shock as an instrumental variable for economic growth in a sample of African countries, Miguel et al. (2004) found that rainfall shocks have a dramatic impact on the likelihood of civil war: a five percentage-point negative rainfall shock increases the likelihood of a civil war the following year by nearly one-half. The study found that the impact of economic shocks is approximately the same across countries with a range of different economic, social and political institutional characteristics, suggesting that economic shocks are a critical determinant of civil conflict in Africa (Miguel et al. 2004). However, Bruckner and Ciccone found that the effect of low growth on the likelihood of civil war is significantly weaker in countries with democratic institutions. They note that low growth increases the likelihood of civil war in autocracies, and conclude that there is interaction between economic and institutional causes of civil war (Bruckner and Ciccone, 2007).
- The extent to which underlying forces can be politically destabilizing depends on the preexisting political and socio-economic context. Poverty, hunger and food insecurity, together with a very unequal distribution of income, land and other material goods, provide a fertile ground for grievances that can be exploited by individuals and groups with a desire to cause conflict (Pinstrup-Andersen and Shimokawa, 2008).

- Vallings and Moreno-Torres (2005) argue that the central driver of fragility is weak state institutions. Poverty is linked to fragility but not all poor areas are necessarily fragile. Fragility can occur when poverty or economic decline are combined with weak state institutions that cannot manage the very real grievances caused by, say, inequitable distribution of resources or unequal access to formal institutions. This means that in fragile states political situations are not strong enough to manage the natural conflicts that occur in society (Vallings and Moreno-Torres, 2005). FAO (2008a) state that structural factors – such as failed institutions and conflicts over land and resources – are at the root cause of most protracted crises.

## 2. Trends in food and agriculture that threaten stability

The world is facing tremendous challenges in providing nutritious, healthy, and stable diets to feed a growing population. Recent trends in food and agriculture are increasing stress on developing countries in a way that has implications for the future of food security, socio-economic development and sustainable peace. Countries under the greatest stress typically have the least capacity to respond successfully.

- *Increase in population* – of the 6.8 billion people on the planet in 2010, there are presently 925 million undernourished people (FAO 2010a). According to current estimates, world population is expected to rise to 9 billion by 2050. High population growth along with rising income and purchasing power will lead to greater demand for food. This will, in turn, increase pressure on the agricultural supply system. Migration from highly populated areas, regions, or countries raise demand for land elsewhere, with subsequent resettlement often increasing local social tension and conflict.
- *Growing competition for land and water* – as population grows, it puts ever increasing pressure on land. Land degradation due to desertification, salinization, soil erosion and deforestation is leading to loss of productivity and increased conflict. At the same time, energy policies are adding competitive pressures on agricultural land through biofuels. Governments and private actors from the wealthy and emergent nations that are buying up land in developing countries in an effort to secure their own long-term food or raw material supplies trigger concern for the livelihoods and food security of people presently living on those lands. This has led to opposition in some of the target countries. In Madagascar, discontent with a land deal between the government and a foreign private corporation was a key factor in the coup that led to the ouster of the President. Water scarcity in many countries is also leading to potential conflicts among countries and regions that share transboundary sources and reserves. Of all the international water-related events<sup>1</sup> between 1946 and 1999, 1,228 were cooperative and 507 were conflictual (von Braun 2009).

---

<sup>1</sup> Water-related events in this context are State-to State interactions over transboundary basins; they include in decreasing order of collaboration: International water treaties, military support, non-military agreement, verbal support, neutrality, verbal hostility, hostile acts, military acts, and formal war.

- *Price volatility that threatens security* – global wheat prices almost doubled and rice prices almost tripled from 2006 to 2008; the associated surge in domestic food prices led to strikes, protests and riots in more than 60 countries (Zaman et al. 2008). Although this unrest has occurred mostly in countries with low performance indicators in governance, countries with high governance performance were also affected (von Braun 2008).<sup>2</sup> There are clear links between high prices, lower calorie intake, lower quality diet, and increase in child malnutrition (Alderman, et al. 2006). Tiwari and Zaman (2010) found that the 2008 global food price spike increased global undernourishment by 6.8 percent, or 63 million people. Volatile prices lead to food insecurity that can, in turn, lead to conflict. At the same time, conflict can also lead to price volatility. Maize prices in Kenya, driven by lower plantings from election-related disruptions, higher fertilizer prices, and a drought, rose even during the latter part of 2008 when global prices were falling (World Bank 2010a).

The outlook for global prices of major food staples – maize, wheat, and rice - is more uncertain than in the past. New and more volatile sources of demand (particularly for biofuels), and more variable supply (from climate change) has added to the uncertainty. Reactive trade policies (such as export bans) also become more uncertain, amplifying volatility. The country impact of global food price volatility is conditioned by the trade status of countries. Net food importers generally lose from higher prices, net exporters generally gain (Zaman et al. 2008, Ivanic and Martin 2008).

At the household level as at the national level, food price rises tend to hurt net consumers of food more than net sellers of food, especially because food staples typically account for more than half of total consumption expenditures (cash and kind) of poor households (Ivanic and Martin 2008). When the price increases are sudden and large, adjustment of the poor is especially difficult. In most fragile countries, the poor, especially the urban poor, are net consumers. Even the rural poor are typically only marginally net sellers if they are sellers, and are often net consumers (Ivanic and Martin 2008). Due to a relatively higher share of net consumers to net producers in most fragile countries compared to developing countries as a whole, unpredictability and especially sudden spikes in food prices in fragile countries tend to lead to increased poverty and significantly more stress in their coping strategies (Wodon and Zaman, 2009).

Almost all of the countries listed in the World Bank's harmonized list of "fragile situations"<sup>3</sup> are net importers of cereals. For these fragile countries, higher global prices means larger import

---

<sup>2</sup> Compiled by IFPRI – Food protests data are from news reports; government effectiveness data are from Governance Matters 2008: Worldwide Governance Indicators database, 1996-2007.

<sup>3</sup> "Fragile Situations" have: either a) a harmonized average CPIA country rating of 3.2 or less, or b) the presence of a UN and/or regional peace-keeping or peace-building mission during the past three years. This definition is pursuant to an agreement between the World Bank and other MDBs at the start of the IDA 15 round in 2007 (only the ADB and AfDB use CPIA ratings). This list includes only IDA eligible countries. It excludes IBRD only countries for which the CPIA scores are not currently disclosed. The list is found here:

costs. Not all food crops are traded. Food prices in highly insulated markets, reflected by high transport cost and distant locations, will be driven largely by local supply and demand with limited pass-through of international prices. Without the benefit of price smoothing effects of trade, prices in these local markets can be volatile, especially if local supply becomes more variable through climate change.

In Sub-Saharan Africa, where there are many fragile states, locally produced cassava, sorghum, and millet are also top providers of calories besides rice, wheat and maize. However, cassava, sorghum and millet are rarely traded, and hence, not directly affected by changes in international prices. For these commodities, domestic production shocks due to food market conditions like regional transports costs, conflict and other macroeconomic events often have more impact on domestic food prices in some parts of country than pass-through from global markets, even many months later (Delgado et al. 2005). Landlocked countries in Sub Saharan Africa are typically more exposed to domestic shocks than international shocks as their capacities to trade in world markets are limited due to high transport costs and foreign exchange constraints (Delgado 1992, World Bank 2006, Wodon and Zaman 2009).

- *Climate change effects on food production capacity and migration patterns* – agriculture is extremely vulnerable to climate change. Higher temperatures and more erratic rainfall patterns reduce yield, encourage weed and pest proliferation and increase the likelihood of short run crop failures and long run production declines. Although there will be gain in some parts of the world, the overall impacts are expected to be negative, threatening global food security, particularly in the poorer parts of the developing world (Nelson et al., 2009). Combining historical crop production and weather data, Schlenker and Lobell estimated the yield response to climate change for 5 key African crops (maize, sorghum, millet, groundnut, and cassava) in 2046-2065 relative to 1961-2002. In all cases except cassava, there is a 95 percent probability that yield declines exceed 7 percent, and a 5 percent probability that they exceed 27 percent. Countries with the highest average yields have the largest projected yield losses, suggesting that modern seed-fertilizer packages are more susceptible to heat related losses (Schlenker and Lobell, 2010).

