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**FOOD SECURITY AND  
AGRICULTURAL DEVELOPMENT  
IN SUB-SAHARAN AFRICA**

**Building a case for more public support**



**BACKGROUND DOCUMENT**

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## **FOREWORD**

It has been the case that most African Governments have been taxing farmers and subsidizing urban consumers, while at the same time doing very little in terms of policy and investment to favour the rural sector. The ratio of investment to GDP in most Sub-Saharan Africa (SSA) has been well below the ratios attained in Latin America and Asia. Similarly, Africa's private sector investment in agriculture has been curtailed by a combination of financial capacity, and lack of security, financial services and regulatory framework.

However, Africa needs to investment more and encourage increased private sector investment - both domestic and external - to ensure agriculture based economic growth and sustain it. This notion seems to have been understood by African Governments when the Heads of State and Governments have, in approving the New Economic Partnership for Africa's Development (NEPAD) Comprehensive Africa Agriculture Development Programme (CAADP) at their Summit in Maputo in 2003, committed themselves to increase resource allocation to agriculture to 10 percent of the national budget by 2008. In this context, the Policy Assistance Unit (SAFP) of the FAO Subregional Office for East and Southern Africa, in collaboration with the Agriculture Policy Support Service (TCAS) of the FAO Policy Assistance Division (TCA) embarked in 2004 on a study to analyze the status of food security and agricultural development.

Implementing the Maputo commitment of budgetary increase is however likely to be difficult in view of resource constraints of counties against daunting challenges, especially in the public service sectors. One of the main objectives of the study was therefore to provide objective rationale why agriculture should be supported in the African context.

The study had four components: (a) preparation of 10 country studies representing Central, East, West and Southern Africa, (b) preparation of a background document that looks into the conceptual issues and development paradigms and the prioritization of agriculture, review of relevant lessons from developed and developing countries who have successfully eliminated food insecurity, (c) organization of high-level workshop to discuss the findings of the study and (d) preparation of a report based on the above as well as extensive desk based research by Senior FAO Officers. The paper represents the Background document which attempts to provide conceptual and empirical underpinning to the overall study.

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## EXECUTIVE SUMMARY

### **Food insecurity in sub-Saharan Africa: a chronic widespread condition, whose main cause is low household income.**

Almost 33 percent of the African population, some 200 million people, are malnourished, which is the highest prevalence in the world. The number of malnourished Africans has almost doubled since the late 1960s, increasing roughly at the same rate as population growth, a fact that indicates a lack of successful strategies in poverty alleviation and food security improvement. Food crises occur when shocks such as drought, flood, pests, economic downturns or conflicts harm the livelihoods of this chronically insecure population. Annually, around 30 million Africans are affected.

The analysis of average food availability among a representative set of African countries confirms this distressing situation and also reveals a high degree of heterogeneity among countries. In one third of African countries, the average daily caloric intake availability is below the recommended level of 2 100 kcal (Ethiopia, Kenya, Rwanda, and Tanzania in East Africa; and Angola, Madagascar, Mozambique, and Zambia in Southern Africa; Sierra Leone in West Africa). In a few countries (Burundi, Democratic Republic of the Congo, Eritrea, and Somalia) the mean availability is below 1 800 kcal, which is considered the minimum intake level. In some countries (Botswana, Burundi, DR Congo, Gambia, Liberia, Madagascar, Senegal, Sierra Leone, Somalia, Tanzania, and Zambia), the situation has been deteriorating over the last ten years while in others (Ghana, Malawi and Nigeria) aggregate figures show some improvement. Less than 50 percent of sub-Saharan African countries have levels of malnutrition under 30 percent, and only three of them are under 10 percent (Gabon, Namibia and Nigeria). Despite economic growth and sufficient aggregate food availability, some countries still display increasing malnutrition, as measured by the prevalence of stunted growth among children. Such is the case in Mali.

Average food availability is calculated by adding domestic production, imports and food aid, then subtracting exports. Statistical analysis of several countries shows the marginal impact of exports. Inadequate average food availability is consequently the result of insufficient domestic production and imports.

Analysis of domestic production and external trade shows a striking lack of recourse to imports to provide adequate food availability in situations where domestic production is insufficient. Poverty statistics, as well as national income trends (as measured by GDP) indicate that the food insecurity problem is related to "access": food-insecure households do not have the means to pay the prices for imports. But in a world where adequate food supply is globally available, trade should in fact provide deficit countries with the volume of food required to feed their populations. Also, increased income should generate a strong rise in food demand among food-insecure households. If this is not the case, and no bottleneck is restricting access to international trade, then the problem stems from the lack of solvent demand due to insufficient income.

### **Low labour productivity and non-solvent demand as primary roots of insufficient income**

The persistence of chronic, widespread food insecurity in Africa raises the difficult question of why the household income of a large share of the population is so low. Factors constraining economic growth and job opportunities, especially among low-income households, need to be examined.



At the national level, income is defined as the sum of household incomes (including remittances). Among poor households, income is generated by selling goods produced at home and by selling labour. If income is not sufficient to meet the basic needs of the household, several factors may be responsible. Selling goods may not produce sufficient income because products are not competitively priced. Therefore, low household income can be directly related to **low labour productivity**. But the level of sales may also be insufficient due to the **lack of solvent demand**, which is directly related to low income. The lack of solvent demand in turn explains the lack of economic growth and job opportunities. Production factors, such as labour, may be underutilized as a result.

Several root causes are responsible for low labour productivity. The **lack of public goods** in Africa is now seen as a main cause of insufficient pro-poor growth. Public investment in soil and water management would allow rural populations to cope with droughts and floods as well as to improve yields. Transport infrastructure is another problem: already in the 1960s, the level of transport in Africa was far lower than in Asia, partly because of too low a population density. The fact that this situation still exists, despite the huge amount of development aid devoted to the problem between the 1960s and the beginning of the 1980s may be attributed to faulty project definition, poorly conceived planning systems, lack of coordination between ministries and donors and a lack of coordination between public and private investment. In addition, there has been an enormous cut in public expenditures since the beginning of the 1980s as a result of the decline in aid combined with macroeconomic stabilization policies.

The **low level of capital endowment** per capita reflects the risks faced by farmers, traders and processors. Farmers face both yield and output price instability. Output price instability not only affects income, but also ex post returns on investments in farming, marketing and processing. All participants react to the uncertainty induced by market instability by reducing their level of investment, in both physical and human capital. This phenomenon is particularly prevalent among poor farmers, who are highly risk-averse and do not resort credit to ease consumption and investment difficulties. The inadequacy of public goods, such as irrigation facilities, extension services and roads, further decreases the profitability of private investment and discourages investors and other private actors from investing in the agricultural sector.

Counterintuitively, perhaps, the decline in the measured capital stock per worker in Africa is not the primary source of the decrease in output per worker in sub-Saharan Africa from 1980 to 2000. It is not so much the limited growth of capital per worker during the last 20 years as its inadequacy to Africa production constraints (such as land available per worker, weather conditions and market institutions) that hampers productivity growth. **Inadequate technical agendas** in agriculture, with for example the very low level of inputs, can be partly explained by limited access to markets for agricultural inputs and outputs as well as for non-agricultural goods, and partly by the lack of adequate public research on African agriculture and the dearth of efficient agricultural services (extension and credit, for example).

The **lack of scale effect**, mainly in agroprocessing and marketing activities, is directly related to physical isolation, exacerbated by the absence of good-quality roads. Farmers and other actors face a very thin market with very high transaction costs. This considerably reduces the benefits of trade and discourages economic activity. Risk considerations also lead to a **lack of specialization**, because one main strategy to cope with the uncertainty of output prices and yields is to diversify production activities.

Insufficient solvent demand also has several root causes. The lack of income among a large share of the population depresses solvent demand. This is directly related to low labour productivity and the lack of job opportunities. In addition, imported goods are often preferred

by the richest consumers, and exports subsidies and food aid have a negative impact on agricultural output prices and divert part of the local demand to foreign supply. The burden of debt repayment also affects the national income and thus is another factor in low solvent demand. As already mentioned, the drastic cut in public expenditures since the mid-1980s, has led to a sharp drop in public demand. At the same time, **foreign demand** is hampered by high transaction costs, isolation of local markets from the rest of the world, low competitiveness of local goods due to low productivity and foreign market protection (e.g. through tariffs and nontariff barriers).

Low productivity and low demand are linked by a circular relationship. Early development theorists used to wonder why income growth in economically backward areas was stagnant. Starting with the demand size of the problem, the most documented determinants are transport facilities, which Adam Smith singled out for special emphasis. Reductions in transport costs enlarge markets, in the economic as well as the geographical sense; but reductions in *any* cost of production tend to have the same effect. Thus, the size of the market is determined by the general level of productivity and by the level of domestic factors used. Capacity to *buy* means capacity to *produce*. In turn, the level of productivity depends largely on the use of capital in production. But what if the use of capital is inhibited by the small size of the market? A vicious circle results. What is the way out?

### **Using policy as a way out of the circle linking low productivity and the small size of the market**

The root causes of chronic food insecurity should be turned into priority objectives for development. Policy-makers whose countries have been facing chronic food insecurity should, first of all, aim to improve productivity, and second, to boost demand for the products and labour of food-insecure households. The first objective is widely accepted among policy advisers and academics, except for external (foreign) demand for labour. The second goal is far more neglected, and indeed often ignored. When applied to the rural sector, it goes beyond agricultural policy *per se* and involves clearcut choices in terms of growth and development policies. **Refocusing on demand growth, both local and external, should be a top priority for any development policy that aims to enhance food security.**

The review of policy measures actually implemented in African countries highlights the vanishing of agricultural policies in their OECD or post-independence acceptance. With the exception of some subsidies on inputs in few Southern African countries, cotton in some West African countries, some minimum price guarantee schemes for maize in some African countries, VAT exemptions, limited import tariffs (although far below the banded rate) and scattered public investment in rural areas, the scope of public intervention is narrow. This narrowness points to the scandalously limited policy response by African countries today to the predicament of African populations. **A reallocation of budgets toward rural populations is urgently needed to overcome the unaddressed causes of food insecurity.**

It is worth recalling that available policy measures are much more numerous than those now in use in Africa. Policy tools for the rural sector include: border measures (fixed tariffs, variable tariffs and quotas, both on imports and exports); domestic support (minimum pricing, output and input subsidies, consumption subsidies, direct transfers and stabilization); indirect taxes (VAT exemptions); investment funding and incentives (subsidies); interest rate subsidies; and provision of agricultural services in remote areas (credit, irrigation and storage facilities). Successful food security strategies in Indonesia, Europe and Central America over the past several decades have demonstrated that there is no orthodox, one-size-fits-all policy package. The larger the spectrum of measures available, the higher the probability of utilizing Tinbergen's efficiency rule, according to which one policy measure must be targeted at only one objective – following the dictum that “you cannot hit two birds with one stone”. In fact, the

root causes of food insecurity provide a large scope for policy objectives. **Significant widening and greater flexibility in the choice of policy measures is essential to overcoming food insecurity.**

The impact of international or regional commitments on African countries does not convincingly explain the narrowness of public interventions targeted at food insecurity. The room for ambitious agricultural policies at the World Trade Organization (WTO) is wide, with total exemption of tariff and support reduction being granted to least developed countries, most of which in sub-Saharan Africa, while developing countries enjoy a special and differential treatment rehabilitating some of the pre-Structural Adjustment Programme (SAP) instruments (such as input subsidies, as long as they are targeted at the poorest). Examination of bilateral agreements such as the Economic Partnership Agreement (EPA) initiated following Cotonou Partnership Agreements between EU and ACP countries and regional agreements reveals no significant constraints on any kind of domestic support, since the primary constraint relates to external tariffs. The most stringent constraints seem to stem from the conditions imposed by donors and international financial institutions (the International Monetary Fund and the World Bank) and other aid agencies adopting the same agenda. **Upgrading in a coherent framework the set of rights and obligations of the governments of food-insecure countries towards the international community, and specifically toward the Bretton Woods institutions and other aid agencies is urgently needed to overcome the unaddressed causes of food insecurity.**

Economists have tried to identify the losses, dysfunctions and failures associated with particular policy instruments. For African countries, two major factors in the analysis of agricultural policy must be considered:

- A first body of research has focused on agricultural policy instruments giving access to a limited amount of specific free or subsidized goods or services (inputs, credit, extension) or limited access to a particular market (a foreign market, for example). This limitation in quantity gives rise to subsidies, and people will compete to get these subsidies and devote resources to such competition. Depending on the allocation method used, the kind of resource provided will differ. When allocation of trade licenses is decided by government officials, different kind of expenses will be involved to influence the decision: a trip to the capital, office rent in the capital, lobbyist services and even money (i.e. a bribe). Therefore, waste of resources is a primary problem with the use of such instruments. Increasing inequality and corruption are others.
- A second group of analyses aims to explain the apparent preference of African governments for input or credit subsidies and projects instead of higher prices for agricultural commodities. According to these analyses, the role of pressure groups can be important, but the search for power by the state elite is the main issue. The first objective of African governments is to secure political control over their rural population. By using projects instead of higher prices, government can exercise discretionary power; choose regions, groups or even individuals as beneficiaries; and can also intervene in the staffing of the project. By choosing some specific groups, the government gains their support and weakens any opposition by dividing the rural world.

Together, these two avenues of research have discredited the 1960s and 1970s agricultural policies, but before ruling them out completely, one should remember that low farm gate prices were at the same time stable and predictable – i.e. stabilized. Ample evidence shows that agricultural supply responds to price stability just as much as to mean price level. As a consequence, providing stable prices to farmers is just as important for production as high prices. A trade-off was expected to occur between low and stable agricultural prices, allowing

for productivity gains in agriculture through risk-free investment in capital goods, along with productivity gains in labour-intensive activities in all sectors, thanks to moderate wage increases allowed by moderate food prices. This trade-off did work in some places, such as Europe and Indonesia, but it completely collapsed in most African countries because too narrow a role was allowed to market forces between farm gate and consumer plate.

In spite of their poor outcomes, the policies maintained during the 1960s and 1970s were not totally without merit or justification. One should consider the rationale behind them. Relatively low farm gate prices at a time when international prices were high meant profits for marketing boards and similar agencies. Economists, who developed the concept, intended such profits to be spent on increased investments and long-term development measures that the market usually fails to secure, and **which by necessity must be funded by the state**. One may question the choice to have such development measures funded by poor farmers rather than by richer people, but the central question is, **why were these profits not spent on development by the states** responsible?

A further lesson can be drawn from the economic literature. Although controversy continues, academics tend now to promote budget-funded, targeted policy instruments to consumer-funded price instruments, because the latter suffer from poor targeting and distorting (inefficiency) effects. On efficiency grounds, the “modern” food policy relies heavily – at least in theory - on freeing market prices, which means near-zero tariffs, decoupled support (compensation and insurance transfers), and investment in public goods such as research, infrastructure, education, health and the enforcement of the rule of law. These measures can make market institutions work properly, and even “work for the poor”. **But when no such public investment budget is made available, the case for such an agricultural policy vanishes.**

How best to use an agricultural budget in an accountable manner cannot be defined in terms of policy measures at this stage. This can only be done on a country-by-country basis with the participation of local stakeholders throughout the policy-making process. A framework for action has been set forth in this document, envisioning a step-by-step definition of agricultural policies that will ensure their legitimacy inside and outside the country, at all levels of negotiations, within and among ministries. The initial step is to identify the characteristics of food insecurity on a country-by-country basis, followed by the identification of the root causes. This will provide grounds for policy action, as long as such causes relate either to market failures or government failures as described above. Checking for country commitment and possible perverse effects of such policy, because of subsidy-seeking or any counterproductive effect current knowledge helps prevent, leaves room for the final design of sound agricultural policies embedded in demand-led growth which secures food.

