ROSA Focus

This Month's Highlight:

Adapting to climate change in the agriculture and rural development sector

The question of **adaptation to climate change** is taking an increasingly important place in international discussions. It is acknowledged as a major issue for developing countries, especially the least developed countries such as African countries, parts of Asia and certain Andean countries which are very vulnerable. In the field of development policy and projects, adaptation initiatives are multiplying. However, a big gap remains between needs and current efforts to address them.

The systemic nature of climate change and its effects creates challenges for the development of adaptation policies. Since they encompass various activities in various sectors, **multidimensional and multi-sectoral answers will be needed**. Aware of this challenge, AIDCO unit E6 is preparing a series of sector scripts that provide guidance on the links between climate change and a specific sector, together with possible responses. It may be used to provide inputs for strengthening climate change integration in ongoing and future cooperation programmes and projects. It also aims to support political dialogue between the European Commission and its partners involved in EC development activities on climate change implications.

This Month's Highlight is based on the **sector script** that focuses on **agriculture and rural development** (ARD)[1]. It identifies key issues in dealing with the effects of climate change on sectors that are relevant to rural development and also affect food security (agriculture, forestry, fisheries, livestock, extractive and processing industries and tertiary sector activities). It also highlights opportunities to contribute to climate change mitigation and adaptation. This article focuses on possible adaptation measures to be considered in the ARD sector.

The effects of climate change on agriculture and rural development

The vulnerability to the impacts of both current climate and future climate change is dependent on a wide variety of factors, not all of which are linked directly with the climate. It results from a combination of: (i) exposure to the bio-physical and socio-economic consequences of climate change (cf. Box No. 1); (ii) sensitivity to these effects (which may vary across and within populations) and iii) ability to adapt (which depends on factors such as wealth, education, access to information and technology, infrastructure, institutions and social organisation and in general on the level of development of countries).

Agriculture is widely considered as the sector most directly and significantly affected by climate change, due to its sensitivity to climate factors and dependence on natural resources. Others sectors that depend on primary production and are directly relevant to rural livelihoods, such as forestry, fisheries and livestock, are also seriously impacted. Processing industries built around primary production and extractive activities will suffer if the upstream activities on which they depend are affected by climate change. Rural development is also concerned with the development of tertiary sector activities, including tourism, and institutions at all levels.

AIDCO

ROSA is an initiative of:

COMMISSION EUROPÉENNE

N° 16 May 2009

EN

[1] Related and complementary scripts notably include those on Economic Development, Energy, Environment & Natural Resources, Governance, Infrastructure (incl. transport) and Water & Sanitation.

No. 16 – May 2009
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Box 1: How climate change might affect agriculture and rural development

The ***biophysical effects*** of climate change most likely to be relevant to ARD include the following:

- changes in (average and/or extreme) temperature and rainfall patterns;
- shifts in seasons;
- increased frequency and/or severity of droughts, floods (including coastal floods), landslides, storms, hurricanes, cyclones, heat waves, wildfires, etc.;
- increased frequency and/or severity of disease and pest outbreaks;
- raised sea levels and increased coastal erosion;
- river bank erosion;
- seasonal or permanent reduction in the availability of freshwater;
- decrease in water quality;
- loss of habitats and changes in ecosystems.

