

Least developed countries – the case of Burundi

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Abstract: The contribution is focused on the food problem in the least developed countries, on the chosen areas where the overall situation is the most problematic. It deals with Burundi, belonging to the low income food deficit countries with one of the world's lowest rates of the gross domestic product per capita. The paper defines the food security situation in the global connection, representing a wide complex of economic, social, demographic, technologic and political aspects of production, distribution, shift and consumption of foodstuffs. The inter-related causes of food insecurity are mainly the long lasting civil wars, a limited access to land, environmental degradation, climatic shocks and the rapid population growth resulting from the high birth rates and the return of refugees. Subsistence crops and livestock products represent the main source of income for most households. The performance of these subsectors is very low, and generates chronic food deficits. Agriculture is thus the key sector in the predominantly rural economies and there is still a significant room for growth, diversification, increasing productivity and improving competitiveness.

Key words: agriculture, conflict, economic growth, food security, poverty

Economic growth alone could rapidly reduce poverty and hunger, many parts of the developing world ought to be much freer from these scourges than they are. To be sure, the rapid economic growth in many developing countries, and the agricultural growth in particular, has advanced the global progress in reducing poverty and hunger. But even growth that reduces poverty has its limits in reaching and including the extremely poor and hungry people. Especially in the environments of high inequality and poor governance, growth often does little to improve the livelihoods of those at the bottom of the income scale. And while growth is a key to cutting poverty initially, its power to reduce poverty and the dangers to human well-being (such as childhood malnutrition) diminishes as the poverty reduction progresses (Braun et al. 2007).

Economic growth in Burundi has remained well below the SSA (Sub-Saharan Africa) average, and Burundi is now the third poorest country in the world. In 2005, the real per capita GDP dropped to \$105, a level that had not been recorded since the mid-1960s. If trends persist, Burundi will need 225 years to reduce its poverty by one half*.

Agriculture accounts there for 31.6% of the GDP, industry 21.4% and services 47%. If we take a look at the labour force, we can see that 93.6% of the population works in the agricultural sector.

Over the 2000–2005 periods, the structure of the economy (contribution to the GDP by sector) was as follows: services: 41.7%, agriculture: 39.2%, industry: 19.1%. Over time, the structure shows a shift towards services: in 1970–1979, services accounted for 21.5% of the GDP and agriculture for 65.5%. The share of industry has only marginally increased over the last 30 years, from 13.1% in 1970–1979 to 19.1% in 2000–2005. Although the contribution of the service sector was higher than that of agriculture for the first time during the 2000–2005 periods, the population remains predominantly rural (90–95%) and dependent on its own agricultural production for its subsistence. Furthermore, while the service sector indeed experienced a growth period, the figures also reflect a decline of the agricultural productivity due to the environmental factors (climate, erosion, loss of fertility) and the periods of conflicts and insecurity (Vinck et al. 2008).

According to the U.S. Department of State 2011 (USAID 2010), the primary sector is supplied by coffee, cotton, tea, corn, sorghum, sweet potatoes, bananas, manioc (tapioca), beef, milk, hides. The secondary sector is based on the beverage production, coffee and tea processing, cigarette production, sugar refining, pharmaceuticals, light food processing, chemicals (insecticides), public works construction,

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consumer goods, assembly of imported components, light consumer goods such as blankets, shoes, soap.

Although Burundi is not a globally significant producer or consumer of minerals, the country has commercial quantities of nickel (6% of the known world reserves), phosphates, vanadium, peat, and alluvial gold, and niobium and tantalum are produced on an artisanal scale. The country also has deposits of iron, limestone, uranium, titanium, carbonatites, and cassiterite under varying exploration and production efforts. Burundi exported 2170 kilograms of gold in 2008, with between one quarter and one half produced by artisanal miners. Most mining takes place in the Kirundo, Kayanza, Muyinga, and Citiboke provinces (Baghdadli et al. 2008).