## **Chapter 1: An Introduction to food security and sub-Saharan Africa**

Food insecurity has been increasing recently in sub-Saharan Africa (SSA) and is a source of growing concern to African governments. FAO estimates of the number of undernourished people in SSA show an increase from 165.5 million in 1990-92 to 198.4 million in 1999-2001 (FAO, 2003). Although the proportion of undernourished people remained about constant during this period, the increase in the absolute number reflects the fact that the supply of domestic or imported food is not sufficient to cope with population growth.

It is generally acknowledged that the problem is particularly acute in rural areas. For instance, the final statement of the World Food Summit organized by the FAO in 2002 concludes: *“the goal of halving the number of hungry requires that the most food insecure and impoverished countries promote the alleviation of rural poverty, especially through sustained growth of agricultural production, particularly in sub-Saharan Africa”* (FAO, 2002). The idea behind this statement is that agricultural development can both increase the supply of food and also be the main tool for generating the income required to ensure access to food by food-insecure people.

It is a lesson of history that most political regimes founded their legitimacy on their ability to secure food<sup>1</sup>. It is not surprising that, without even speaking of human dignity and charity, food security is in the front rank of the preoccupations of the political class. This is one of the reasons that the New Partnership for African Development (NEPAD)<sup>2</sup>, supported by the Johannesburg summit on sustainable development in 2002, places emphasis on agricultural development and the eradication of rural poverty. Indeed, NEPAD envisages a kind of Marshall Plan for Africa, in the hope of repeating the outstanding success of the help the United States provided to Europe in the aftermath of the Second World War in a similar situation of food shortage and pervasive poverty.

At the same time, there are many powerful reasons why food security and agriculture have been neglected, and why, if they were turned into policy priorities, they could consequently be mutually supportive:

- (i) Agricultural projects are difficult to implement, and have lower ex–post rates of return than projects in other sectors;
- (ii) there are serious problems of absorptive capacity in many countries, especially in the agricultural sector;
- (iii) due to slow disbursement in agriculture and poor performance of the sector, the ministries of finance have been less and less inclined to fund agricultural projects;
- (iv) conflicts have attracted priority attention and expenditures in a large number of SSA countries;
- (v) food insecurity is often not perceived by leaders as a priority problem because experience has shown that in many cases, trade and emergency food aid can cope with any serious problem of food shortage;

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<sup>1</sup> For instance, historians note that relatively strong local powers existed in the Sahelian regions of SSA long before colonization, while such institutions are much less frequently encountered in the equatorial regions, and relate this situation to the necessity of collective management of granaries in arid climates (Illid, 1995; Dun and McShaw, 2001). Even in the Bible, the story of Joseph can be interpreted as a pamphlet by the King of Egypt, claiming political authority over the Middle East on the ground of his ability (probably unique at time) to avoid the consequences of droughts and diseases through public stocking.

<sup>2</sup> This initiative was launched by several African leaders (the presidents of Algeria, Egypt, Nigeria, Senegal, and South Africa) at the Lusaka conference in 2001, to finance African development in general. The fact that agriculture is one of the components of the NEPAD programme is significant.

- (vi) food security is a complex concept, difficult to measure, and therefore an awkward basis for policy design, implementation and monitoring;
- (vii) agriculture is not seen as a dynamic sector carrying much potential for future development of a “modern” country; and
- (viii) the political economy in many SSA countries tends to induce an anti-rural and anti-agriculture bias in policies and programmes.

Thus there are considerable obstacles to assigning high priority to reducing food insecurity, especially if it means boosting the agricultural sector. In the eyes of many African leaders, other sectors seem to have greater development potential and ability to create wealth, including the capacity to generate the financial resources required to import food. The question is whether this view is correct, and whether the income generated really goes to the food-insecure population. Also, food aid is usually felt to be a relatively easy to mobilize and cheap source of food in case of emergency, while donor countries – and their publics – are more disposed to provide emergency food aid than longer-term development aid. But doubt remains whether this is the most effective way to use limited financial resources and whether this approach is conducive to development.

These two approaches can translate into very disparate development strategies and policies: vigorous measures to improve the agricultural situation on the one hand, or neglect of agriculture and reliance on other ways to achieve some form of food security on the other. The purpose of this study is to determine the best policy in the range that exists between these two poles. To that end, the first questions to be answered are, “What is food security?” and, “To what extent has food insecurity increased in SSA recently?”

## 1.1 Has food insecurity worsened in SSA recently?

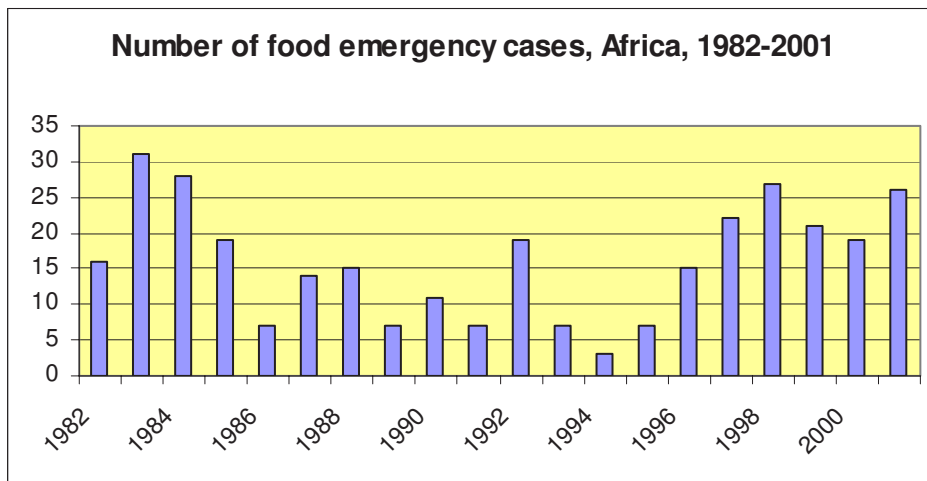
FAO has provided a clear and widely (although not necessarily universally) accepted definition of food security: “Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food for a healthy and active life (World Food Summit Plan of Action, para. 1). This involves four conditions: (i) adequacy of food supply or availability; (ii) stability of supply, without fluctuations or shortages from season to season or from year to year; (iii) accessibility to food or affordability; and (iv) quality and safety of food”.

Unfortunately, such a definition cannot easily be translated into one simple statistical indicator, the evolution of which would provide an unambiguous answer to the above question. Existing measurements, derived from guidelines by international organizations<sup>3</sup>, are at best approximations, which place emphasis on one or another of the four aspects just listed. And because these indices are not available over sufficiently long periods, they do not allow for an adequate assessment of evolving patterns. This limits the possibility of giving a detailed and long-term picture of the evolution of food security in SSA. Yet there are indicators that permit an overall diagnosis; these indicators are examined in figures 1 to 4.

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<sup>3</sup> See, for instance FAO, *The state of food insecurity in the world*, Rome, various reports from 1999 to 2003. Another more detailed technical reference is: Riely, Frank, Mock *et al.*, 1999. See Shapouri and Rosen, 2004 for the definition of the interesting notion of a “food gap”.

Figure 1.1: Reported cases of food emergency in Africa



Source: T. Parris *et al.*, The number of cases is reported from the International Disaster Database, Louvain University, Belgium.

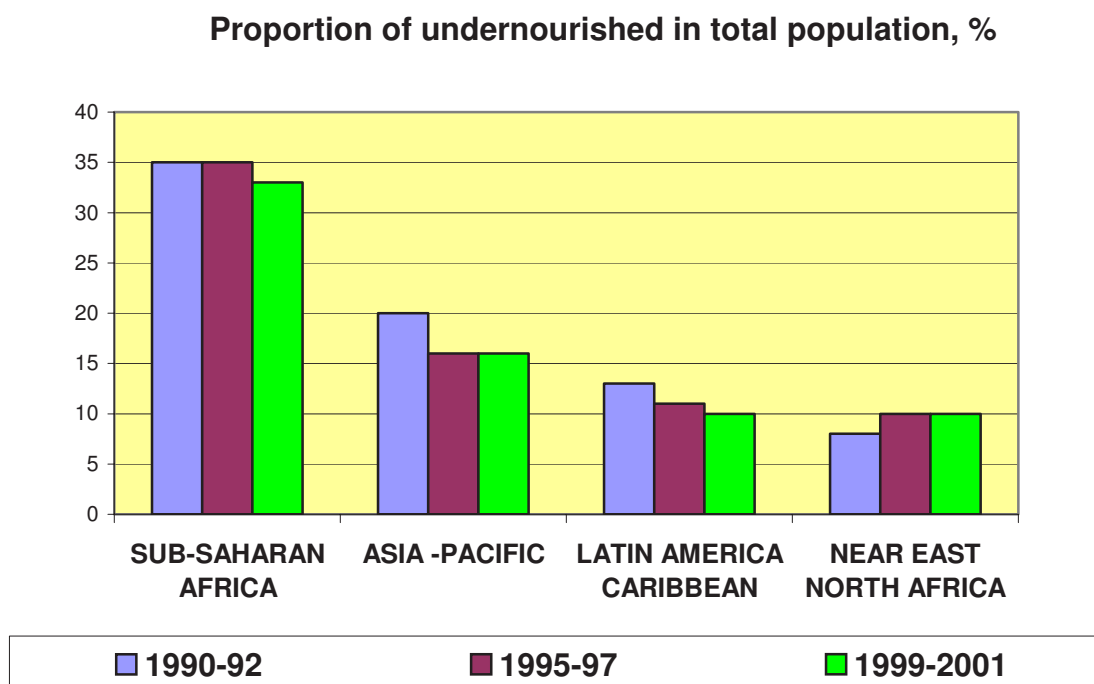
Figure 1.1 shows that in Africa the number of emergency cases reported by the Centre of Research for the Epidemiology of Disaster is not very different in the first decade of this century from what it was in the 1980s. However, after a significant decline during the early 1990s, the number of reported food shortage cases recently increased again. Such a phenomenon relates to point (ii) above, regarding temporary food shortages. More significant, perhaps, is the information provided by Figure 1.2.

Figure 1.2 compares the situation in Africa with other developing countries. The food insecurity indicator here is the proportion of malnourished people, according to FAO standards, in the total population. Thus, it concerns a different aspect of food security: the permanent lack of access to food for significant segments of the population. At first glance, it seems to confirm that the level of food security did not change very significantly during the last 15 years, beyond a slight improvement. Such a conclusion might be misleading because these figures are in *relative* terms and reflect the *proportion* of people suffering food shortage. But a constant proportion of a growing basis means a parallel growth in the *absolute number* of people involved. Indeed, this constancy of relative figures indicates that the growth of the problem progresses at the same rate as the population – which, in SSA, is quite significant, amounting to about 3 percent per year.

The most disturbing as well as tragic lesson to be derived from this figure is that, in Sub Sahara Africa, the situation is worse than elsewhere by a magnitude of 1 to 2.

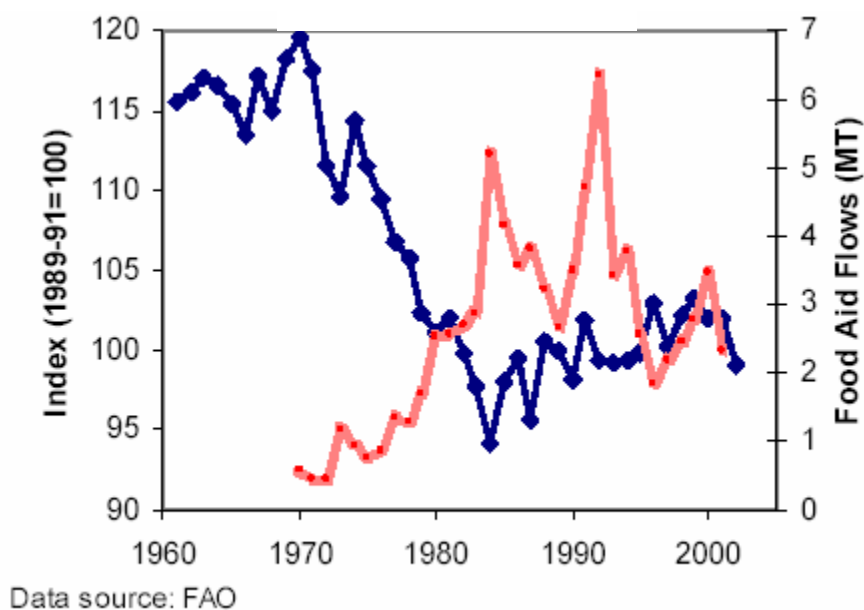
Is this a consequence of insufficient production or of insufficient food aid? Figure 1.3, derived from a study by the International Food Policy Research Institute (IFPRI) (Awudu, Barrett and Hazell, 2004) tends to show that while there has been modest recovery over the past 15 years, overall food production in sub-Saharan Africa remains almost 20 percent below the levels of the early 1970s in per capita terms. Over the same period that food production per capita declined, food aid into sub-Saharan Africa increased nearly fivefold. Food aid flows then became extremely volatile, but have remained in the range of 2.0-4.0 million metric tonnes per year for the past decade.

Figure 1.2: Evolution of a food insecurity indicator in various regions of the world



Source: FAO, 2003.

Figure 1.3: Sub-Saharan Africa per capita food production vs. food aid flows



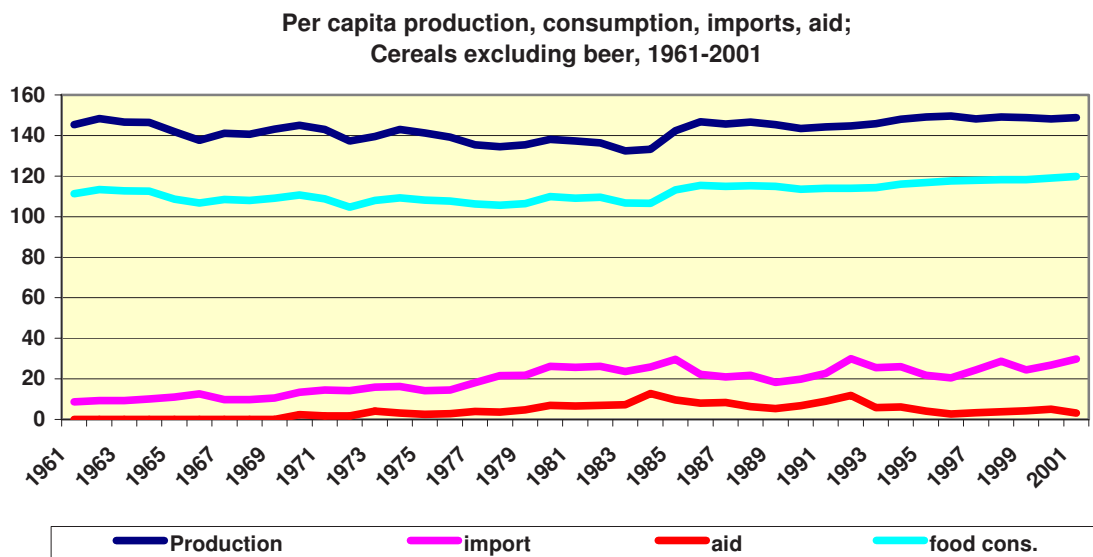
Source: Awudu, Barrett, and Hazell, 2004

Again, one must not be confused by statistics. Since food aid is measured as a total volume, while the production curve corresponds to a per capita index, one should be cautious in interpreting Figure 1.3. Indeed, in view of the demographic increase, the aid flow per capita may have *decreased* significantly in the last few years, together with a modest food production per-capita recovery.