Climate change is likely to be a significant factor leading to mass exodus from increasingly uninhabitable areas, and population shifts stemming directly or indirectly from environmental pressures can place significant burdens on migrant receiving areas. For example, Bengali migrants to the north-eastern Indian region of Assam have contributed to social frictions and outright conflict in Assam. Migrations induced by crop loss typically exhibit at least one of two pathways from climate change to conflict. First, environmental problems may lead directly to emigration. Second, it may lead to resource conflicts in the home area, and these may produce more refugees. Migration directly caused by environmental factors may lead to social tensions

and sporadic violence in receiving areas. In contrast, political refugees from violent regions may be involved in militant activities (Gleditsch et al., 2007).

- Conflict potential is especially high when inequalities or environmental degradation lead to extreme marginalization of large segments of the population. The triggers inducing conflict and violence may be (Messer and Cohen 2006):
  - *natural*, such as prolonged drought, as in Ethiopia in 1973-74 (Shepherd 1975);
  - *economic*, such as a big change in price of the principal crop (food riots in Haiti in 2008) or cash crop (coffee in Rwanda), which deprives the affected population of its perceived just standard of living (Uvin 1996);
  - or *political*, such as the denial of access to land or social welfare programs (Madagascar with land).

### **3. Food insecurity as a consequence of conflict**

Food shortages or other dimensions of severe food insecurity are an obvious consequence of conflict in many cases. Conflict typically reduces availability, access, and utilization of food. It also leads to poverty, high infant mortality, inequality, and declining per capita incomes. The growth inhibiting impacts of conflict can be observed in the rapid resumption of agricultural growth following peace, as experienced in Mozambique.

- *Conflict destroys land, water, biological, and social resources for food production.* Thirty million people in more than 60 countries were displaced or had their livelihoods destroyed by conflict every year in the 1990s (WFP 2004). FAO (2002) has estimated losses of almost \$52 billion in agricultural output through conflict in Sub-Saharan Africa between 1970 to 1997, a figure equivalent to 75 percent of all official development assistance received by the conflict-affected countries. Estimated losses for all developing countries averaged \$4.3 billion per year – enough to have raised the food intake of 330 million undernourished people to minimum required levels.
- *One of the most direct effects of conflict on food security is the displacement of people.* In 2001, there were more than 12 million refugees, 25 million internally displaced people (IDPs) and an unknown number of people trapped in combat zones (FAO 2002). Most of these need temporary food assistance until they can return to their homes or find new livelihoods. Contributing to meeting the food needs of refugees places an additional burden on recipient communities where food security is already marginal leading to sometimes acute food shortages. Refugees fleeing fighting in northern Chad upset markets in western Darfur during the drought years 1983-85, transforming that food shortage into a famine (Messer et al. 1998).

- *The use of hunger as a weapon (“food war”)*, which includes selective distribution of food to favor populations in pro-government areas, is implicated in the famines of the 1980s and 1990s in Africa, and in chronic underproduction and food insecurity in post-conflict economies in Africa, Asia and Latin America. The Sudan civil war (1983-84) arose as Southern groups rebelled to assert economic and political rights being denied by the Northern-dominated government. Hunger was used as a deliberate weapon of war leading to almost 7 percent in one camp dying each week. The ensuing famine had its origin in the civil war — raiding of cattle, combined with scorched earth tactics, disrupted economic life and deprived people of assets that normally protected against famine (Stewart 1998).
- *Military expenditures lower investments in health, education, agriculture and environmental protection.* In the late 1990s and early 2000s, low and middle-income countries devoted nearly 13 percent of government budgets to defense (Messer and Cohen 2006).
- *Economic sanctions are another potential source of conflict related hunger.* For example, after the Gulf War, Iraq faced economic sanctions after years of reliance on external food supplies exchanged for oil revenues. Although essential food was allowed, the poor had less access to food and medicines under sanctions for reasons of both diminished total availability and the distributional policies of the government of the day, and this contributed to significant child mortality (Garfield and Leu, 2000, Garfield et al 1995).

The impact of conflict on poverty and hunger, in turn, makes conflict more likely. Regression estimates suggest that halving the income of a country is associated with a doubling of the risk of civil war. Conflict is also likely to reoccur generating a “conflict trap” in which countries embark on a downward spiral of increasing impoverishment, hunger and violence (Ahmed et al. 2007, Collier 2007).

#### **4. Food aid as an entry point to dealing with conflict**

Food aid is a major tool in dealing with food insecurity situations often associated with conflict. It has grown as a significant source of food availability in Sub-Saharan Africa, for example, more than tripling from an average of just over one million metric tons per year in the 1970s to more than 3.3 million metric tons in the 1990s (Abdulai et al. 2004). More broadly, it has been key to stabilizing volatile social situations in the face of severe deprivation. The World Food Programme (WFP) estimated that non-violent deaths in the context of major emergencies declined by almost 40 percent between 1993 and 2003, compared with the previous decade (WFP 2004).

In humanitarian emergencies, the most common applications of food aid are: (i) general nutrition support, primarily through direct distribution of food to vulnerable groups; (ii) correcting malnutrition via supplementary or therapeutic feeding for especially acutely affected sub-groups; and (iii) safety net interventions if the emergency intervention is put in place rapidly enough to begin before people have been so badly affected by the crisis that they cannot undertake physical labor (Barrett 2006). The timeliness of food aid is vital. Transport difficulties often delay arrival of food shipments, illustrating the benefit of holding small reserves in different, hard to access, regions. Small independent emergency

reserves amounting to roughly 5% of current food aid flows – managed regionally – could help bridge the lags in food aid response (von Braun and Torero 2009).

However, the intended and unintended longer-run effects of food aid can be complex and multilayered. Food aid has often been criticized for lowering domestic food price levels and predictability, undermining incentives for local food production. This, in turn, can contribute to delaying the recovery of rural livelihoods when emergencies subside. Unintended consequences can also include induced changes in recipients' food consumption and natural use patterns, distortion of private social safety nets, and trade displacement (Messer et al. 1998, Teodosijevic 2003, Barrett 2006). Adverse effects of food aid can be minimized through effective management, especially reasonably accurate targeting and timing of food aid to food insecure households. On the plus side, the income transfer component of well-timed and well-targeted food aid can alleviate liquidity constraints, enabling smallholders to undertake productive investments. (Abdulai et al. 2004, Barrett 2006)

Although food aid is intended to provide relief, it has on a few occasions been hijacked as an instrument of conflict. Allegations persist that food deliveries are sometimes used by local authorities to deny disfavored populations access to food. Shipments can be looted and humanitarian agencies denied access to food-insecure populations. Food aid can also give the impression that donors are doing something to alleviate the immediate humanitarian problem, while failing to address the underlying causes of the problem itself (Barrett 2006, Stewart 1998)

Longer term, there is no alternative to food insecurity in most conflict-prone rural areas without raising domestic agricultural productivity, as a necessary if not sufficient condition for widespread increased household incomes of the poor in the agriculturally dependent developing countries that account for a disproportionate share of the world's poorest and most conflict-prone areas (WDR 2008). Almost all of the countries listed in the World Bank's harmonized list of fragile situations are agriculture-based economies in WDR 2008 terms, mostly in Sub-Saharan Africa. If food aid can be used better to relieve short-term working capital, transport capacity, and other constraints to investment and productivity growth, or if its distribution can be used effectively to add value to raw commodities through processing and improved marketing, then food aid can lead to both long-term agricultural productivity growth and more stable food security (Abdulai et al. 2004). In poor, agriculturally-dependent, zones that harbor a disproportionate share of the world's abject poverty and conflict, there is no way to a lasting solution without addressing the underlying causes of poverty, but getting there requires much more attention to a strategic approach in dealing with the here and now.