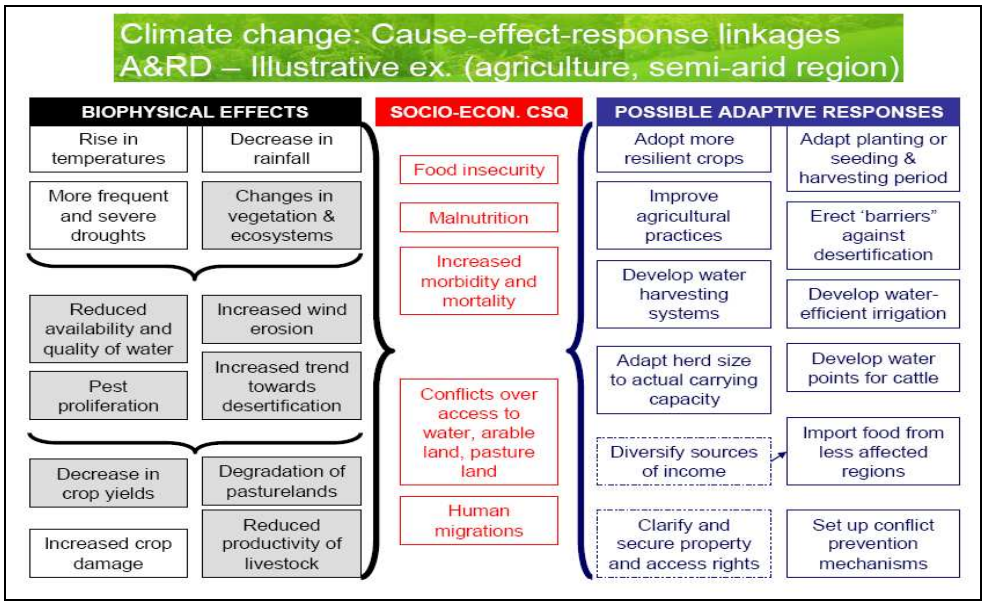
The ***socio-economic impacts*** that are most likely to be relevant to ARD include:

- increased mortality and morbidity as well as malnutrition;
- increased probability and intensity of conflicts related to access to natural resources;
- damage to or destruction of infrastructure;
- human migrations.

Adapting to climate change

The Intergovernmental Panel on Climate Change (IPCC) defines adaptation as "adjustments in natural and human systems in response to actual and expected climatic stimuli or their effects, which moderate harm or exploit beneficial opportunities". Successful adaptation can reduce vulnerability both in the short and long term by building on and strengthening existing coping mechanisms, targeting climate change vulnerability with specific measures and integrating vulnerability reduction into wider policies[2].

The **identification of potentially significant effects** is the starting point for the assessment of risks, opportunities and appropriate responses. The sector script on ARD presents illustrations of the linkages between biophysical effects of climate change, potential socio-economic consequences and possible adaptative responses. They are provided to help visualize some important cause-effect relationship and how adaptative responses relate to the identified manifestations and impacts of climate change[3]. The illustrative example for agriculture is presented below[4]. This sector has historically been confronted with climate variability and has generally shown a high level of adaptability. Many adaptation options are in extensions of existing risk management and production-enhancing techniques.



[2] Tom Mitchell and Thomas Tanner, *Adapting to climate change. Challenges and opportunities for the development community*, IDS-Tearfund, 2006.

[3] These illustrations are not meant to be comprehensive, or to be universally applicable; the simple format retained does not allow showing the multiple systemic interactions (including feedback loops) between various elements.

[4] Grey boxes show biophysical impacts that are not exclusively or even primarily caused by climate change – but are also significantly influenced by other pressures resulting from human activities. Boxes framed with a dotted line show possible responses that are in principle not under the direct control of the concerned sector authorities – but depend on the development of a cross-sectoral coordinated response.

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A distinction can be made between **coping** (reactive adaptation) and **adapting** (proactive adaptation). The first is about acting in response to observed climate changes and variability and alleviating the impacts, the latter entails anticipating future climate change by reducing the risks of taking advantage of the changes[5]. In most cases, measures aimed at reducing poverty, protecting or restoring ecosystems, diversifying livelihood strategies and improving access to essential services and resources can be expected to **enhance the population's resilience and adaptative capacity**. Nevertheless, applying a "climate change lens" to specific policies and planned interventions is needed to avoid ***"maladaptation"*** (i.e. the adoption of measures or the implementation of policies that end up increasing, rather than reducing, overall vulnerability to climate change).

