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A Reader

Resources on

Issues related to Geopolitics of Food¹

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partageons les connaissances au profit des communautés rurales
sharing knowledge, improving rural livelihoods

¹ This Reader is not intended to exhaustively cover the issue of humanitarian assistance in ACP countries but to provide some background information and selected information resources, focusing on the implications for rural development. Most text of this Reader has been directly taken from the original documents or websites. For additional inputs, kindly contact Isolina Boto (boto@cta.int).

The Reader and most of the resources are available at <http://brusselsbriefings.net>

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Geopolitics of Food

“Hunger is a political issue rather than an agricultural issue”²

Seventy-five percent of the world’s poor are rural, and most earn their livelihoods from farming. However, the vast majority of smallholders in Africa, for example, are also net-buyers of food³.

1. Context

A wide range of factors influence agricultural production and the nutritional levels of the poor in ACP countries. These include climate change, energy security, population growth, youth unemployment, global land acquisition, migration and urbanisation, water scarcity, the decrease in expatriate remittances, the demand for biofuels and declining investment in research over the past two decades^{4 5}. Other factors, such as the increase in the purchasing power of the emerging middle classes in countries like China, and the competition between food and fuel production, are also influencing food policy and pose complex challenges to global agriculture, whose goal must be to ensure food and energy security in ways that are environmentally and socially sustainable⁶.

To meet rising demand without a significant increase in prices, the world will need to produce 70–100% more food by 2050 (FAO, 2009) and to tackle inequalities in access to food. Today we produce enough food to feed the world, but over one billion people suffer from food insecurity and malnutrition (IAASTD, 2009). Since 2007, spikes in world food prices have threatened global food security and sparked off food riots in some poor countries. The result has been political instability, government intervention in food markets and the closure of borders to food exports.

The steady decline in global cereal stocks is evidence that production has not kept up with these demand increases. An important factor here is weather induced supply shocks – although presumably transitory, these may be expected to become more frequent, and more correlated across countries, as a result of climate change. Another factor is the decades long public underinvestment in agriculture that has made it harder to accelerate production. Other shocks on the supply side have come from policies in response to the price rises themselves, such as export restrictions, which can have significant impacts in markets dominated by only a handful of supplier countries. Apart from the collective impact of these factors, it has also been argued that financial speculation in securities and derivatives linked to commodities has helped push prices higher⁷.

1.1 Can we feed the world: do we want to feed the world?

The world produces enough food to feed everyone. World agriculture produces 17 percent more calories per person today than it did 30 years ago, despite a 70 percent population increase. This is enough to provide everyone in the world with at least 2,720 kilocalories (kcal) per person per day (FAO 2002). The principal problem is that many people in the world do not have sufficient land to grow, or income to purchase, enough food. The most recent estimate, released in October 2010 by FAO, says that 925 million people are undernourished. As the figure below shows, the number of hungry people has increased since 1995-97, though the number is down from last year. The increase has been due to three factors: 1) neglect of agriculture relevant to very poor people by governments and international agencies; 2) the current worldwide economic crisis, and 3) the significant increase of food prices in the last several years which has been devastating to those with only a few dollars a day to spend. 925 million people is

² Olivier de Schutter, Le Vif, 3/09/2010

³ <http://un-foodsecurity.org/sites/default/files/09progressreport.pdf>

⁴ Oxford Policy Management, 2007, UNCTAD 2007

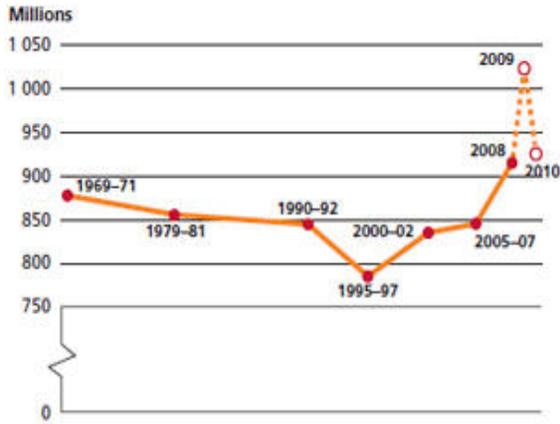
⁵ The number of undernourished people in the developing world has increased from 848 million to 1,020 million from 2003-05 to 2009, mainly because of the food crisis and the world economic recession (FAO).

⁶ National Research Council, 2010

⁷ http://www.et.undp.org/index2.php?option=com_docman&task=doc_view&gid=67&Itemid=45

13.6 percent of the estimated world population of 6.8 billion. Nearly all of the undernourished are in developing countries.

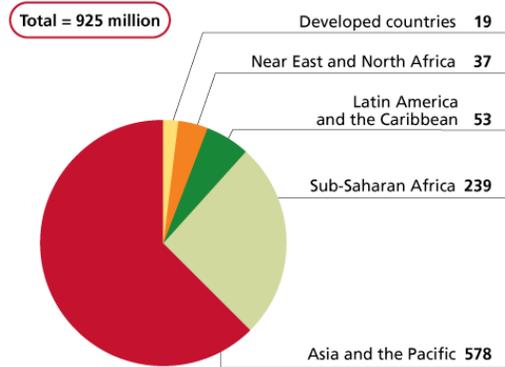
Number of hungry people, 1969-2010



Source: FAO

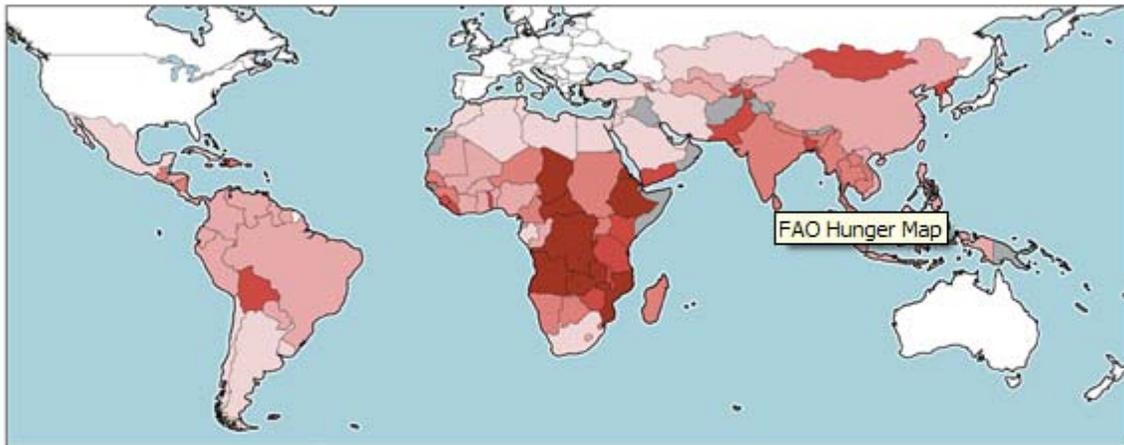
Number of hungry people in the world

925 million hungry people in 2010



FAO Hunger Map 2010

Prevalence of undernourishment in developing countries

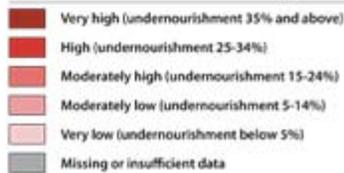


Source: FAOSTAT 2010 (www.fao.org/hunger)

Note: The map shows the prevalence of undernourishment in the total population of developing countries as of 2005-7 – the most recent period for which complete data are available. Undernourishment exists when caloric intake is below the minimum dietary energy requirement (MDER). The MDER is the amount of energy needed for light activity and a minimum acceptable weight for attained height, and it varies by country and from year to year depending on the gender and age structure of the population.

The boundaries, names and the representation of material in the map do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal or constitutional status of any country, territory or sea area, or concerning the distribution of frontiers.

Prevalence of undernourishment in developing countries (2005-07)



www.fao.org

2. Crisis in the global food system, rising food commodity prices and price volatility

World prices of food commodities increased by 130 percent from January 2002 to June 2008. Individual agricultural commodities such as corn, wheat, rice and soybeans rose by 190, 162, 318 and 246 percent, respectively. Between March 2007 and March 2008, global food prices increased an average of 43 percent (IMF). During that time period, wheat, soybean, corn, and rice prices increased by 146 percent, 71 percent, 41 percent, and 29 percent, respectively (U.S. Department of Agriculture). Rising food prices contributed to a significant increase in food insecurity worldwide, particularly among poorer populations. 2010 ended with food prices at their highest since 2008. Most experts see the hike as a temporary peak⁸ and not a global crisis, but there is still some debate on this. FAO's food price index for December 2010 was one percent higher than in June 2008, but the prices of staple grains were 13 percent below their peak in June 2008 and the World Bank noted in an analysis that food prices in December 2010 were still eight percent below the 2008 peak.

Countries faced a potential crisis depending on whether they had ample supplies or the financial capacity to import countries. For IFPRI⁹, the current global environment is very similar to the 2007/2008 food crisis. The FAO food price index is at the same level it was in June of 2008, sugar prices are at a record high and there are also some worrying food inflation trends in a variety of developing countries. The global average price of food – including cereals, cooking oil, meat and dairy products – was 25 percent higher in December 2010 than in December 2009. In its just released *Global Food Price Monitor*¹⁰ FAO said the prices of wheat and maize in the first half of January 2011 stayed at the high levels of December 2010.

In its *2010 Food Outlook Report*, FAO issued a warning to the international community to prepare for harder times unless production of major food crops increased significantly in 2011¹¹. Food import bills for the world's poorest countries were predicted to rise by 11 percent in 2010 and by 20 percent for low-income food-deficit countries. By passing a trillion dollars, the global import food bill will likely rise to a level not seen since food prices peaked in 2008, while prices of most commodities are up sharply from 2009. Contrary to earlier predictions, world cereal production had been forecast to contract by 2 percent rather than to expand by 1.2 percent as was anticipated in June 2010.

2.1. A combination of factors behind the food crisis

The dramatic rise in global food prices is the result of the cumulative effects of long-term trends including increasing food demand and declining private/public investment in agriculture (especially in staple food production), urbanization and concurrent shifts in dietary preferences (over the last 15 years, meat consumption more than doubled in China and grew by 70 percent in Brazil and 20 percent in India. Since it takes some 5 Kg of cereals to produce 1 Kg of meat, this shift in diet is also leading to higher cereal prices), land conversion and land erosion/degradation, and water scarcity/desertification. Other contributing factors include biofuels industry expansion, climate change and interconnectedness with non-food markets (e.g. oil and energy). Speculation in food commodity markets also played a role and will likely be a prevalent future market force. Volatility in both international and local prices and the persistent upward stickiness of prices in many developing countries call for a better understanding of price transmission mechanisms and coordination of policy responses.¹²

2010 food crisis was brought about by the combination of bad harvests in most great exporting countries (Russia, Ukraine, United States and Australia), coupled with the protectionist reaction of some exporting countries (Thailand, India, Vietnam) which decreased or suspended exports to preserve their internal market. Speculators attracted by the rising demand for commodities provoked an inflation spike, while surging oil prices, which in June passed the \$150 per barrel, had the double effect of increasing transportation as well as inputs costs obtained from oil by-products (fertilizers, pesticides, herbicides).

⁸ Abdolreza Abbassian, secretary of the Intergovernmental Group on Grains at FAO.

⁹ Headey D & Fan S., 2010. *Reflection on the Global Food Crisis*. International Food Policy Research Institute, Washington DC, 42 p. <http://www.ifpri.org/publication/reflections-global-food-crisis>

¹⁰ FAO Global Price Monitor, 14th January 2011 - http://www.fao.org/giews/english/gfpm/GFPM_01_2011.pdf

¹¹ FAO, Soaring food prices: facts, perspectives, impacts and actions required, High-level Conference on World Food Security: the challenges of climate change and bioenergy, Rome 2008 <ftp://ftp.fao.org/docrep/fao/meeting/013/k2414e.pdf>

¹² <http://un-foodsecurity.org/sites/default/files/09progressreport.pdf>

The surging cost of energy, coupled with the renewed attention of most developed countries toward a more responsible and sustainable development have resulted reorienting a part of the agricultural production (maize, wheat, soya beans, palm oil, sugar cane...) in favour of energy needs, as to curb non-renewable fossil fuels (coal, gas, oil). Increased demand from the biofuels sector also tended to push prices upwards. It is estimated that about 100 million tons of grain (some 4.7 percent of global cereal production) were used for biofuels in 2007/8. In 2007/8 the United States alone is expected to use about 80 million tons of maize to produce ethanol, a 37 percent increase over the previous year. One-quarter of all the maize and other grain crops grown in the US now ends up as biofuel in cars rather than being used to feed people, according to 2009 figures from the US Department of Agriculture.

Inclement weather and price volatility propelled prices during the second half of 2010. As drought and fires raged through Russia and Ukraine, two of the world's top wheat producers, prices began to climb in July 2010. By September 2010 wheat prices had risen by between 60 and 80 percent and Russia banned exports. Canada, another major wheat producer, was hit by bad weather. Since November, prolonged dry conditions have affected soya bean and maize crops in Argentina, also among the top producers. Floods in Australia, an important source of quality wheat, could have an impact on prices and dry conditions in some wheat-growing areas of the US had also aided higher prices. Dry weather in Argentina, and a drop in the estimated size of the US maize harvest, have kept prices of that staple high. High food prices spell good news for farmers, encouraging them to plant more and many farmers tend to diversify can have an impact on the supply of one particular crop (FAO).

Some countries blamed financial speculation for contributing to soaring commodity prices, although analysts are divided over whether this has played as significant a role as economic fundamentals in driving price levels. Policymakers are concerned that rising food prices could stoke inflation, protectionism and the kind of unrest that has been seen in Tunisia and Algeria in recent weeks. High food prices could also hit consumer spending in fast-growing emerging countries that are leading the revival of the global economy. The US has already acted to prevent spikes in food prices and Europe is following suit, with proposals that would force traders to disclose their positions, put a cap on large trades and give regulators new powers to intervene to curb speculation.

2.2. Impacts on developing countries

The vast majority of poor rural and urban households in developing countries are net food buyers who are negatively affected by higher prices.

This situation creates challenges for the achievement of the Millennium Development Goals, particularly MDG1 of reducing poverty and hunger. However, higher food prices affect countries differently depending on whether they are net exporters or net importers of food. Net food-exporting countries will benefit and experience higher terms of trade and more income. Net food-importing countries will face lower terms of trade and have to pay a larger food import bill, which will impact negatively on trade balance and affect the strength of their currency. This is especially worrying for developing countries, the majority (55 percent) of which are net food importers. Almost all countries in Africa are net importers of cereals.