## **5. Recommendations for strengthening food security in fragile and conflict-affected countries**

The key to improving access to food as quickly as possible, while addressing long-term structural problems, is to strengthen local institutions, many times building on informal mechanisms already in place. The current aid architecture also has to be stable and linked to both short and long term agricultural investments that reduce food insecurity and distribute income to the poorest widely. At the

same time, current policies at the national, regional and international level can be improved to reduce developing countries' susceptibility to shocks.

### *Improving levels, predictability and quality of aid to agriculture*

More financing focused on long term productivity growth is needed in fragile states to improve their resilience to global trends (e.g. resource scarcity and climate change) that raise the likelihood of conflict. There is also a need for more predictability in funds available for short term emergency response. The quality and coordination of aid also has to be improved so as to strengthen the country's institutional framework, addressing both the short and long-term dimensions of an emergency.

While aid can be an important tool to support stability in fragile states, predictability and quality of aid remains a cause for concern in many fragile and conflict-affected countries, particularly in rural areas. Furthermore, estimating the global investment needs to better exploit agriculture's potential to provide food security, economic growth, poverty reduction and environmental services in developing countries is at best a proximate exercise. The International Food Policy Research Institute (IFPRI) estimated the global incremental agricultural public investment required – the additional amount necessary to meet the Millennium Development Goal of halving poverty by 2015 – to be \$14 billion annually for all developing countries. The estimated incremental annual investment needed in Sub-Saharan Africa ranged from \$3.8 billion to \$4.8 billion (the former using a unit cost approach, the latter being the additional investment needed to meet the Maputo declaration of spending 10 percent of Government budgets on agriculture) (World Bank 2009a, Fan and Rosegrant 2008).

The share of agriculture in official development assistance (ODA) has declined sharply over the past two decades, from a high of 17 percent in the 1980s to 5 percent in 2006-08 (OECD DAC 2010). In Sub-Saharan Africa, only 5 percent of total aid went to agriculture receiving an average of \$2.6 billion in 2006-08. Total annual average aid commitments to agriculture in developing countries in 2006-08 (including Development Assistance Committee [DAC] countries and multilateral agencies) amounted to \$6.5 billion, of which only 18 percent (\$1.2 billion) went to fragile and conflict states (OECD DAC 2010).<sup>4</sup> A recent report produced by the OECD DAC International Network on Conflict and Fragility (INCAF) also shows that overall ODA to fragile states remains highly concentrated, with 51 percent of 2008 ODA for the 42 fragile states benefiting six countries<sup>5</sup>. These six countries account for only 23 percent of the population of the total fragile states group (OECD DAC INCAF 2010). Afghanistan alone received more

---

<sup>4</sup> "Fragile States" have: either a) a harmonized average CPIA country rating of 3.2 or less; countries without CPIA scores; and non-member territories; or b) the presence of a UN and/or regional peace-keeping or peace-building mission during the past three years. This list includes only IDA eligible countries and excludes IBRD only countries. The list is found here:

[http://siteresources.worldbank.org/EXTLICUS/Resources/511777-1247506883703/Fragile\\_Situations\\_List\\_FY10\\_Nov\\_17\\_2009\\_EXT.pdf](http://siteresources.worldbank.org/EXTLICUS/Resources/511777-1247506883703/Fragile_Situations_List_FY10_Nov_17_2009_EXT.pdf)

Among these fragile countries, data on aid for agriculture was not available for Kosovo, Darfur, and Western Sahara.

<sup>5</sup> The six countries are: Afghanistan (13.5%), Ethiopia (9.5%), Iraq (9.4%), West Bank and Gaza (7.3%), Sudan (6.6%) and Uganda (4.7%). ODA figures exclude debt relief.

than 26 percent of the average aid commitments to agriculture in fragile states in 2006-08 (OECD DAC 2010). Fragile states also experience lower rates of aid predictability and higher volatility than other developing countries, with two-thirds of aid shocks between 1970 and 2006 occurring in fragile states — such volatility is estimated to shave 15 percent off the value of ODA (OECD DAC INCAF 2010).

Furthermore, showing results that will have lasting impacts on food security will also require *better* as well as *more* investment. Not only is there a need to maintain aid levels but it is also important to improve the quality and coordination of aid. Aid can play a vital role in mitigating the impact of crisis in fragile states by upholding commitments, enhancing counter-cyclical assistance, and increasing its effectiveness through improved predictability, consideration of planned allocations and synchronization to absorption capacity (OECD DAC INCAF 2010). FAO (2010b) states that most development assistance interventions in conflict states currently fall under three categories: (i) humanitarian aid, which neglects long-term considerations; (ii) development assistance which relies on functioning state institutions; and (iii) nation-building activities, which focus more on re-establishing the public sector than addressing the source of the problem. None of these instruments alone can effectively combat food insecurity in fragile states. Instead protracted crises require an integrated approach that strengthens a country's institutional framework and simultaneously addresses the short and long-term dimensions of an emergency (FAO 2010b).

Ensuring the appropriate level of financing for emergency preparedness and early response has been difficult. Although some progress has been made in recent years, the multilateral humanitarian system is still based on flash appeals that mainly deliver aid after the crisis occurs. Humanitarian aid is not always well-thought out as a whole and is often unpredictable, especially because it is delivered as a result of appeals to donors subject to their own approval processes and budget cycles (World Bank 2006a).

To respond to these challenges, the Central Emergency Response Fund (CERF) was established by the United Nations to enable more timely and reliable humanitarian assistance to those affected by natural disasters and armed conflicts. The scope of the CERF is to pre-position funding for humanitarian action to finance both preparedness and early response to crisis. A total of 51 countries benefited from CERF funding in 2009. The Horn of Africa received 34 percent of the total funding; of this, Somalia received some \$60.5 million, the most in nominal terms any one country has ever received in a single year. So far this year, CERF has contributed to six of the thirteen 2010 Consolidated Appeals Process (CAP) appeals: in the Democratic Republic of Congo (DRC), it represents 35 percent of the total funding; in Yemen it accounts for 15 percent of total funding received (OCHA 2010).

According to a 2008 evaluation, CERF helped to accelerate response and increase coverage of needs, in addition to serving as a catalyst for improved field-level coordination, and evidence-based prioritization. However, it was also noted that, while the CERF works well for large-scale rapid onset disasters, it has been less certain in its handling of “underfunded protracted crisis” (OCHA 2008).

*Improve management of grain stocks*

Actions on grain stocks at the international level need to focus on addressing factors that lead to rapid escalation of prices to levels that can trigger unrest or conflict. This rapid escalation is amplified when market confidence erodes and uncertainty turns to panic. Better transparency and management of grain stock can help improve market confidence. At the international level, a number of initiatives – emergency food reserves, regional reserves, virtual reserves among others – have been proposed (von Braun and Torero 2009). However, proposals or direct market action to reduce global and regional price volatility will require further work on implementation issues and potential risks and benefits before clear operational conclusions can be drawn. A brief summary and assessment of the various proposals are given below (see Wright 2009 for more details):