Figure 1.4, based on FAOSTAT data<sup>4</sup>, gives the absolute values in kilograms (kg) of per capita production, imports and food aid. The striking fact here is the stability: there is a strict parallel between food consumption and domestic production. The parallel is less strict with food aid, which generally occurs one year after a significant decrease in consumption imports, while, for unknown reasons, imports increase one or two years after food aid. In general, consumption, food aid and imports display a clear tendency to increase, albeit at a small rate (far less than 1 percent a year).

**Figure 1.4: Long-term evolution of cereal availability, Africa south of the Sahara**



Source: FAOSTAT, 2004.

The most important fact shown by Figure 1.4 is that the bulk of food consumption comes from domestic production. Imports account for only a small percentage of available food, and food aid an even smaller percentage. Does this mean that imports and food aid are not important? The answer is two-sided.

On one hand, neglecting imports and food aid would be a great mistake, because the important point here is not total, but marginal availability: a person might starve with a "normal" food consumption secured for eleven months if they were totally deprived during the twelfth month. Indeed, in the present situation, food imports are obviously necessary in SSA as a whole. Similarly, it would be foolish to deny the importance of food aid when no imports and no domestic production are available. In such cases, aid is a prerequisite for rapid recovery after the end of whatever catastrophe that triggered famine. This is the message conveyed by the aforementioned IFPRI study (Awudu *et al.*).

On the other hand, these figures also tell us something else: because the gap between needs and domestic production is not large, it should be possible to fill it at minimal cost. Doing something in this respect is the more tempting option, because most starving peoples stay in rural areas and are not capable of any activity other than agriculture; very often, they are unemployed but willing to work. Why then should governments beg for humanitarian aid, or waste foreign currency reserves on food imports, when so many other more fruitful uses of

<sup>4</sup> Notice that figure 1.4 concerns cereals only, while figure 1.3 is based on a "total food index". Yet cereals are fairly representative of total food. Notice also that production is larger than consumption. This is because a significant share of production is either used as stockfeed or exported.

aid and funds are possible? Answers to this question must be made on a case-by-case basis, requiring careful attention to the various situations faced by African countries today.

## 1.2 Food insecurity in Africa: Ten stylized facts

Almost 33 percent of sub-Saharan Africans are malnourished, which is the highest prevalence in the world. In one-third of African countries, the average daily calorie intake remains below the recommended level of 2 100 kcal<sup>5</sup> (Ethiopia, Kenya, Rwanda, and Tanzania in East Africa; Angola, Madagascar, Mozambique, and Zambia in Southern Africa; Sierra Leone in West Africa).

Maps provided by international organizations (FAO, the United Nations Development Programme and the World Bank) highlight the variable performance across subregions of Africa. The best performance can be found in North Africa, where less than 20 percent of the population is still malnourished and the average daily calorie intake per capita is far above requirements. West Africa also performs relatively well in terms of average calorie intake (above 2 100 kcal per capita in most of the countries, and above 2 400 in some of them), but the share of malnourished people (above 20 percent of the population in most countries) and the prevalence of micronutrient deficiency are still worrisome. The situation is worse in Central and Eastern Africa, with a few exceptions. The daily energy supply is far from sufficient, and malnutrition and deficiencies affect more than 40 percent of the population. In a few countries (Burundi, Democratic Republic of the Congo, Eritrea and Somalia), the mean availability per capita is below 1 800 kcal, which is considered the minimum intake level. In several countries (Botswana, Burundi, DRC Congo, Gambia, Liberia, Madagascar, Senegal, Sierra Leone, Somalia, Tanzania and Zambia) the situation has been deteriorating over the last ten years, while others (Ghana, Malawi and Nigeria) exhibit a trend toward sustained recovery. Less than 50 percent of sub-Saharan African countries have malnutrition figures below 30 percent, and only three countries are below 10 percent (Gabon, Namibia and Nigeria). Despite economic growth and sufficient aggregate availability of food, some countries still exhibit increasing malnutrition, as measured by the prevalence of stunted growth in children<sup>6</sup>, as in the case of Mali.

**Stylized fact 1:** Malnutrition, in its various forms, appears a chronic widespread condition in Africa.

Rampant food insecurity degenerates into food crisis when shocks such as droughts, floods, pests, locust invasion, economic downturns, and conflicts destabilize the precarious existence of the chronically food-insecure. Food crises are dramatic and are widely reported by the media. They affect approximately 30 million Africans on average per year, while 200 million are chronically insecure.

**Stylized fact 2:** Food crisis, jeopardizing household livelihood, exacerbates chronic food insecurity for households close to the food insecurity (or “vulnerability”) line.

In order to bring more insight to problems of food insecurity in selected countries representative of African diversity<sup>7</sup>, international statistics have been used in the discussion that follows. They are complemented by household surveys, where available. The quality and

<sup>5</sup> Energy requirements vary according to age, sex, and activity.

<sup>6</sup> Daily kcal availability is not sufficient to define adequate nutrition. Micronutrient deficiencies, for example of iodine, iron, vitamin A and zinc, are also widespread and responsible for irreversible disabilities. Only two countries in sub-Saharan Africa had less than 20 percent of children stunted (the Congo and the Gambia).

<sup>7</sup> Namely, Burkina Faso, Ethiopia, Ghana, Malawi, Mali, Mozambique, Tanzania, Zambia and Zimbabwe.

coverage of data is highly heterogeneous, especially when related to food production and consumption at the household level. Surprisingly, and despite the renewed interest from international institutions in food security issues, data for the household level are sparse or even totally lacking in most African food-insecure (poor) countries<sup>8</sup>, and it is easier to study average domestic food availability than food access.

### **1.2.1 Food availability at the national level**

What is the food insecurity picture given by trends in average domestic food availability per capita over the last 40 years, as well as by malnutrition changes at the household level? In the following tables and figures, national food availability is computed after conversion in kcal of the main aggregates available from FAOSTAT<sup>9</sup>. The official daily food availability supplied by FAOSTAT is also given, the difference stemming from feed used, seeds and post-harvest losses, as well as stock variations, which are not considered in our computation.

Each case study country<sup>10</sup> is presented so as to give a picture of differences and similarities in current levels and trends in domestic food availability, expressed in calories per capita, as well as the share of international supply in total food availability.

**Stylized fact 3:** Food availability is uneven across countries the bulk of whose population is close to the food insecurity (“vulnerability”) line.

Assuming an average daily requirement of 2 100 kcal per capita, the African situation is characterized by an uneven food deficit at the national level, as shown in figures 1.5 and 1.7. Most of the countries are close to the food-insecurity line, with a slight recovery over the past ten years. Extreme situations are found in Ghana, whose availability has been well above the food-insecurity threshold for the past ten years, and at the opposite end of the spectrum in Ethiopia, where availability is stationary around the critical values of 1 500-1 800 kcal.

Mozambique (Figure 1.6) exhibits a slightly better pattern, with an improving trend since the end of the 1990s, bringing the country close to the food-insecurity line today. In Zambia and Zimbabwe, levels of food availability have been deteriorating since the beginning of the 1980s. In these countries available kcal per capita was around 2 200 kcal from the 1960s to the mid-1980s, but fell below 2 000 kcal in the 1990s.

<sup>8</sup> For example, the Living Standard Measurement Study (LSMS) dataset of the World Bank includes only five African countries: Ghana, Côte d'Ivoire, Morocco, South Africa and Tanzania (<http://www.worldbank.org/lsmis/>).

<sup>9</sup> Daily kcal availability is calculated as  $(\text{production} + \text{imports} + \text{food aid} - \text{exports}) / \text{population} * 365$ . The products considered are FAOSTAT aggregated categories, i.e. cereals, fruits, vegetables, roots and tuber. Because the precise kg caloric value of each product in a single category varies across products, weighted averages of kcal have been used for each category, the weight being calculated as the product's share in sub-Saharan African consumption.

<sup>10</sup> Except Ethiopia, for which data on population size before 1993 are lacking. However, recourse to the foreign supply of food (aid included) often represents more than 15 percent of total availability since the mid-1980s.

Figure 1.5: Food availability in selected countries

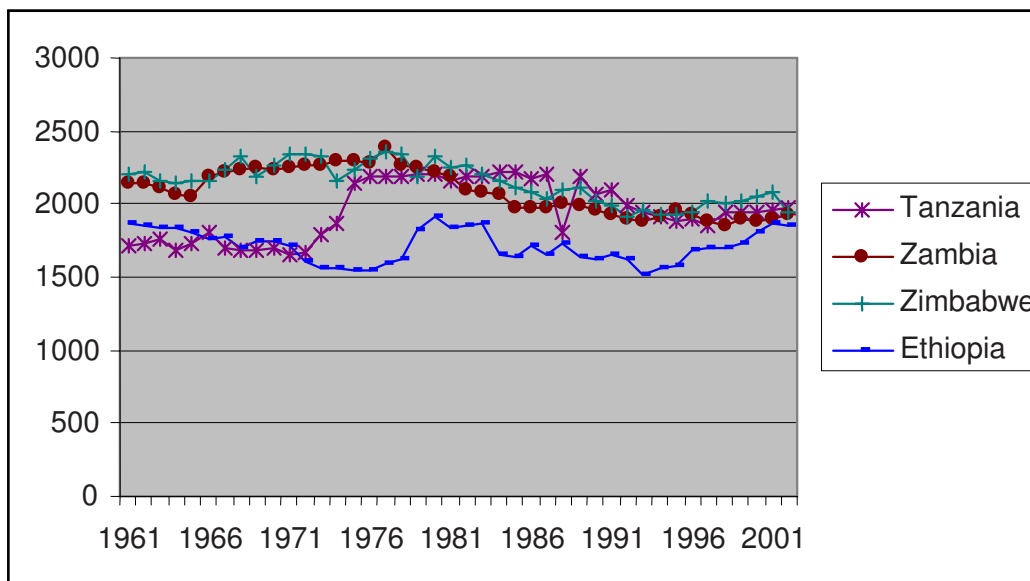
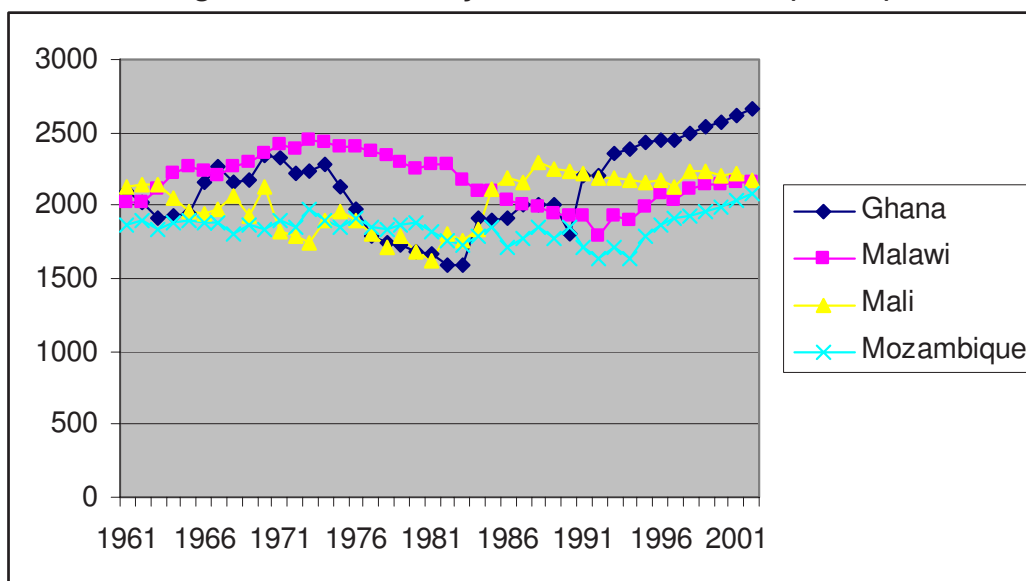


Figure 1.6: Availability in selected countries (cont'd)



The situation of Malawi deteriorated in the 1970s and 1980s but seems to have recovered since the mid-1990s, returning to the 2 200 kcal level over the last couple of years.

In Tanzania, the situation improved in the early 1970s but deteriorated at the end of the 1980s. The food intake is now stable but it hardly reaches 2 000 kcal per capita. In Mali, the situation has improved since the mid-1980s and seems to be stable at around 2 200 kcal per capita per day. In Ghana, available kcal per capita was around 2 100 in the 1960s, But deteriorated sharply between the mid-1970s and the mid-1980s. Ghana recovered at the beginning of the 1990s and has exceeded 2 500 kcal ever since 1999.

Finally, the situation is worrisome everywhere except in Ghana, Malawi, Mali and Mozambique, the countries that exhibit the most promising trends. It is worth remembering, however, that figures 1.5 and 1.6 represent per capita kcal availability and reflect the sharp increase in African population size over the last 40 years.

### **1.2.2 Food availability at the household level**

Restoring aggregate food availability does not ensure that every household and individual enjoys sufficient access to food. In most countries studied, areas of excess food supply coexist with deficit areas. Chronically food-insecure households are spread across regions, whereas food crises are transitory and region-specific. The situation is exacerbated in rural areas, which have a higher share of the malnourished population and stunted children, even if the quality and amount of available food in urban centres are also at worrisome levels.

**Stylized fact 4:** Chronically food-insecure households are widespread and scattered across regions, whereas transitory food crises are more often region-specific.

Food insecurity does not usually affect the whole population, but particularly harms specific social groups who do not own enough production factors, such as land, labour and capital, to buy adequate food. In all countries, orphans, female-headed households, the disabled and the very old are the most vulnerable, and as such deserve specific attention and support. In some countries HIV has considerably worsened the vulnerability of populations. Given the high share of undernourished people in most countries, however, food insecurity is not confined to one group nor to any particular region (see for example the case of Burkina Faso in Box 1).

In most countries, more than 30 percent of the population is undernourished. In countries such as Malawi and Mali, the figures are still perturbing despite adequate aggregate supply of food at the national level. Only Ghana has succeeded in reducing significantly the number of the undernourished over the last ten years. The mere fact that rising imports occur along with rising per capita food production and food security improvement illustrates the fact that there is no contradiction between food imports, increases in domestic food production and food security (Figure 1.7).

**Stylized fact 5:** Despite inadequate levels of calorie intake among a large share of the population, imports from foreign providers do not match the complementary food requirements. To put it in another way, the issue is not that there are too many imports, but the national production level being given, that imports are too low.