Low-income food-deficit countries have been hit hard by high food prices in recent years. The people most affected by higher food prices are net food buyers, depending on the extent to which international price movements are transmitted to domestic markets. Net food buyers are urban residents and small farmers, fisherfolk, foresters, pastoralists and agricultural labourers who do not produce enough to cover their needs. Producers who are net buyers in value terms have also been affected because they sell at the time of harvest in order to finance essential needs and buy back at a higher price later in the year.

Soaring food prices have negative short-run effects on developing countries that depend on imports for their food security and where the vast majority of households, including in rural areas, are net food buyers. Hence, it is not surprising that increasing food prices have triggered riots, and even contributed to political instability. Unrest linked to high food price has already occurred in a number of countries. This highlights the importance of increasing food prices as a political as well as a developmental issue.

The total cost of food imports for Low-Income Food-Deficit Countries (LIFDCs) was 24 percent higher in 2007 than in 2006, rising to \$107 billion. Annual food import bills for these countries were more than twice their level in 2000. Having to deal with higher food and energy import prices is placing a heavy burden on LIFDCs, especially as they have to deal with existing problems of under-nourishment.

Households around the developing world, where food represents 60-80 percent of consumer spending, are suffering from domestic food inflation. In Cote d'Ivoire prices of rice in March 2008 were double their level of a year earlier, while in Senegal wheat prices by February 2008 were twice the level of a year ago and sorghum was up 56 percent. In Nigeria, prices of sorghum and millet have doubled in the past five months. In Somalia, the price of wheat flour in the northern areas has almost tripled over twelve months, and in Sudan (Khartoum) it increased by 90 percent. The price of maize in Uganda was 65 percent higher in March 2008 than in September 2007. In March 2008 maize prices in Mozambique (Maputo) were 43 percent higher than a year ago.

Risk analysis conducted by WFP in a number of countries suggests that the impact on household food security will be significant. According to World Bank household data less than 10 percent of poor households in Bolivia, Ethiopia and Bangladesh are net sellers of food. Simulations by FAO using household data from Malawi indicate that a 10 percent increase in food prices leads to a 1.2 percent income loss for the poorest quintile in rural areas and a 2.6 percent income loss for the poorest urban quintile. According to this analysis, only the richest rural quintile gain from an increase in food prices.

2.3. Policy responses

In low-income countries (less than USD1,000/person/year) food is a key expenditure for a large share of the population. For the poorest households, in particular, food expenditure can represent more than 60 percent of their consumption expenditure. This means that any measures that will impinge on food consumption are likely to have substantial consequences on government budget. While cutting budget expenditure, care will be needed to avoid cutting essential programmes for development (education, health, infrastructure) that have important long-term consequences for food security and poverty. Faced with this situation, many governments have tried to limit the increase in domestic food prices by raising subsidies, lowering import tariffs or imposing export restrictions. By keeping domestic prices below international levels those interventions provide short-term relief for distressed consumers, but could also have negative effects for three reasons.

- (i) First, by maintaining farm-gate prices artificially low they discourage the much needed supply response and productivity increase that is required for long-term food security.
- (ii) Second, export restrictions lower supply on international markets, pushing prices higher and aggravating the global situation. Several countries have *restricted exports* of staple cereals, with the intention of lowering prices in the domestic market. This benefits domestic consumers irrespective of their need, but reduces the incentive to produce more, as producers are unable to sell at the more profitable world price. The reduction in grain availability on the world market increases the world price, and contributes to increased volatility.
- (iii) Third, higher subsidies and/or lower taxes and tariffs increase the pressure on national budgets and reduce fiscal resources available for much needed public investment and other developmental expenditures.¹³ For countries that are net *food importers*, the immediate impact of the price rise, unless accompanied by an increase in export earnings, will be manifested in less favorable terms of trade. An immediate concern for such countries is meeting the higher import bill. Several countries have lowered or eliminated tariffs, which can reduce somewhat the rise in prices faced by the consumer, but are also accompanied by a loss in revenue for the government.

For the worst affected, the immediate emergency response is *food aid*. Such aid ameliorates the current crisis but, by lowering domestic prices, also reduces the incentives of local producers to grow for the next season. This can be mitigated if food aid in this season is coupled with a guaranteed procurement price for the next season.

¹³ *High food prices: Impact and recommendations*, Paper prepared by FAO, IFAD and WFP for the meeting of the Chief Executives Board for Coordination on 28-29 April 2008, Berne, Switzerland: <http://www.ifad.org/operations/food/ceb.htm>

In the “quality-quantity trade-off”, rural homes experienced small declines in calorie intake, while urban homes were able to buffer the shock of reduced calories by lowering their intake of nutrient-rich foods in larger measures.

Social protection systems can be strengthened and extended to include those vulnerable to higher prices. Safety nets may include assistance in the form of food, vouchers or cash transfers, employment programmes (food or cash for work), school feeding and specific nutritional activities focused on members of vulnerable food-insecure households as well as children, pregnant and lactating women and people living with HIV/AIDS or tuberculosis and their household members. They may also include insurance schemes.

Food subsidies (to selected vulnerable groups or agroprocessors to ensure that the retail price remains below a certain value) to help vulnerable households maintain an adequate level of food consumption when they are confronted with negative shocks and to avoid depleting their asset holdings. These measures were widely adopted or scaled-up during the 2008 crisis in middle income countries such as Brazil, China, Egypt, Ethiopia, Indonesia, Mexico, South Africa and Tunisia and in low-income countries such as Mozambique and Sri Lanka.

In countries where a large proportion of the population is poor and food insecure (e.g. more than 30 percent before the increase of food prices), it may be less costly to import more food using such financial support measures and make them available to the population through normal market channels than to resort to the typical, very costly targeted food aid distribution mechanisms.

Food distribution in kind was adopted in 2008 by Afghanistan, Bangladesh, Burkina Faso, Cambodia, China, Honduras, India, Kenya, Madagascar, Mozambique and Peru. Beneficiaries have direct and free access to a certain quantity (ration) of food. If food is purchased locally, it can help to increase demand and stimulate production. In case of limited supply availability, however, local purchases will have an inflationary effect and contribute to further price increases. Since food distribution can disrupt local production, labour markets and consumption patterns, it is important that the food distributed be locally procured, if available. Local procurement has the advantage that it stimulates agricultural production, markets and growth.

Price control on key staple food products through regulation. The government fixes a price level for selected food products, monitors if the fixed prices are respected and punishes or taxes those who transgress the rule. Zimbabwe is a recent example of a government’s attempt to control prices, and images of the resulting empty shelves in the country’s supermarkets have been shown frequently in the international media. Other countries that have adopted this approach include Benin, Cameroon, China, Ecuador, Haiti, Mexico, Russia and Senegal.

2.4. Future trends

Available medium-term projections by the International Food Policy Research Institute (IFPRI)¹⁴ and by OECD/FAO indicate that food prices will remain above their previous trend level for the foreseeable future. Prices of food commodities for the next 10 years will be higher than during the previous 10 years, despite a small decline in 2009 or 2010. Those projections are explained by three factors. First, it is believed that the demand for biofuels will continue to rise rapidly, partly driven by high oil prices. According to the International Energy Agency (IEA) the share of the world’s arable land devoted to the growing of biomass for liquid biofuels could triple over the next 20 years. Second, developing country economic growth is expected to continue at about 6 percent a year with significant implications for food demand. Third, climate-change risks are likely to have adverse impacts on food production, compounding the challenge of meeting global food demand.¹⁵

Headey and Fan (IFPRI) looked at the food price projections prepared by the US Department of Agriculture, and jointly by FAO and the OECD, which predicted higher equilibrium prices – the outcome of usual supply and demand factors like population and economic growth, oil price trends and biofuel use – over the next 10 years. The prices will remain high. A similar situation played out after the 1974 food price crisis, prices were higher over the next decade or so, but there was also more volatility.

¹⁴ Headey D & Fan S., 2010. *Reflection on the Global Food Crisis*. International Food Policy Research Institute, Washington DC, 42 p. <http://www.ifpri.org/publication/reflections-global-food-crisis>

¹⁵ *High food prices: Impact and recommendations*, Paper prepared by FAO, IFAD and WFP for the meeting of the Chief Executives Board for Coordination on 28-29 April 2008, Berne, Switzerland: <http://www.ifad.org/operations/food/ceb.htm>

International prices may rise even more if production in 2011 does not increase significantly, especially for maize, soybean and wheat. The price of rice, the supply of which, according to FAO, had been more adequate than other cereals, could be affected if prices of other major food crops continue to climb¹⁶.

Looking ahead, the inter-agency International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD), predicts that global cereal demand will increase by 75 percent between 2000 and 2050, while global demand for meat will double during the same period, with the latter implying a concurrent additional increase in feedstock demand¹⁷. More than three-fourths of this growth in demand for both cereals and meat will be accounted for by developing countries.¹⁸

3. Factors affecting world food supply

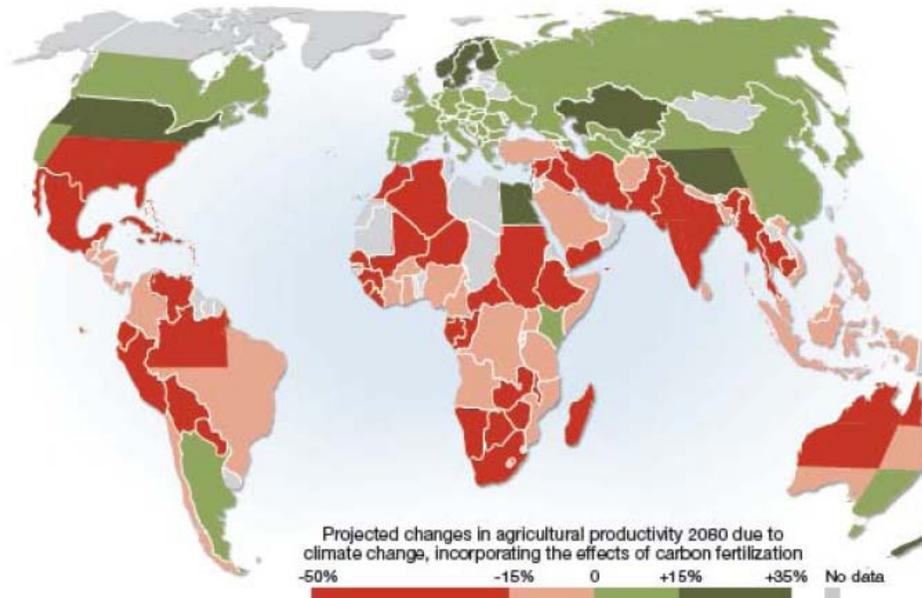
3.1. Climate change

In 2007, the Fourth Assessment Report of the IPCC authoritatively established that human-induced climate change is accelerating and already has severe impacts on the environment and human lives. A significant impact of climate change is the increase in the frequency and severity of certain hazards. More frequent and intense storms and floods and long-lasting droughts can erode existing community coping capacity to prepare, respond and rebuild after successive hazard events. The other adverse impacts of climate change, for example on public health, ecosystems, food security, migration will increase the vulnerability of communities to natural hazards of all types. This in turn may also exacerbate the struggle for access to, or control of, scarce resources and increase the likelihood of migration or even conflict. Any increase in disasters, whether large or small, will threaten development gains and hinder the implementation of the MDGs. Many of the countries that are already of humanitarian concern and which have populations that are highly vulnerable will face even greater risks because of the impacts of climate change. Some climate change related drivers may affect the agriculture sector by reducing crop yields and agriculture productivity; increase incidence of pest attacks; limit the availability of water; reduce fish stocks; see recurrent droughts; reduction in soil fertility; health and disease patterns.

¹⁶ *Guide for Policy and Programmatic Actions at Country Level to Address High Food Prices*, FAO 2011 - http://www.fao.org/fileadmin/user_upload/ISFP/revisedISFP_guide_web.pdf

¹⁷ One indication of the cereal intensive nature of modern livestock rearing comes from the Worldwatch Institute (<http://www.worldwatch.org/node/1626>), which estimates that in feedlots, about 7 kilograms of grain is required to produce one kilogram of beef, with the corresponding figures for pork and chicken being about 4 kilograms and 2 kilograms respectively.

¹⁸ IAASTD, Global summary for decision makers - http://www.agassessment.org/docs/Global_SDM_060608_English.pdf



Projected losses in food production due to climate change by 2080. (Source: Cline, 2007).

The poorest communities will be the most vulnerable to the impacts of climate change as they have fewer resources to invest in preventing and mitigating the effects of climate change. Some of the most at-risk people include subsistence farmers, indigenous peoples and coastal populations.

Projected losses in food production due to climate change

Most studies agree that Africa will be hardest hit by the effects of temperature rises, decreases in moisture availability and changing rainfall patterns and on crop production because of the high dependence (approximately 70% of Africa's population) on agriculture. 95% of cropland is devoted to rainfed agriculture. Whereas some areas may benefit from increases in rainfall, much larger areas will face severe moisture limitation (80,000km² and 600,000km² respectively according to UNFCCC). In both West and Southern Africa maize yields are likely to fall resulting from the combinations of increased temperature and lower and more variable rainfall, possibly leading to increased famine and malnutrition in the absence of shifts to more drought tolerant crops. Existing model projections vary for the Sahel where there are possibilities of the emergence of a more humid rainfall regime, or of greater rainfall variability with more frequent localized and seasonal flood events¹⁹. According to the IPCC projections for Africa, agricultural production and access to food is projected to be severely compromised by climate variability and change; there is an expected decrease in the area suitable for agriculture, length of growing seasons and yield potential, particularly along margins of semi-arid and arid areas; and in some countries, yields from rainfed agriculture could decrease by up to 50% by 2020 (IPCC, 2007).

Based on a consensus estimate of 6 climate models and two crop modelling methods, Cline (2007) concluded that by 2080, assuming a 4.4° C increase in temperature and a 2.9% increase in precipitation, global agricultural output potential is likely to decrease by about 6%, or 16% without carbon fertilization. Cline suggested a range of output potential decline between 10 and 25% among regions. As climate change increases, projections have been made that by 2080 agricultural output potential may be reduced by up to 60% for several African countries, on average 16–27%, dependent upon the effect of carbon fertilization (Figures 18 and 19). These effects are in addition to general water scarcity as a result of

¹⁹ FAO, Climate change and land tenure, cit., <ftp://ftp.fao.org/docrep/fao/011/aj332e/aj332e00.pdf>

melting glaciers, change in rainfall patterns, or overuse. In order to understand the factors underpinning the food crisis and to assess trends, UNEP commissioned a Rapid Response team of internal and international experts²⁰.