- Global strategic grain reserves seem problematic: While a large international grain reserve controlled jointly by national governments to mitigate global food supply crises would potentially economize on optimal stock sizes and storage costs, it would require commitments by the participants to honor obligations when markets are under stress. Recent experience raises serious concerns about the ability of governments to honor such commitments. Furthermore, the process of public decision-making in what is a widespread and agile global private sector activity would leave the public interventions subject to gaming by private individuals for private gain in a way that would likely prevent any effective stabilization.
- A variant on large global stocks is a “virtual buffer stock” designed to operate in futures markets to smooth price spikes. Short futures positions would be taken to reduce prices (and the incentive to store). Long futures positions would be taken to raise prices (and the incentive to store). This virtual scheme, if large enough to move markets, would be financially risky and subject to manipulation by traders, would likely lose money on average, and would eventually exhaust its budget (Wright 2009). Food price volatility dominates price trends. This non-stationary characteristic of food prices makes trigger points for futures markets interventions difficult to identify and these large standard errors amplify financial risk.
- Price band rules: theory predicts--and experience with international commodity agreements confirms--that these programs inevitably fail, even without the underlying downward trends in prices that seem to be a feature of world grain markets. These schemes face similar issues to “virtual stocks”. Use of price band rules to operate international or domestic market stabilization schemes is less effective in ensuring food security for those most at risk. Beyond the gaming issue alluded to in the case of virtual reserves, commodity prices in band schemes tends to hover at or near the upper or the lower band, rather than in the center of the range. The overall effect on volatility, relative to competitive storage, is ambiguous. While price peaks are reduced to the top of the band, the cost of operation is raised by the fact that private storage is reduced or eliminated, and production is discouraged just when it is most needed.
- A small independent emergency reserve – managed regionally – could bridge the lags in food aid response. Held in existing national storage facilities at strategic locations such a reserve could

allow rapid responses, particularly for land-locked countries, to bridge the lag in food aid response (i.e. a call option on a grain deposit at pre-crisis prices). An example is the East Asia Emergency Rice Reserve (EAERR) programme established by the ten ASEAN Member States, China, Japan, and the Republic of Korea to provide food assistance and strengthen food security in emergencies caused by disasters, and for poverty alleviation purposes. The EAERR is therefore a mutual assistance system to share rice stocks among the 13 countries and aims to contribute to price stability in the region. The EAERR started as a three-year pilot project (2004-07), and a proposal is being developed to upgrade this to become a full-fledged scheme among the ASEAN Plus Three countries. However, the realization of a permanent scheme is subject to internal consultation, further assessment and evaluation of the outcomes of the pilot project. For such a mechanism to work, political support from the ASEAN Plus Three countries is necessary. The EAERR Pilot Project is closely related to the ASEAN Food Security Information System (AFSIS) Project and the ASEAN Food Security Reserve Board (AFSRB), the latter is a mechanism for sharing of rice stocks in times of shortage, particularly through the trigger of a collective operation of the committed “ASEAN Emergency Rice Reserve (AERR)” (ASEAN 2009).

Multilateral funding and management of small regional humanitarian reserves may make sense in some cases. WFP (and others) need to be able to move food quickly in high transfer cost areas, and should stock up when and where prices are low. Such a case is in disaster-prone and infrastructure-poor regions such as the Horn of Africa. Pre-positioned stocks would go far toward assuring faster delivery of food during periods of shortage and would likely smooth the costs of providing aid during periods of high prices. In global terms, these stocks would be small and therefore unlikely to adversely affect global prices. Such stocks could be financed by the G20 or other groups of countries, and be held and managed by agencies with proven track records, working with the private sector where feasible. They would need clear rules and triggers governing the size, eligibility, timing and pricing of release of these stocks, which could perhaps be implemented through a multilateral trade agreement. Given the concessional funding source, limited resources, and desire not to crowd out private responses, it is important that the use of these stocks be well-targeted to the poor and most vulnerable as opposed to attempting to regulate local prices more generally. Export bans would threaten the efficacy of such reserves. Additionally the managing agency (presumably WFP), would need multi-year funding guarantees to support such a system. The World Bank is working with WFP on design issues needed to make such regional schemes most efficient, using a combination of pre-positioned stocks, forward purchases, forward purchases with flexible delivery points, and contingent purchases.

Greater openness and transparency of grain stocks will also improve market information and confidence. More public and improved accuracy of global grain stock information, especially for countries with large grain stocks such as China and India, would improve public access to information on quantity and quality of grain stocks and improve market confidence.

National food security reserves and buffer stocks for quick release ensure timely availability of food to meet emergency needs. Public reserves *designed to* meet quantitative targets for distribution of food on the basis of need, including “food for work” and targeted feeding, used only in severe emergencies,

can dampen the negative food security impacts of shocks, while limiting disincentives effects on private traders and stockholder. For those countries which experience food shortages resulting from droughts (and other risks), reserves should be large enough to cover immediate emergency needs. Those reserves should be decentralized and strategically located to supply at-risk areas, but at the same time they should be located in sufficiently secure regions. Bilateral and other food donors may provide resources to help establish/replenish national stocks. Due to major droughts and harvest failure in Ethiopia in 2008, grain stocks were low, and negotiations between the Government and donors centered on the: (i) prioritization of limited resources, and (ii) the possible increase of donor support for emergency needs, emphasizing fertilizer and seeds to increase food production.

*Less global emissions and more local adaptation is needed to address impacts of climate change*

Climate change in particular is expected to put further stress on land and water resources, thereby putting further pressure on agriculture and food insecurity and exacerbating factors leading to conflict over resources. Global trends raise the pressure and likelihood of water wars. Agriculture and climate change are linked in important ways: (i) climate change will have large effects on agriculture, but precisely where and how much is uncertain, (ii) agricultural activities around the world are responsible for almost 15 percent of annual GHG emissions but can also help mitigate climate change, and (iii) poor farmers will need help adapting to climate change (Nelson 2009). While it seems far-fetched to think that effective action on climate change will be motivated by a desire to limit conflict and food insecurity, it remains important to acknowledge that reducing conflict is another international public good that will be much more difficult to achieve in the fact of significant global warming.

At the global level, a comprehensive, ambitious and effective climate deal is required to put together a framework to transition to a climate-resilient world. Scientific information from the IPCC suggests that to avoid catastrophic impacts of climate change, greenhouse gas (GHG) emissions need to be reduced in the order of 50-80 percent below 1990 levels by 2050 (UNFCCC 2010). The Kyoto Protocol (entered into force on February 16, 2005 and ratified by 184 countries to date) is seen as an important international commitment for a truly global emission reduction regime that will stabilize greenhouse gas concentrations. However, despite the fact that countries have recognized a 2°C limit, pledges for mid-term targets by industrialized countries fall short of the IPCC range (25% to 40% below 1990 levels by 2020). It is essential that at the next 16<sup>th</sup> Conference of the Parties (COP) in Cancun, Mexico, countries agree on a binding agreement for long-term action to reduce emissions that will also provide adequate financial, technological and capacity-building support for both adaptation and mitigation (UNFCCC 2010).

Climate change will have adverse effects on agriculture and adapting to these changes, while feeding a growing population, will require global partnerships in science, technology development, and dissemination of results to millions of smallholder farmers (Rabbinge 2009). In order to improve agriculture's resilience to climate change and effectively implement adaptation strategies, funds must be made available to increase and disseminate knowledge. This can be done by increasing funding for international partnerships like the Consultative Group on International Agriculture Research (CGIAR) or

research and project-specific funding to regional research organizations and national agricultural and research and extensions services (Rabbinge 2009).

*More food trade to allow food movement from surplus to deficit areas*

The potential for conflict may be reduced by diversifying a country's income from exports of one primary commodity controlled by a narrow group of people with vested interests. However, the current international trade system with rising protection of developed countries' markets has serious negative impact on poor developing countries and reduces their access to markets for products or commodities that provide livelihood to a large number of people. A successful and ambitious conclusion to the Doha Development Round offers significant scope for gain for some developing countries from agricultural trade, which can both boost incomes and help stabilize global grain markets (Anderson et al 2006). The removal of trade-distorting subsidies on food is expected to boost agricultural prices, and this will help food exporting countries. According to a study by Anderson et al (2006), full trade liberalization is estimated to increase international commodity prices by 5.5 percent for primary agricultural products and 1.53 percent for processed foods. Developing countries are estimated to gain 9 percentage points in their share of agricultural exports — increasing from 54 to 65 percent.