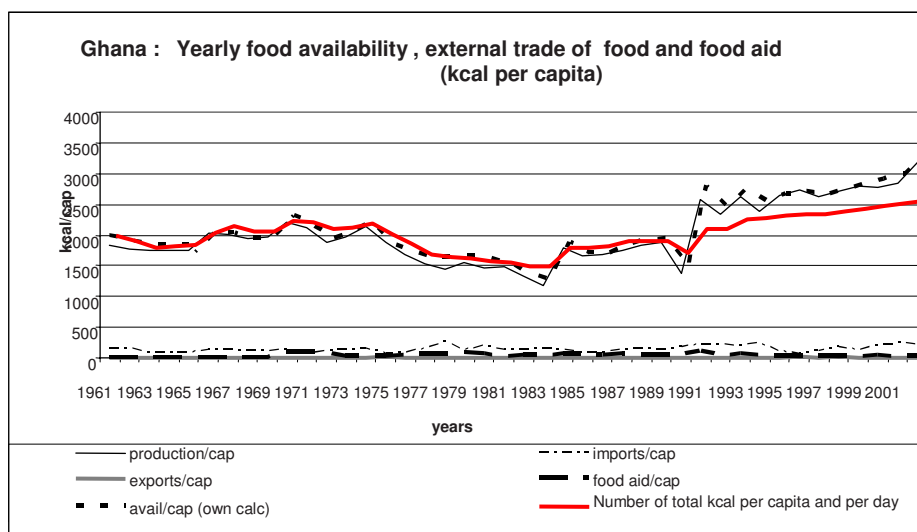
In Malawi, Mali, Zambia and Zimbabwe, production is highly unstable due to droughts, floods and other factors. In other countries, even when average daily availability appears relatively stable, it is worth remembering that the kcal aggregates presented here smooth the series and that crop production in tonnes are actually much more unstable. Most of the countries under study report high dependence on climatic factors for agricultural performance and income. Most of the time, technical solutions exist that would reduce this high vulnerability of yields to climatic disturbances, but they require investments beyond the means of the population concerned.

**Stylized fact 6:** Most countries report high dependence on climatic conditions and exhibit persistent instability in production levels.

The fact that food aid is a significant component of availability only when domestic production drops tends to show the efficiency of international food aid delivery. However, food aid may also have produced a drop in prices, discouraging farmers to harvest, and this is something that our aggregated data cannot show. This phenomenon occurs in Ethiopia, for example, and because it cannot be reflected in the data, it places a limitation on the analysis of yearly aggregate data on food availability. Food aid seems to act as an adjustment variable, with higher volumes occurring when domestic production drops. On the other hand, the yearly

approach does not help us to check whether the supply of food aid (because of the downward pressure on prices) is causing the drop in domestic production<sup>11</sup>.

**Figure 1.7: Food availability, trade and food aid in Ghana**



**Stylized fact 7:** Foreign supply share in domestic availability is not a determinant of performance of agriculture in food-secure countries.

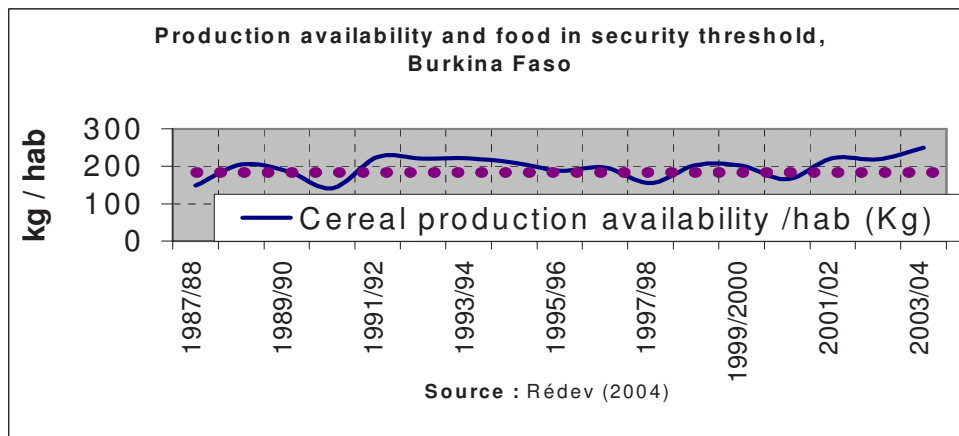
The share of foreign supply in food availability varies. In countries such as Ghana, Malawi, and Mali, imports (as well as food aid) are significant only during years with record-low levels of production because of agroclimatic shocks. In others, such as Mozambique, where food security is improving, foreign supply plays a significant role in overall availability. In Zimbabwe, recourse to foreign supply is also important, but the food security situation is worsening. The same low performance is seen in Tanzania and Zambia, which have a low level of foreign supply of food. Finally, foreign supply as a share of domestic availability does not seem to be a determinant in the performance of countries in achieving food security (Table 1.1).

**Table 1.1: Share of foreign supply in food availability and total food availability per capita, 1990-2002 and 2000-2002**

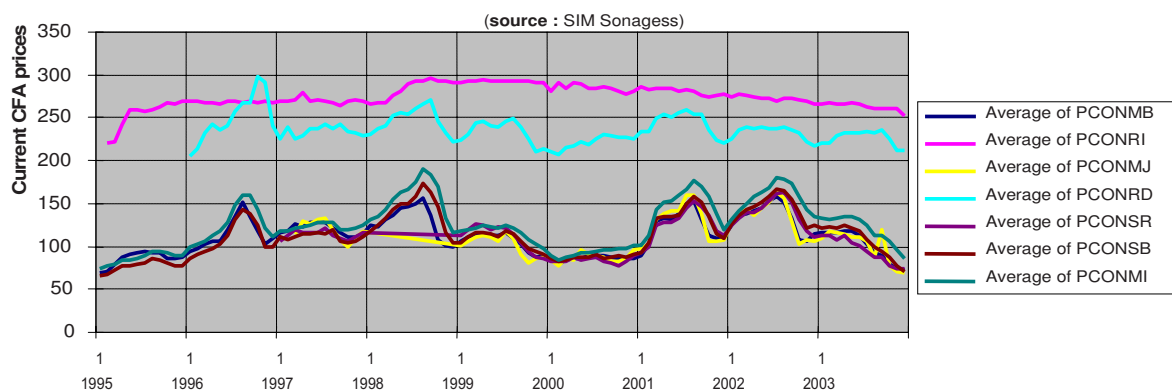
|            | Share of foreign supply in food availability |           | Availability (calories per capita per day) |           |
|------------|--|-----------|--|-----------|
|            | 1990-2002                                    | 2000-2002 | 1990-2002                                  | 2000-2002 |
| Ghana      | 8%   | 8%        | 2400                                       | 2619      |
| Mali       | 5%   | 5%        | 2196                                       | 2200      |
| Malawi     | 17%  | 7%        | 2024                                       | 2155      |
| Mozambique | 25%  | 17%       | 1855                                       | 2033      |
| Tanzania   | 5%   | 8%        | 1954                                       | 1959      |
| Zimbabwe   | 20%  | 21%       | 1984                                       | 2024      |
| Zambia     | 17%  | 15%       | 1909                                       | 1904      |

<sup>11</sup> To overcome this limitation, we should look at monthly data, with special attention to the pre-harvest period.

### Box 1.1: The case of Burkina Faso



Burkina Faso, Average monthly consumer price for main cereals, all markets 1995-2003

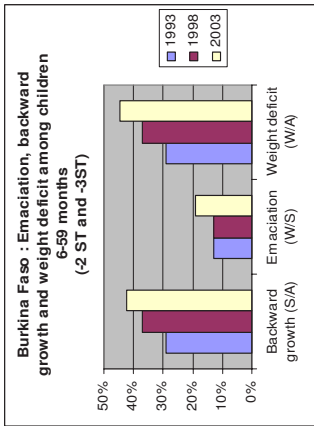


Although fluctuating, availability of food in Burkina Faso is only insufficient on a temporary basis. Cumulated inflation over the 1995-2003 period was 28,30 percent, so that the decline in the purchasing power of producers is striking (Figure 8). Consumer prices in 2003 were 0.03 f.cfa/kcal for maize (the cheapest cereal), followed by millet (0.04 f.cfa/kcal) then rice (0.07 f.cfa/kcal). Meat was sold at 5.70 f.cfa/kcal, which gives terms of trade for 1 kcal of meat against 81k.cal of millet.

An optimization model of food rations for an adult living in Ouagadougou (August 2004) enables us to simulate the minimum threshold of expenses to satisfy basic food requirements. For a food ration equivalent to 2 340 kcal, the budget projected is 13 295 f.cfa per month, or 160 000 f.cfa per year. By comparison, the poverty line is set at 87 672 f.cfa/adult/year in Burkina Faso.

This means that the poorest are food insecure, but that food insecurity is also not restricted to the poorest. The following maps demonstrate that prevalence has risen over the last decade and is not confined to particular region.

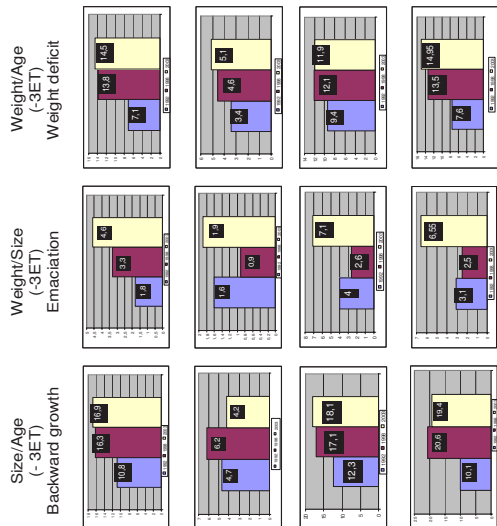
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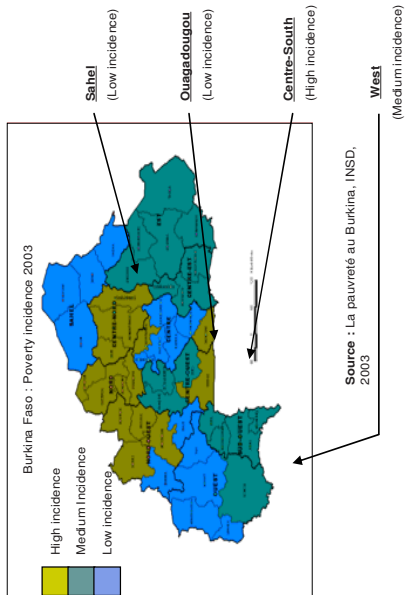
Source : EDS, 1992,1998, 2003, Macro Int

The **size-on-age** (S/A) indicator signals backward growth.  
 The **weigh-on-size** (W/S) indicator reflects current nutrition status. Children whose weigh-on-size indicator is below -2 SD are considered to suffer from acute undernourishment, while those beyond -3 SD suffer from acute and severe undernourishment.  
 The **weigh-on-age** (W/A) integrates into one single indicator the two indicators above.

**Share of 5-year children considered as undernourished according to S/A, W/S and W/A (1993, 1998, 2003)**



Source : EDS, 1992,1998, 2003, Macro Int

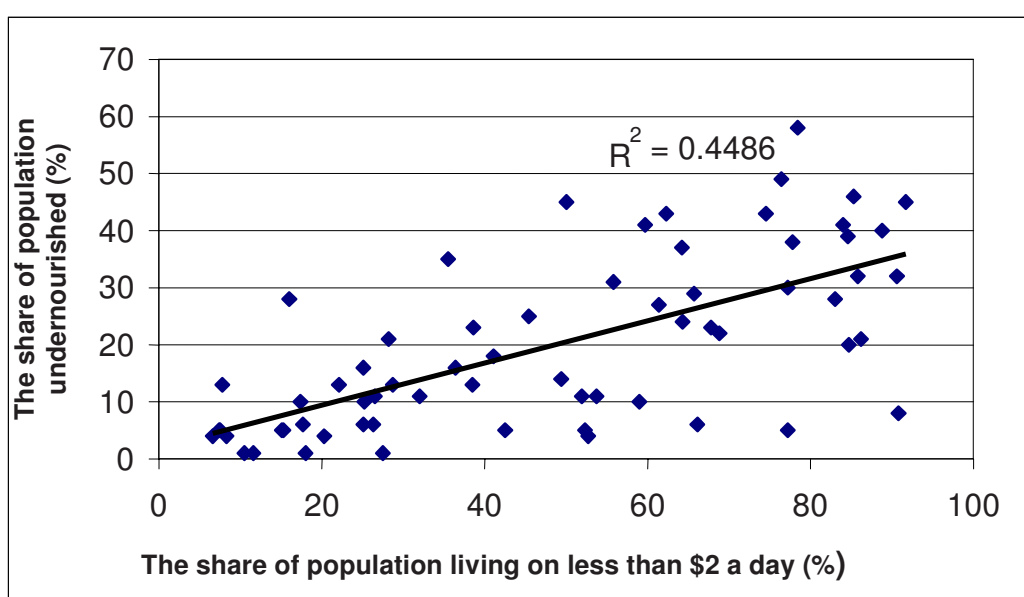




### 1.3 Explaining food insecurity by access

The figures presented thus far demonstrate both the persistent lack of food available to the population and the absence of significant foreign supply (except when climatic disturbance, war and violence significantly affect domestic food production). Because a large share of the population is still malnourished, the increase in the demand for food in the wake of income growth would be very high. This demand should be supplied either from international markets or domestic production. As noted above, lack of food availability persists as neither imports nor domestic production increased. Hence, in the absence of trade ban or conflict or some element forbidding international trade flow, it must be related to the means to pay for food. The assumption is that widespread poverty, combined with low national income, creates the chronic food insecurity in the region.

**Figure 1.8: Poverty and Food Insecurity in development countries and transition countries (65 countries)**



**Stylized fact 8:** There is a correlation between chronic food insecurity and widespread poverty.

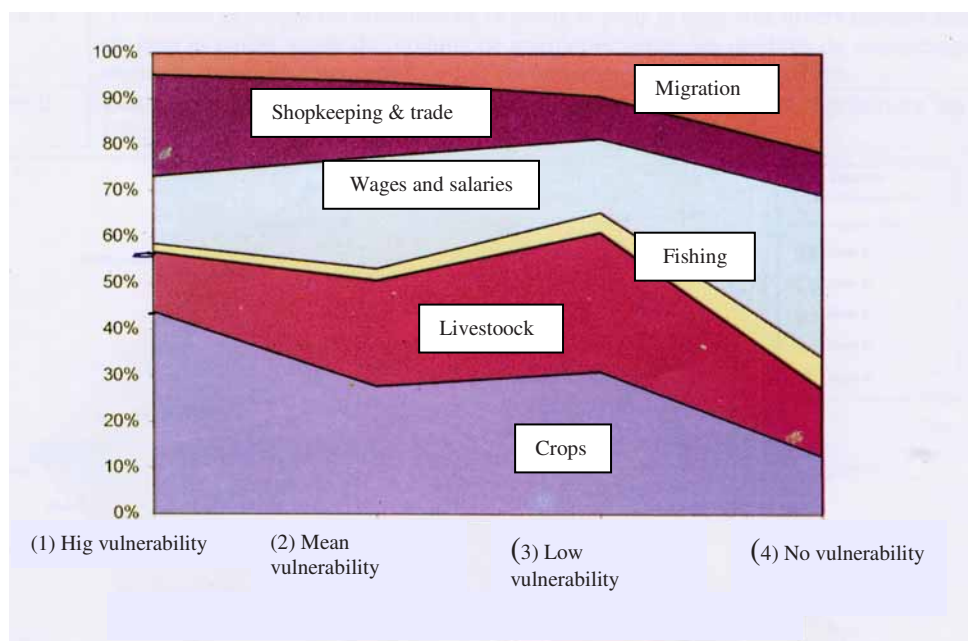
**Stylized fact 9:** Poverty statistics and national income trends measured by GDP both indicate that the food insecurity problem is basically related to access: food-insecure households have limited means to pay the price for imports and to access an adequate supply of food. (In a world where adequate food supply is globally available, trade should theoretically provide deficit countries with the necessary volume of food to properly feed their population)

**Stylized fact 10:** Household vulnerability is dependent upon income sources: the higher the share of agricultural income, the higher the vulnerability.