The experts argue that, unless more sustainable and intelligent management of production and consumption are undertaken food prices could indeed become more volatile and expensive in a world of six billion rising to over nine billion by 2050 as a result of escalating environmental degradation. Up to 25% of the world food production may become 'lost' during this century as a result of climate change, water scarcity, invasive pests and land degradation. The report makes seven significant recommendations. These include real opportunities for boosting aquaculture and fish farming without intensifying damage to the marine environment alongside ones highlighting the opportunities for minimizing and utilizing food.

The impact of these adverse climate changes on agriculture is exacerbated in Africa²¹ by the lack of adapting strategies, which are increasingly limited due to the lack of institutional, economic and financial capacity to support such actions. The utmost concern should therefore be a better understanding of the potential impact of the current and projected climate changes on African agriculture and to identify ways and means to adapt and mitigate its detrimental impact.

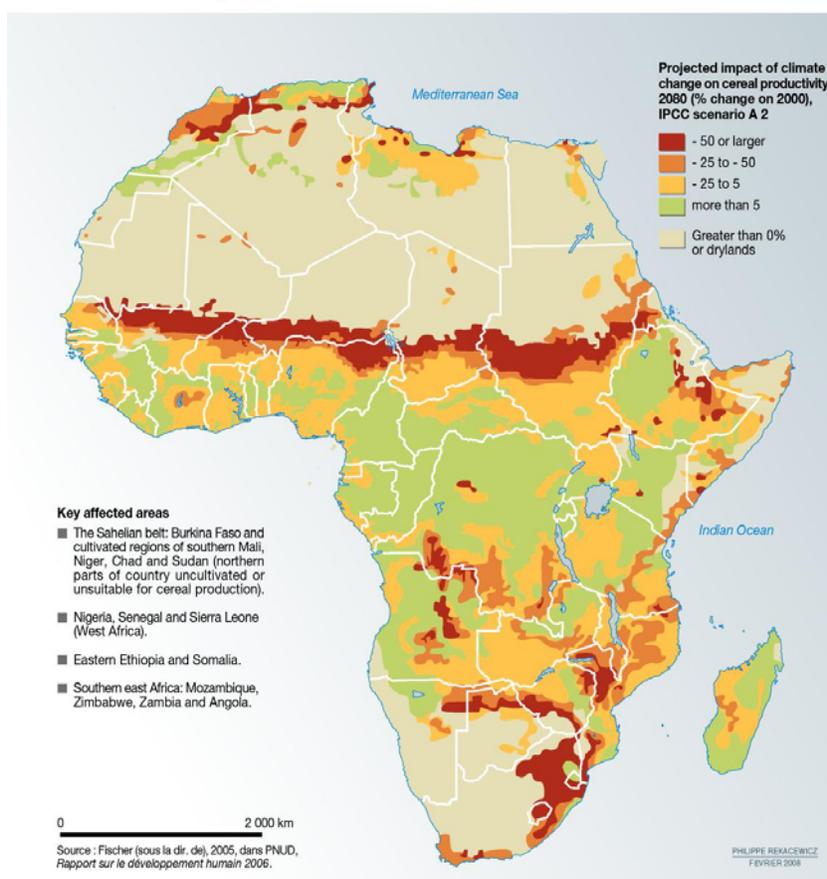
Adaptation to and coping with climate change is complex and will involve a range of social and economic factors including education and literacy as well as creative financial and technological solutions including a better understanding and application indigenous knowledge and traditional coping strategies. If farming communities are to adapt successfully to climate change, they will need crop varieties with greater tolerance to stresses such as drought and heat.

Over the past decade, the Caribbean has experienced extensive social, economic and environmental impacts of intensive storms and hurricanes, with consequent significant loss of life, and major set backs in the national and regional development programmes. Ignoring the specter of climate change and its anticipated impacts, would truly expose the region to unprecedented consequences, and display poor stewardship in our responsibility for the natural and built environment and the regional patrimony. Coastal Erosion and sea level rise is a particularly acute problem for the Small Island States of the Caribbean and the Pacific. The loss of desired beachfront also negatively affects tourism, which is one of the largest economic activities in the Caribbean.

²⁰ *The Environmental Food Crisis: The Environment's Role in Averting Future Food Crises*, United Nations Environment Programme (UNEP), February 2009

²¹ Source: <http://www.sciencedaily.com/releases/2007/04/070410141336.htm>

Cereal productivity in Sub-Saharan Africa under a scenario of the IPCC that shows CO₂ atmospheric concentrations a level at 520-640 ppm by 2050



3.2. Securing energy security: a threat to agriculture?

The desire for energy security and efforts to address climate change by reducing greenhouse gas emissions, have led to policy emphasis on alternative fuel sources, including biofuels. The increasing production of biofuels such as ethanol (derived from starchy crops – including cereals - and sugar crops) and biodiesel (derived from oilseeds) contributes directly to the rise in the prices of the source crops. Biofuel production costs have fallen over time, but they still cannot compete effectively with gasoline and diesel and public policy supports continue to be necessary. The OECD estimates that about 8 percent of the global coarse grain production and 9 percent of the global vegetable oil production went towards biofuel in 2007 and, under the current set of support policies, this is estimated to grow to 12 percent and 14 percent respectively in the coming decade.²²

Recent years have witnessed a rapid and accelerating expansion of bioethanol and biodiesel production. This expansion is driven by government targets for biofuel substitution in energy budgets for transport, driven in turn by concerns about high oil prices, prospects for rural development, export opportunities and means to mitigate climate change. Projections suggest that biofuel production is likely to continue expanding in the coming years. The spread of commercial planting of biofuels crops, whether for export or for internal markets, has significant implications for land use and access in producer countries. The increased demand for biofuels can partly be met by technical improvements in production: more efficient processing and higher yields of feedstocks per unit area. When second generation and third generation biofuels become commercially available, they are likely to accelerate efficient land use, making better use

²² *Increasing food prices and food security: diagnostic issues and policy options*, UNDP Task Force on High Food Prices- http://www.et.undp.org/index2.php?option=com_docman&task=doc_view&gid=67&Itemid=45

of waste products, marginal land and space-saving technologies. Even for first generation biofuels, more intensive land use, producing higher yields, could meet a proportion of the increased demand for feedstocks. Clearly, we cannot rely on yield increases alone to supply the rapidly growing demand for biofuel feedstocks, a direct link between biofuels demand and land demand being envisageable.²³

This new source of demand for agricultural commodities may offer an opportunity for developing countries to harness agricultural growth for broader rural development and poverty reduction. However, there is a risk that higher food prices may have severe negative implications for the food security of the world's poorest people. In addition, demand for biofuels could place substantial additional pressure on the natural resource base, with potentially harmful environmental and social consequences.

The main drivers behind policies supporting biofuels have been the objectives of energy security and climate-change mitigation through reduced greenhouse gas emissions combined with a desire to support agriculture. These concerns are not diminishing. Today, however, the role of biofuels in addressing these concerns, including the appropriate policies to be applied, is coming under closer scrutiny.

The pressure on land to meet projected demand for biofuels feedstocks

In 2006 an estimated 14 million hectares (ha) of land was used for the production of biofuels and by-products, approximately 1% of globally available arable land. A number of analysts have since come forward with projections of future land needs for biofuel production. One recent study estimates that demand for maize-based ethanol from the US alone will put 12.8 million hectares (ha) under maize in the US by 2016, thereby bringing 10.8 million ha new agricultural land into production, mainly in Brazil, China, India and the US. At the global level, according to International Energy Agency's "World Energy Outlook 2006"²⁴ projected growth in biofuel production to 2030 will require 35 million ha of land (2.5% of available arable land, approximately equal to the combined area of France and Spain) in the Reference Scenario, and 53 million ha of land (3.8% of available arable land) in the Alternative Policy Scenario²⁵.

The Global Agro-ecological Assessment, based on satellite imagery, provides the most comprehensive survey of global agricultural potential. At the global level, 2,541 million ha of land have potential for cultivation: 2,541 million ha in the "very suitable" and "suitable" categories and a further 784 million ha in the "moderately suitable" category. A large proportion of the world's land surface is not cultivable due to being too dry, too cold, too steep, too nutrient-poor or a combination of these factors.

In effect 80% of the world's reserve agricultural land is thus in Africa and South America. Estimates based on satellite imagery from 1995-1996 give a total cultivable land in Africa and South America of 807 and 552 million ha respectively (all three suitability categories minus land under forest), of which 197 and 159 million ha respectively are under cultivation. The underestimation of the actual use, according to the authors, ranges from 10 to 20%, which would increase the "cultivated land" up to about 227 million ha (Africa) and 183 million ha (South America). Against this background, increasing demand for land for biofuels will result in changes to land access for poor people through two main routes: direct linkages that involve direct land use change to biofuels crop production from other uses, and indirect linkages that involve changes in land use triggered by biofuels expansion elsewhere.

3.3. Population growth

Major parts of the world remain largely rural. In Africa and Asia, still six out of every ten persons live in rural areas. If between 2007 and 2050, the world population is expected to increase by 2.5 billion, passing from 6.7 billion to 9.2 billion, the population living in urban areas is projected to gain 3.1 billion, passing from 3.3 billion in 2007 to 6.4 billion 2050. Thus, the urban areas of the world are expected to absorb all the population growth expected over the next four decades while at the same time drawing in some of the rural population. As a result, the world rural population is projected to start decreasing in about a decade and 0.6 billion fewer rural inhabitants are expected in 2050 than today. The sustained increase of the urban population combined with the pronounced deceleration of rural population growth will result in

²³ IIED, *Fuelling exclusion?*, cit., <http://www.iied.org/pubs/pdfs/12551IIED.pdf>

²⁴ International Energy Agency (IEA), *World Energy Outlook 2006*, <http://www.iea.org/textbase/nppdf/free/2006/weo2006.pdf>

²⁵ IIED, *Fuelling exclusion?*, cit., <http://www.iied.org/pubs/pdfs/12551IIED.pdf>

continued urbanization, that is, in increasing proportions of the population living in urban areas. Furthermore, most of the population growth expected in urban areas will be concentrated in the cities and towns of the less developed regions. Asia, in particular, is projected to see its urban population increase by 1.8 billion, Africa by 0.9 billion, and Latin America and the Caribbean by 0.2 billion. Population growth is therefore becoming largely an urban phenomenon concentrated in the developing world.

Rural population growth since 1960 has been particularly rapid in Africa and in Melanesia and Micronesia, at nearly 2% per year. Although slower rural growth is expected during 2000-2030 in all regions, 10 of the 21 regions in the world are still expected to see their rural population increase, with substantial rises likely in Eastern Africa, Middle Africa, Western Africa, Melanesia and Micronesia. Many of the countries in those regions already have seriously degraded rural environments and difficulties in feeding their populations. In South-central Asia and Western Asia, rural population growth is expected to be modest but countries in those regions already have high rural population densities.²⁶

While the absence of population related pressures does not guarantee peace, these pressures could increase the probability of conflict. This is particularly true when such additional aggravating factors as widening economic disparities, worsening environmental conditions and dwindling natural resources are also present in countries. The risks of civil conflict (deadly violence between governments and non-state insurgents, or between state factions within territorial boundaries) that are generated by demographic factors may be much more significant than generally recognized, and worthy of more serious consideration by national security policymakers and researchers.²⁷

3.4. Increased competition for land and water

The food price crisis has increased competition for land and water resources for agriculture, and declining capital for long-term investment due to the credit crunch has resulted in revaluation of natural resources. The pressures on natural resources, combined with increasing distrust in the functioning of regional and global markets due to the price crisis, have renewed attention to foreign direct investment in agriculture. A number of countries, many with severe natural resource constraints but rich in capital, have begun investing in agriculture overseas to secure domestic supply. The media report that Egypt and the United Arab Emirates, for example, have made such investments in Sudan, Libya in Ukraine, Saudi Arabia in Thailand, and South Korea in Madagascar. China has invested in agriculture in a number of African countries, as well as in the Philippines and in Russia²⁸.

Land currently used in crop production in the developing countries (excluding China) amounts to some 760 million hectares (ha), of which 120 million ha are irrigated. These 760 million ha represent only 30 per cent of the total land with rain-fed crop production potential, which is estimated to be 2,570 million ha. However, not all the remaining 1,810 million ha of land with crop production potential is, or should be, considered available for agricultural expansion. Limiting factors in expanding cultivated land area include the scarcity of high-quality agricultural land, competition from alternative land uses, and the risk of environmental degradation of marginal cultivated lands and forests. Much of the land in the 1.8 billion ha "reserve" is of inferior quality compared with that currently in agricultural use. Moreover, a large share of the land not in crop production is concentrated in a small number of countries (27% in Brazil, 9% in the Democratic Republic of the Congo and another 36% in 13 other countries), and is not actually available, as it is under forest or located in protected areas.

Competition for land is intensifying. Although direct consumption of grain by humans is the most efficient use of available food supplies, more land in developing countries is now used for growing grain feed, fodder and forage for livestock, as dietary preferences change with increasing wealth in favour of meat and dairy products. Development and population growth have also claimed increasing shares of land for housing, industry and infrastructure. Many of the world's largest cities are in fact located on extremely

²⁶ Source : UN, Population, Environment and Development, The Concise Report, 2001, <http://www.un.org/esa/population/publications/concise2001/C2001English.pdf>

²⁷ Population Action International, The Security Demographic. Population and civil conflict after the Cold War, 2003, http://www.populationaction.org/Publications/Reports/The_Security_Demographic/The_Security_Demographic_Population_and_Civil_Conflict_After_the_Cold_War.pdf

²⁸ Joaquim Von Braun, Food and Financial Crises - Implications for Agriculture and the Poor, IFPRI Food Policy Report No. 20, december 2008, <http://www.ifpri.org/pubs/fpr/pr20.pdf>

fertile agricultural land. As cities expand they displace farms, cover fertile soils with pavement and contaminate neighbouring soils through airborne deposits and solid waste landfills. Projections place the additional land to be occupied by human settlements in the period to 2030 at about 100 million ha, of which nearly 60 million ha would be land with agricultural potential. While this is only a small fraction of total land area, in countries such as China with limited potential for bringing more land into production, even small losses are a cause for concern.