However, it could hurt some low-income net-food-importing countries that depend on the world market for substantial part of their basic food needs, and who may face additional difficulties in financing food imports if other trade concessions on their exports do not boost incomes commensurately. The net effect is an empirical question. It will be especially important for poor conflict-prone countries that trade negotiations focus more on the issues of interest to net grain importers (such as a ban on export bans) than just those issues advancing the interest of exporters. As the 2008 food crisis has shown when prices rose, many governments in grain exporting countries imposed export bans and export barriers to protect their reserves, thus worsening the situation by adding upward pressure on commodity markets. Recently the government of Russia announced a ban on grain exports due to a decline in its harvest caused by drought. Russia has become a prominent exporter of wheat over the last few years, accounting for about 9 percent of world wheat exports, and jointly with Kazakhstan and Ukraine accounts for about 15 percent of global wheat exports. These developments induced considerable price changes. For example, the Chicago futures contract closed at \$289/ton on August 5, 2010, up 77 percent from its June 29, 2010 closing.

At the regional level, shortfalls in one region can be compensated by trading with regions with higher grain production. Regional or bilateral trading agreements among neighboring countries can reduce export restrictions. For example, during the 2008 food crisis Philippines initiated bilateral deals with Japan and Vietnam to strengthen its rice stocks and thus, succeeded in dampening upward pressure on rice prices (World Bank 2008).

*Ensure large-scale investments in land fully contribute to development*

The phenomenon of large-scale land acquisition is seen by some as an opportunity to overcome long term underinvestment in agriculture allowing countries with abundant or underutilized land and large yield gaps to gain access to technology, increase employment, and create the preconditions for sustained and broad-based development (World Bank 2010b). Others point to the risks as eagerness to attract investors, where land and resource rights are ill defined and institutional capacity is weak, could result in conflict and environmental damage. In a recently published report *“Rising Global demand in Farmland: Can it Yield Sustainable and Equitable benefits?”*, the World Bank along with FAO, IFAD, UNCTAD and other partners has formulated seven principles that all involved should adhere to for investment to fully contribute to development. They are:

- Respecting land and resource rights. Existing rights to land and associated natural resources are recognized and respected.
- Ensuring food security. Investments do not jeopardize food security but strengthen it.
- Ensuring transparency, good governance and a proper enabling environment. Processes for acquiring land and other resources and then making associated investments are transparent and monitored, ensuring accountability for all stakeholders within a proper legal, regulatory and business environment.
- Consultation and participation. All those materially affected are consulted, and the agreements from consultations are recorded and enforced.
- Responsible agro-investing. Investors ensure that projects respect the rule of law, reflect industry best practice, are economically viable, and result in durable shared value.
- Social sustainability. Investments generate desirable social and distributional impacts and do not increase vulnerability.
- Environmental sustainability. Environmental impacts of a project are quantified and measures are taken to encourage sustainable resource use while minimizing and mitigating the risk and magnitude of negative impacts.

The report also states that effective responses to increased pressure on land requires both government leadership in host and source countries, as well as input from a wide range of stakeholders, including private sector operators, civil society organizations, and international institutions.

For Governments, the policy, legal and institutional framework will determine their ability to enhance opportunities. Specifically countries should:

- Identify strategic priorities and assess whether, given available resources and necessary trade-offs, large-scale investments could contribute to employment generation, food security, regional and smallholder development, and technology transfer.
- Improve land governance to ensure that the pressures from higher land values do not lead to dispossession of existing rights.
- If large scale investment and land transfers are part of a country’s strategy, actions will be needed to improve the capacity of government institutions to administer and manage large scale land transfers and learn from experience through a variety of mechanisms, including an audit of existing contracts. Such analyses could provide guidance on appropriate regulations and

standards, environmental safeguards, and ways to ensure that approved investments are economically viable and they generate local benefits. Capacity building is required in order to: (a) establish effective consultation; (b) streamline and review institutional responsibilities; (c) develop more open modalities of land acquisition; and (d) strengthen records management.

For the private sector, leading companies have recently paid increased attention to principles, guidelines, best practices, and voluntary codes intended to guide large-scale agricultural investments. In considering industry standards regarding land acquisition, active government participation is critical in order to effectively translate experience into broad policy reform and to fully integrate those standards in a country's policy and regulatory frameworks. Further, there remains a need for principles with focused, specific criteria founded on experience, plus realistic disclosure mechanisms, third-party verification, and effective enforcement mechanisms.

Civil Society and local governments can build critical links to local communities in three ways: (i) educating communities about effectively exercising their rights; (ii) assisting in the design, negotiation, implementation, and monitoring of investment projects where requested; and (iii) acting as watchdogs to critically review projects and publicize findings by holding governments and investors accountable and providing inputs into country strategies.

International organizations can do more to support countries to maximize opportunities and minimize risks from large scale land acquisition in four ways: (i) they can assist countries to integrate information and analysis on large scale land acquisition into national strategies; (ii) they can offer financial and technical support for capacity building; (iii) supporting stakeholder convergence around responsible agro-investment principles for all stakeholders that can be implemented and monitored; (iv) establish and maintain mechanisms to disseminate information and good practice on management of land acquisitions by incorporating experience and lessons from existing multi-stakeholder initiatives (World Bank 2010b).

#### *Improve country level early warning systems*

Most practical options for dealing with the interrelationships of conflict and food security concern actions at the national level. The key distinctions here relate to timing vis-à-vis the onset of conflict. Pre-conflict, governments and donors need to target rapid response mitigation efforts to the evolution of the social, economic, and political situations that are affecting the food security of the population. In fragile pre-conflict states, the emphasis should be more on early warning systems and continuous monitoring and evaluation of "at risk" areas. In drought prone countries, the focus should be on monitoring food security indicators that can trigger conflict over access and resources. During conflict, food aid interventions should aim at targeting the most vulnerable groups and not exacerbate the level of conflict or undermine long term incentives for local food production. Post-conflict actions should be focused on increasing agricultural productivity and growth strategies.

In pre-conflict situations, it is important to maintain a high level of preparedness and to plan ahead for risks to which particular areas of the country are known to be exposed, in order to ensure that when a crisis occurs the food aid response is rapid, appropriate and effective. Effective early warning systems on food and agriculture should be in place to identify, assess and monitor the evolution of conflict risks and food security levels, especially in fragile countries. Early warning alerts are used to establish readiness and to program emergency food aid response; to interconnect actors and stakeholders in early operational actions; and to trigger allocation of adequate resources to enable the necessary preparedness and early response. Examples of multi-agency food security early warning systems that use satellite data to anticipate crop failure and food shortages are: (i) the UN-sponsored Global Information and Early Warning System (GIEWS)<sup>6</sup> which aims at improving food security response planning in 22 drought prone African countries, and (ii) the USAID-sponsored Famine Early Warning System Network (FEWS NET)<sup>7</sup>, which monitors food supply and demand in all countries with emphasis on 80 low-income food deficit nations.

Regional expertise and indigenous support have a critical role in contributing to the success of early warning systems ability to predict food insecurity at sub-national levels. The Southern African Development Community (SADC) Remote Sensing Unit<sup>8</sup> in Harare, Zimbabwe, and the AGRHYMET Regional Center<sup>9</sup> in Niamey, Niger, are two successful examples of specialized institutes that not only provide food security assessment at the local level but also aim at building local capacity (Smith and Petley 2009)<sup>10</sup>. Recent regional efforts include the establishment of the ASEAN Food Security Information System (AFSIS) created in 2002 by the ASEAN Member States plus China, Japan and Korea with the objective of strengthening food security in the region through the systematic collection, analysis and dissemination of food security related information. This system was strongly related to the East Asia Emergency Rice Reserve Pilot Project (EAERR) discussed above (ASEAN 2009).