Poverty and food insecurity are closely intertwined (Figure 1.8). The case of Senegal exemplifies this point (Figure 1.9). Vulnerability of rural households in Senegal depends significantly on income sources: the higher the share of agricultural income, the greater the vulnerability. The conclusions can be extended to other poor countries in Africa and beyond.

First, because agricultural income is only a part of rural income, declining food security requires a broad policy response going beyond agricultural policy *per se*. In particular, improving the access of the most vulnerable to nonfarm activities seems crucial. Second, because vulnerability is higher among households whose income depends on agriculture, agricultural policy has not performed with any degree of success in addressing food insecurity in SSA, with a few and temporary exceptions<sup>12</sup>. Improving access to food through by raising rural incomes is the key issue for food policy-makers today.

**Figure 1.9: Food vulnerability and income sources, Senegal (2003)**



**Source:** WFP, 2003

For the poorest quintile, casual nonfarm wage income accounts for about 16 percent of total income. This drops to around 15 percent for the second quintile, and continues to fall monotonously across quintiles to only 2 percent for the top quintile. In contrast, regular nonfarm wage income shares rise sharply with the income quintiles – from only about 4 percent among the poorest quintile to as much as 21 percent for the richest.

<sup>12</sup> See Africa Success Story reviewed by IFPRI, *Successes in African Agriculture: Building for the Future*, Pretoria, South Africa, December 1-3, 2003, available at <http://www.ifpri.org/events/conferences/2003/120103/papers/papers.htm>.

### **Box 1.2: Ten stylized facts on African food insecurity**

**Stylized fact 1:** Malnutrition, in its various forms, appears primarily as a chronic widespread condition in Africa.

**Stylized fact 2:** Food crisis, jeopardizing household livelihood, superimposes on chronic food insecurity for a high share of households close to the food security (or “vulnerability”) line.

**Stylized fact 3:** Food availability is uneven across countries whose bulk is close to the food-security (“vulnerability”) line.

**Stylized fact 4:** Chronic food-insecure households are widespread and scattered across regions while transitory food crisis are more often region specific.

**Stylized fact 5:** Despite inadequate level of calorie intake among a large share of population, imports from foreign providers do not match the complementary food requirements. To put it in another way, the issue is not that there are too much imports, but the national production level being given, that imports are too low.

**Stylized fact 6:** Most countries report high dependence on climate conditions and exhibit persistent instability in production level.

**Stylized fact 7:** Foreign supply share in total availability is not a determinant of food security countries performance.

**Stylized fact 8:** There is a correlation between chronic food insecurity and widespread poverty combined with low national income

**Stylized fact 9:** Poverty statistics as well as national income trends, measured by GDP, indicate that the food insecurity problem is basically related to “access”: food insecure households have limited means to pay the price for imports and access to adequate supply of food. (In a world where adequate food supply is globally available, trade should theoretically provide deficit countries with the necessary volume of food to properly feed their population).

**Stylized fact 10:** Household vulnerability is dependent on income sources: the higher the share of agricultural income, the higher the vulnerability.

## **1.4 How can the problem be tackled?**

When analyzing domestic production and external trade, the absence of sufficient recourse to imports to maintain adequate food availability when domestic production is insufficient is striking. Poverty statistics, as well as national income trends measured by GDP, indicate that the food-insecurity problem is related to access: food-insecure households do not have the means to pay for imports to ensure an adequate supply of food. In a world where adequate food supply is globally available, trade should provide deficit countries with the necessary volume of food to feed their populations. An increase in income should generate a high response in food demand among food insecure households. If this is not the case, and no bottleneck restricts access to international trade, the problem is linked to the lack of solvent demand due to insufficient income.

What kind of policy would be needed to eradicate the continuously worsening food-security situation in Africa? Examples from history must be examined before tackling this question. The first lesson relates to past intervention policies.

Intervention policies were common in Africa in the 1960s. They failed, as demonstrated by the remarkable stability of per capita indicators noted in Figure 1.4. Admittedly, there has been a large increase in production since the 1960s; however, it was absorbed by parallel population growth, so that, in per capita terms, there was no substantial change, despite the enormous sums spent on developing agriculture. This failure, and the public deficit and macroeconomic imbalances it implied, brought on board the “structural adjustment” policies initiated in the 1980s.

The core idea behind structural adjustment was that private interest would be the best engine of development. According to the famous statement of Adam Smith, *"It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest"*. Hence it was felt that the state should withdraw from direct production; inefficient and corrupt parastatal companies should be privatized or dismantled. Taxes, which deprived farmers of the benefit of their work, should be reformed (yet at the same time, more effectively collected!). Trade policies were to be modified to allow world prices to be better reflected in domestic markets.

The impact of these policies is not illustrated in the trends depicted by Figure 1.4. This is not to say that the impact has been negligible; on the contrary, many analysts contend that it has been significant, and indeed detrimental. It has frequently been noted that structural adjustment programmes have often impoverished various population segments (as will be shown below). But as far as the long-term trend in per capita cereal production and consumption is concerned, the least that can be said is that the effect of structural adjustment programmes is not visible. And this, of course, is the tragedy, precisely because structural adjustment was meant to boost development and solve the recurrent food problem. It has failed to do so.

An increasing number of organizations and specialists feel that it is necessary to reconsider current policies and find new ways to support agriculture. Such methods must propel agricultural development forward and contribute to improved food security, yet avoid the pitfalls of the policies of the 1960s and 1970s. This view is further supported by the evidence that food insecurity has a cost for development, whereas foregoing agricultural development can have considerable implications for development as a whole and the dynamics of any given country.

Before trying to set up a new policy, first it would of course be necessary to understand the reasons for the previous failures mentioned above. This document attempts to provide answers that can be widely embraced by policy-makers in developing countries, as well as by their cooperating partners.

## **Chapter 2: Does food aid foster or impede economic development?**

Since the early 1960s, the controversy over the opportunity cost of food aid for food recipient countries has continued unabated. While there is no doubt that targeted and temporary food aid is a major positive factor in emergency relief, some policy-makers and development practitioners among the nongovernmental agencies (NGOs) emphasize the increasing costs of food aid programmes over time.

First of all, recipient countries incur budgetary costs for storage, transport and delivery of food aid funded by donors. Second, when poorly targeted and used over long periods, in large quantities and in situations where there is no real food shortage, food aid can exert a downward pressure on domestic prices and act as a disincentive to produce and invest. Finally, excessive reliance on food aid may become politically unsustainable. Political legitimacy may erode with the decreasing credibility of the state as provider of the basic needs of the population and its perceived dependence on (and accountability to) donors rather than its own citizens. These arguments must be carefully reviewed in relation to the specific conditions of SSA.

The question posed by this chapter's title entails a review of the theoretical and empirical impacts of food aid. But short-term and even static analyses of food aid have generally been privileged, while long-term, dynamic effects are scarcely addressed. In addition, numerous market failures encountered in food-aid recipient countries further restrict the usefulness of standard micro-econometric approaches to the analysis of the impact of food aid on heterogeneous households. Our review underscores the idiosyncratic impact of food aid, which makes the debate moot; there is no case for or against food aid, because food aid simply is not a panacea for development, nor is it the main culprit in the disappointing past performance in African countries. Learning to use food aid *so as to no longer need it* turns out to be the main problem that food-aid recipient countries should be tackling today.

### **2.1 The theoretical impact of food aid**

Concerns over food aid's potential disincentive effects for domestic agriculture have been discussed extensively in the development literature since the seminal contribution of Schulz (1960) over PL 480<sup>13</sup>. First, it is crucial to make a distinction among three main types of food aid:

- Programme food aid, which is usually supplied as a resource transfer for balance of payment or budgetary support activities. This form of food aid is not targeted to specific groups and is sold on the open market and provided by donor countries either as a grant or as a loan.
- Project food aid, which supports specific poverty-alleviation and disaster-prevention activities. It is usually freely distributed to targeted beneficiary groups, but may also be sold on the open market. It is often referred to as "monetized" food aid. It is usually provided on a grant basis

<sup>13</sup> Schultz, 1960. The P.L. 480 (also known as the Agricultural Trade Development and Assistance Act) was enacted in 1954, in line with the U.S. policy of using its agricultural productivity to enhance the food security of developing countries. It authorized the U.S. government to fund very long-term credit (30 years) for emergency food exports.

- . Emergency food aid, destined to victims of natural or man-made disasters. It is freely distributed to targeted beneficiary groups and usually provided on a grant basis.<sup>14</sup>

It is indisputable that food aid has saved countless lives and improved the nutritional status of large population groups in emergency situations. Food aid has also contributed to investment in rural areas by helping to finance transport and production infrastructure. It is also acknowledged, however, that food aid can impact product and factor markets by affecting three key variables: food prices, factor prices and risk, whose food-aid-induced variations are determinants of food security and poverty (Awudu, Barrett and Hazell, 2004).

### **2.1.1 Food price effect**

In some cases, food aid may exert downward pressure on food prices, and this pressure is greatest in places where targeting of aid is poor. This may occur when food aid delivery increases supply faster than it stimulates demand, thereby depressing the prices paid to local producers and traders. This short-term negative effect is relatively more likely in cases of programme or project food aid. It may create disincentives for producers to invest in improved technologies or for marketing intermediaries to invest in storage and transport capacity, thereby turning a short-term negative effect into a long-term one (Awudu, Barrett and Hoddinott, 2004).

These negative impacts, however, only affect those producers who are selling their products on the market, which may be a small proportion of total producers. In case of subsistence farmers whose food products are not actually sold, price changes may not affect decisions, or may affect them in a counterintuitive way<sup>15</sup>. De Janvry and Sadoulet (2002), for instance, emphasize the high transaction costs faced by rural households in developing countries because of poor infrastructure and low human capital. In such conditions, there exists for every household a price band within which the household has no incentive either to buy or sell (Key et al., 2000). This also holds true for the production factors that the household may own (and particularly its own labour force). Within the price band, the producer does not respond to market prices, but to an “implicit” price, clearing the supply and demand at the household level. For example, households facing constraints for the marketing of food crops (as when high transaction costs limits the number of market transactions) will not respond to a cash-crop price increase as much as would households facing no transaction costs in a perfect market situation; the former household is thus constrained by a minimum production level for its own consumption. Winters (2000) insists on the impact of such behaviour on poverty; as long as households are constrained by market failures (credit access, for example) they are unlikely to react to price changes, at least not as much as the classical model, in which the farmer acts to maximize his profit<sup>16</sup>. The implications for food aid are that price changes give limited information on households’ possible shifts between net buyer or net seller positions, and that net impact on income and food security cannot be assessed until transaction costs have been taken into account. But transaction costs differ from farmer to farmer, and therefore the implicit price such costs induce differs as well. A given change in market price may result in quite different consequences for different households, according to the specific situation. Transaction costs and price bands are idiosyncratic; food aid price impacts are also idiosyncratic.

<sup>14</sup> Intergovernmental working group for the elaboration of a set of voluntary guidelines to support the progressive realisation of the right for adequate food in the context of national food security, *Food Aid and the Right to Food – Draft information paper*, FAO, Rome June 2004.

<sup>15</sup> See the example in de Janvry *et al.* (1991).

<sup>16</sup> Löfgren *et al.* (1999) integrated a “transaction cost-constrained” household into a computable general equilibrium model. Simulations show that the household’s response to price changes is nil.

Other effects of food aid may affect all households. They are briefly reviewed below<sup>17</sup> :

### **2.1.2 Income effect**

Food being a normal good with an income elasticity of demand of less than one, each dollar of food aid received by beneficiaries will induce an increased food demand of less than one dollar. Although the propensity to use additional income for consuming food is higher when income results from food distribution, shipments of food aid inevitably induce an increase in food demand, the magnitude of which is lower than the amount of the aid. Consequently, as income elasticity of demand for food is highest among the poorest population groups, food aid distributed exclusively to poor recipients in an emergency situation generates minimal food-market distortions relative to untargeted programme food aid sold on the open market<sup>18</sup>.

### **2.1.3 Substitution effect**

When the commodity imported as food is the same as the commodity locally produced or is a substitute, the distributed food aid adds to the total supply of that good. As discussed in the previous section, in general, the increase in demand induced by the income effect is less than the additional supply. So even well-targeted food aid will tend to result in a fall in prices in non-emergency situations. The more poorly targeted the food aid is, the more severe the adverse price effects. In the case of substitute commodities, no direct supply effects are expected, only demand-side effects. It turns out that the cross-price effects of food aid are more ambiguous than the own-price effects. Food aid transfers tend to decrease the demand for substitute commodities, and to increase demand for complementary commodities.

The net cross-price effect of food aid is therefore uncertain, and depends on the relative magnitude of the (generally negative) substitution and (generally positive) income effects. Producers of complementary foods tend to benefit from food aid, while the market prices of substitute foods can either rise or fall, depending on how income and substitution effects net out.

In the longer term, continuous programme or project food aid can also help bring about changes in consumption patterns by generating demand for exotic food products (e.g. wheat bread and other wheat-based products in the Sahel).

### **2.1.4 Factors price effect**

Households derive income both from selling products and labour. Economic textbooks assert that a fall in agricultural output price generates a less-than-proportionate fall in rural wages because of declining demand for wage workers (Krugman et al., 2001). Regular income transfers, whether in cash or kind, tend to induce increased demand for leisure and further reduce the supply of labour, leading to significant diversions of labour from the market. Evidence shows that labour supply becomes more responsive to changes in income as people grow wealthier, and that poorly targeted food aid magnifies labour market disincentives by contributing to a withdrawal of labour supply from the market, with a negative consequence on wages. In particular, food for work programmes (FFW), if poorly targeted, can attract workers away from vital activities, especially if the wages offered under FFW are at or above prevailing market rates. As a consequence, these activities should be scheduled at times when there is a surplus of labour available.

Effects on capital markets are likely to be more positive. In situations of rural financial market failures, high interest rates and stringent seasonal liquidity for smallholders, the income transfer generated by food aid enables cash-strapped recipients to escape liquidity constraints and undertake productive investments through the purchase of high-return inputs,

<sup>17</sup> Gabre-Madhin, Barrett and Dorosh, 2003.

<sup>18</sup> Barrett, 2003.

as has been demonstrated in Kenya (Bezuneh, Deaton and Norton, 1988). But this is conditional upon the income transfer component of food aid being well-timed and well-targeted.

### 2.1.5 Risk-management effect

Food insecurity results from the cumulative risks faced by producers that contribute to low productivity; these include climate, disease, pests, and civil unrest or war. Food aid can act as a last resort, but how effective food aid is in helping smallholders manage their risk is the key question. Food aid targeting and timeliness have been of mixed effectiveness at best, and therefore food aid has been an unreliable insurance against shocks. According to Awudu, Barrett and Hazell (2004), much of food aid substitutes for informal social insurance flows, generating little net additional insurance coverage. They also underline the well-known hazard that people who have been assured of food aid have less of an incentive to take all reasonable precautions to avoid losses. This is true for governments as well, with long-term development implications. As long as food aid in emergency situations can be taken for granted, the incentive is reduced to undertake precautionary actions such as investment in irrigation, agricultural research and extension. This can have potentially damaging consequences on productivity and growth. The possible impacts are summarized in Table 2.1.