Long-term global warming and climate change could also threaten as much as one half of the high-quality land resources of some countries through sea-level rise or deterioration in agro-ecological conditions. Agriculture now contributes about 30% of total global emissions of greenhouse gases (GHGs). "Tropical forest clearance and land cover change were major factors in the past for CO₂ emissions, but more attention is now being given to methane (CH₄) and nitrous oxide (N₂O), since agriculture is responsible for about 40 and 80% respectively of total global anthropogenic emissions of these GHGs". Agricultural intensification in recent decades has taken a heavy toll on the environment. Poor cultivation and irrigation techniques and excessive use of pesticides and herbicides have led to widespread soil degradation and water contamination. Salinization of the soil is a serious problem in West Asia and in localized areas in other regions. Each year an additional 20 million ha of agricultural land becomes too degraded for crop production, or is lost to urban sprawl. Yet over the next 30 years the demand for food in developing countries is expected to double. So, new land will certainly be farmed, but much of it will be marginal and therefore even more susceptible to degradation. Advances in agricultural biotechnology may help developing countries by creating drought-, salt- and pest-resistant crop varieties. However, the environmental impact of biotechnology has yet to be fully evaluated and many questions, in particular those related to biosafety, remain to be answered.²⁹

International land acquisitions for outsourcing food and fodder production

As land increasingly become an economic asset, and the market for it has become increasingly globalised, poorer land users have increasingly become vulnerable to losing their land to those with greater economic, political or social ability than themselves to lay claim to, or acquire, the same tracts of land. These factors have contributed to an increasing concentration of landholdings in many countries of Asia, Africa and Latin America in particular. The globalization of land markets, combined with increasing opportunities for profit from agricultural production, is provoking increased speculation in agricultural and by multinational companies, including investments banks. Within the wider context of gradual attrition of land used by the poor, a new set of global trends is currently emerging that vastly increases commercial demand for land.

In recent years, countries such as China, Japan, Kuwait, Saudi Arabia and South Korea and other cash-rich nations have been buying or leasing huge quantities of foreign land for the production of food for domestic consumption. Their big corporations engaged in acquiring land in foreign countries are using their technical and financial power to increase the production of food, fodder and biofuel crops.

Some see these initiatives can be interpreted to be attempts to circumvent normal international trade processes to secure procurement at cost of food and other agricultural commodities. This approach has some similarities with that adopted by multinationals for decades and which was estimated to represent about 40 percent of world "traded" commodities in 2000 occurring outside of "normal" trade processes and that escape WTO regulations³⁰. While some of these arrangements include heavy investments leading to increased production and employment generation, they also carry the risk, unless they are properly regulated and negotiated, of having dramatic consequences on access to land by farmers and communities in developing countries and for the countries themselves in terms of lost income.

²⁹ Source : UN, Population, Environment and Development, The Concise Report, 2001, <http://www.un.org/esa/population/publications/concise2001/C2001English.pdf>

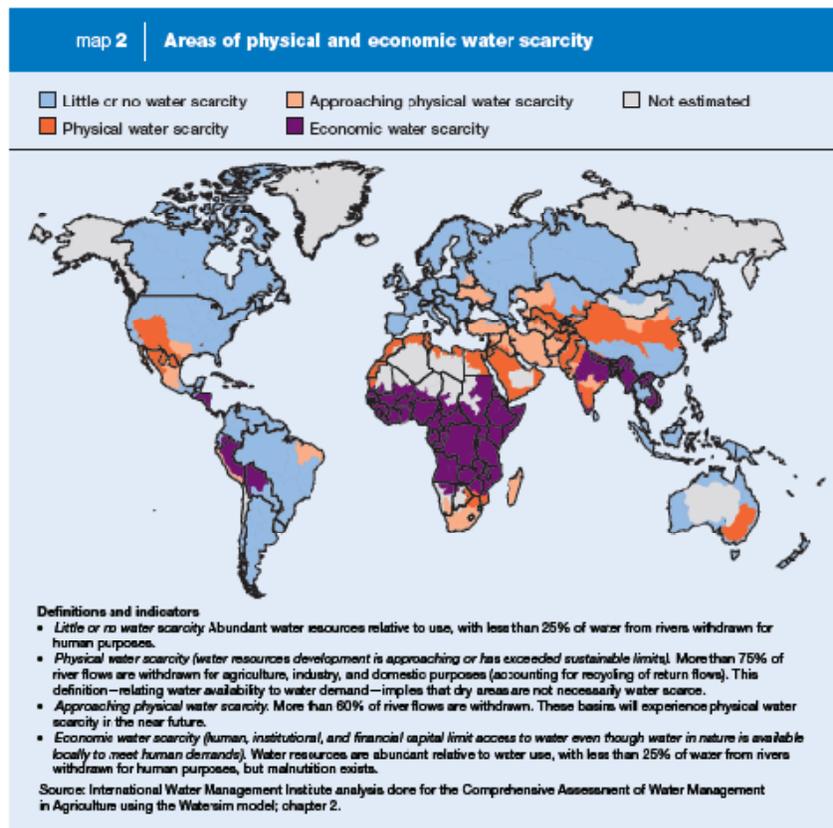
³⁰ Fernández, Y and M. Maetz, *Trends in World and Agricultural Trade, in Multilateral Trade Negotiations on Agriculture, A Resource Manual*, I, Introduction and general topics, FAO 2000.

Water scarcity

Without better water management in agriculture the MDGs for poverty, hunger, and a sustainable environment cannot be met. Access to water is difficult for millions of poor women and men for reasons that go beyond the physical resource base. In some places water is abundant, but getting it to people is difficult because of lack of infrastructure and restricted access. In other places, people's demands go beyond what the natural resource base can handle, and not everyone is assured access to water. Water scarcity, defined in terms of access to water, is a critical constraint to agriculture in many areas of the world. A fifth of the world's people, more than 1.2 billion, live in areas of physical water scarcity, lacking enough water for everyone's demands. About 1.6 billion people live in water-scarce basins, where human capacity or financial resources are likely to be insufficient to develop adequate water resources (map 2). Behind today's water scarcity lie factors likely to multiply and gain in complexity over the coming years. A growing population is a major factor, but the main reasons for water problems lie elsewhere—lack of commitment to water and poverty, inadequate and inadequately targeted investment, insufficient human capacity, ineffective institutions, and poor governance. The International Water Management Institute points out that at least an additional 2,000 to 3,000 cubic kilometers of water—the equivalent of 33 % of current agricultural water use—will need to be found for irrigated and rainfed cropping by 2030.

Economic scarcity is caused by a lack of investment in water or a lack of human capacity to satisfy the demand for water. And even where infrastructure exists, the distribution of water may be inequitable.

Without further improvements in water productivity or major shifts in production patterns, the amount of water consumed by evapotranspiration in agriculture will increase by 70%–90% by 2050. The total amount of water evaporated in crop production would amount to 12,000–13,500 cubic kilometers, almost doubling the 7,130 cubic kilometers of today. This corresponds to an average annual increase of 100–130 cubic kilometers, almost three times the volume of water supplied to Egypt through the High Aswan Dam every year. On top of this is the amount of water needed to produce fiber and biomass for energy. Cotton demand is projected to grow by 1.5% annually, and demand for energy seems insatiable. By 2030 world energy demand will rise by 60%, two-thirds of the increase from developing countries, some from bioenergy.



The world's available land and water resources can satisfy future food demands

Improving rainfed agriculture

Today, 55% of the gross value of our food is produced under rainfed conditions on nearly 72% of the world's harvested cropland. In the past, many countries focused their "water attention" and resources on irrigation development. The future food production that should come from rainfed or irrigated agriculture is the subject of intense debate, and the policy options have implications that go beyond national boundaries. An important option is to upgrade rainfed agriculture through better water management practices. Better soil and land management practices can increase water productivity, adding a component of irrigation water through smaller scale interventions such as rainwater harvesting. Integrating livestock in a balanced way to increase the productivity of livestock water is important in rainfed areas.

Optimizing irrigated agriculture

Under optimistic assumptions about water productivity gains, three-quarters of the additional food demand can be met by improving water productivity on existing irrigated lands. In South Asia—where more than 50% of the cropped area is irrigated and productivity is low—additional food demand can be met by improving water productivity in irrigated agriculture rather than by expanding the area under production. But in parts of China and Egypt and in developed countries, yields and water productivity are already quite high, and the scope for further improvements is limited. In many rice-growing areas water savings during the wet season make little sense because they will not be easily available for other uses.

An alternative strategy is to continue expansion of irrigated land because it provides access to water to more people and can provide a more secure food future. Irrigation could contribute 55% of the total value of food supply by 2050. But that expansion would require 40% more withdrawals of water for agriculture, surely a threat to aquatic ecosystems and capture fisheries in many areas. In Sub-Saharan Africa there is very little irrigation, and expansion seems warranted. Doubling the irrigated area in Sub-Saharan Africa would increase irrigation's contribution to food supply from only 5% now to an optimistic 11% by 2050.

The potential of trade to release pressure on water resources

By importing agricultural commodities, a nation "saves" the amount of water it would have required to produce those commodities domestically. Egypt, a highly water-stressed country, imported 8 million metric tons of grain from the United States in 2000. To produce this amount of grain Egypt would have needed about 8.5 cubic kilometers of irrigation water (Egypt's annual supply from Lake Nasser is 55.6 cubic kilometers). Japan, a land-scarce country and the world's biggest grain importer, would require an additional 30 billion cubic meters of crop water consumption to grow the food it imports. Cereal trade has a moderating impact on the demand for irrigation water, because the major grain exporters—the United States, Canada, France, Australia, and Argentina—produce grain in highly productive rainfed conditions.

A strategic increase in international food trade could thus mitigate water scarcity and reduce environmental degradation. Instead of striving for food self-sufficiency, water-short countries would import food from water-abundant countries. But poor countries depend, to a large extent, on their national agriculture sector, and the purchasing power required to cover food needs from the world market is often low. Struggling with food security, these countries remain wary of depending on imports to satisfy basic food needs. A degree of food self-sufficiency is still an important policy goal. And despite emerging water problems, many countries view the development of water resources as a more secure option to achieving food supply goals and promoting income growth, particularly in poor rural communities. The implication is that under the present global and national geopolitical and economic situation, it is unlikely that food trade will solve water scarcity problems in the near term.

3.5. Food waste

Addressing waste across the entire food chain will be critical in any strategy to feed nine billion people sustainably and equitably by 2050. Making the food chain more efficient will reduce pressure on resources required for food production, lower greenhouse gas emissions, and contribute to other policy agendas, such as cutting the need for further space set aside for landfill, which in turn would reduce GHG emissions. If the current global figure of 30% waste is assumed, this would reduce the food required by

2050 by an amount approximately equal to 25% of today's production³¹. Making waste reduction a strategic target would entail reducing post-harvest waste in low-income countries; improving existing knowledge and technology in storage and transport infrastructure; investing in new, appropriate technology to reduce post-harvest waste; developing infrastructure, financial and market reforms to reduce waste and reducing consumer and food service sector waste, chiefly in high-income countries

The use of information and communication technology (mobile phones in particular) could help improve market information and allow producers to make better decisions about timely supply to markets to achieve best prices, avoiding or at least reducing seasonal gluts and product waste, particularly during months of peak production. Better financial support for smallholder farmers would allow them to store produce rather than sell when prices are at their lowest. Better information about fisheries stocks, fishing activities, surveillance and market prices could improve value, reduce or improve usage of by-catch, and reduce gluts by allowing stocks to be fished more steadily over longer time periods.

4. The way forward: New policy challenges for food production

4.1. Trade and Globalisation

The modification of trade policies and measures has been the most common reaction of countries to high food prices, with the main objective of trying to protect the domestic market from increasing prices on the world market. For exporting countries, export bans or limitations have been used in several cases. Increasing or establishing export taxes has also been used. For importing countries, the main trade related measure has been to cut import taxes on food items, agricultural inputs and equipment as to facilitate imports and reduce domestic consumers prices. This also reduces the protection that local producers may have had because of the existence of the duty.

Governments of at least thirty countries had implemented export restrictions by July 2008 (WB) as a means to promote domestic food security.

Trade restricting policies – whether they restrict exports or imports – have undesirable and often unintended impacts, especially in the medium and long term. Subsidies that distort markets are equally unhelpful. Export taxes and embargos may in the short term provide some relief to domestic consumers, though such measures do not distinguish between low and high income consumers, and they also impose a burden on domestic producers and limit their supply response. Export restrictions contribute to global commodity market uncertainty and drive international market prices further up. On the import side, —protecting domestic producers of agricultural commodities by providing high price support and border protection restricts growth opportunities for producers abroad and imposes a burden on domestic consumers.

A swift and ambitious conclusion of the Doha Round of WTO negotiations could make an important contribution to exploiting the potential of markets to balance global supply and demand³².

It should facilitate fair trade in agricultural products and improve incentives in many countries for more efficient, viable agriculture systems which will bolster national efforts to improve food security. The Annual Global Review of Aid for Trade was completed in July 2009 with significant new pledges being made. At the same time WTO members launched the Global Trade Liquidity Programme, to boost trade finance.

Policy-makers need to examine options to create buffers in the international trade system in order to make it more resilient to shocks and stresses.

4.2. Long term productivity boosting measures

The long term, sustained response to the food crisis must come in the form of increased production of food grains. However, the past decades have been marked by declining public and private investments in agriculture, especially in staple food production. This has diminished the capacity of agricultural systems to respond efficiently to the crisis. Public investments in small scale irrigation and extension services would also be needed. Much of the world's farming activity occurs on smallholder farms, with production at or below subsistence levels. The technology exists to boost productivity on these farms. However, these

³¹ Foresight. *The Future of Food and Farming* (2011), Final Project Report.

<http://www.bis.gov.uk/assets/bispartners/foresight/docs/food-and-farming/11-546-future-of-food-and-farming-report.pdf>

³² *Rising Food Prices : Causes and Consequences*, OECD, 2008: <http://www.oecd.org/dataoecd/54/42/40847088.pdf>

farmers have low assets, are often outside formal credit markets, and have high degrees of risk aversion that make it difficult for them to make even the initial investments that would increase production. Long term productivity increases can take place through the use of superior inputs (fertilizers, improved seeds, and planting materials), adoption of better farming practices including those related to water management and resource conservation (for which a strong extension system may be a necessary pre-condition), and participation in agricultural credit, insurance, input and product markets.