Climate change adaptation measures can aim to offset negative impacts but also to take advantage of positive ones, where they exist. Adaptation should not be seen just as a constraint and an additional financial and economic burden. In almost every sector, climate change intensifies already existing problems. Climate-related concerns may provide the impetus needed to implement many of the environmental and developmental **"best practices"** previously neglected and in this way make a sector's programmes and projects both more effective and more sustainable. There are many instances in which "climate change adaptation measures" may alleviate factors that contribute to chronic vulnerability, enhance equity, reduce poverty, improve management, and generally make a positive contribution to development objectives.

Across sectors, adaptation to climate change will involve:

- strengthening systems for data collection and monitoring, knowledge management and sharing;
- using tools such as integrated models, GIS and scenarios to predict impacts and support adaptation assessments and interventions;
- raising awareness (in the general population and in specific groups) and improving access to information;
- building capacities (in the public and the private sector, at the national, regional and local levels), through the education system, the provision of training and advisory services, etc.;
- financing research, pilot projects and demonstration activities, as well as the dissemination of research results and the scaling-up of successful initiatives;
- strengthening the public and private, national, regional and local institutions involved in governance, and fostering cross-sectoral planning, cooperation and response mechanisms.

It should be noted that not all proposed measures will be relevant, feasible or appropriate everywhere. Adaptation measures should match:

- the identified (country- or location-specific) risks & opportunities;
- the magnitude and rapidity of expected changes: some proposed measures may work for relatively mild or gradual climatic and environmental changes but become ineffective beyond certain thresholds or in the presence of very sudden changes;
- physical limits, economic constraints, available resources and capacities: some options may be affordable and/or technically feasible in some specific contexts but not in others;
- other local characteristics, such as political and social limitations, culture and traditions: some proposed measures may be acceptable in some places but not others.

Finally, adaptation measures may have a better chance of success if **combined measures** are adopted, to take advantage of **possible synergies**. Given the size and complexity of the challenge, **strong rural development institutions**, at supranational, national, regional and local level, will be crucial. There is a clear need for planned adaptation policies, which strengthen the capacities of communities and local organisations, and link local adaptation needs to regional, sectoral and national policies frameworks and decision-making processes[6].

This article is based on a "sector script" on agriculture and rural development prepared the EC with the support of the Environmental Integration Advisory Services[7].

For more information:

European Commission, *Responding to climate change: Sector script. Agriculture and rural development*, 2009.

Both Ends, *Adapting to climate change: How local experiences can shape the debate*, Briefing paper, August 2007.

Tom Mitchell and Thomas Taurer, *Adapting to climate change. Challenges and opportunities for the development community*, IDS-Tearfund, 2006.

[5] Both Ends, *Adapting to climate change: How local experiences can shape the debate*, Briefing paper, August 2007.

[6] Both Ends, August 2007

[7] This script is part of a series of guidance notes primarily addressed at EC staff and looking at climate change implications on individual areas of external cooperation.

Current food security situation

Bangladesh

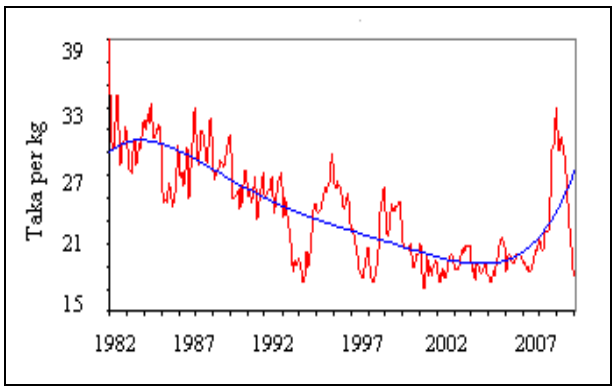
In 2007/08, Bangladesh agriculture and food security were put seriously under stress by two floods and a cyclone - involving losses of rice production - estimated at around 1.8 million tons. Over the previous decade, Bangladesh had successfully dealt with availability supply crises of even larger magnitude mainly relying on rice imports from India. However, the 2007 crises took place at time of booming international food, fuel and fertilizer prices, compounded by export restrictions that particularly impacted on the international rice market.