**Table 2.1: Potential impact of food aid on food product and factor markets**

| Potential adverse impact   | Potential favorable impact   |
|--|--|
| <b>Food price impact</b><br>1. Lowers local food prices to the detriment of farmers<br>2. Many shift preferences to imported foods                                       | <b>Factor price impact</b><br>1. Stimulus to demand for complementary foods<br>2. Income effects on demand when food aid is well targeted  |
| <b>Factor market effects</b><br>1. Labour market disincentive  | <b>Factor market effects</b><br>Food-For-Work public goods and private inputs can help productivity and markets<br>1. Alleviate binding (temporary/seasonal) liquidity constraints |
| <b>Risk-management effects</b><br>1. May act as disincentive for recipient governments and farmers to invest in agriculture<br>2. Moral hazard effects of free insurance | <b>Risk-management effects</b><br>1. Smooths income variations and reduces costly risk mitigation  |

## 2.2 Empirical evidence

Are these theoretical impacts observed in reality? The empirical evidence is puzzling. To quote the above-mentioned IFPRI report (Awudu, Barrett and Hazell, 2004), “there exists negligible empirical evidence to either refute or confirm the pervasive belief that food aid has significant disincentive effects on recipient food production at both micro and macro levels. Empirical evidence remains country specific, and to a few exceptions, no systematic finding emerges on the overall impact of food aid on food security, poverty alleviation and development”.

We use the analytical framework of Table 2.6 to track the variables that control food aid effects. On the basis of country and cross-country analysis, we try to isolate some possible consensual effects (although, as with any empirical study, results should be treated with care). The review of recent literature covered Bangladesh, Ethiopia, India, Mozambique and Tanzania, whereas cross-sectional analysis found generally applied to sub-Saharan Africa. Results are summarized in Table 2.2. Country references in the text are to be found in the table.



**Table 2.2: Observed impact of food aid<sup>19</sup>**

| <b>Disincentive impact through:</b>  | <b>Negligible or positive impact through</b>  |
|--|---|
| <b>Food price</b><br>Sub-Saharan Africa: Awudu, Barrett and Hoddinott (2004)<br>Ethiopia: Yamano, Jayne and Strauss (2000)<br>Bangladesh: Dorosh, Shahabuddin, Aziz and Farid (2002) | <b>Food price</b><br>Sub-Saharan Africa: Barrett, Mohapatra and Snyder (1999)<br>Sub-Saharan Africa: Awudu, Barrett and Hazell (2004)<br>Mozambique (Maputo): Dorosh, del Ninno and Sahn (1995)<br>Bangladesh: Del Ninno and Dorosh (1998)<br>Ethiopia (Levinsohn, Mc Millan, 2004) |
| <b>Factor market</b>   | <b>Factor market</b><br>Sub-Saharan Africa: Awudu, Barrett and Hoddinott (2004)<br>Ethiopia: Hoddinott (2003); Holden, Barrett and Hagos (2003)<br>Kenya. Bezuneh, Deaton and Norton (1988)   |
| <b>Risk management</b>   | <b>Risk management</b><br>Sub-Saharan Africa: Barrett and Heisey (2002)<br>Ethiopia: Hoddinott (2003)   |

The empirical findings to be derived from our literature review follow.

### **2.2.1 General findings**

The literature cited in table 2.2 highlights negative or negligible food price effects, positive or negligible factor price effects, and positive (short-term) risk-management effects of food aid. Discrepancies are striking, with sometimes opposite results occurring within the same country. Factor and risk effects are poorly documented compared to output price effects. An important result – or at least an issue to be further clarified – is the potential of food aid to obviate liquidity constraints. Results in sub-Saharan Africa underscore the importance of factor-market failures (labour and capital) in limiting productivity.

### **2.2.2 Targeting of food aid is essential**

A second and more specific lesson relates to the relative efficiency of different types of aid. (Self) targeting, timeliness and direct distribution schemes (in kind or cash) seem to limit more than FFW does the possible disincentive effects of food aid (as in Bangladesh and Ethiopia). While much of the literature on food-for-work (for example, Barrett, Holden and Clay, 2004) has found that self-targeting employment schemes are effective in reaching the poor, recent evaluations have found alternative explanations for the targeting of food aid: bureaucratic inertia and the history of past receipts of food aid seem to be among the most important determinants. Moreover, direct payment of food-for-work appears to be best limited to programmes with a short duration during the transition from relief to recovery. As a famine management programme evolves from relief to recovery, cash wages are likely to become a more efficient, valuable instrument for delivery of assistance as the commercial food supply improves. But as the recovery progresses, the continued provision of a wage in-kind does not appear justified, because it increasingly becomes a less efficient mechanism for provision of welfare-enhancing aid (in Ethiopia, for example).

### **2.2.3 The development impact of food aid is ambiguous**

Impact on development is difficult to analyse. Food aid can play a useful role in furthering development and poverty alleviation if the recipient country is generally following an

<sup>19</sup> The reader might be surprised to find the same author on both columns of this table: it only demonstrates that the question is country-specific and even household-specific; an author may find different and sometimes opposite results according to situations.

appropriate development strategy. Otherwise, it can create dependency and sustain inappropriate policies (Svrinivasan, 2000). In India, it is the availability since the mid-1960s of high-yielding dwarf varieties of wheat and rice, rather than food aid and donor pressure that have put an end to famine. Domestic economic policy based on a strong political will at the highest level – probably linked somewhat to India’s political system, based on democratic elections – had a substantial role in helping to stabilize food consumption, develop production and reduce food insecurity.

#### **2.2.4 Food aid as a subsidy for building infrastructure**

It has been contended that food aid could be used as a “capital accumulator” through “food-for-work” programmes to build infrastructure (such as roads, irrigation schemes and so on), while incurring only the cost of feeding workers. Furthermore, such programmes will not offend the dignity of recipients in the way that “food for nothing” might. Although this logic is seductive, it must be applied very carefully. First, there are cases where “food-for-work” was offered at harvest or ploughing time, when the opportunity cost of labour is at its highest. In such cases, FFW will depress agricultural and food production rather than increase it. More generally, it contributes to the idea that “the labour price is the cost of workers’ subsistence”. We shall see below that this is the key of the “Malthusian trap” (see Box 3.4), which must be avoided.

#### **2.2.5 The cost of food aid for recipient countries is not clear**

The cost to recipient countries of food aid, if often neglected, is far from nil, yet it has not been clearly assessed. In order for imported food aid to reach target recipients, roads, harbours, trucks and even railways are necessary. Part of that cost is borne by donors, such as the World Food Programme (WFP), which does fund extensions of ports and the building of bridges. But this sometimes requires heavy investment, of which the beneficiary government often has to bear at least a part. Also, an administration must be set up to manage the food provided and protect it from being stolen. On the positive side, such infrastructures, equipment and institutional arrangements are at least in part those that would have to be put in place anyway for the market to work properly, even though the infrastructure put in place by donors is usually more adapted to reducing the cost of transport and facilitating the flow of goods between import points (ports) and main consumption centres, rather than from the producing areas within the country to the main consumption centres.

### **2.3 In conclusion**

According to our review, food aid usually exerts downward pressure on food prices (although this may be negligible), with that pressure greatest in places where targeting is poor, but at the same time enables productivity gains through positive factor-market effects. The experiences of Bangladesh, India and Pakistan demonstrate that, with appropriate government policies, rapid technological change in agriculture can enable countries to expand food production even in the face of substantial inflows of food aid and despite their expected adverse producer price-incentive effects. Successful policies are those that make investments in rural infrastructure, assuring input supply to farmers and maintaining remunerative producer prices. In Bangladesh, which reached record levels of grain production in 1999/2000 and 2000/2001, “green revolution” technology such as small-scale irrigation, expansion of improved seed and fertilizer use contributed to the doubling of rice output and increases of wheat production several fold over the past two decades. In this period, food aid has evolved from the use of monetized food aid funds for public expenditures in the 1970s and early 1980s to reforms in the late 1980s and 1990s to improve targeting and reduce leakages (Dorosh *et al.*, 2002). This is not in contradiction with Awudu, Barrett and Hazel (2004), who conclude that “food aid’s apparent historical success<sup>20</sup> in

<sup>20</sup> Apparently, in Ethiopia, Kenya and Rwanda.

stimulating food productivity in Africa suggests that the relatively unheralded factor market effects of food aid may trump the oft-repeated product market disincentive effects”, and that “the collapse of per capita food productivity in Sub-Saharan Africa over the decade to the mid-1980s would have been still more severe without the sharp simultaneous increase in food aid flows to the region”. The key question is whether productivity gains would have been even greater with sound agricultural policies targeted on farm support. This leads us to examine the various options found both in literature and history.

## Chapter 3: Why did development policies go wrong?

Because improving food security requires an increase of real income per capita, especially for the poorest people, the only sustainable way of removing hunger is development. But what is development, and how can it be nurtured? This question has long preoccupied economists, some with a theoretical (and sometime ideological) point of view, and also other researchers who have sought to check empirically (and historically) the validity of theoretical thinking. The next two chapters review the research findings.

This chapter deals mainly with the basic facts and theory of development, using examples primarily from the nineteenth- and twentieth-century economic history of developed countries. At the beginning of the nineteenth century, these countries were not in a better situation than Africa is today. In chapter 4, specific agricultural situations will be discussed. But first we will consider the main choices a development policy-maker is always confronted with.

### 3.1 Development dilemmas

Development is conceived today as consisting in developing demand-driven markets, which will stimulate and absorb production and create employment opportunities. Such development can be oriented inward (developing domestic production for domestic markets) or outward (developing domestic production for export). Although the two alternatives seem opposite, they turn out to be equally difficult to achieve. The problem is the same from the producer's point of view, because the ultimate destination of the product – the domestic or the international markets – is immaterial. (Though of course, the export and domestic markets are not identical, and might require different commodities, at least in terms of quality norms. But at this stage of the analysis, assuming complete substitutability makes the central argument easier to understand.) A number of sub-options remain open and these will be described below, including a review of how they have been used historically in what are now the developed countries.

#### **3.1.1 Encouraging industry or agriculture?**

Economic policies can be designed to encourage agriculture or industry; for example, at the end of the nineteenth century, while Britain deliberately sacrificed its agriculture, France and Germany made it a priority (see Box 3.1). All three countries were rather successful. During the same period, the Uruguayan economy was almost exclusively based on meat production, and it was basically a failure (Jacobs, 1985). In the United States at the time of the Civil War, the contrast was striking between the South and the North. The North was industrialist and protectionist; the South was agricultural and liberal. Both were prosperous (on the surface at least, and if one forgets the situation of the slaves in the South and of the urban proletariat in the North).

These examples show that quite opposite policies can lead to success or failure, depending on specific conditions in the country. The basic reasoning here is based on the comparative advantage theory: if a country is doing well in some segments of nonagricultural production, the best course of action is certainly to develop this sector, while agriculture will release labour forces to expand it.

### **Box 3.1: Examples of opposite policy orientations in the United Kingdom, France and Germany**

In the mid-1800s, the British government decided to abolish the “corn laws”, which since the seventeenth century had protected farmers against food imports. The corn laws had been the result of a decision to protect domestic agriculture from the vagaries of international markets, on the grounds that it was the pillar of the British economy. Their abolition was a deliberate choice to sacrifice the agricultural sector in order to foster industrial development (already on a promising growth path, made possible in part by the relatively high productivity of the agricultural sector), now deemed the core of wealth and power. The existence of a highly competitive industrial sector, and the conviction that the international market supply was large enough to cover the gap between needs and domestic food production, allowed that choice. It was a conspicuous success until World War I, allowing for a brilliant development of the British industrial base.

Conversely, in the 1880s, Germany, followed by France, was confronted by a growing food deficit; they decided to discourage agricultural imports in order to let domestic agriculture develop. This policy was very successful in Germany, enabling German agriculture to sustain the consequences of a very large reduction of manpower availability during World War I. The success was less obvious in France, which remained for a long time with a farm sector cluttered by many poor peasants. A possible (but not demonstrated) explanation of this situation is that France never cut the flow of agricultural imports from the colonies, which were promising food exporters at the time.<sup>21</sup>

One must remember that the above accounts are simplifications. In fact, Britain was never completely indifferent to agriculture, and France and Germany never gave total priority to agriculture; quite the contrary. As we shall show below in greater detail, although the question has caused considerable discussion in government and university circles, it turns out that “balanced” growth based on both industry *and* agriculture is the only possible solution to development. The above examples should be applied with care, though they can still be a guide in some specific situations.

If agriculture is considered a priority sector for development, three strategic questions arise about what type of agriculture is to be pursued.

#### **3.1.2 Encouraging export or domestic market-oriented production**

The first and most important choice is between giving priority to export crops or production for domestic markets. It can be rightly contended that Africa has sufficient comparative advantages in the production of export commodities such as cotton, cocoa, oilseeds and so on to develop these products for export, and in exchange to import staple food commodities cheaply produced elsewhere. But although basically correct, this reasoning suffers from two flaws.

First, SSA is not the only possible producer of such commodities. There are strong competitors in other parts of the world, and demand for certain tropical commodities (coffee and cocoa in particular) is limited. In a highly competitive framework, it is not certain that competition would not end in a global disaster, which would see the ruin of all participants in the game. Indeed, a determinant of the short-run advantage is the existence of low wages relative to productivity of labour. If SSA had to compete with other regions with higher productivity of labour (through improved technology), competition could induce wage levels that would be close to a minimal survival wage, and that would certainly not help reduce food insecurity and alleviate poverty.

<sup>21</sup> These periods of history have been the subject of considerable research. The best synthesis probably can be found in Bairoch 1995. See also Bairoch, 1993.

Second, if a strong agriculture is developed for exports, it is probably also strong for producing domestic goods. In fact, during the last 50 years, experience with agricultural projects in Africa seems to demonstrate that there exists a synergy among different crops. For instance, in West Africa, food crops are benefiting significantly from fertilizers used on cotton fields. Other examples exist. Hence it is probably misleading to assume that there is an either/or choice between developing export crops or domestic market crops. They are in fact complementary (Lele, Van de Walle and M. Gbetibouo, 1998).

### **Box 3.2: Complementarity between food and export crops: the case of cotton in West Africa**

Since independence, and until recently, cotton in West Africa was cultivated under the supervision of the CFDT (Compagnie Française pour le Développement des fibres Textiles) and its subsidiaries (the SODECOTON in Cameroon, for example). These companies supplied seeds, fertilizers and often ploughing (when necessary). They guaranteed purchase of the harvest, retaining the advance payment made from the final payment. In addition, they offered advice and technical help.

Because the fertilizer doses were generous, food crops planted after cotton on the same soil in the following year benefitted from nutrient reserves accumulated in the soil. Because the cotton price was known in advance almost with certainty, peasants were able to make their own computations. As cotton represented a very safe speculation, they were even ready to take risks on non-supported markets, especially for food crops, because if food-crop prices collapsed, they were almost sure that receipts from cotton would give them a minimum income. This provided decisive encouragement to grow commercial food crops, the price of which could reach very high as well as extremely low values. Thus, the effect of the price guarantee on cotton was spilling over on food crops, and indeed was a condition of the development of the latter.

The CFDT itself was prudent in avoiding growing more cotton than it was possible to sell, thus implicitly stabilizing the cotton price paid to farmers at a relatively low but sure level. The main drawback of the system was that only some villages had access to cotton contracts, thus arousing jealousy from others. The CFDT system has been dismantled under pressures from the World Bank and IMF on the ground that it was not fair. Yet it is clear that nobody really benefited from its disappearance, while many African peasants suffered from it.

#### **3.1.3 Small or large (subsistence or commercial) farms?**

The relative advantages and disadvantages of small (or “subsistence”) and large (or “commercial”) farms have been the subject of vast debate. This would certainly not have been the case if large farms had benefited from a significant and decisive advantage. But neither does it mean that some advantages for the large farm may not materialize in some circumstances.