Apart from the physical infrastructure needed to improve transportation and link farms to markets, attention must also be paid to improving access to information about prices and market conditions at all levels. One innovative approach here has been through strengthening farmers' associations, which have traditionally been vehicles for extension, into agencies for collective marketing of produce. Another approach that can introduce farmers to markets is through contract farming, although the extent to which it can work with small farmers is not yet clear.

As the experience of Malawi shows, such subsidies can have dramatic effects where yields have been low to start with. At the same time, the Malawi program does not have a well defined, politically feasible exit strategy, and its ballooning cost is already straining the budget. If this is not addressed, there is a possibility that it, too, will go the way of the subsidies that were popular in Africa in the 1960s and 1970s, but then had to be ended in 1980s and 1990s.

4.3. Increasing availability and access to food

The long term, sustained response to the food crisis must come in the form of *increased production* of foodgrains. However, the past decades have been marked by declining public and private investments in agriculture, and this is one reason why higher prices may not in themselves be enough. Public investments in small scale irrigation and extension services would also be needed. Much of the world's farming activity occurs on smallholder farms, with production at or below subsistence. However, these farmers have low assets, are often outside formal credit markets, and have high degrees of risk aversion that make it difficult for them to make even the initial investments that would increase production³³.

It may therefore be necessary to institute targeted, fiscally responsible *subsidies* with a well defined exit strategy to encourage the adoption of critical inputs by small holder farmers while measures to facilitate their access to markets are being put into place and their assets are being built up. One way in which small farm productivity can be boosted, and the benefits of higher market prices be passed on, is through *contract farming*, especially when it is accompanied by input supply and training. A recent extension of this idea is the move by some countries to lease farmland in others. The terms of such agreements, and *how* they are set would appear to be important to determining the net balance of costs and benefits in the producer country. On the one hand, it would appear to introduce yield enhancing methods and inputs and offer farmers a price floor that could be particularly advantageous during a production glut. On the other hand, this very feature could be detrimental to farmer profits, and producer country food security in the event of a production deficit. There is also concern that such arrangements could contribute to lowered volumes coming into the spot markets, leading to increased volatility.

Buffer stocks and grain pooling

Buffer stocks, used strategically, can lower prices and volatility, but require infrastructure and skills to procure, hold and manage. Countries that choose to create or revitalize them must weigh these costs against the potential of the market being able to provide a timely response to an unexpected shortfall. Alternatives such as regional grain pools may also be explored, although their utility will be limited if production shocks are correlated across countries in the region³⁴.

Retrospectively, the approach advocated by many against countries keeping large food stocks (on the grounds that they are costly to maintain and incur considerable losses over time) does not appear well adapted in a situation where food prices are rising, making it more difficult to buy food on the international market. Those countries that kept financial reserves (particularly if the reserves were in US dollars) have seen the amounts of food that can be purchased with the money kept reduce very rapidly, much more

³³ http://www.et.undp.org/index2.php?option=com_docman&task=doc_view&gid=67&Itemid=45

³⁴ http://www.et.undp.org/index2.php?option=com_docman&task=doc_view&gid=67&Itemid=45

rapidly than if physical resources had been kept. This may give renewed arguments in favour of keeping physical stocks in the future³⁵.

4.4. Increased investment in agriculture

The UN Food and Agriculture Organization (FAO) and the World Food Programme (WFP) predict that the food crisis of 2008, which led to riots and political turmoil in several countries, will be repeated over the coming decades. It is clear that current levels of investment in agriculture are insufficient to drive the 70% increase in food production necessary to feed 9.1 billion people by 2050. During the fiscal crises in the 1980s and 1990s, agriculture suffered from a reduction in investment that has never been restored despite the increase in the recent years. With its current level of resources, production of food has to become more efficient (investment in technology, ecologically crop nutrition and protection products...).

The International Food Policy Research Institute (IFPRI) estimated the global incremental agricultural public investment required—the additional amount necessary to meet the MDG goal of halving poverty by 2015—to be US\$14 billion annually for all developing countries³⁶. The estimated incremental annual investment needed in Sub-Saharan Africa ranged from US\$3.8 to US\$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).

The current hike in food prices is an issue of a truly global nature. It has complex causes and impacts, and requires a complex response at the international level. Current developments on global food markets are having dramatic implications for food security among poor people. At the same time, speculative factors and inward looking policy actions contribute to the nervousness and volatility of markets. What is needed now is an *objective, effective and coherent global response* to avoid making a difficult situation worse.

A comprehensive response is essential both to immediate and long-term challenges, with priority on improving access to food and nutrition support for the most vulnerable, including through well-designed, fiscally sustainable social protection mechanisms, including social security, and investments in food systems and infrastructure that support smallholder production and markets, backed with fair trading systems that respond to the interests of poor people.

In the medium term, there is a real need to improve the purchasing power of poor food buyers so they can acquire enough food even at the higher prices. Fundamentally that requires to *foster growth and development in poor countries*. In some of the poorest countries, investment in agriculture, including in agricultural research, extension and education, may be the best way to cut poverty and stimulate economic activity. In other situations, investment in agriculture may also be helpful, but there may equally be a need to diversify the structure of the economy. In many cases, investments in improving the overall environment in which agriculture operates may be most appropriate – improving basic governance systems, macroeconomic policy, infrastructure, technology, education, health, etc. In other words, a tailored approach is needed, one that builds upon the capacity and potential of individual countries, rather than a generalized rush to develop agriculture.³⁷ High agriculture commodity prices also have an impact on close substitutes, such as fish, and could contribute to even further pressure on already depleted *fish stocks*, as well as to increased demand for fish from aquaculture. Policies that ensure the sustainable and responsible use of ocean resources have a key role to play, both within national boundaries and on the high seas; concerted action to control illegal fishing is needed. Options to improve the business environment for private investment in aquaculture might also be explored.³⁸

³⁵ *Guide for Policy and Programmatic Actions at Country Level to Address High Food Prices*, FAO 2011 - http://www.fao.org/fileadmin/user_upload/ISFP/reviseISFP_guide_web.pdf

³⁶ Fan, S. and Rosegrant, M. (2008). *Investing in Agriculture to Overcome the World Food Crisis and Reduce Poverty and Hunger*. Policy Brief 3. International Food Policy Research Institute

³⁷ *Rising Food Prices : Causes and Consequences*, OECD, 2008: <http://www.oecd.org/dataoecd/54/42/40847088.pdf>

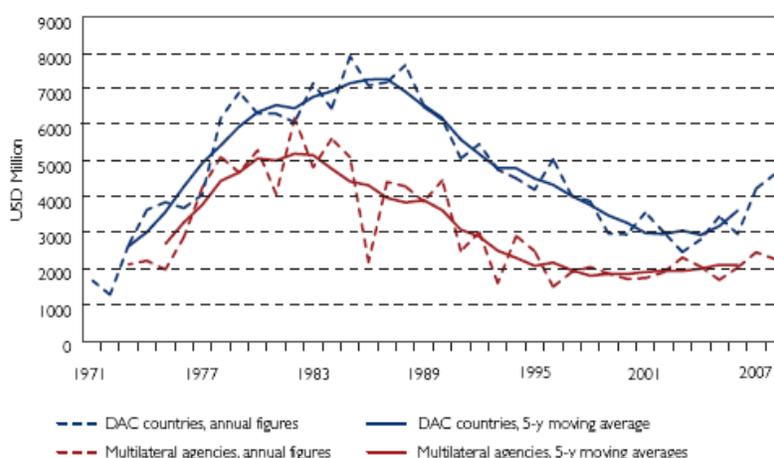
³⁸ *Ibid.*

Decline in donor's support Agriculture: the neglected child of aid donors and developing countries' governments³⁹

- Proportion of official development assistance aid going to agriculture: — 17% in 1980, 3% in 2006
- Total amount of aid spent on agriculture in real terms: -58%, between 1980 and 2006
- Proportion of public spending for agriculture in Africa: 4.5% in spite of an African Union target of 10% by 2008
- Budget of the Consultative Group on International Agricultural Research (CGIAR), key coordinating body for public investment in agricultural R&D: -50% over the past 15 years

Despite official development aid (ODA) being recognized as a crucial instrument for supporting agriculture and rural development, and for enhancing food security, the share of agriculture in official development assistance (ODA) declined sharply from a high of 18 percent in 1979 to a low of 3.5 percent in 2004, which equated to more than a 50 percent decline in the value of support⁴⁰. Since the mid 1980s, bilateral aid to agriculture has halved, to \$3.8 billion in 2007⁴¹. This was a steeper decline than the decline in developing country governments' own commitments to agriculture, which were on average double the share of total donor commitments, although with significant differences across regions. The share of IDA/IBRD lending to agriculture declined from 30 percent in 1980–1982, to 7 percent in 1999–2001, then increased to 12 percent in FY2006–2008.

Figure 6.4: Commitments to agricultural aid. 1973– 2008, 5-year moving averages and annual figures, constant 2007 prices



Source: April 2010, OECD-DAC, www.oecd.org/dac/stats/agriculture

New donors

The evolution of international relations, the emergence of a multipolar global architecture as well as the emergence of new players and increased South-South cooperation are having a direct impact on how international cooperation is conceived and carried out, thus affecting agricultural development.

South or “emerging” donors traditionally account for around 5-10 percent of ODA. The principal countries involved are large states such as China and India, as well as South Africa, Brazil, Malaysia, Mexico, Venezuela, new EU members, OPEC and Middle East countries. China's major expansion of investment in Africa started in 2000, when it hosted the China-Africa Cooperation Forum. In 2006 China committed to double its development aid, to make US\$5 billion in loans and investment credits over the following three years, and to cancel debt from all African least developed and highly-indebted countries.

In 2005, a study by the Humanitarian Policy Group (HPG), entitled *Diversity in Donorship: The Changing Landscape of Official Humanitarian Aid*, documented the growing diversity of donors responding to

³⁹ Source: UN, 2008; Evans, 2009

⁴⁰ www.ukfg.org.uk/docs/More_Aid_for_African_Agriculture_MAIN_REPORT.pdf

⁴¹ Hearn - Koc - Piesse – Thirtle. *A Preliminary Analysis of European Assistance to Agriculture in Sub-Saharan Africa*

humanitarian crises⁴². From as few as a dozen government financiers just over a decade ago, it is now commonplace to see 50 or 60 donor governments supporting a humanitarian response. [...] Through membership of the Development Assistance Committee (DAC) of the Organisation for Economic Cooperation and Development (OECD), Western governments have tended to dominate public debates about the direction, purpose, principles and methodology of relief. Diversity in Donorship noted that countries with DAC membership do not, however, represent the totality of aid, nor are the DAC's members all necessarily the most significant aid-givers. Non-DAC donor contributions have steadily increased in recent years. Saudi Arabia, the UAE, Kuwait and Qatar together accounted for 64% of overall non-DAC aid in the period 2000–2008. Despite the increase in total humanitarian aid, non-DAC donors continue to provide only a small percentage of reported humanitarian flows from official donors. As a percentage, non-DAC contributions in 2008 accounted for 12% of total official humanitarian aid. This comparatively minor financial weight does not necessarily result in a lack of influence over the course of the humanitarian response. In Darfur, for example, where China (a non-DAC donor) has made a very small financial contribution, its political influence, both bilaterally and over actions taken by the international community in the UN Security Council, has been considerable.

Activities under Chinese-African Cooperation often do not meet OECD's definition of ODA, mixing concessional and non-concessional aid, and being often tied⁴³. Large philanthropic private foundations are gaining prominence as sources of development funding.

4.5. Mobilizing budgetary resources

Many of the policy instruments addressing high food prices, whether directed at trade (e.g. cut in import taxes), consumption (e.g. lowered taxes and tariffs on food, food subsidies, safety net programmes) or production (e.g. subsidies, production programmes) will require more budgetary resources. Implications will be that these resources will have to be reallocated from other uses (with implications on other functions of the state) or that the budget deficit will be allowed to increase.

Increasing budget revenue could be considered in relatively richer countries (e.g. with oil and other mineral resources or strong industrial or services sector) and where financial flows are important. A measure already in practice in some emerging countries (e.g. Brazil) has been to impose a very light tax on financial transactions.

Enhancing fiscal revenue

Revenue collected from taxes along with customs collections represents the major funding source for governmental expenditures. An effective and efficient tax administration system is integral to any country's well being. The proper amount of tax must be collected in a timely manner and the enforcement powers of the tax administration must be applied judiciously and in an even handed fashion. The tax administration must provide an even playing field for business by ensuring that all taxpayers meet their tax filing and paying requirements. This requires significant efforts to deal with the underground economy and to, therefore, increase the tax base. This represents a significant challenge in a developing economies.⁴⁴

Africa, in particular, faces three types of challenges respect to mobilisation of public resources. First, there are cross-cutting structural bottlenecks: high levels of informality, a lack of fiscal legitimacy and strong administrative capacity constraints, under-pinned by insufficient support from donors. Second, the existing tax-base is shallow as it is eroded by excessive granting of tax preferences, inefficient taxation of extractive activities and inability to fight abuses of transfer pricing by Multinational Enterprises. Third, the tax mix of many African countries is unbalanced. Hence, these countries rely excessively on a narrow set of taxes to generate revenues for their state and some stake-holders are disproportionately represented in the tax base. Indeed, the lack of urban cadastres and population censuses makes collecting urban

⁴² Adele Harmer and Lin Cotterrell, *Diversity in Donorship: The Changing Landscape of Official Humanitarian Aid*, HPG Report 20 (London: ODI, 2005).

<http://www.odi.org.uk/programmes/humanitarian-policy-group/focus-humanitarian-aid-system.asp>

⁴³ See Richard Manning (2006) "Will *Emerging Donors* Change the Face of International Cooperation?", OECD DAC

⁴⁴ Lewis Baurer, *Tax Administrations and Small and Medium Enterprises in Developing Countries*, IFC:

[http://www.ifc.org/ifcext/sme.nsf/AttachmentsByTitle/BEE+SME+Taxation/\\$FILE/SME+Taxation+Toolkit.pdf](http://www.ifc.org/ifcext/sme.nsf/AttachmentsByTitle/BEE+SME+Taxation/$FILE/SME+Taxation+Toolkit.pdf)

property taxes particularly challenging for local African administrations on top of the difficulty of collecting taxes on the elite. Additionally, trade tax revenues are bound to be further challenged by trade liberalization agreements.