Food price volatility in Bangladesh

World food prices fluctuated drastically since 2007, with an 80% increase in food prices between beginning 2007 and mid-2008 followed by a 33% drop within April 2009. Prices remain, however, above their pre-price hike level, and substantially so for rice.

Though the world prices spike was only partially transmitted (Dawe, 2008)[5], the real wholesale price of rice in Bangladesh increased by 78% between January 2007 and mid-2008 - compared to 191% increase at international level. By May 2009, domestic prices fell back, in real terms, to their pre-crisis level, reverting twice for the second time in less than two years the decline experienced over the previous 25 years (cf. graph below).

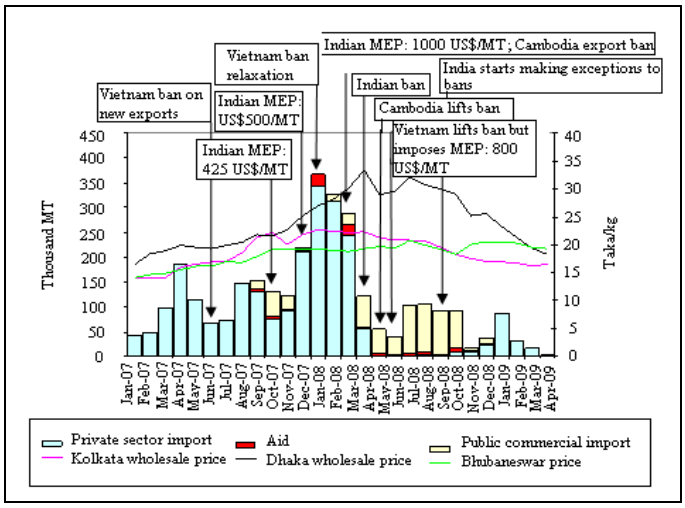
Graph 1: National wholesale rice real prices 1982-2009



Source: Government of Bangladesh

Promptly reacting to the July-September floods and the November cyclone in 2007, private imports boomed, with almost 1.6 million tons imported between August 2007 and March 2008, compared to about 0.5 million in a normal year. However, the massive import took place from India at increasing prices due to the introduction of a minimum export price which was gradually increased and finally turned into a ban in March 2008. The effect of the export restriction is clearly reflected in the wedge between prices in Bangladesh and India. Remarkably, this wedge only closed after three consecutive record harvests and confirmation of positive prospects for 2009, even though by mid-2008, domestic production and imports had more than compensated the losses of late 2007. Indeed, the non availability of competitive imports generated a strong incentive to postpone sales and maintain high inventories adequate to face possible further shocks on domestic production.

Graph 2: Evolution of imports and wholesale prices for rice



Based on data from the Government of Bangladesh and the Government of India

Rice production response and availability

Bangladesh is frequently exposed to natural calamities and relative production shortfall. Due to the high responsiveness of farmers supported by government interventions and favorable weather conditions, domestic production has increased rapidly over the last few years.

In mid-2008, the main rice crop, Boro, increased by almost 19%, compared to an average 2.8% growth since the 1980s. Rice availability from production and imports is estimated to have exceeded utilization by over 2.0 million tons by mid-2008. Spectacular increases followed for the two other rice

[5] D. Dawe (April 2008), *Have recent increases in international cereal prices been transmitted to domestic economies? The experience of seven large Asian countries*, FAO ESA Working Paper N. 08-03.