The major source of confusion arises from the failure to distinguish between “large farms” and “capital intensive technology”. Obviously, certain pieces of equipment, such as tractors or combine harvesters, must be employed on a certain scale, which is “large” by African standards. However, a tractor, a combine harvester or even a pair of oxen can be hired for a few hours or days on a small farm. The difficulty is that there are no harvesters or tractors to be rented in most rural areas in SSA. Thus, the reason for not employing tractors or combine harvesters in Africa is not because farms are small, but because there is a lack of capital, which is in fact one of the main constraints of SSA agriculture.

In many cases, this confusion was one of the reasons for the dismantling of “state farms” and other similar devices (along with the fact that they had often become a burden for the government’s budget) with the advent of the structural adjustment programmes. Such farms were organized on the same pattern as similar enterprises in industrialized countries. For

instance, in the 1970s, Gabon developed California-style “feed lots”. But the conditions were not the same as in California. In California at the time, manpower was scarce while capital was relatively abundant, and as a consequence, in Californian feed lots the quantity of capital per worker was enormous. In Africa, capital is the scarcest resource. In such a context, using the same technique as in California to produce meat just squanders of resources.

At the same time, monitoring workers is extremely difficult on a large farm. Since their salaries are guaranteed, workers have no incentive to work hard or to warn their supervisors if something goes wrong. For these reasons productivity of labour is often low on such farms, unless farm management exerts considerable power and authority over workers. And in fact, this was the case on large slave plantations, and accounted for their “economic success” (see Hicks, 1969). In the absence of a dictatorial authority (and dictatorial authorities must not be encouraged for other reasons), the financial collapse of such a system becomes unavoidable<sup>22</sup>.

On the other hand, even if “small farms” are not less efficient than “large farms” as long as production is considered in the strictest sense of the word (and indeed, small farms are often more efficient and labour is much more productively and carefully employed, because farmers “monitor themselves”), they still suffer from the structural inability to get the product to market. A small farmer has neither the time nor the transport to bring the harvest to remote markets. Hence an organization of the agricultural sector based on family farms implies the existence of large “post-harvest” networks to collect production, with roads, means of transportation, storage facilities, quality control systems etc. Some of these facilities must obviously be private (e.g. trucks) while others (such as roads) are of a public nature, requiring the state to intervene.

### **Box 3.3: Historical development of post-harvest networks in Europe**

In most European countries, the creation of such networks has been the task of local figures, often democratically elected, and sometimes because they were rich enough to pay for the necessary investments. Mostly politicians, they were in some instances motivated by their own interest and profit, but more often by power.

For the cleverest of the poor, the process functioned as a “social elevator”: in many cases, being elected as president of a cooperative or to the council of a local community was the only chance for a peasant to become an “important person”. At the same time, this process could not come about without a minimum of public support. At the very least, local public executives had to be available to discuss the opportunity envisaged by public investment.

In some cases, because of disputes, lack of economic culture or other considerations, such public support was probably not “optimally” utilized. Yet, on the whole, the result is evident: in the absence of such institutions, efficient small-family farming would not have emerged.

However they are created, such facilities are a prerequisite for “subsistence farms” to be turned into “commercial farms”. Such a transformation occurs very easily and often quickly when these facilities exist, as shown by innumerable examples, such as the transformation of

<sup>22</sup> For that reason, very large farms in Asia and in Medieval Europe evolved toward sharecropping. Indeed, with sharecropping contracts, workers are encouraged to work and “monitor themselves”, while landlords have incentive to provide not only land, but also capital goods. This type of contract is “inefficient” according to Alfred Marshall because the incentive is only partial. Since workers receive only a share of benefits, marginal productivity of labour does not exceed this reward, while landlords, too, invest less than what could be expected from the marginal productivity of capital. Yet, “a little” is better than “nothing”, and sharecropping could be considered at least as a transitory solution for mitigating labour supervision problems in the African setting.

"labourers" into commercial farmers in Europe during the nineteenth century, and also the evolution of many irrigation schemes<sup>23</sup>, for instance the "Office du Niger" in Mali.

Thus, the key idea is that "small" farming can be even more efficient than "large farming", but with the condition that there must exist a complex network of pre- and post-harvest institutions linking farmers and markets.

#### **3.1.4 Intensive or extensive farming?**

Intensive farming is a set of production techniques that involve a large quantity of inputs (be it labour, capital or other inputs) per unit of land. Typical intensive farming techniques are those derived from the "Green Revolution": heavy investments in irrigation, large quantities of fertilizer and high-yield varieties of seeds. Productivity is impressive, with often ten tonnes or more of grain per hectare per year over three crop cycles.

Such technology was developed in India and other high-population density countries in Asia. With something like 0.1 hectares of arable available per final consumer, there was no choice but to increase yields in order to ensure a minimum level of self-sufficiency. The situation is not the same in most parts of Africa, however, where land is generally not scarce (although this situation is rapidly changing in certain areas because of high population growth). SSA yields in traditional agriculture remain very low and are the result of low-input agriculture.

Technological choices do matter, of course. And the question in SSA is the type of technological development that is best adapted to prevailing conditions, and the level and type of intensification that should be advocated.

At present, with traditional tools, an SSA smallholder family can cultivate from one to five hectares (depending on agroclimatic conditions). Beyond this limit, there would not be enough time to harvest and weed at the appropriate time. With a yield of 0.5 tonnes of grain per hectare (from which 0.1 tonnes of seeds for the next year are to be reserved), this is hardly sufficient to provide enough calories for a small family of five or six persons, not to mention selling any surplus. With a pair of oxen (and the accompanying set of tools), this family could operate 5 to 15 hectares, which means more than tripling the productivity of labour. With tractors, harvesters, and other devices, one person can operate 100-200 hectares anywhere in the world. This represents an additional productivity multiplied by a factor of ten. Increasing labour productivity is the only way for a farmer to generate a higher income. Improving the genetic material used or using more inputs (fertilizers and pesticides, or other means of plant protection) can also contribute to an increase in labour productivity, through intensification of agriculture and a simultaneous growth of land productivity (yield). To adopt this second approach, the farmer still needs working capital for the purchase of additional inputs. Thus, increasing the quantity of capital per hectare or per worker is essential to obtaining higher labour productivity and greater income.

#### **3.1.5 The need for an evolutionary policy**

Development entails increasing the wealth of a nation as well as the average wealth of its inhabitants. As average income increases, the proportion of expenditure on food decreases. Relatively more is spent on other items such as housing, education, health, entertainment and luxury goods. Similarly, the composition of food consumption changes: vegetables, fruit and meat increase, while traditional staple foods decrease. These changes are reflected at the macroeconomic and demographic level.

As industry develops in response to increased non-food demand, an increasing number of people move to the cities (and to non-agricultural activities). Figure 3.1 illustrates this point,

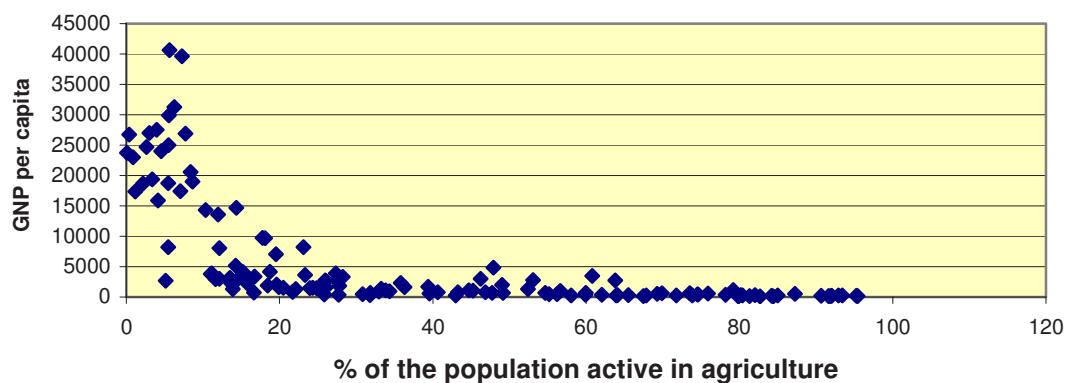
<sup>23</sup> Irrigation is in general a public investment, which in principle has nothing to do with the above-mentioned facilities. Yet, since the people in charge of an irrigation scheme want it to succeed, they often provide it as a "complementary facility". One could ask whether the "complementary facilities" are not just as essential as water in explaining most irrigation project successes.



showing the evolution of the proportion of the population working in agriculture as a function of per capita GNP. It is clear that there is a relation of inverse proportion between these variables: the wealthier the country, the less important the agricultural population. But because with a constant population food demand is about the same (and even slightly increases), agricultural production must become more capital-intensive to compensate for the loss of labour. Unless capital is available for agriculture to change in relation to economic and demographic trends, the country's food deficit will increase and it will have to rely increasingly on food imports.

Thus, if most of the agricultural area is occupied by, say, one farmer per 5 hectares, assuming a change that will lower this ratio to one man per 100 hectares means that the farm population must be divided by 20. Therefore, 80 percent of the population currently occupied by farming will have to change to another activity. Such statements often surprise (and even offend) people accustomed to think about agricultural policy. Yet it is merely logical, and must be considered seriously<sup>24</sup>.

**Figure 3.1: Percentage of population active in agriculture plotted against GNP per capita for 133 countries in 1990 (each point represents a country)**



**Source:** World Bank basic indicators

Under the best circumstances, people migrating to urban areas will be employed in industry or services, producing non-agricultural goods for domestic consumption or exports. This scenario is nothing other than the "normal" course of balanced development, which implies that sustainable growth in one sector requires concomittant growth in other sectors.

But there is another possible (and much worse) scenario: too rapid an expansion of "commercial farming" may result in an exaggerated pressure on land, the "rich" capital intensive farmers being in a position to maintain poor subsistence farmers in marginal areas, on the grounds that the latter "cannot make proper use of land" (which is true, in the absence of capital). From Algeria to Zimbabwe, such a situation has not been uncommon in colonial Africa. Since the poor, in that case, quickly run out of land, they have no choice but unemployment and living in misery. They are victims of predatory and other illicit activities and of insecurity. This can be avoided if industries and services expand in tandem with the farming sector.

<sup>24</sup> The thesis was very popular in the 1950s and 1960s, when the question was at issue in the United States and Europe. Nowadays it is surprisingly absent from the literature. Interested readers could consult Mellor, 1995; Niho, 1974; and Mazoyer and Roudart, 2005.

## 3.2 A quick historical sketch of ideas on development

Since the 1960s, almost all development theories have been tried in Africa, and most have been disappointing. Dwelling on conspicuous failures may not be necessary, yet learning from experience is useful if it can help to understand contemporary problems. For that reason, the main development doctrines and their outcomes have been reviewed below.

### 3.2.1 The socialist “industry-based” approach to development

Since the most obvious sign of development is the existence of industry, early proponents of development policies argued that forced industrialization was the only path to growth. But how does one force industrialization? The idea was to have workers build machines, which would help in building other machines, and so on, until consumer goods were available in abundance. To ensure that food was available for the population during the industrialization process, large state farms were established, which were expected to benefit from economies of scale. Countries adopting this strategy followed a command economy approach (central planning). The USSR was the leader in this line of thought, which was extremely popular in the 1960s.

This approach achieved some success<sup>25</sup> – first in the USSR itself, where there was rapid economic growth during the 1950s and the 1960s (and even until about 1980)<sup>26</sup>. There were also conspicuous failures, for instance in Madagascar and Tanzania. Especially in agriculture, economies of scale failed to materialize, largely because of labour supervision problems and the stifling of individual initiative, which put most state farms at disadvantage compared to peasant farmers. As noticed by Nobel Prize winner Amartya Sen, lack of incentive at all levels of the decision-making chain caused enormous difficulties each time unexpected situations occurred. Because in agriculture unexpected situations are the rule rather than the exception, the failure of such a system is not surprising. At the same time, in most of the countries that followed that line (Madagascar being a particularly illustrative case), because peasant farming was not within the scope of the plan, it was denied any support. As a consequence, not only did small farms not continue to supply free markets with even modest production, but most of the time their production shrank to a level only sufficient for subsistence of the household<sup>27</sup>.

In contrast to the “socialist approach”, alternative theories explicitly left room for the market. Yet until the 1990s, it was generally agreed that even in market economies, the state had a central role to play in the market, although there was considerable disagreement as to the best way for the state to intervene.

<sup>25</sup> Bairoch (1995) notices that, on the whole, a “planned” economy achieved slightly better results (in terms of growth) than a “market” economy in Third World countries during the period 1950-1980. He adds at the same time that this was more a matter of chance than of regime, as actual economies were never either pure planned or pure market economies.

<sup>26</sup> It remains to be seen if this USSR success justifies the theory. In fact, Russia was already a relatively well-developed country in the 1920’s, so that it could perform a basic capital accumulation from its own resources. And, despite the advertised “planning system”, markets continued to play a role in the USSR which should not be underestimated, especially in agriculture. “Individual plots” – that is, in essence, peasant farming – were the sources of a very significant proportion of overall food production.

<sup>27</sup> Curiously enough, such a scenario did not occur in USSR. One reason for that is that kolkhozian workers on “individual plots” were in fact indirectly supported by “large farms”, through a strange set of complementarities: The Kolkhozes were producing basic grain foodstuff, through capital intensive technology. A significant part of the kolkhozian grain production was more or less officially used by workers to sustain milk cows and other animal production which they had the right to raise on their “individual plots”. In principle, kolkhozian plots were intended to serve only family needs. In effect, most of the corresponding production was sold on the “kolkhozian market”, which accounted for a significant share of the USSR agricultural production.

### **3.2.2 Early theories of development based on agriculture**

#### *The colonial pact*

Yet another view was based on the fact that developing countries being mostly agricultural, they should base their development on agriculture. This idea was introduced very early and is at the root of the “colonial pact”. As a consequence of comparative advantage, the colony would specialize in agricultural export goods, while the colonizer would manufacture the industrial goods using its technological skill. Ironically, this doctrine is now current in many WTO circles, because it is strongly founded on the elementary Ricardian comparative advantage concept<sup>28</sup>. Indeed, the development of most colonial countries actually began with a “commodity boom”. Because tropical countries were so obviously in a better position to produce cotton, cocoa or rubber, it did not take a great economist to understand and seize such an opportunity. The many “Indian companies” of the eighteenth and nineteenth centuries did exactly that, and often with success, at least at the beginning.

Political reasons aside, a major weakness of this colonial approach to development is the phenomenon known as the deterioration of the terms of trade. The phrase “terms of trade” refers to the ratio export prices/import prices. Measuring it is not easy, because results may vary according to the weight given to each specific price in the indices calculation. Nevertheless, as shown in Figure 3.2, whatever the method of calculation, as time passes, it is a fact that the ratio of developing countries’ export prices over import prices follows a downward trend, compelling these countries to export increasing quantities of their products to be able to continue purchasing the same amount of imported goods (Ocampo and Parra, 2003).