In the short-run however, strategies towards more effective, efficient, and fair taxation in Africa typically lie with deepening the current tax base in administratively feasible way. Policy options include removing tax preferences, dealing with abuses of transfer pricing techniques by MNEs and taxing extractive industries more fairly and more transparently. The international community has a key role to play in enhancing administrative capacity, while southern partners should provide peer learning opportunities. In the longer-term, the capacity constraints of African tax administrations must be released to open up policy options and enable generating tax revenues through a more balanced tax-mix. Indeed, taxing new potential tax payers is crucial.⁴⁵

4.6. Investing in Research and Technological Innovation

It is also instructive to look closely at the causes of recent price increases. On the supply side, the link between production and yield shortfalls and *climate change* might be further explored. Investments in R&D, technology transfer and extension services, particularly in less developed economies, could do much to increase *productivity* and output. The use of genetic modification (*GMOs*) also offers potential that could be further exploited, to improve productivity, to enhance the attributes of crops destined for either food or non-food uses, and to enhance the resilience of crops against stress such as drought. On the demand side, policies that encourage increased production and use of *biofuels* warrant a close review. OECD/IEA analysis to date suggests that the energy security, environmental, and economic benefits of biofuels production based on (first generation) agricultural commodity feed stocks are modest and are unlikely to be delivered by current policies. Alternative approaches (for example, that encourage reduced energy demand and GHG emissions, provide for freer trade in biofuels, and accelerate introduction of second generation' production technologies that do not rely upon current commodity feed stocks) offer potentially greater benefits without the unintended impact on food prices.

Given demand growth and resource scarcity, the agriculture industry faces the challenge of producing more and better food with fewer resources. Globally the average hectare of arable land supported 2.4 persons in 1960, 4.5 persons in 2005 and, according to some estimates⁴⁶, is required to support over 6 persons by 2050. But the rate of growth in agricultural productivity is declining: from 2.3% a year since 1961 to 1.5% up to 2030, forecast at 0.9% between 2030 and 2050⁴⁷

Information and Communication Technology is increasingly used in large-scale agriculture in order to fine-tune sowing density as well as chemical and water usage. Precision farming relies on Global Positioning Systems (GPS), sensors and sometimes aerial images to understand in-field variability, with expected benefits in terms of yields, costs and the environment. Less high-tech mobile phones have however proved very useful in accessing timely data on input prices, environmental conditions or weather, thus contributing to cost reduction and yield increases.

4.7. Supporting small-scale farmers

Modern food systems are accelerating towards a highly concentrated structure⁴⁸. The comparative advantage of smallholder farming, in terms of its labour and land productivity, may be offset by the cost of dealing with markets with high levels of industrial concentration and new forms of private sector governance, such as private and voluntary standards. Excessive concentration within input markets (such as seeds and agrochemicals) and output markets (trading, processing, manufacturing and retailing) can work against the interests of small producers in poor countries by creating barriers to market entry, or by

⁴⁵ Gregory de Paepe, Policy Analyst Europe, OECD, <http://brusselsbriefings-videos.net/100915/EN/13/>

⁴⁶ IASSTD (2009)

⁴⁷ IASSTD (2009)

⁴⁸ *Concentration in food supply and retail chains*, DFID-IIED, 2004 - <http://dfid-agriculture-consultation.nri.org/summaries/wp13.pdf>

worsening the terms on which they engage in trade. Concentration is particularly striking in some globalised food chains (three or four companies control 40--80% of world trade in coffee, tea and cocoa.)⁴⁹

Driven by gains from economies of scale and globalisation of the food chain, multinational companies increasingly dominate the food sector along the value chain. National, regional, and global supply chains are being radically altered, bypassing traditional markets where smallholders sell to local markets and traders. Supermarkets control 60 to 70 percent of food sales in Argentina and Brazil, and are expanding rapidly in China, India and urban Africa.⁵⁰ Independent grocers continue to dominate the market in Vietnam (85% of retail sales) and India (77% of retail sales).⁵¹ Consolidations all along the value chain have concentrated the market power and leverage of large international corporations, transforming the opportunities for small producers. Better prospects and access to markets have however also come with new requirements in terms of food safety and quality standards. Whereas this is positive for consumers, it sometimes creates a barrier to entry for small agricultural producers, especially in developing countries, until they get organised (as cooperatives or public-private partnerships).

Improved risk management for farmers

While free, transparent price formation is recognised as a “key prerequisite” for functioning markets and while many developed countries have historically employed price control measures as a means to subsidise their producers, these can also prevent farmers from responding to signals from consumers, and distort trade and production.

Reinforcing the importance of risk-protection measures would be needed in order to tackle price volatility (instruments such as insurance schemes for farmers, or social safety-nets). The European Commission recently announced it is considering a new ‘risk management toolkit’ for the EU’s post-2013 farm policy, with options “ranging from a new WTO green box compatible income stabilisation tool, to strengthened support to insurance instruments and mutual funds.

5. New forms of food governance

Agriculture is a complex issue which is not just about commodities production but also deeply rooted in societies and cultures and coordinating its implementation at national level.

Response to the crisis: a change of paradigm?

Responses of developing countries to the food security crisis appear to have been in contrast to the policy orientation most of them had pursued over the last decades as a result of the implementation of the Washington consensus supported by the Bretton Woods Institutions. This period had been characterized by an increased reliance on the market – both domestic and international – on the ground that this reliance would increase efficiency of resources allocation, and by taking world prices as a reference for measuring economic efficiency. The availability of cheap food on the international market was one of the factors that contributed to reduced investment and support to agriculture by developing countries (and their development partners), which is generally put forward as one of the reasons for the recent crisis. This increased reliance on markets was also concomitant to a progressive withdrawal of the state from the food and agriculture sector, on the ground that the private sector was more efficient from an economic point of view⁵². As a result, several countries have decided to change their approach, questioning *de facto* the paradigm

that had guided their policies and strategies during the last decades:

- By trying to isolate domestic prices from world prices (exporting countries);
- By moving from a food security based strategy to a food self sufficiency based strategy;
- By trying to shunt “normal” international trade processes either by acquiring land abroad for

⁴⁹ *Addressing concentration in food supply chains*- Olivier de Schutter , United Nations Special Rapporteur on the Right to Food- http://www.srfood.org/images/stories/pdf/otherdocuments/20101201_briefing-note-03_en.pdf

⁵⁰ World Bank (2007).

⁵¹ Euromonitor (2007).

⁵² http://www.fao.org/fileadmin/user_upload/ISFP/pdf_for_site/Country_Response_to_the_Food_Security.pdf

- securing food and fodder procurement or by trying to engage in trade agreements at the regional level;
- By showing distrust towards the private sector (price controls, anti-hoarding laws, government intervention in output and input markets).

Over the last few years, especially in the wake of soaring food prices and the global economic and financial crisis, widespread concerns about food and nutrition security have been raised. Renewed political attention has been given to world food security and its governance with the intention to address both the effects of crises, but more importantly, the long-term, structural factors that contribute to hunger, food insecurity and malnutrition. Pledges to increase resources devoted to agriculture and food security especially in those countries most in need have been renewed. A number of national and regional efforts (policies and programmes) have been developed through a participatory process to promote food and nutrition security at national and sub-national levels and a conducive policy framework for growth of agriculture. Existing and emerging regional and sub-regional responses (such as NEPAD/CAADP and Latin America sin hambre) promote integration, coherence and consistency of national level efforts. The drive for greater policy and implementation coherence is also evident in the efforts of donor coordination through the Paris Declaration and the Accra Agenda for Action. The International Alliance against Hunger (IAAH) was established after the World Food Summit: five years later as a multi-sector, multi-stakeholder mechanism to capitalize on experiences and reinforce initiatives at the national level. In response to the devastating impact of high food and fuel prices on global food security, the UN High-Level Task Force on the Global Food Security Crisis was created in April 2008 to promote a comprehensive and unified response by UN bodies by facilitating the creation of a prioritized plan of action and coordinating its implementation at national level.

5.1. Applying the Right to Food as a human right⁵³

In 2008, the right to adequate food was recognized as a fundamental component of a sustainable solution to the world food-security crisis caused by high food prices. The reasons are twofold. On the one hand, the crisis disproportionately affected those who were already vulnerable, typically people who spend large proportions of their income on food. On the other hand, there was wide recognition that, when it came to responding to the crisis, the “business-as-usual” approach would not work. Traditional approaches, which dealt with the technical dimensions of food insecurity in terms of both their emergency and structural aspects, needed to be complemented with an additional dimension focusing on the promotion of the right to adequate food and the reform of both global and national food-security governance. The right to food was also central to the January 2009 High-Level Meeting on Food Security for All, held in Madrid. In his closing remarks to the conference, United Nations Secretary-General Ban Ki-moon pleaded for inclusion of the right to food “as a basis for analysis, action and accountability” in promoting food security.

The right to food is, first of all, a basic human right enshrined in international law. It is the right of every person to have continuous access to the resources necessary to produce, earn or purchase enough food not only to prevent hunger, but also to ensure health and well-being. The right to food provides a coherent framework within which to address critical governance dimensions of the fight against hunger and gives voice to a wide array of relevant groups and individuals. It establishes principles that govern decision⁵⁴.

Guaranteeing the right to food requires coherent public policies through institutions established to secure the right at a national level. It largely depends on whether sectoral policies create the conditions necessary to make it a reality and on the fact that it must be understood as indivisible and interrelated⁵⁵ with other human rights. Among the most important areas in this respect are: natural resources

⁵³ <http://www.srfood.org/index.php/en/right-to-food>

⁵⁴ FAO, *Food insecurity in the world 2009. Economic crises - impacts and lessons learned*,

<http://www.fao.org/docrep/012/i0876e/i0876e00.HTM>

⁵⁵ The Vienna Declaration and Plan of Action were adopted in the context of the World Conference on Human Rights, held from 14 to 25 June 1993, which established that “All human rights are universal, indivisible and interdependent and interrelated.” It also asserts that “the international community must treat human rights globally in a fair and equal manner, on the same footing, and with the same emphasis. While the significance of national and regional particularities and various historical, cultural and religious backgrounds must be borne in mind, it is the duty of States, regardless of their political, economic and cultural systems, to promote and protect all human rights and fundamental freedoms.” See A/CONF.157/23.

management, trade policy, investment in agriculture, infrastructure and local markets, national social security, educational and public service systems. The multidimensional nature of the right to food requires implementation with a broad perspective that takes into account all policy areas that bear on access to food.

5.2. Enhancing regional processes for food governance

In addition to the need to have agricultural policies in place at national level, several regions have taken steps toward improving regional food security through regional cooperation in order to reduce dependence on imports outside the region. For example, in August 2008, the Southern African Development Community (SADC) announced that it will establish a Regional Food Reserve Facility, while urging member states not to impose export restrictions on maize. Kenya, Uganda and Tanzania are discussing the possibility of setting up a regional fertilizer plant to offset high costs and ensure long-term sustainable supplies.

In Africa, the AU, through the New Economic Program for African Development (NEPAD) and the Comprehensive African Agriculture Development Program (CAADP), has been actively developing policy for a number of years to address the region's deep and long-running food security challenges. CAADP provides a framework to stimulate and guide the development of national and sub-regional food policies. Regional Economic Communities (RECs) are entrusted to promote and implement the continental framework at country and sub-regional level.

The West African embodiment of CAADP and NEPAD is the Economic Community of West African States (ECOWAS) Agricultural Policy (ECOWAP) which focuses on reducing food insecurity. Under the framework set out by the policy, an ECOWAS commission supports member states in developing national agricultural investment programs and prepare round-tables for the adoption of "compacts" engaging all stakeholders in a partnership for coordinated implementation. HLTF agencies are actively participating with other technical partners in fostering collaboration and alignment under ECOWAP. ECOWAS also develops regional investment programs. Rather than the sum of national programs, they are instead focused on regional investment needed to foster national efforts and tackle specific regional issues. They address, for example, lifting of intra-regional trade barriers, reinforcement of regional value-chains, harmonization of information systems, and coordination of monitoring systems for food emergencies.

More South-South exchanges

As the economies of industrialized countries become weaker, and new economic powers emerge with important food production capacities or food needs, the trend towards deepened South-South relations is accelerating. In addition, trade and investment relations between developing countries are accounting for an increasing share of world total trade exchanges. The G20 Seoul Consensus on development (a first from this grouping and the first under the leadership of a non-G8 country) is a first step towards more inclusive governance systems.

Developed countries still dominate world agricultural exports, but middle-income countries have been gaining ground. Latin America, in particular, stands out as a large and fast-growing net agricultural exporter (see chart 27). The epicentre of global agriculture is expected to further shift from the OECD towards developing countries. Both consumption and production are growing faster in developing countries for all products except wheat. By 2017, these countries are expected to dominate production and consumption of most food commodities, with the exception of coarse grains, cheese and skim-milk powder (FAO2008).

5.3. Food self-sufficiency

Several countries, including China, Indonesia, Malaysia, the Philippines and Senegal, have declared food self sufficiency as their strategic response to high food prices. For example, the Government of the Philippines, the biggest rice importer in the world, is seeking to achieve 98 percent self-sufficiency in rice by 2010. This clearly represents a change of policy orientation from food security to food self-sufficiency.

Similarly, the President of Indonesia recently stated that the country needs to become food self-sufficient, saying global food production had been compromised by the recent food crisis. Food self-sufficiency is to be achieved though increasing subsidy for seeds, fertilizers and loan schemes for farmers.

Senegal consumes about 800 000 tonnes of rice per year and nearly 80 percent of this is imported, making the nation one of the top ten importers in the world. As one of the countries hardest-hit by the crisis, with massive riots in the last few months, the President has unveiled an ambitious agricultural plan called the Great Offensive for Food and Abundance (GOANA), which aims to make Senegal self sufficient in food staples, especially rice.

The food crisis has also brought a renewed emphasis on domestic food production in many Latin American and Caribbean countries which have been relying heavily on food imports. For instance, Colombia, which imports 60 percent of its corn (3.4 million tonnes) and 96 percent of its wheat (1.4 million tonnes) requirements, has started supporting its farmers with credit to produce corn and wheat.

Too heavy a focus on export crops such coffee, banana, tropical fruits and beef is considered to have adversely affected the food security situation of the country. There are also calls for expanding area under food crops, removing the huge subsidies and incentives granted for biofuels and reducing area under cattle ranching to make Colombia not only food self-sufficient but also generate surplus for export. In Honduras, the President has launched the Plan for Supply of Basic Grains and the Technological Productive Voucher (BTP), in order to produce enough basic grains this year (2008) to feed the population of 7.3 million people. There will be provision of some basic inputs in terms of agricultural credit at low interest rates (lowered from 24 percent to 9 percent) for seeds, technology, etc. The policy that encouraged rice import from the US (starting in the early 1990s) as a cheap alternative in Honduras is now viewed as undesirable as it drove rice farmers into bankruptcy⁵⁶

5.4. Stronger regulation of commodity markets: source of differences

French president called for stronger regulation of commodity markets. EU Agriculture Commissioner Dacian Cioloş argued that disclosing more information on farm commodity trading would help to eliminate those who conduct these transactions only to speculate and make short-term profits.