Baseline vulnerability information on food security levels in “at risk” areas should be collected in advance at the local and district levels. Sustained monitoring of precarious nutritional conditions in these areas will help Governments to anticipate the populations most likely to be affected by conflict and to better target food aid response and related livelihood support activities. For countries facing a serious food emergency, FAO/GIEWS and the World Food Programme carries out joint Crop and Food Security Assessment Missions (CFSAMs) or Emergency Food Security Assessments (EFSAs). Their purpose is to collect timely and reliable information at the household-level when information does not exist; and to complement early warning systems so that appropriate actions can be taken by the governments, the

---

<sup>6</sup> <http://www.fao.org/giews/english/index.htm>

<sup>7</sup> <http://www.fews.net/Pages/default.aspx>

<sup>8</sup> <http://aims.sadc.int/>

<sup>9</sup> [www.agrhymet.ne](http://www.agrhymet.ne)

<sup>10</sup> The AGRHYMET Regional Center was established in 1974 as a specialized institute for improving food supplies and natural resource management in the Sahel. Sponsored by nine sub-Saharan states (Burkina Faso, Cape Verde, Chad, Gambia, Guinea Bissau, Mali, Mauritania, Niger, Senegal) it is now a regional centre of excellence which offers training to officers from Sahelian countries on regional agro-meteorological and hydrological monitoring; agricultural statistics and crop monitoring; and aims at strengthening interstate co-operation by sharing methodologies and technologies.

international community, and other parties. Baseline data in food insecure areas should at least include the following aspects: (i) food production (types, seasonal production cycles, normal yields for major crops and small gardens, average on farm retention levels); (ii) food availability and access (e.g. normal price of basic grains) in those particular areas; (iii) nutritional status of children - including seasonal variations.

However, in many fragile countries these data may be very difficult to collect and restrictions of access can impede effective response in critical moments. During the 2008 food price crisis, the government of at least one country in the Horn of Africa restricted information gathering and sharing, and imposed limitations of movement that greatly constrained humanitarian actors to respond to early warning alerts of soaring food prices and drought conditions (OCHA 2009). A recent evaluation of FAO and WFP support to Information Systems for Food Security (ISFS) showed a lack of coherent strategic focus on national and regional capacity building and recommended that data collected by ISFSs could be better employed to understand and provide guidance for disaster risk management and post crisis/conflict response (WFP and FAO 2009).

Contingency plans that are shared among actors likely to intervene during the conflict will improve the timing of food-aid operations. Contingency plans help governments to program in advance the required levels and type of food aid to be requested to the international community and to anticipate possible logistical bottlenecks taking into account likely difficulties in accessing insecure and remote areas (especially insecure roads, possible food distribution points). Up-to date contingency plans provide the basis for rapid and appropriate actions, ensuring the intervention occurs early enough to reduce the likelihood of occurrence of negative coping strategies by recipients.

#### *Improve access to insurance options*

Risk assessment and management can help households manage food security related stress. Quantitative probabilistic risk assessments can assist government in developing forward looking and anticipatory strategies for adapting to frequent droughts and to predict the effect of migration which can lead to conflict. At the request of the Indian Government, the World Bank developed a probabilistic drought risk assessment model to estimate the economic impact of drought and to assess different drought migration strategies under various climate change scenarios (World Bank 2006a). Other risk management mechanisms, such as index insurances, could provide contingent ex-ante funding for emergency relief operations and therefore mitigate some of the shortcomings of the current aid system. Index insurance provides timely and predictable payouts during emergencies; by funding early-relief they preserve livelihoods and to some extent preempt emergencies (Barnett et al 2005).

Ex-ante financial mechanisms can offer insurance to agricultural communities and may prove to become effective mitigation systems in countries where conflict over natural resources (access and control) are likely to arise. Index-based insurance products, which rely on objective measurements of some proxy index (such as weather parameters), are mechanisms to transfer risks from farmers and agricultural communities to insurance markets when crop losses occur from low temperatures (as in Ethiopia) or livestock mortality occurs (as in Mongolia). These mechanisms have been implemented in more than 15

countries but still need to demonstrate sustainability and scalability especially in low income-countries. The lack of reliable historical data covering at least 30 years is a significant impediment to the development of market-based risk financing products in most developing countries. For example, the Satellite Rainfall Estimates (RFE) of the African continent — which are used to provide early warning monitoring systems in Ethiopia — could not be used as an underlying variable for risk transfer due to concerns about the short length of the historical dataset (which starts in 1995) (Cummins and Mahul 2009).

Agricultural insurance is further complicated when farms units are small, markets are not well developed, regulations are unclear and data and information are limited (World Bank 2007). Small farmers with one hectare of land or less are not attractive marketing target for insurance companies. Attempts to market stand-alone agricultural insurance directly to smallholders have not proved to be viable given transaction costs (delivery and training costs) are high. The challenge is to identify suitable aggregators of risk, such as microfinance institutions, banks or cooperatives, or even local authorities who can act as intermediaries and enroll farmers in group insurance programs (World Bank 2006a). Rural financial services are critical to developing the rural economy, and for helping the rural poor build assets that can decrease their vulnerability to shocks.

#### *Better targeting of support during conflict*

Interventions during conflict have to take into account weak state and local institutions; this may require reliance on informal mechanisms as the only feasible option. Careful evaluation of local conditions is essential with regard to the impact of ongoing food aid responses in relation to the evolution of the conflict. Continuous monitoring and evaluation of ongoing food interventions should focus on the targeting of the most vulnerable populations in conflict affected areas. Here, particular attention should be given to high risk groups, including internally-displaced people, women and children. In the meantime, the level of exclusion should also be monitored in order to rectify ongoing interventions.

Rectifications can include: (i) expanding ongoing programs to cover new geographical areas; (ii) providing basic food services in refugee camps or other secure areas; (iii) addressing the needs of returnees if a temporary cease fire is reached. For example, when the food security situation in the Karamoja region in northern Uganda was deteriorating in 2008 due to a below-normal harvest and falling livestock prices, it led to increased cattle raiding and conflict. Yet internally displaced persons in other areas of the country were returning peacefully to their areas of origin. However lack of services and delayed assistance in the Karamoja region aggravated malnutrition and disease. Continuous monitoring and evaluation can make sure interventions are targeted, flexible and address multiple food insecurity issues at the same time.

Donor assistance is needed to help with the increasing cost of securing food aid operations during conflict. The space for humanitarian action is likely to shrink at these times, despite increased needs for emergency food aid. In Somalia more than 65 percent of the population was in need of food aid at the end of 2008, however humanitarian access to vulnerable population was hampered due to the security situation and to the recurrent attacks on food aid workers (OCHA 2009).

### *Improve security and productivity of land in post-conflict*

In the aftermath of conflict, basic safety net systems for conflict-affected rural populations should seek to create economic opportunities that will contribute to the restoration of livelihoods (food or cash for work) and the construction of rural infrastructure and community assets (public works). Since conflict economies are overwhelmingly agricultural economies, agriculture and its associated industries are essential to growth and to reducing mass poverty and food insecurity. The way forward for smallholder agricultural development in these countries is articulated in *Implementing Agriculture for Development. World Bank Group Agriculture Action Plan (ARD): FY2010-2012*. The focus needs to be on agricultural productivity growth and food security, balancing support to both entrepreneurial actors and favored regions, and subsistence farming through resilient farming systems and safety nets (World Bank 2009).

Longer term, there is no alternative to raising domestic agricultural productivity for overall economic growth, widespread increased household incomes of the poor, and food security in the agriculturally dependent developing countries, which account for a disproportionate share of the world's poorest and most conflict-prone areas (WDR 2008).

**Raise agricultural productivity:** significant investment in raising agricultural productivity is an initial--if not sufficient--requirement for the long-term reduction of conflict in poor, labor-intensive countries. Without such investment, it will be impossible to assure improvements in food security in many fragile countries (WDR 2008). Investment priorities must be targeted to narrowing the yield gap between what poor farmers achieve and what can be achieved, and reversing the slowdown in spending on research and development.

