

BLOG POST November 16th 2015

Agriculture: what needs to change?

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 Reading time: 5 min

Climate change is a direct threat to food security in the countries of the South. Adapting to this change implies reinventing agricultural models. But in what way?

Agriculture is an economic sector that is particularly vulnerable to climate change, and this situation means that policies implemented in this field need to be redesigned. In many regions, such as the Mediterranean and sub-Saharan Africa, yield losses are expected from 2040 onwards. In the Sahel belt, if global emissions are not reduced, yields per hectare could be halved by the end of the century. Among other factors, these losses will be the result of higher average annual temperatures, reduced rainfall, and an increase in the frequency and intensity of droughts. How can agriculture play the key role expected of it in the development strategies of these countries, faced with the challenge of climate change and these productivity losses? At present, however, the challenge facing agriculture is more

one of employment than of climate change. In numerous developing countries, many of which are still experiencing rapid population growth, the rural agricultural world remains the basis of economic growth. In sub-Saharan Africa, 330 million young people will enter the job market by 2025, 200 million of whom live in rural areas. The other economic sectors, industry and services, will fall far short of providing enough jobs, either because they are underdeveloped – this is true throughout most of sub-Saharan Africa –, or because they have already reached high levels of productivity and offer few job opportunities, or only at highly qualified levels, as is the case in India and China. It is therefore crucial to avoid reproducing in these countries the European or North American models, where farm mechanisation and expansion have resulted in plummeting labour requirements. Putting employment back at the heart of agricultural policy should therefore be a key area of development strategy in these countries. **Is agroecology the ultimate solution?** In addition to the issue of employment, agricultural policy also needs to anticipate that of resources. It must integrate the long-term increase in fossil fuel prices, which impacts on nitrogen fertiliser prices. It is also crucial to preserve or restore the productive bases of agriculture: water availability, soil quality, ecosystem diversity, etc. Today, agricultural projects should no longer be able to neglect environmental variables and reproduce the “green revolution” models of the 1960s. The widespread use of chemical fertilisers, pesticides, improved seeds, mechanisation and large-scale irrigation have certainly radically increased output in many countries of the South, but at the cost of serious, sometimes irreversible environmental damage such as soil salinisation in the Punjab. The focus on “adaptation” to climate change cannot therefore overlook the issue of developing, in each country, a genuine policy for agricultural sector transformation that addresses not only the social challenge but also the environmental challenge. What are the solutions? For many civil society stakeholders, agroecology, which is labour intensive and harnesses natural resources without destroying them, is the best option available. For many governments and economic stakeholders, however, increasing yields through chemical inputs is a critical first step to ensuring food security and guaranteeing the economic viability of farms. Once these farms have been consolidated, environmental challenges and job creation can then be tackled. These diametrically opposed approaches must be considered in the light of climate risks. Two major impacts of climate warming will be particularly strongly felt in regions where agriculture remains central to the economy: the increased frequency of extreme events (droughts, floods, heat waves, cyclones) and gradual changes in climate conditions (which affect plant growth, water availability, and the presence of plant and animal diseases, among others). **Resilience and anticipation** Choosing a particular technical and economic model to adapt to climate warming should be assessed according to two criteria. First, resilience to climate or economic shocks: for example, is it better to specialise in one type of crop whose resistance to climate variability has been improved, or to focus on crop diversification? And second, the capacity to evolve. It is essential to anticipate gradual changes in climate conditions in order to avoid developing today supply chains that will be in great difficulty in the future, due to water shortages for example, for which any investment will consequently be wasted. Climate change thus adds a new level of complexity to the serious problem of rural and agricultural employment in the countries of the South. Between agroecology and the rational use of developments in conventional agriculture, it is impossible to say, in all circumstances, which strategy is the best. It is nevertheless clear that dependence on fossil fuels and the specialisation inherent to the green revolution model are not a viable path for the future, whereas agroecology, which is labour intensive and based on crop diversification, has many benefits to address the multiplicity and systemic nature of these challenges. International cooperation on adaptation to climate change therefore needs to move beyond the scale of agricultural development projects to which it is often limited. It needs to do more to support the states concerned in informing their own discussions on the policies to be implemented, by

analysing the different options and their economic, social and environmental impacts, according to possible climate change scenarios. There is still a great deal to be done in this field. **What is adaptation to climate change?** **ALEXANDRE MAGNAN** According to the definition given by the IPCC, adaptation to climate change is an “adjustment in natural or human systems to a new or changing environment”. Thus, the fundamental challenge of adaptation consists, for a given system (a society, a territory, an economic sector, etc.), in seeking first to limit the impacts of extreme events which we know will become more intense and frequent, but which we will never be able to predict well in advance (cyclones, droughts, etc.) and, second, to ensure protection against the impacts of gradual, more predictable changes, such as sea level rise. Adaptation thus relates to the complementary concepts of resilience and anticipation. Although human societies have adapted to climate change over the last three million years, this long-term adaptive capacity (spanning periods of at least 1 000 years) sheds only very limited light on the current situation. First, because climate change is now happening at an unprecedented rate (centuries or even decades). And second, because the current level of technological and economic development is unparalleled in human history, which provides scope in terms of resilience and anticipation, but also implies potential weaknesses.

[Article in french in the No 17 of Alternatives Internationales](#)

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