Speculation and food prices

Does speculation in commodity futures increase price volatility on food markets? Some economists say no, suggesting instead that futures markets have a stabilizing effect as traders merely react to price signals that eventually depend on market fundamentals. In this way speculation would even accelerate the process of finding an equilibrium price. Such theory, however, may not hold in the presence of trend-following investors or those with market power. For example, in the short term an investor might be attracted by the opportunities offered by the upward trend of a commodity price although this development may not be based on any fundamental data. These speculative investments could strengthen the trend and push the futures price further from its true equilibrium, especially if many investors jump the bandwagon (“herd behavior”) or those who invest have sufficient funds to influence the market.

Index funds are an example of such powerful investors. They have become key players in the market, holding about 25-35 percent of all agricultural futures contracts. Besides investing large amounts of money, they also hold futures contracts for a long time. Some observers suggest that this trading behavior makes them less likely to react to changes in market fundamentals.

Empirical evidence for both hypotheses is inconclusive. For each study that finds a positive impact there is at least one that claims the contrary. Indeed, there are a number of reasons to believe that speculation might not have been the main driver of the food price surge⁵⁷. For one, price volatility has also been high for commodities that do not have future markets or for which these markets are not important (e.g. steel and rice). Furthermore, as excess demand in well-functioning futures markets can easily be met by sufficient supply (i.e. by issuing new futures contracts), the effect of speculation on the equilibrium price is relatively small and short-lived compared to price swings of a physical asset where supply might be less elastic or even fixed.

What type of regulation?

Available analyses and data suggest that trading in futures markets may have amplified price volatility in the short term only. Longer-term equilibrium prices, however, are ultimately determined in cash markets where buying and selling physical commodities reflects the fundamental supply and demand forces.

⁵⁶ International Rice Research Institute (IRRI), Countries make plans to ramp up food output, May 15, 2008.

⁵⁷ <http://www.fao.org/docrep/012/al296e/al296e00.pdf>

Efforts to reduce speculation in futures markets might even have unintended consequences. Mechanisms to intervene in futures markets, if the futures price diverges from an equilibrium level determined by market fundamentals (a level which in itself will be difficult to determine), might divert speculators from trading and thus lower the liquidity in the market available for hedging purposes. Proposals to create an international fund to react to price hikes in futures markets might therefore not be an optimal solution. What is more, such a fund would require exorbitant resources to counteract speculation effectively.

Instead, regulatory measures should aim primarily at enhancing confidence in the good functioning of the market. This can be achieved by increasing transparency and the amount of available information on futures trading. Furthermore, suspicious behavior (e.g. traders requesting permission to invest above their speculative position limits) should be investigated closely, as already practiced by the US futures trading supervisory body. In August 2009, the agency lifted exemptions for two firms trading in maize, wheat and soybean futures. Commodity futures have become an integral part of food markets, and they perform an important role for many market participants. Adequate regulation should improve, not ban, speculative trading in order to foster market performance.⁵⁸

Some regulation of commodities futures markets is desirable, according to FAO, but any intervention should be cautious and stop short of imposing tight limits or an outright ban on such trading. WTO Director-General Pascal Lamy cautioned that there was not yet a consensus on the role of speculation in prompting price spikes and called to consider the role of export restrictions in exacerbating food shortages, noting that some analysts consider these to be the principle cause of the food price rise in 2008, for some of the most vital staples⁵⁹. Bad weather, exacerbated by policy measures such as export bans, was at the root of the recent price spikes. He also called for countries to explore exempting humanitarian food aid from export bans. A Doha accord would greatly reduce rich world subsidies that have stymied the developing world's production capacity and which have, in certain commodities, cornered it completely out of the market.

Towards sustainable global and local food markets

Policy options for addressing food security require a combination of approaches. Social protection strategies should be designed to mitigate the current shock for the most vulnerable, lay the foundation for sustainable recovery, and prevent negative impacts in the future. An important part of the solution to global hunger is reducing gender inequality as evidence shows that higher levels of hunger are associated with lower literacy rates and access to education for women. Policy options should also include the establishment of food stocks and a global minimum grain reserve, developing high-value and underutilized crops, strengthening local markets and improving food safety and quality. Price shocks and extreme weather events call for a global system of monitoring and intervention for the timely prediction of major food shortages. Given the close link between local production and food insecurity, investments in the agricultural sector and agricultural research that increase food availability and strengthen the resilience of the food production system will have immediate positive impacts in food insecure regions (the amount spent in agricultural research and development has fallen dramatically by more than 50% over the last decade). Trade policy approaches to benefit developing countries include, among other measures, the removal of barriers for products in which they have a comparative advantage; reduced tariffs for processed commodities, deeper preferential access to markets for least developed countries, flexibility to allow developing countries to designate "special products," crucial for food security, livelihood and development⁶⁰

⁵⁸ <http://www.fao.org/docrep/012/al296e/al296e00.pdf>

⁵⁹ <http://ictsd.org/i/news/bridgesweekly/99595/>

⁶⁰ International Assessment of Agricultural Knowledge, Science and Technology for Development (IAATSD), Synthesis Report, 2009, [http://www.agassessment.org/reports/IAASTD/EN/Agriculture%20at%20a%20Crossroads_Synthesis%20Report%20\(English\).pdf](http://www.agassessment.org/reports/IAASTD/EN/Agriculture%20at%20a%20Crossroads_Synthesis%20Report%20(English).pdf).

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Commission Européenne -Direction Générale Agriculture et Développement Rural
http://ec.europa.eu/agriculture/index_fr.htm

European Commission-EuropeAid Development and Cooperation
http://ec.europa.eu/europeaid/index_en.htm

Commission Européenne-Développement et Coopération EuropeAid
http://ec.europa.eu/europeaid/index_fr.htm

European Commission-Directorate General External Relations
http://ec.europa.eu/external_relations/index.htm

Commission Européenne-Direction Général Relations Extérieures
http://ec.europa.eu/external_relations/index_fr.htm

ECHO - European Commission-Humanitarian Aid
http://ec.europa.eu/echo/index_en.htm

Commission Européenne-Direction Général Aide Humanitaire et Protection Civile
http://ec.europa.eu/echo/index_fr.htm

Food Facility
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International, ACP and Bilateral Organizations

Africa development Bank
<http://www.afdb.org/en/>

Banque Africaine de Développement
<http://www.afdb.org/fr/>

AEO - African Economic Outlook
<http://www.africaneconomicoutlook.org/en/>

PEA - Perspectives Économiques en Afrique
<http://www.africaneconomicoutlook.org/fr/>

AICD-Africa Infrastructure Country Diagnostic
<http://www.infrastructureafrica.org/aicd/>

DFID -Department for International Development
<http://www.dfid.gov.uk/>

Food security information for action
<http://www.foodsec.org>

SPFS-Special Programme for Food security
<http://www.fao.org/spfs/spfs-home/en>

GDPRD -Global Donor Platform for Rural Development
<http://www.donorplatform.org>

GMFS - Global Monitoring for Food Security
<http://www.gmfs.info>

GIZ -Deutsche Gesellschaft für Internationale Zusammenarbeit
<http://www.giz.de/en/home.html>

IFAD- International Fund for Agricultural Development
<http://www.ifad.org/>

IMF-International Monetary Fund
<http://www.imf.org/external/index.htm>

FMI-Fonds Monétaire International
<http://www.imf.org/external/french/index.htm>

OECD - Organisation for Economic Co-operation and Development
http://www.oecd.org/home/0,2987,en_2649_201185_1_1_1_1_1,00.html

Organisation de coopération et de développement économiques
http://www.oecd.org/home/0,3305,fr_2649_201185_1_1_1_1_1,00.html

DCD-DAC- Development Co-operation Directorate
http://www.oecd.org/department/0,2688,en_2649_33721_1_1_1_1_1,00.html

DCD- CA- Direction de la coopération pour le développement
http://www.oecd.org/department/0,3355,fr_2649_33721_1_1_1_1_1,00.html

OECD Tax database
http://www.oecd.org/document/60/0,3343,en_2649_34533_1942460_1_1_1_37427,00&&en-USS_01DBC.html

NEPAD-New Partnership for Africa's Development
<http://www.nepad.org/>

NEPAD- Nouveau Partenariat pour le Développement de l'Afrique
<http://www.nepad.org/home/lang/fr>

PCHPA - Partnership to cut hunger and poverty in Africa
<http://www.partnership-africa.org/>

RLC - Rural finance Learning Centre
<http://www.ruralfinance.org/>

UKFG - UK Food Group
<http://www.ukfg.org.uk/>

United Nations Organizations

United Nations
<http://www.un.org/en>

Nations Unies
<http://www.un.org/fr/>

ECOSOC-United Nations Economic and Social Council
<http://www.un.org/en/ecosoc/>

ECOSOC-Nations Unies Conseil Économique et Social
<http://www.un.org/fr/ecosoc/>

MDG-Millennium Development Goals
<http://www.un.org/millenniumgoals/>

OMD-Objectifs du Millénaire pour le Développement
<http://www.un.org/fr/millenniumgoals/>

UNCTAD-United Nations conference on Trade and Development
<http://www.unctad.org/Templates/StartPage.asp?intltemID=2068&lang=1>

CNUCED-Conférence des Nation Unies sur le commerce et le développement
<http://www.unctad.org/Templates/StartPage.asp?intltemID=2068&lang=2>

UN Food Security – Global Food Security Crisis
<http://un-foodsecurity.org/>

FAO-The Food and Agriculture Organization of the United Nations
<http://www.fao.org/>

FAO-Organisation des Nations Unies pour l'Alimentation et l'Agriculture
http://www.fao.org/index_fr.htm

UNDP-United Nations Development Programme
<http://www.undp.org/>

PNUD-Programme des Nations Unies pour le développement
<http://www.undp.org/french/>

UNEP-United Nations Environment Programme
<http://www.unep.org/>

PNUE-Programme des Nations Unies pour le Développement
<http://www.unep.org/french/>

United Nations Special Rapporteur on the Right to Food – Olivier De Schutter.
<http://www.srfood.org/>

UNECA-Economic Commission for Africa
<http://www.uneca.org/>

CEA- Commission Economique pour l'Afrique
http://www.uneca.org/fr/fr_main.htm

USAID-United States Agency for International Development
<http://www.usaid.gov/>

World Bank /Agriculture and rural development
<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTARD/0,,menuPK:336688~pagePK:149018~piPK:149093~theSitePK:336682,00.html>

WPF-World Food Programme
<http://www.wfp.org/>

PAM-Programme Alimentaire Mondiale
<http://fr.wfp.org/>

WTO-World Trade Organization
<http://www.wto.org/index.htm>

OMC-Organisation Mondiale de Commerce
<http://www.wto.org/indexfr.htm>

YARA
<http://www.yara.com/>

NGOs and Networks

ACTION AID
<http://www.actionaid.org/>

AGRA-Alliance for a Green Revolution in Africa
<http://www.agra-alliance.org/>

AGRA-Alliance pour une révolution verte en Afrique
<http://www.agra-alliance.org/section/fr>

CONCORD
<http://www.concordeurope.org/Page.php?ID=4&language=eng>
<http://www.concordeurope.org/Page.php?ID=4&language=fr>

CSA – Collectif Stratégies Alimentaires
<http://www.csa-be.org>

EURODAD
<http://www.eurodad.org>
<http://www.eurodad.org/index.aspx?&LangType=103635>

FIAN-Food first Information and Action Network
http://www.fian.org/?set_language=en

OXFAM

<http://www.oxfam.org>

<http://www.oxfamsol.be/fr>

SOS Faim-Belgique

<http://www.sosfaim.be>

http://www.sosfaim.be/ong-developpement-EN-sosfaim_en-about_us.htm

UK Food Group

<http://www.ukfg.org.uk>

Research Organisations

Africa and Europe : Partnerships in Food and Farming

<http://www3.imperial.ac.uk/africanagriculturaldevelopment>

CGIAR-Consultative Group on International Agriculture Reserach

<http://www.cgiar.org>

CGIAR-Groupe Consultatif pour la Recherche Agricole Internationale

<http://www.cgiar.org/languages/lang-french.htm>

FARA-Forum for agriculture research in Africa

<http://www.fara-africa.org/>

FARA-Forum pour la recherche agricole en Afrique

<http://fr.fara-africa.org>

IIAASTD-International Assessment of Agricultural Knowledge, Science and Technology for Development

<http://www.agassessment.org>

IFPRI-International Food Policy Research Institute

<http://www.ifpri.org/34>

IFPRI-Institut International de Recherche sur les Politiques Alimentaires

<http://www.ifpri.org/french>

MOMAGRI-Mouvement pour une Organisation Mondiale de l'Agriculture.

<http://www.momagri.org/UK/momagri-home.html>

<http://www.momagri.org/FR/accueil-momagri.html>

ODI-Overseas Development Institute

<http://www.odi.org.uk>

GLOSSARY

Adaptation to Climate Change

Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects. Various types of adaptation exist, e.g. anticipatory and reactive, private and public, and autonomous and planned. Examples are raising river or coastal dikes, the substitution of more temperature-shock resistant plants for sensitive ones, etc.

Bilateral Aid

Bilateral aid is provided to developing countries and countries in transition on the Development Assistance Committee List on a country to country basis, and to institutions, normally in Britain, working in fields related to these countries.

Biodiesel

Produced from organic oils, usually from the oily fruits of crops such as rapeseed, sunflower, soya, castor, oil palm, coconut or jatropha, but also from animal fats, tallow and waste cooking oil. A second generation of biodiesel technologies synthesises diesel fuels from wood and straw. Like bioethanol, biodiesel can be used in pure form in specially adapted vehicles or blended with automotive diesel. A third generation of biodiesel technologies will use oils from algae.

Biodiversity

Contraction of biological diversity. Quantity and variability among living organisms within species (genetic diversity), between species and between ecosystems. Biodiversity is not itself an ecosystem service but underpins the supply of services. The value placed on biodiversity for its own sake is captured under the cultural ecosystem service called "ethical values".