**Reduce risk and vulnerability:** heightened food price uncertainty, the ongoing financial crisis, and continued risk of major outbreaks of crop and livestock pests and diseases, point to the need for increased investment to help households manage income shocks and food security related stresses. These include in particular the public goods component of support to manage price and weather risks, strengthen social protection systems and investment in improved nutrition.

**Facilitate agricultural entry and exit and rural nonfarm income:** rural non-farm activities are an important source of income growth and safety net support for rural households, and a key to increasing social stability. They provide coping strategies for the rural poor in dealing with volatility in agricultural incomes. The key is to link serious efforts to increase incomes that almost always increase the exposure of the poor to markets to better safety nets for when those markets are especially volatile, as in 2007-2008. Rural labor markets need become more effective pathways out of poverty. Improvements in the rural investment climate and rural infrastructure will play an important role in linking rural producers and consumers to markets and in providing income and employment.

**Enhance environmental services and sustainability:** environmental degradation and climate change exacerbates the challenges faced by the poor. Investments in adaptation and mitigation measures can reduce adverse economic impact that can lead to conflict. These measures produce opportunities to improve incomes of the poor while at the same time mitigating climate change effects.

## References

- Abdulai, A., C. Barrett, and P. Hazell. 2004. *Food Aid for market Development in Sub-Saharan Africa*. Development Strategy and Governance Division Discussion Paper No. 5. International Food Policy Research Institute. Washington DC.
- Ahmed, A., R. Hill, L. Smith, D. Wiesman, and T. Frankenberger. 2007. *The World's Most Deprived: Characteristics and Causes of Extreme Poverty and Hunger*. 2020 Discussion Paper 43. International Food Policy Research Institute. Washington DC.
- Alderman, H., J. Hoddinott, and B. Kinsey. 2006. *Long Term Consequences of Early Childhood Malnutrition*. Oxford Economic Papers 58(3): 450-474
- Anderson, K., W. Martin, and D. van der Mensbrughe. 2006. *Doha Merchandise Trade Reform: Impacts on Agricultural Markets and Farm Incomes*. Review of Agricultural Economics 28 (2): 169-95.
- Association of Southeast Asian Nations (ASEAN). 2009. *East Asia Emergency Rice Reserve (EAERR) Pilot Project Fact Sheet*. Issued by the Public Affairs Office of the ASEAN Secretariat. Jakarta, Indonesia.
- Barrett, C. 2006. *Food Aid's Intended and Unintended Consequences*. ESA Working paper No. 06-05. Food and Agriculture Organization. Rome
- Barnett, Barry J., J. Roy Black, Yingyao Hu, and Jerry. R. Skees 2005. "Is Area-Yield Insurance Competitive with Farm-Yield Insurance?" Journal of Agricultural and Resource Economics 30 (2): 285–301.
- Bruckner, M. and A. Ciccone. 2007. *Growth, Democracy and Civil War*. Discussion Paper No. 6568. Centre for Economic Policy Research. London
- Collier, P. 2007. *The Bottom Billion: Why the Poorest Countries are Failing and What Can Be Done About It*. Oxford University Press. Oxford.
- Collier, P. 2000. *Doing Well Out of War: An Economic Perspective*. In *Greed and Grievance. Economic Agendas in Civil Wars*. Edited by Mats Berdal and David M. Malone
- Collier, P. and A. Hoeffler. 2004. *Greed and Grievance in Civil War*. Oxford Economic Papers. 56 (2004), 563-595. Oxford University Press.
- Cummins J.D., and Mahul O. 2009. *Catastrophe Risk Financing in Developing Countries: Principle for Public intervention*. World Bank.

Delgado, C. 1992. *Why Domestic Food Prices Matter to Growth Strategy in Semi-Open West African Agriculture*. Journal of African Economies 1: 446-471.

Delgado, C., N. Minot, and M. Tiongco. 2005. *Evidence and Implications of Non-Tradability of Food Staples in Tanzania 1983-98*. Journal of Development Studies 41 (3): 376-93.

Fan, S. and M. Rosegrant. 2008. *Investing in Agriculture to Overcome the World Food Crisis and Reduce Poverty and Hunger*. Policy Brief 3. International Food Policy Research Institute. Washington DC.

Food and Agricultural Organization of the United Nations (FAO). 2010a. *Global Hunger Declining but Still Unacceptably High. International Hunger Targets Difficult to Reach*. Economic and Social Department. September 2010. Policy Brief. Food and Agriculture Organization. Rome

Food and Agricultural Organization of the United Nations (FAO). 2010b. *When Emergencies Last for Decades. How to Improve Food Security in Protracted Crises*. Economic and Social Perspectives. February 2010. Policy Brief 7. Food and Agriculture Organization. Rome

Food and Agricultural Organization of the United Nations (FAO). 2008a. *Food Security in Protracted Crises: What Can be Done?* Food Security Information for Action. Policy Brief. Food and Agriculture Organization. Rome

Food and Agricultural Organization of the United Nations (FAO). 2008b. *The Breakdown of the Doha Round of Negotiations. What Does it Mean for Dealing with Soaring Food Prices?* Economic and Social Perspectives. Policy Brief 3. Food and Agriculture Organization. Rome

Food and Agricultural Organization of the United Nations (FAO). 2006. *Food Security*. Policy Brief June 2006. Issue 2. Food and Agriculture Organization. Rome

Food and Agricultural Organization of the United Nations (FAO). 2002. *The State of Food Insecurity in the World (SOFI) 2002*. Food and Agriculture Organization. Rome

Garfield, R. and C. Leu. 2000. *A Multivariate Method for Estimating Mortality Rates among Children under 5 years from Health and Social Indicators in Iraq*. International Journal of Epidemiology 2000; 29:510-515

Garfield, R., J. Devin, and J. Fausey. 1995. *The Health Impact of Economic Sanctions*. Bull NY Acad Med. 1995 Winter, 72(2): 454-469.

Gleditsch, N. P., R. Nordas, and I. Salehyan. 2007. *Climate Change and Conflict: the Migration Link*. Coping with Crisis Working Paper Series. International Peace Academy. New York.

Ivanic, M, and W. Martin. 2008. *Implications of Higher Global Food Prices for Poverty in Low-Income Countries*. Policy Research Working Paper 4595. The World Bank. Washington DC.

Messer, E. and M. Cohen. 2006. *Conflict, Food Insecurity, and Globalization*. Food Consumption and Nutrition Division Discussion Paper 206. International Food Policy Research Institute. Washington DC.

Messer, E., M. Cohen and J. D'Costa. 1998. *Food from Peace: Breaking the Links between Conflict and Hunger*. Food, Agriculture and the Environment Discussion Paper 24. International Food Policy Research Institute. Washington DC.

Miguel, E., S. Satyanath and E. Sergenti. 2004. *Economic Shocks and Civil Conflict: An Instrumental Variables Approach*. Journal of Political Economy, 2004, vol. 112, no. 4.

Nelson, G.C. 2009. *Agriculture and Climate Change: An Agenda for Negotiations in Copenhagen. Overview*. Focus 16. Brief 1. 2020 Vision for Food, Agriculture and the Environment. International Food Policy Research Institute. Washington DC.

Nelson, G, M. Rosegrant, J. Koo, R. Robertson. T. Sulser, T. Zhu, C. Ringler, S. Msangi, A. Palazzo, M. Batka, M. Magalhaes, R. Valmonte-Santos, M. Ewing and D.Lee. 2009. *Climate Change: Impacts on Agriculture and Costs of Adaptation*. Food Policy Report. International Food Policy Research Institute, Washington DC.