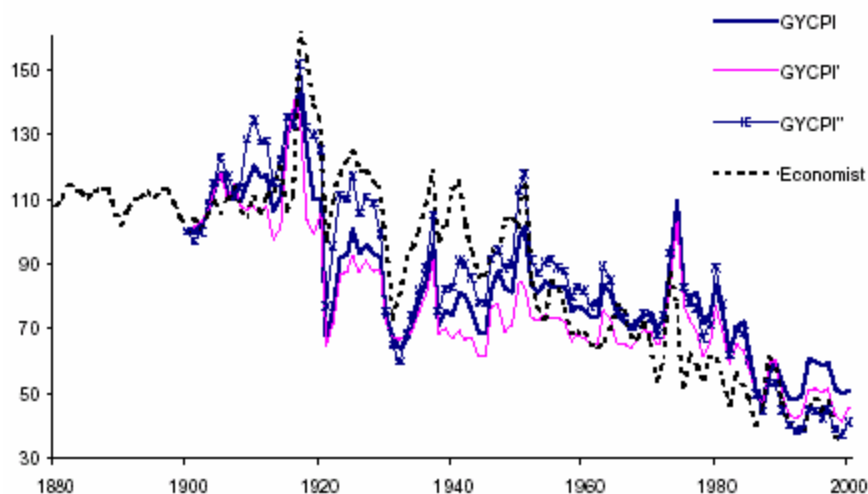
There are different interpretations of this evolution. One of them was given more than 200 years ago by Malthus,<sup>29</sup> who stated that if labour is to be sold on a competitive market (which actually is the case, if commodities sold on competitive markets are produced only by unskilled labour in developing countries), then its price must just equal the level at which workers reproduce themselves – that is, the “starvation point”, below which workers die and population becomes stable (Box 3.2).

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<sup>28</sup> Enunciated by David Ricardo (1772-1823). See Schumpeter (1954).

<sup>29</sup> Thomas Robert Malthus (1766-1834). See Schumpeter (1954).

**Figure 3.2: Various estimates of real commodity prices index evolution since the end of the nineteenth century**



**Source:** reproduced from Ocampo and Parra (2003)

GCPI: Total index, weighted by the share of total exports represented by each product in 1977- 1979; three sub-indices are also derived: food products, non-food products and metals. GYCPI' : Total index, weighted by the developing countries share of commodity exports in 1981. (The original index used weightings for 1977- 1979; since these weightings were unavailable, weightings for 1981 were substituted.). GYCPI'': Total index, weighted by the share of world exports represented by commodities during the year in question. Economist: Source: Grilli and Yang (1988); The Economist and calculations based on United Nations data.

### **Box 3.4: Robert Malthus and modern economists' views on the price of labour**

Robert Malthus's view regarding wages was pessimistic: anything preventing the poor from dying – especially charitable help – was going to increase the evil of low salaries. The only possible way to increase wages was to let the population decrease. Then labour would become scarce, and wages could increase again. Hence he would have disagreed with food aid programmes, probably on the grounds that they would just prolong the ordeal of the poor, who would be better off dying as quickly as possible. (Malthus was a priest, and practiced charity toward the poor in his parish for years. Such was the lesson he derived from this experience.)

But Malthus was not entirely right: another possibility is to employ the poor in creating new wealth, especially capital goods capable of raising the marginal productivity of labour, thus allowing for increased wages through growth and expansion. This is what economists discovered during the course of the following two centuries. Human needs are insatiable, and it is always possible to find usefulness in employing additional workers to satisfy them. As a consequence, if markets operated ideally, the wage rate should never fall below the subsistence level. If it does, from time to time (as was the case in Malthus's England), it is a consequence of bad organization of society and of "market failures", leading to situations in which, for various reasons, actual markets do not warrant an optimal use of production factors, one of which is labour.

Another interpretation<sup>30</sup> is based on the technological change that occurred in agriculture and on the structure of international agricultural markets. Because of technological progress,

<sup>30</sup> Based in part on the view of the "structuralist" economists (Prebisch, 1950).

productivity increases. In a competitive market, prices follow the production cost. Therefore, production costs must fall as productivity increases.

A third interpretation relies on the differences in income demand elasticity in developed (centre) and developing (periphery) countries. The elasticity of the demand for food and fibre with respect to income is lower in the centre than on the periphery. At the same time, it is higher on the periphery for industrial products imported from the centre. The consequence is that the process of growth, and hence of income expansion, raises import demand more in the periphery than at the centre, thus pushing up the prices of periphery imports vis-à-vis those of exports and lowering the terms of trade.

Whichever of these explanations holds in general, it must be recognized that all possible reasons for an adverse evolution of terms of trade are present today in SSA. Productivity increases less in Africa than in other regions; Africa produces relatively more low income-elasticity basic foodstuffs than any other region; and its only opportunity is to compensate for other disadvantages by reduced remuneration of labour. It is therefore not likely that Africa can develop by selling agricultural goods only – which, of course, does not mean that selling agricultural products must be ruled out altogether.

#### *The postcolonial self-sufficiency theory of development*

The main doctrinal change introduced in the postcolonial era (mostly in reaction to the "colonial pact" and its associated failures) was the idea that it was necessary to tax agriculture in order to pay for industrial development. The idea was not without logic: some sort of industrial development was needed, but the main obstacle to industrial development was the lack of capital. Increasing the stock of capital is possible through savings. This implied foregoing the consumption of part of the benefits accrued from exporting agricultural commodities, and importing capital goods from abroad (the socialist approach seen earlier amounted to saving the surplus of agricultural commodities produced and using it to pay for industrial development).

Because governments were not overly confident in the private individual's willingness to save, they decided to tax agriculture in order to generate the required savings. In some cases, this was achieved through explicit taxation: for instance, in Côte d'Ivoire, the government bought cocoa at a low price, and the commodity was then resold to exporters at a higher price, the difference being used to fund public investment. (This kind of policy came under fire by the IMF and the World Bank during the 1980s and 1990s, on the ground that it was "robbing farmers of their labour".) In other instances governments used "forced savings through inflation". Due to money creation, prices increased constantly and producers were paid apparently fair prices. But when, later on, they tried to use the money to buy consumer goods, they realized that prices had increased in the meantime, thus limiting their ability to consume. In that way, they were "forced to save". Obviously, such a trick can work for some time, but after a while producers tend not to keep liquidities during inflationary periods.

The major difficulty with this policy approach is the inability of the state to invest the accrued savings usefully. It has similar drawbacks to those seen in central planning: a bureaucracy can do a lot of things, but it cannot fulfil the role of an entrepreneur. Unfortunately, this is precisely what would have been necessary to ensure success of the forced savings policy. As a result, except in a few cases where charismatic leaders played a large role, state entrepreneurship mostly failed due to corruption, lack of accountability and mismanagement. Many state enterprises were asked by the state to perform non-commercial (political, social and economic) functions with a cost that would put them in deficit (overstaffing, provision of subsidized goods or services etc.). Indeed, most of these investments were miscalculated from the outset, because they were designed on the model of industrialized countries, without regard to African specificity.

### 3.2.3 Import-substitution policy and “development projects”

The “import-substitution policy” (see Box 3.5) is a natural corollary of the structuralist view that emphasizes the need for industrialization as a vehicle for development. If the diagnosis of the long-term evolution of the terms of trade was right, the development process could not rely on export-led growth based on primary products. If planned autonomous growth is not feasible and if there are difficulties in being competitive on the world market and in exports, then the import side of the balance of trade has to be reduced to create at least a balance, if not a surplus, to fund imports for the means of production.

#### Box 3.5: The import-substitution strategy and its denouement

The thrust of this strategy was a change of the development engine from the promotion of exports to the substitution of imports, and from investment in primary products (agricultural raw materials, minerals and fuels) to investments in the development of the manufacturing sector. Industrialization required a number of conditions:

- (i) Protecting infant industries from international competition;
- (ii) financial and fiscal support to these industries;
- (iii) the development of domestic infrastructure in the transport, communication and energy sectors;
- (iv) the enlargement of the domestic market so that it could absorb the manufacturing goods produced internally, to be achieved through suitable income distribution measures such as agrarian reform, social welfare and improved wages;
- (v) the contribution of direct and indirect foreign investment; and
- (vi) a strong and rational (i.e. planning-oriented) government of a new type, representing the aspirations of the emerging industry-related classes, as opposed to those of the traditional landowning and intermediary bourgeois groups.

This policy package was very successful in creating an industrial base and raising growth rates throughout most of the Latin-American region in the postwar decades, until the late 1970s and early 1980s. This happened, however, in a macroeconomic climate of recurrent economic cycles, fiscal and monetary permissiveness, mounting inflation and overvalued exchange rates, which led to recurrent fiscal and balance-of-payment disequilibria. It is generally acknowledged today that, in the end, these disequilibria led to the exhaustion of the model's development potential, at least under its traditional form. This happened roughly in two phases.

First, in the 1970s, the macroeconomic disequilibria, which had been generally moderate up to then, were exacerbated by the abandonment of convertibility by the United States and the consequent proliferation of flexible exchange regimes. This generated a relaxation of discipline in the international monetary system, exacerbated by the oil shocks, which led to international inflation. They were cushioned, however, by the undisturbed accumulation of a growing international debt in most countries in the region, facilitated by the enormous excess liquidity existing at the time in international capital markets, much of which found its way into Latin America in the form of international loans.

Second, in the 1980s, the disequilibria became unsustainable due to a combination of three factors: (i) the drying up of fresh capital inflows due to growing repayment difficulties; (ii) a big international increase in interest rates; and (iii) a long-lasting international recession, which resulted in a big drop in the prices of Latin American primary export products. These factors precipitated the so-called debt crisis (i.e. the inability to service the debt), which marked the end of the import-substitution strategy and the opening of the structural adjustment era.

Source: FAO, 2000

At the same time, import substitution should aim at building up an autonomous industrial capacity able to produce those goods for which world prices are improving. This can be done by heavily protecting local industries capable of producing goods that are import substitutes. Thus, for instance, investment goods that are unlikely to be produced in the country are imported free of taxes, while food, which is assumed to be more easily produced locally, is subjected to a high tariff. Simultaneously, subsidies are provided to investments in the most promising import-substitute industries, such as low-cost cars, or similar goods that are also heavily protected by tariffs on imports, to allow these new industries to be competitive on the domestic market. To complement these policies, government also has to set up public utilities, such as roads, dams, research institutions and so on. This type of strategy was widely adopted in Latin America (see box) and India in the 1970s and early 1980s.

To some extent, this idea can be traced back far into the past. It was at the root of the policy set up for France by Minister Colbert during the seventeenth century (hence the name “colbertism” given to this sort of action). In Africa during the 1950s and 1960s, this line of thought was very fashionable, although it is not clear that the philosophy was completely understood. Indeed, instead of setting up long-range plans, with consideration of possible future evolutions into which particular projects could have been progressively and consistently embedded, many African leaders were excessively preoccupied with starting a large number of projects as soon as possible. It led to deep misunderstandings between project leaders and governments. Understandably, project leaders were focused on the success of their projects, without regard to other considerations (all the more so because most of them were expatriates). Governments were not able to coordinate these activities. Thus, the overall economic policy was replaced by a set of “development projects”, each of them approved on its own merits, but with their integration into a whole not really being consistent.

It would certainly be wrong to be overly severe when assessing such policies. They possessed the main quality of being pragmatic, and (contrary to the political logics presented so far) almost completely without ideology. At the same time they had serious shortcomings. First, the model would now be contrary to the rules of WTO, which renders its application today virtually impossible. It also requires very careful and efficient governance, as well as an irreproachable bureaucracy. For these reasons, and many others, international organizations preferred to recommend a liberal approach in the 1980s and the 1990s.

#### **3.2.4 The “liberal” approach**

The most “natural” policy is not to do anything. This is the *laissez faire* (let it be done) doctrine, which promotes governmental abstention from interference in the workings of the market. This policy is recommended by the most liberal economists, on the ground that development is tantamount to all citizens’ enrichment. Since everyone likes to become rich, people are expected to act in order to achieve this goal. If the law prohibits unsocial behaviours, such as robbing or criminality, the only way to reach this goal will be to “cooperate” with other citizens by responding to market signals.

In this view, the government has nothing special to do in the economic sphere but prevent gain from unfair competition, and the best arrangement for growth emerges from the market, the reason being that the market is a unique and extremely efficient device for looking for new opportunities<sup>31</sup>: if competition is promoted no monopoly or unjustified benefit can stand for long, because surely somebody will discover that it is possible to make money by providing the same goods or services at a lower cost, thus destroying the monopolist’s source of income and power. Technically, it can easily be proven that perfect competition ensures *marginal cost* equating price. The marginal cost is the cost of the last useful unit of any good or service produced. If a larger quantity is produced, its marginal cost will be

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<sup>31</sup> Among many others, see Hayek (1979).

higher, and not worth being purchased at this cost. If a smaller quantity is produced, then at least one customer is ready to buy it at a price even greater than the cost. Thus, when marginal cost equals price, producers have no incentive to produce more, and consumers get the lowest price compatible with technology and other prices in the economy.

This economic theory – liberalism – became dominant in the 1980s and underpinned the structural adjustment approach, which replaced previous policies in most sub-Saharan African countries. The first principle was that nothing could be done for development if the main macroeconomic equilibriums were not secured: thus, the balance of payments and government budget – but also the accounts of all parastatal companies and other “projects” – had to be balanced.

In such a policy context, of course, there is no need for the state to tell investors what to do. Because developing countries possess manpower in abundance and are deprived of capital, the marginal productivity of capital should be high in developing countries, and it was expected that investors would be attracted by such a high profitability and hence eager to invest. The role of the government is limited to the minimum: e.g. securing property rights, external and internal security and rule of law and key infrastructure.

Unfortunately, it is now clear that the structural adjustment policy failed to trigger the investment and growth it was supposed to generate after what was expected to be a few difficult initial years necessary to absorb the heritage of the past and re-establish the basic equilibria. Agricultural markets, particularly in SSA, are far from perfect. After almost two decades of active structural adjustment, results in SAA, as detailed in chapter 1, have not been as hoped for, and the constraints facing SSA agriculture and food security call for additional support.

### **3.3 In conclusion**

The main conclusions of the review presented in this chapter can be summarized as follows:

- 1) There is no clear-cut recommendation on whether agricultural development should be export-led or export-oriented in order to satisfying local demand. It depends on local conditions. Common sense, however, suggests that in larger countries, opportunities offered by local demand and the increasing share of population living in urban areas can act as an important source of growth for the agricultural sector. Smaller countries with limited domestic production for export will necessarily have a larger role to play in the development of the agricultural sector. However, it is also apparent that there is a strong synergy between these two approaches.
- 2) Capital accumulation is the key issue for development. It may originate from private or public sources, or be funded internally or from abroad. It is necessary to identify the specific types of investments to be funded publicly or privately, and to put in place policies that attract private investment.
- 3) A sound food and agriculture policy should aim first, obviously, at feeding the nation (whether from local production or from imports), avoiding famines, generating employment for labour in rural areas and promoting agro-based value-added activities.
- 4) A sound agricultural policy should also manage the progressive movement of population and labour from agriculture and rural areas to other sectors and cities.



- 5) It may be necessary to "tax agriculture to finance development", insofar as agriculture is the main sector of the economy in SSA, and, therefore, the only possible source of fresh savings. Yet this must be done with prudence, and only if the government is prudent enough to make a proper use of the savings thus obtained. In any case, in view of the high interest rates practiced in the countryside, fueling agriculture with increased credit is certainly a feasible and promising way of increasing income and therefore savings.

In the next chapter, policies to make investment attractive in agriculture and agroprocessing industries and to handle intersectoral and rural-urban labour migration in such a way as to avoid shortages or overproduction will be discussed. It will be shown that specific conditions in the agricultural sector justify well-designed and targeted public intervention to complement the market. But first we must address the question of the place of agriculture within the whole economy.