Bioethanol

Distilled liquid produced by fermenting sugars from sugar plants and cereal crops (e.g. sugarcane, maize, sugarbeet, cassava, wheat, sorghum). A second generation of bioethanol – lignocellulosic – makes use of a range of lignin and cellulose materials such as short-rotation wood coppices and energy grasses. Bioethanol can be used in pure form in specially adapted vehicles, or blended with gasoline.

Biofuels

Liquid fuels manufactured from biomass. They are used mainly for transport or heating. They can be produced from agricultural products, and forest products, or from the biodegradable portion of industrial and municipal waste. Bioethanol and biodiesel account for more than 90% of global biofuel use. Biofuels are made from biofuel feedstocks, plant or animal materials that may be produced especially or may be by-products or wastes from other industries.

Biomass

The total quantity or mass of organic material produced by living organisms in a particular area, at a given time.

Birth and Death Rate

The annual number of births and deaths per 1,000 total population. These rates are often referred to as "crude rates" since they do not take a population's age structure into account. Thus, crude death rates in more developed countries, with a relatively large proportion of high-mortality older population, are often higher than those in less developed countries with lower life expectancy.

Civil Society Organisations

All Civic Organisations, associations and networks which occupy the "Social space" between the family and the State who come together to advocate their common interests through collective action. It includes

volunteer and charity groups, parents and teachers associations, senior citizens groups, sports clubs, arts and culture groups, faith-based groups, workers clubs and trade unions, non-profit think-tanks and "issue-based" activist groups.

Climate change

Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use. Note that the Framework Convention on Climate Change (UNFCCC), in its Article 1, defines climate change as: 'a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods'. The UNFCCC thus makes a distinction between climate change attributable to human activities altering the atmospheric composition, and climate variability attributable to natural causes.

Climate Change Mitigation

Technological change and substitution that reduce resource inputs and emissions per unit of output. Although several social, economic and technological policies would produce an emission reduction, with respect to Climate Change, mitigation means implementing policies to reduce greenhouse gas emissions and enhance sinks.

Commodity

A tangible good that has value and can be exchanged.

Desertification

Desertification is the degradation of land in arid and dry sub-humid areas due to various factors: including climatic variations and human activities

Energy

The amount of work or heat delivered. Energy is classified in a variety of types and becomes useful to human ends when it flows from one place to another or is converted from one type into another. Primary energy (also referred to as energy sources) is the energy embodied in natural resources (e.g., coal, crude oil, natural gas, uranium) that has not undergone any anthropogenic conversion. This primary energy needs to be converted and transported to become usable energy (e.g. light). Renewable energy is obtained from the continuing or repetitive currents of energy occurring in the natural environment, and includes non-carbon technologies such as solar energy, hydropower, wind, tide and waves, and geothermal heat, as well as carbon neutral technologies such as biomass. Embodied energy is the energy used to produce a material substance (such as processed metals, or building materials), taking into account energy used at the manufacturing facility (zero order), energy used in producing the materials that are used in the manufacturing facility (first order), and so on.

Famine

A famine is a widespread scarcity of food that may apply to any faunal species. This phenomenon is usually accompanied or followed by regional malnutrition, starvation, epidemic, and increased mortality.

Food access

A household's ability to acquire adequate amounts of food regularly through a combination of production, purchases, barter, borrowing, food assistance or gifts.

Food availability

The amount of food that is present in a country or area through all forms of domestic production, imports, food stocks and food aid.

Food Insecurity

Food insecurity exists when people are undernourished as a result of the physical unavailability of food, their lack of social or economic access to adequate food, and/or inadequate food utilization. Food-insecure people are those individuals whose food intake falls below their minimum calorie (energy) requirements, as well as those who exhibit physical symptoms caused by energy and nutrient deficiencies resulting from an inadequate or unbalanced diet or from the body's inability to use food effectively because of infection or disease.

Food security

A condition that exists when all people, at all times, are free from hunger. Food security involves four aspects: (1) availability; (2) access; (3) utilization; and (4) stability.

Globalization

The growing independence and interconnectedness of the modern world through increased flows of goods, services, capital, people and information. The process is driven by technological advances and reductions in the costs of integrated transactions, which spread technology and ideas, raise the share of trade in world production and increase the mobility of capital.

Greenhouse effect

Greenhouse gases effectively absorb infrared radiation, emitted by the Earth's surface, by the atmosphere itself due to the same gases, and by clouds. Atmospheric radiation is emitted to all sides, including downward to the Earth's surface. Thus greenhouse gases trap heat within the surface-troposphere system. This is called the "natural greenhouse effect." Atmospheric radiation is strongly coupled to the temperature of the level at which it is emitted. In the troposphere, the temperature generally decreases with height. Effectively, infrared radiation emitted to space originates from an altitude with a temperature of, on average, -19°C, in balance with the net incoming solar radiation, whereas the Earth's surface is kept at a much higher temperature of, on average, +14°C. An increase in the concentration of greenhouse gases leads to an increased infrared opacity of the atmosphere, and therefore to an effective radiation into space from a higher altitude at a lower temperature. This causes a radiative forcing, an imbalance that can only be compensated for by an increase of the temperature of the surface-troposphere system. This is the "enhanced greenhouse effect."

Hunger

A condition in which people lack both the macronutrients, energy and protein, and the micronutrients, vitamins and minerals for fully productive, active and healthy lives. Hunger can be a short- or long-term problem with many causes and a range of effects, from mild to severe. It can result from insufficient nutrient intake or from people's bodies failing to absorb the required nutrients – hidden hunger. Two billion people suffer from vitamin and mineral shortages. It can also result from poor food and childcare practices.

International Monetary Fund

The International Monetary Fund aims to promote international monetary cooperation, exchange stability, and orderly exchange arrangements; to foster economic growth and high levels of employment; and to provide temporary financial assistance to countries to help ease balance of payments adjustment.

Intergovernmental Panel on Climate Change (IPCC)

Established in 1988, its first report provided the initial scientific evidence of climate change.

Land use

Land use refers to the total of arrangements, activities and inputs undertaken in a certain land cover type (a set of human actions). The term land use is also used in the sense of the social and economic purposes for which land is managed (e.g., grazing, timber extraction and conservation). Land use change refers to a change in the use or management of land by humans, which may lead to a change in land cover. Land cover and land use change may have an impact on the surface albedo, evapotranspiration, sources and sinks of greenhouse gases, or other properties of the climate system and may thus have a radiative forcing and/or other impacts on climate, locally or globally.

Land-use change

A change in the use or management of land by humans, which may lead to a change in land cover. Land cover and land-use change may have an impact on the albedo, evapotranspiration, sources, and sinks of greenhouse gases, or other properties of the climate system, and may thus have an impact on climate, locally or globally.

Least Developed Country (LDC)

Least Developed Countries are those assessed as having particularly severe long-term constraints to development. Inclusion on the list of Least Developed Countries is now assessed on two main criteria: economic diversity and quality of life.

Low Income Countries

Countries in the Low Income Group, as defined in Income Groups

Middle Income Countries

Countries in the lower middle and upper middle income groups (see Income Groups).

Millennium Development Goals (MDGs)

A set of eight international development goals for 2015, adopted by the international community in the UN Millennium Declaration in September 2000, and endorsed by IMF, World Bank and OECD. Multilateral Aid

Multilateral Aid

Aid channeled through international bodies for use in or on behalf of aid recipient countries. Aid channeled through multilateral agencies is regarded as bilateral where DFID specifies the use and destination of the funds.

Natural resources - All "gifts of nature"- air, land, water, forests, wildlife, topsoil, minerals- used by people for production or for direct consumption. Can be either renewable or nonrenewable. Natural resources include natural capital plus those gifts of nature that cannot be stocked (such as sunlight) or cannot be used in production (such as picturesque landscapes).

Non-governmental organizations

These are private non-profit making bodies which are active in development work. To qualify for official support UK non-governmental organizations must be registered charities.

Official Aid

This is the equivalent, for countries on Part II of the Development Assistance Committee List, of official development assistance to countries on Part I of the Development Assistance List (i.e. developing countries). To qualify as official aid, resource flows should have the same concessional and qualitative features as official development assistance.

Official Development Assistance (ODA)

Flows of official financing administered with the promotion of the economic development and welfare of developing countries as the main objective, and which are concessional in character with a grant element of at least 25 percent (using a fixed 10 percent rate of discount). By convention, ODA flows comprise contributions of donor government agencies, at all levels, to developing countries ("bilateral ODA") and to multilateral institutions. ODA receipts comprise disbursements by bilateral donors and multilateral institutions. Lending by export credit agencies—with the pure purpose of export promotion—is excluded.

Ownership

Partner countries exercise effective leadership over their development policies and strategies and co-ordinate development actions.

Paris Declaration

The Paris Declaration is an international agreement in which over one hundred countries and organizations committed to continue to increase efforts in harmonization, alignment and managing aid for results with a set of monitorable actions and indicators.

Percent Urban

Percentage of the total population living in areas termed “urban” by that country. Countries define urban in many different ways, from population centers of 100 or more dwellings to only the population living in national and provincial capitals.

Percentage rural

Rural population as a percentage of the total population

Poverty Reduction Strategies

Poverty Reduction Strategies are prepared by developing country governments in collaboration with the World Bank and International Monetary Fund as well as civil society and development partners. These documents describe the country's macroeconomic, structural and social policies and programmes to promote growth and reduce poverty, as well as associated external financing needs and major sources of financing.

Price

The amount of money required for the exchange of a good or service to take place. Prices are an important source of market information, providing the incentive for market actors' decisions.

There are different types of prices:

- Farm-gate price: the price a farmer receives for a product at the boundary of the farm, not including transport costs or other marketing services.
- Wholesale price: the price of a good purchased from a wholesaler. Wholesalers buy large quantities of goods and resell them to retailers. The wholesale price is higher than the farm-gate price because of the marketing margin.
- Retail price: the price of a good purchased from a retailer by a consumer. The retail price is higher than the wholesale price because of the marketing margin.
- Import parity price: the price paid for an imported good at the border, not including transaction costs incurred within the importing country.
- Export parity price: the price received for an exported good at the border, including transaction costs incurred within the exporting country.

Purchasing power

The quantities of goods and services that can be bought with a given amount of money. It depends on income and prices.

Regional Development Banks

International Development Banks which serve particular regions, for example the African Development Bank or the European Bank for Reconstruction and Development

Sea level change/sea level rise

Sea level can change, both globally and locally, due to (i) changes in the shape of the ocean basins, (ii) changes in the total mass of water and (iii) changes in water density. Factors leading to sea level rise under global warming include both increases in the total mass of water from the melting of land based snow and ice, and changes in water density from an increase in ocean water temperatures and salinity changes. Relative sea level rise occurs where there is a local increase in the level of the ocean relative to the land, which might be due to ocean rise and/or land level subsidence.

Sustainable Development (SD)

The concept of sustainable development was introduced in the World Conservation Strategy (IUCN 1980) and had its roots in the concept of a sustainable society and in the management of renewable resources. Adopted by the WCED in 1987 and by the Rio Conference in 1992 as a process of change in which the

exploitation of resources, the direction of investments, the orientation of technological development and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations. SD integrates the political, social, economic and environmental dimensions.

Technical cooperation

Includes both (a) grants to nationals of aid recipient countries receiving education or training at home or abroad, and (b) payments to consultants, advisers and similar personnel as well as teachers and administrators serving in recipient countries, (including the cost of associated equipment). Assistance of this kind provided specifically to facilitate the implementation of a capital project is included indistinguishably among bilateral project and programme expenditures, and not separately identified as technical co-operation in statistics of aggregate flows.

Undernutrition

Physical manifestation of hunger resulting from inadequate intake of macro- and micronutrients or disease, and characterized by wasting, stunting or other clinical signs. These deficiencies impair body processes, such as growth, pregnancy, lactation, physical work, cognitive function, and disease resistance and recovery. It can be measured as weight for age (underweight), height for age (stunting) and height for weight (wasting).

Undernourishment

The condition of people whose dietary energy consumption is continuously below the minimum required for fully productive, active and healthy lives. It is determined using a proxy indicator that estimates whether the food available in a country is sufficient to meet the population's energy requirements, but not its protein, vitamin and mineral needs. Unlike undernutrition, undernourishment is not measured as an actual outcome.

Urban population

De facto population living in areas classified as urban according to the criteria used by each area or country. Data refer to 1 July of the year indicated and are presented in thousands.

Water consumption

Amount of extracted water irretrievably lost during its use (by evaporation and goods production). Water consumption is equal to water withdrawal minus return flow.

Water stress

A country is water stressed if the available freshwater supply relative to water withdrawals acts as an important constraint on development. In global-scale assessments, basins with water stress are often defined as having a per capita water availability below 1,000 m³/yr (based on long-term average runoff). Withdrawals exceeding 20% of renewable water supply have also been used as an indicator of water stress.

Water scarcity

Water scarcity occur when the demand for water exceeds the available amount during a certain period or when poor quality restricts its use. Scarcity can be absolute, such as in environments of low precipitation and large evapotranspiration rates.

Acronyms

AfDB	African Development Bank
AU	African Union
CARICOM	Caribbean Community and Common Market
CAADP	Comprehensive Africa Agriculture Development Programme
CGIAR	Consultative Group on International Agriculture Research
CSO	Civil society organizations
DDA	Doha Development Agenda
DFID	Department for International Development, UK
ECA	United Nations Economic Commission for Africa
ECOWAS	Economic Community of West African States
EU	European Union
EPAs	Economic Partnership Agreements
FARA	Forum for Agricultural Research in Africa
FAO	Food and Agriculture Organization of the United Nations
FIVIMS	Food Insecurity and Vulnerability Information and Mapping Systems
FPI	Food price index
FTAs	Free trade agreements
GCP	Global Carbon Project
GDP	Gross Domestic Product
GEC	Global Environmental Change
GIS	Geographic Information Systems
GNP	Gross national product
GMO	Genetically modified organism
IFAD	International Fund for Agricultural Development
IFIs	International financial institutions

IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
LAC	Latin America and the Caribbean
LDCs	Least-developed countries
MDGs	Millennium Development Goals
NEPAD	New Partnership for Africa's Development
NGOs	Non-governmental organizations
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
PRSP	Poverty reduction strategy paper
PRSC	Poverty reduction support credit
R&D	Research and Development
SADC	Southern African Development Community
SOFI	State of Food Insecurity
SSA	Sub-Saharan Africa
UN	United Nations
UNECA	United Nations Economic Commission for Africa
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNFPA	United Nations Population Fund
WB	World Bank
WFP	World Food Programme
WFS	World Food Summit
WTO	World Trade Organization