Office for the Coordination of Humanitarian Affairs (OCHA). 2010. *Analysis of CERF Activities in 2009*. <http://ochaonline.un.org/cerf/WhatistheCERF/tabid/3534/language/en-US/Default.aspx>

Office for the Coordination of Humanitarian Affairs (OCHA). 2009. *Horn of Africa Crisis Report*. Office for the Coordination of Humanitarian Affairs (OCHA). Nairobi, Kenya. [http://www.fao.org/fileadmin/user\\_upload/newsroom/docs/Horn%20of%20Africa%20Crisis%20Report%20February%202009.pdf](http://www.fao.org/fileadmin/user_upload/newsroom/docs/Horn%20of%20Africa%20Crisis%20Report%20February%202009.pdf)

Office for the Coordination of Humanitarian Affairs (OCHA). 2008. *CERF: Two Years Evaluation*. <http://ochaonline.un.org/cerf/WhatistheCERF/EvaluationsandReviews/tabid/5340/language/en-US/Default.aspx>

OECD-DAC. 2010. Statistics accessed on May 24<sup>th</sup>, 2010. [http://www.oecd.org/document/44/0,3343,en\\_2649\\_34447\\_43817324\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/44/0,3343,en_2649_34447_43817324_1_1_1_1,00.html)

Also see, *Measuring Aid to Agriculture*. <http://www.oecd.org/dataoecd/54/38/44116307.pdf>

Organization for Economic Co-Operation and Development.

OECD-DAC INCAF. 2010. *Ensuring Fragile States Are Not Left Behind*. Summary Report – February 2010. Organization for Economic Co-Operation and Development (OECD) Development Assistance Committee International Network on Conflict and Fragility (INCAF).

Pingali, P., L. Alinovi and J. Sutton. 2005. Food Security in Complex Emergencies: Enhancing Food System Resilience. *Disasters*. 29(S1): s5-s24. ©Food and Agriculture Organization of the United Nations.

Pinstrup-Andersen, P. and S. Shimokawa. 2008. *Do Poverty and Poor Health and Nutrition Increase the Risk of Armed Conflict Onset?* *Food Policy* 33 (2008) 513-520

Rabbinge, R. 2009. *Agriculture and Climate Change: An Agenda for Negotiations in Copenhagen. Agricultural Science and Technology Needs for Climate Change*. Focus 16. Brief 2. 2020 Vision for Food, Agriculture and the Environment. International Food Policy Research Institute. Washington DC.

Schlenker, W. and D. Lobell. 2010. *Robust Negative Impacts of Climate Change on African Agriculture*. *Environmental Research Letters*. 5 (2010) 014010 (8pp)

Shepherd, J. 1975. *The Politics of Starvation*. New York: Carnegie Endowment for International Peace.

Smith, K. and D.N. Petley. 2009. *Environmental Hazards: Assessing risks and reducing disasters*. Routledge. London, UK.

Stewart, F. 1998. *Food Aid During Conflict: Can One Reconcile Its Humanitarian, Economic and Political Economy Effects?* *American Journal of Agricultural Economic*. Vol. 80, No. 3 (Aug. 1998), pp 560-656.

Teodosijevic, S. 2003. *Armed Conflicts and Food Security*. ESA Working Paper No. 03-11. Food and Agriculture Organization. Rome

Tiwari, S. and H. Zaman. 2010. *The Impact of Economic Shocks on Global Undernourishment*. Policy Research Working Paper 5215. The World Bank. Washington DC.

United Nations Framework Convention on Climate Change (UNFCCC). 2010. *Fact Sheet: Why is a Global Climate Change Deal so Important?* United Nations Framework Convention on Climate Change. Bonn, Germany. [http://unfccc.int/files/press/fact\\_sheets/application/pdf/fact\\_sheet\\_climate\\_deal.pdf](http://unfccc.int/files/press/fact_sheets/application/pdf/fact_sheet_climate_deal.pdf)

Uvin, P. 1996. *Tragedy in Rwanda: The Political Ecology of Conflict*. *Environment*, 38 (3), 6-15

Vallings, C. and M. Moreno-Torres. 2005. *Drivers of Fragility: What Makes States Fragile? Poverty Reduction in Difficult Environments (PRDE) Working Paper No. 7*. Department for International Development (DfID). UK.

von Braun, J. 2009. *Threats to Security Related to Food, Agriculture, and Natural Resources – What to Do?* Paper presented at 'Strategic Discussion Circle' EADS, Berlin, March 26, 2009.

Von Braun, J. and M. Torero. 2009. *Exploring the Price Spike*. Choices: The magazine of food, farm, and resource issues. Q1, 24 (1) 16-21

von Braun, J. 2008. *Food and Financial Crisis: Implications for Agriculture and the Poor*. Food Policy Report. International Food Policy Research Institute. Washington, D.C.

von Braun, J., A. Ahmed, K. Asenso-Okyere, S. Fan, A. Gulati, J. Hoddinott, R. Pandya-Lorch, M. W. Rosegrant, M. Ruel, M. Torero, T. van Rheenen, K. von Grebmer. 2008. *High Food Prices: The What, Who, and How of Proposed Policy Actions*. Policy Brief. International Food Policy Research Institute. Washington, D.C.

Wodon, Q. and H. Zaman. 2009. *Higher Food Prices in Sub-Saharan Africa: Poverty Impact and Policy Responses*. The World Bank Research Observer. The World Bank. Washington DC.

World Bank. 2010a. *Food Price Watch. February 2010*. Poverty Reduction and Equity Group. Poverty Reduction and Economic Management (PREM) Network. The World Bank. Washington DC.

World Bank. 2010b. *Rising Global demand in Farmland: Can it Yield Sustainable and Equitable Benefits?* The World bank. Washington DC.

World Bank. 2009. *Implementing Agriculture for Development. World Bank Group Agriculture Action Plan: FY2010-2012*. The World Bank. Washington DC.

World Bank. 2008. *Program Document for a Proposed Food Crisis Response Development Policy Operation (DPO) under the Global Food Crisis Response Program in the amount of \$200 million to the Republic of Philippines*. The World Bank. Washington DC.

World Bank. 2007. *China: Innovations in Agricultural Insurance. Promoting Access to Agricultural Insurance for Small Farmers*. Sustainable Development Network, East Asia and Pacific Region. The World Bank. Washington DC.

World Bank. 2006. *Managing Food Price Risks and Instability in an Environment of Market Liberalization*. The World Bank. Washington DC.

World Bank. 2006a. *Managing Agricultural Production Risk: Innovations in Developing Countries*. Report 32727-GLB, Agriculture and Rural Development, World Bank, Washington, DC.

World Development Report (WDR). 2008. *World Development Report 2008: Agriculture for Development*. World Bank. Washington, D.C.

World Food Programme (WFP) and Food and Agricultural Organization of the United Nations. 2009. *Joint Thematic Evaluation of FAO and WFP: Support to Information Systems for Food Security*. Final Report.

October 2009. Commissioned by the Office of Evaluation of the World Food Programme and the Office of Evaluation of the Food and Agriculture Organization. Rome.  
[http://www.fao.org/docs/eims/upload/272037/Microsoft\\_Word\\_-\\_ISFS\\_acl\\_16.12\\_vs\\_reduced\\_Final.pdf](http://www.fao.org/docs/eims/upload/272037/Microsoft_Word_-_ISFS_acl_16.12_vs_reduced_Final.pdf)

World Food Programme (WFP). 2004. *Nutrition in Emergencies: WFP Experiences and Challenges*. Policy Issues Agenda Item 5. World Food Program. Rome.

Wright, B. 2009. *A Note on International Grain Reserves and Other Instruments to Address Volatility in Grain Markets*. A Technical Background paper presented at the World Grain Forum 2009, St. Petersburg, Russian Federation, June 6-7, 2009.

Zaman, H., C. Delgado, D. Mitchell, and A. Revenga. 2008. *Rising Food Prices: Are There Right Policy Choices?* Development Outreach, October 6-8