

ROSA Focus

This Month's Highlight: Food security issues related to climate change

Global warming is already underway. Current levels of greenhouse gases (380 ppm carbon dioxide equivalent) may very quickly exceed the danger limit of 450 ppm, which would mean a 2°C temperature rise. Exceeding this limit could lead to irreversible effects on ecosystems, water resources, food and health. Developing countries will be most affected, for two reasons. One is their geographical situation and their economies, which are highly dependent on the climate, and the other is the limited human, institutional and financial resources available to deal with these issues. The effects of climate change are likely to aggravate the existing problems, such as large populations, deforestation and land deterioration, which already make them vulnerable. Given the size of the problem, institutional, technical, economic and legal solutions must be set up to reduce greenhouse gas emissions and help the most vulnerable groups to cope with the existing and future impacts.

This article presents the main issues for developing countries, notably in terms of food security, and the solutions needed to reduce vulnerability and improve resilience to deal with the negative effects of climate change.

Developing countries will suffer the most from climate change


Threats posed by climate change differ in different regions. Tropical and subtropical countries and desert regions will be more affected than more northerly regions. Coastal areas, and particularly islands, are very vulnerable.

Some countries are already feeling the effects of extreme weather conditions such as floods, hurricanes and droughts. The Sahel countries are particularly badly hit. According to statistics, West Africa is the region in which rainfall has been most irregular for the last century.

Box No. 1: Climate extremes in West Africa

Over the last thirty years or so, there has been a long-term drought despite the monsoons (June to September). This is the only rainy season in the region, and so the lives of many people depend on it. Rainfall is about 30% lower than usual. Some rivers have shrunk dramatically, such as the Niger, which is flowing at 60% of its previous rate. The monsoon season in some countries such as Mali, Benin and Niger is changing. Improved planning is needed to lessen the impact of these phenomena on people and the environment.

Source: Revue La recherche sur le développement (March 2007)

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Climate change: A vulnerability amplifier

Climate change is going to increase the existing economic, environmental, social and institutional vulnerability of these countries (cf. Box No. 2). Moreover, the combination of slow economic growth and great inequality make a large part of the population vulnerable to economic and natural shocks.

Global warming and the change in rainfall patterns will have major socio-economic impacts. In low-lying coastal areas, rising sea levels will make soil salty and arable land non-productive. According to the 2007 report by the Intergovernmental Panel on Climate Change (IPPC), agricultural yields will decrease in arid and tropical areas. Food insecurity in Africa in particular could increase because agricultural areas are shrinking and yields are dropping, especially in dry areas. In some countries, yields of non-irrigated crops could be reduced by over 50% in 2020.

Box No. 2: Structural vulnerability

Economic vulnerability: The economies of developing countries are generally poorly diversified and dependent on the primary sector. This sector, based on the use of natural resources and the land, is obviously very climate-dependent.

Environmental vulnerability: Developing countries are exposed to environmental pressure (soil deterioration, overexploitation of resources) notably due to the large population growth, poor human and technical means for managing natural resources, and the current climate conditions.

Social vulnerability: People in developing countries suffer from poor hygiene, spread of disease and poor sanitation. The low levels of education of the poorest groups can also be a factor in limiting their ability to develop new production methods or diversify the sources of income in the case of a climate shock.

Institutional vulnerability: Developing countries have very few institutions capable of dealing with economic, social or environmental disruptions that could occur with climate change. Environmental regulations and adaptive measures will be harder to implement.

Developing countries also have little accurate information on the climate. Their ability to observe and understand climate phenomena is relatively poor.

According to the IPPC report, the ability to adapt to climate changes varies enormously from one region to another. In Africa, for example, it remains limited because of the low GDP per inhabitant, generalised poverty, unequal land distribution and low levels of education. This is compounded by the lack of social protection, particularly after poor harvests. Individual strategies implemented to cope with desertification are currently showing certain limits. There is still a strong dependence on rainfall-based agriculture. As for Asia, the capacity to adapt is increasing in some countries, but it is still hindered by limited resources, poorly developed infrastructures, inequalities in income, weak institutions and outdated technology.

What solutions are there to the climate change?

Two types of solutions exist to avoid or limit damage caused by climate change. **Attenuation** covers all actions aiming to limit greenhouse gas levels, because that determines the size and speed of climate change. Efforts to attenuate the effects must come first from industrialised countries, which emit the largest per capita amounts of greenhouse gas. This is recognised in the Climate Change Convention and the Kyoto Protocol (cf. below). Developing countries, and in particular the emerging countries, are required to keep the increase in carbon and energy use to reasonable levels. However, this transition presupposes financial backing and technology transfers. These questions are central to international negotiations on climate change, and also to relationships between industrialised countries and their partners from South.