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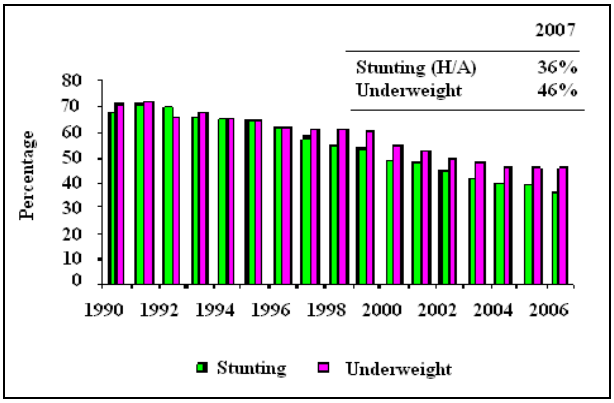
crops -Aus (+25%) and Amon (+20%) - and a further substantial inventory increase is expected for 2008/09. It is worthy to note that the 2007/08 crisis was remarkably different because private imports did not prove a reliable stabilizer of domestic supply and prices, as they had in the past, notably during the 1998 flood.

Food price impact

Unlike other largely agrarian economies, in Bangladesh, most rural households were adversely affected by the increase in prices (FAO, 2008)[6]. This can be explained by the high fragmentation of the farming structure and the small proportion of surplus farmers.

As a result, the long-term encouraging trends in the prevalence of absolute and hard core poverty were reverted: FAO/WFP[7] estimated an increase of 7.5 and 6.9 million in the number individuals consuming less than 2,122 kcal/day and 1,805 kcal/day, respectively, between 2007 and 2008. A study by BRAC[8] found an almost 50% increase in child wasting and 23% in underweight.

Graph No. 3: Prevalence of stunting and underweight among children under 6



Source: Data from NIPORT-BIDHS (Bangladesh Institute of Development Studies) and Helen Keller International (HK)/Institute of Public Health Nutrition (IPHN) - Nutrition Surveillance Project (NSP)

Key policy responses

Various measures were introduced by the Government to boost production, including an innovative subsidy on fuel for irrigation, secured availability of fertilizers and rebalanced subsidies for urea and other fertilizers. Social safety nets were expanded (a 48% or 0.8 billion US$ budget increase). Six new cash-based programs were introduced, the largest being the 100 Day Employment Generation Program (0.3 billion US$) covering two million people. Food reserves were boosted to enhance the capacity to operate safety nets, stabilize the market and cope with emergencies, and the public food stocking capacity is being increased.

The Government also adopted a Plan of Action (2008/2015) for the implementation of the National Food Policy, providing a comprehensive framework for food security interventions encompassing availability, access and nutrition. This document constitutes a reference for aligning development support to Government priorities in the spirit of the Paris.

Role of agriculture

Overall, domestic production has demonstrated strong responsiveness to high prices. However, this response can only take place with a seasonal lag, while, in presence of tight international markets, imports may not constitute a reliable source of complementary supply. This has strengthened the case for pursuing self-sufficiency in rice production, also considering that Bangladesh counts on a competitive advantage in rice import substitution.

While food prices have declined, the global economic crisis has slowed down two main motors of growth for Bangladesh -the export oriented industry and the migrants' remittance- emphasizing the key role of agriculture not only as supplier of food, but also as source of livelihood, employment, growth, and balanced nutrition through diversification. A renewed focus on agriculture aiming at intensification, diversification, sustainability and resilience through the valorisation of small and marginal farmers along the lines depicted in the World Development Report 2008[9], can contribute, also through its forward and backward linkages, to a more pro-poor economic growth, better balanced between urban and rural areas and less dependent on international economic cycles.

This article is a contribution of Ciro Fiorillo and Marie Jo A. Cortijo, FAO Chief Technical Advisor and Social Economist on the National Food Policy Capacity Strengthening Programme (NFPCSP)[10].

[6] FAO (June 2008), *Soaring food prices: Facts, perspectives, impacts and actions required*, Paper presented at the High-Level Conference on World Food Security: The challenges of climate change and bioenergy, Rome.