Adaptation consists in decreasing the impact of present and future climate variability on ecosystems and humans. The aim is to set up preventive or ex-post measures to improve the resilience of groups of people facing the negative effects of climate change. One of the main issues is the capacity to anticipate these phenomena in order to adjust policies, technical choices, infrastructures and land use to adapt them to increased climatic risks. The question of adaptation is becoming increasingly important in international discussions. It is critical for developing countries, in particular the LDC. Adaptation is closely linked to the countries' level of development (existence and application of public policies for health, water, basic infrastructures...). This makes it very difficult to separate adaptation from development.

The need to adapt and consolidate the multilateral regime

Limiting global warming requires considerable efforts to reduce emissions while increasing the means for adaptation of the most vulnerable countries and groups of people. Instruments have gradually been introduced via the United Nations Framework Convention and the Kyoto Protocol (cf. Box No. 3). Some of these instruments are specifically for the developing countries, notably the clean development mechanism, or the various funds for financing emission reduction, technology transfer or adaptation projects.

Box No. 3: The multilateral framework for combating climate change

The **United Nations Framework Convention on Climate Change** came into force in 1994. The aim of the Convention is to stabilise the concentration of greenhouse gases in order to avoid major changes in the climate within a *"short enough time to allow ecosystems to adapt naturally to the climatic changes, not threaten food production and allow continuing sustainable economic development."* It recognises the principle of *"common but differentiated responsibilities"* for industrialised and developing countries. This Convention laid the foundations for a multilateral regime to combat climate change, but contained no measurable goals.

The **Kyoto Protocol** was adopted in December 1997, after more than two years of negotiations. It is backed by the Convention. Through the Protocol, industrialised countries agreed to reduce their greenhouse gas emissions with measurable goals between 2008 and 2012. The Kyoto Protocol came into force in February 2005. The United States (which is responsible for one quarter of the world's CO₂ emissions) was the only industrialised country not to sign the Protocol.

Since the Convention on Climate Change and the Kyoto Protocol, the context has changed. Some emerging countries, such as China, India and Brazil, have begun to emit larger proportions of the world's greenhouse gases. The increased participation of these countries in the multilateral regime has become a major issue. At the same time, the United States still refuse to do anything about reducing their emissions. Therefore the multilateral regime must change to take account of this new context.

With this in mind, during the 13th Conference of Convention Partners on Climate Change, (Bali, December 2007), the industrialised and developing countries agreed to negotiate a new agreement on the multilateral regime after 2012. It should be signed by the end of 2009. From 1st to 12th December this year, the international community is meeting in Poznan (Poland) for the 14th Conference. This is a key meeting, not only for an update on the implementation of the Convention and the Protocol, but also for laying the foundations for the future climate agreement after 2012.

An approach on several levels

Taking account of climate change requires a multi-level approach because of the **links that exist between attenuation adaptation and development**. Attenuation and adaptation measures have impacts on development activities, and vice versa. It is obvious that development actions that are not directly climate related can have positive or negative consequences on emission reduction and on adaptation. As for adaptation, poverty reduction policies based on education, health and nutrition indirectly reduce people's vulnerability and increase their resilience to climate change. Although adaptation to climate changes is not new, the risk of increased climate variation must be incorporated into development strategies, policies and projects.

Although there is a global dimension to attenuation, the impacts of climate change are very strong locally in rural and urban areas. Consequently, local institutions have a major role to play in terms of adaptation. Hence the need to better understand the mechanisms for reducing vulnerability and adapting to climate change.

This article was written with the collaboration of Anne Chetaille, programmer officer at GRET.

For more information:

IPPC, Climate change. Synthesis report, 4th assessment report 2007.

Stéphanie Margot and Anne Chetaille, *Le développement à l'épreuve du changement climatique*, (Development put to the test by climate change) April 2007.

Anne Chetaille, *De l'urgence climatique à une réponse politique forte, une route sinueuse*, (From climate emergency to a strong political solution – a long, winding road) January 2008.

Current food security situation

Remarkable progress since the end of the civil war

Since 1992, Mozambique has made significant progress in economic development and poverty reduction. The country's average growth rate was 8% from 2000 to 2006, one of the best performances in Sub-Saharan Africa. This trend is mainly due to the large growth of foreign investment and the massive support of international donors¹. The growth has slowed slightly since 2007, because of the increase in oil prices and a drop in non-traditional exports.

Mozambique is still one of the poorest countries in the world. But poverty has decreased significantly over the last decade. The poverty rate decreased from 69% in 1996/97 to 54% in 2002/03. No data from surveys conducted in households has been available since 2003 for updating the poverty rate. However, according to a study done by Eduardo Mondlane University in 2006, the rate at which poverty is decreasing seems to be slowing, with large regional differences².

Major obstacles remain

Despite significant progress in reducing the poverty rate, the country faces major obstacles. Almost 80% of people live in rural areas, and the economy is very dependant on farming (30% of the GDP and 80% of exports), so they are particularly **vulnerable to natural disasters** (cyclones, floods, droughts) that occur regularly in the country.

Since 1992, cereal production has more than doubled. But Mozambique remains dependant on imports to satisfy consumer needs, particularly in the Centre and South of the country³. Agricultural production is concentrated in the North. Nevertheless, the lack of adequate means of transport and their high cost is a barrier for supplying regions in deficit.

¹ In 2008, Official Development Assistance funded more than 50% of government spending. The level of donations should drop over time, whence the urgency to find additional funds from taxation (BAfD/OECD, 2008).

² Poverty rates increased in the city and province of Maputo. This situation has been aggravated by the rising food prices.

³ Imports supplied 20% of national consumption. These figures underestimate imports/exports from neighbouring countries (informal circuits) which have increased significantly over the last few years.

Southern Africa - Mozambique

The North-South links needed in the country are poor. The surplus of production in the Northern regions is usually exported to neighbouring countries while Southern regions imported a large part of food from South Africa.

Malnutrition rates are very high, with over 40% of children suffering from chronic malnutrition. A recent World Bank report⁴ talks of a "nutrition paradox", in that while food availability has been increasing all over the country, chronic malnutrition has not decreased, and has even increased in some areas (Zambezi, Sofala, Inhambane, Gaza and Maputo Provinces). The rate of acute malnutrition or **wasting remains** (4.5% overall, 1.6% severe) remains fairly stable all over the country.

These problems are aggravated by the high HIV/AIDS incidence, poor eating habits and lack of access to basic services such as health, drinking water and sanitation. In 2004, **the prevalence of HIV/AIDS** was evaluated at 16% of the adult population, a very high level, which the Health Ministry estimates not to have changed since then.

Box No. 1: Interface between HIV/AIDS and food security

A two-way relationship exists between HIV/AIDS and food security: HIV/AIDS is both a determining factor and a result of food insecurity.

The effect of HIV/AIDS on food security is felt both in the short and long term. The epidemic impoverishes families through the loss of labour for agriculture and other income generating activities; increased healthcare expenses; less capacity for caring for children and other vulnerable people; erosion of assets.

AIDS also increases long term vulnerability because of its systemic impact on the social and economic structures and institutions of seriously affected countries.

HIV/AIDS is yet another of the many factors that determine food security. So it is vital to react to improve food security and use short and long term actions.

Source: Text adapted from the FAO (2003)

⁴ World Bank, Beating the Odds: Sustaining inclusion in a growing economy, 2007.

Assessment of the food and nutrition situation in 2007/2008

Since the end of 2007, Mozambique has undergone several natural disasters: floods on the Zambezi, Pongue, Buzi and Save rivers, the cyclone Favio, which affected the coastal areas of Nampula and Zambezi Provinces, and lack of rainfall in the centre and south of the country. The increase in food prices and the lack of water, particularly in the south, have aggravated food insecurity. A World Bank study (May 2008) shows that the agricultural regions in the north were less affected by this increase, because they mainly produce their own staples for consumption.

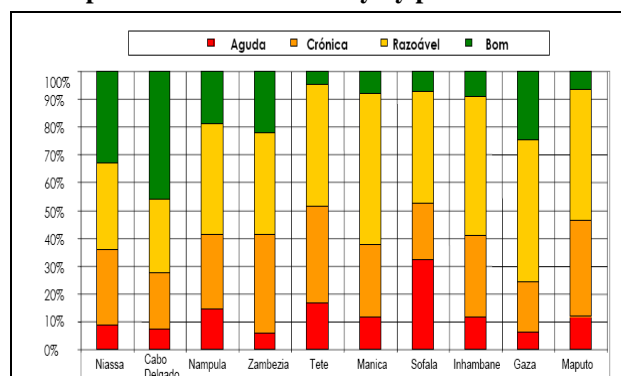
In April-May 2008, the SETSAN (Food Security and Nutrition Technical Secretariat) carried out an assessment of food and nutrition vulnerability. According to this, one third of households in Mozambique are in a **situation of chronic food insecurity**. This largely reflects poverty levels and structural problems of access to food⁵. The worst affected regions are Zambezi (35.6%), Tete (34.6%), Maputo (34.4%) and Inhambane (29.5%), as shown in Graph No. 1.