[7] FAO/WFP (August 2008), *Special report: FAO/WFP crop and food supply assessment mission to Bangladesh.*

[8] BRAC (January 2009), Impact of the food price hike on nutritional status of women and children, *BRAC RED Research Monograph Series n.38.*

[9] World Bank (2008) *World Development Report- Agriculture for development*.

[10] This programme is implemented by FAO and the Government of Bangladesh, with financial support from EC and USAID. Views expressed in this paper are those of the authors and do not necessarily reflect the opinions of FAO or other partners.

International news

Feedback from various events organized by the IPC partnership

At global level, the Integrated Food Security Phase Classification (IPC) is being developed and supported by a multi-agency partnership of eight food security organizations: CARE International, the Joint Research Centre (JRC), FAO, FEWS NET, Oxfam GB, Save the Children (UK&US) and WFP. The initiative has received financial support from various donors including ECHO, which is currently its largest source of funding.

In the past two months, a number of events have been organized by the IPC partnership. The overall purpose was to increase the level of ownership and institutionalization and raise awareness about basic concepts of the IPC tool and the principles that guide its implementation. These events have been targeted mainly towards donors, national governments, regional economic communities, international organizations and NGOs.

On May 12th, representatives from the EC, CIDA, DFID, SIDA and USAID met in Brussels with a representation of the IPC partnership. They were briefed about the initiative and its current state of development. It was also an opportunity to gather feedback from donors about the IPC and to discuss about future strategic orientations and funding perspectives.

On the following day, ECHO and the JRC invited colleagues from DEV, RELEX and AIDCO to meet with representatives from the IPC partnership. The purpose of the meeting was to explain in detail the IPC tool and its implementation process.

During the month of June, three awareness raising events were organized. The first two were held on the 7th in Washington D.C. and on the 15th in Brussels. Their target audiences were international NGOs with activities in the food security domain. More than 30 European and North American organizations participated in total. The third information session took place in Johannesburg on the 24th and gathered representatives from NGOs, country offices, regional organizations and national governments.

A workshop was organized on June 25th and 26th in Johannesburg, to engage with and consult IPC practitioners, review IPC implementation in the regions and agree the way forward. More than seventy representatives from a multiplicity of food security stakeholders from both Sub-Saharan Africa and the global level attended this meeting. The meeting confirmed the relevance of the IPC across the region and continuing progress in institutionalization amongst multiple agencies at national, regional and global levels. The key challenges to its further adoption were identified and responses proposed.

For more information:
http://www.ipcinfo.org/news.php
ROSA's website: Looking back on past events

Feedback from donors meeting on nutrition

Over the past year, the EC and many other agencies are in the process of reassessing their positions and strategies with regard to their nutrition support. As a concrete step towards better donor collaboration and coordination on nutrition, the EC together with the UK and France organized a donors seminar on June 15th in Brussels. It counted with the participation of several European donors, UN agencies, research centres, NGOs and technical experts.

The main outcomes of the seminar were: i) greater collaboration and coordination amongst donors; ii) more strategic support to nutrition at national and international levels from EU donors; and, iii) agreement on options to provide effective support to a reform of the global coordination and leadership in nutrition.

The meeting was held in two sessions. The morning session provided an opportunity to gain a better understanding of donors' nutrition action plans and strategies and to discuss about different options to provide effective support to the reform of the global coordination. The afternoon session was attended by European donors to continue the discussions on coordination and to review existing and institutional setups to help identify adequate arrangements for nutrition within EU donors.

For more information:
ROSA's website: Looking back on past events

This bulletin was written by the GRET team in charge of animating ROSA (Operational Food Security Network). It is an initiative of AIDCO E6 (Thematic support for food security, rural development and environment) in collaboration with AIDCO G4 (Training and knowledge management).The viewpoints expressed do not in any case represent the official European Commission viewpoint.

Contacts: Dominique Blariaux, Héloïse Troc, AIDCO/E6