Several natural disasters struck Inhambane and Tete Provinces over the last ten years. This substantially reduced the ability of households to deal with external shocks. Added to this are the problems of poverty, low agricultural production and high prevalence of HIV/AIDS⁶.

The problems are complex for Zambezi Province. This province was less affected by climate shocks (although there were floods in several districts of the Zambezi Valley). Production levels are relatively high, with a great agricultural potential. Nevertheless, social indicators remain low with a 45% prevalence of poverty, a chronic malnutrition level of 41% and a HIV/AIDS prevalence of 19%.

In Maputo Province, roughly half the population is in a situation of food insecurity. The main factors are irregular rainfall which has affected agriculture over the last five years, the absence of alternative sources of income and relatively high prices of food.

Graph No. 1: Food insecurity by province



Source: SETSAN, May 2008

Despite significant progress, the situation remains precarious. In its last report, SETSAN provides some recommendations for implementing measures directed to reducing effectively chronic food insecurity, particularly strengthening social protection mechanisms aimed at target groups (families headed by women, the elderly, vulnerable families and people living with AIDS) and diversifying sources of income.

This article was written with the collaboration of the EC Delegation in Mozambique

For more information:

Fews Net/USAID, Mozambique food security update, October 2008.

SETSAN, Relatório da Monitoria da Segurança Alimentar e Nutricional em Moçambique, May 2008.

ODI, Food security options in Mozambique: one country, two words?, November 2004,

⁵ Chronic food insecurity reflects a lasting inability to access adequate and nourishing food. Acute food insecurity is a temporary lack of food and caused by shocks such as droughts, floods and a rise in food prices (SETSAN).

⁶ This is largely caused by the migration of labour to the mines South Africa and Zimbabwe.

International news

24th annual meeting of the Food Crisis Prevention Network (FCPN)

The 24th annual meeting of the FCPN, hosted by Senegal, was held from 25th to 28th November this year. The Network meets yearly in plenary session to prevent food crises in the Sahel, notably by ringing alarm bells early enough for an appropriate response to be implemented in good time. It allows experts and directors of regional and international organisations, NGOs and donor representatives to look at the results of the current growing season, and discuss some recent points of interest to all parties, and particularly policies and strategies. This year, the central theme was "the market's role and its importance in the promotion of food security in the Sahel and in West Africa".

Discussions on the situation for the 2008/2009 season showed that, for the moment, the availability of food is globally satisfactory in the whole region. Markets are well supplied (except for a few localised pockets). However, although prices of local cereals have dropped since the start of the harvest, they are still higher than the seasonal average, particularly for rice, despite the worldwide downward trend. This high price can be considered as an opportunity for producers, but without adequate measures, the merchants are likely to be the ones who profit the most. Unlike producers, they have storage facilities, and have no need of ready cash immediately. Nevertheless, the price is an issue for both rural and urban poor consumers.

West African regional agricultural policy

The Presidency of the ECOWAS Commission and the French Presidency of the European Union, in dialogue with the EC and the World Bank, are organising a seminar in Paris on 9th December this year.

This meeting aims to discuss an approach common to both the region and the international community on agriculture and food issues in West Africa and how to deal with them, on implementing the ECOWAP and to propose a time-frame and working method for donors to materialise their support for implementing the ECOWAP. More specifically, they will:

- discuss how ECOWAS member state policies align with the directions taken by ECOWAP, bearing in mind the emergency measures taken by some states in term of trade, storage and boosting production;
- start talks between the region and the international community on a limited number of regional intervention instruments;
- investigate the lessons learned by regional economic organisations who already have some experience in implementing agricultural policies, such as Europe;
- ensure that support given to the various regional initiatives is consistent; discuss national and regional investment programmes, programmes for boosting agricultural production, a regional offensive, regional economic programmes, measures for supporting EPAs, market access and Common External Tariff offers.

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.