Only a small number of companies are active in the Burundi's mining sector, although the number of foreign companies engaged in the exploration is increasing. The privately owned company Comptoir Minier des Exploitations du Burundi SA (COMEBU) is mining gold, niobium, tin, tungsten, and tantalum. The State-owned Office National de la Tourbe (ONATOUR) produces peat, and the artisanal miners produce alluvial gold. The government awarded the British company Surestream Petroleum Ltd. the exploration licenses on land near Lake Tanganyika. The company is proceeding with its environmental impact assessment in 2010, with a seismic study to follow in 2011. The government identifies the lack of sufficient, reliable energy as the biggest challenge to growth in the sector (Baghdadli et al. 2008).

Mining activities have caused an environmental damage in many areas. The artisanal mining for tantalum (coltan) takes place in hundreds of sites in the Northern Burundi. The operations remove the natural

soil cover, exposing the bare rock that can leech toxic and radioactive elements. The course tailing fills the natural waterways and flows over the fertile land in valleys. Brick quarries are often established on hillsides, along flood plains, on channel banks, and in wetlands. The quarries cause the sedimentation and erosion, with a serious loss of soil and soil productivity.

The secondary sector is underdeveloped. The dominant presence is that of the state, and the private sector is marginal. Most companies are in the state or mixed ownership, and the state often holds a majority interest. Despite the privatization process that was undertaken during the Structural Adjustment Program, the state remains the principal operator in most economic sectors, such as the energy, agro-industry, mining, communications, transport, construction, insurance and hotels.

Compared to the public and para-public sectors, the formal private sector is relatively marginal, consisting of small and medium-scale enterprises. These enterprises are engaged in a variety of activities, and nearly all of their output is aimed at the local market. Exports are rare, and account for only a minimal proportion of the output. Most of these enterprises were created to exploit the opportunities offered by a protectionist environment and a captive market – in other words, they had an import substitution rationale. In the current atmosphere of globalization, liberalization and regional integration, these firms cannot compete with the foreign products, because of the difficulties of supply – the country's landlocked situation raises the cost of raw materials. The narrowness of the local market, together with the high tax burdens and the lack of access to financing, are further constraints.

Table 1. Key sectors for export and import (%)

Breakdown of the economy total exports (2008)		Breakdown of the economy total imports (2008)	
Agricultural products	61.1	Agricultural products	10.0
Fuels and mining products	15.0	Fuels and mining products	3.0
Manufactures	23.9	Manufactures	64.9
By main destination		By main origin	
1. United Arab Emirates	43.6	1. European Union (27)	40.5
2. Switzerland	15.3	2. Uganda	9.6
3. European Union (27)	11.7	3. Kenya	8.8
4. Kenya	5.3	4. China	7.3
5. Congo, Dem. Rep. Of	4.2	5. India	5.0

Source: WTO (2009)

The Burundi foreign trade was in 2009 created as follows: *Exports* – \$63.9 million f.o.b.: coffee, tea, sugar, cotton fabrics and hides. *Imports* – \$402.3 million f.o.b.: food, beverages, tobacco, chemicals, road vehicles, petroleum products. The country's debt was erased through the International Monetary Fund's Heavily Indebted Poor Countries mechanism (Table 1).

The cash crops account for almost all the export revenue. Coffee, the main contributor by far, is produced by about 800 000 households and accounts for 85% of the export revenue despite its mediocre performance. Tea is currently the Burundi's second largest cash crop. It provides 12% of the total merchandise export earnings, and it is produced by four estates and over 50 000 smallholders. Horticulture expanded recently and appears to offer a promise for diversifying the agricultural risk and revenue.

Privatizing the coffee and tea subsectors and developing small entrepreneurs in the horticulture subsector are vital to increasing the contribution of the export crops to growth. The privatization of the coffee and tea subsectors should ensure that the property transfers improve the sector's competitiveness and contribute to the shared growth. Increasing the contribution of horticulture to growth involves a different approach, and will depend on improving the business climate and access to the rural finance (World Bank 2010).

FOOD PRODUCTION

As of 2007, 90% of the Burundi's 8 million people lived in rural areas. The Burundi's mild climate and adequate rainfall provide an environment suited to the intensive agriculture (World Bank 2010).

The Burundi's climate is divided into four seasons: two wet seasons: from October to December (short) and from February to May (long), and two dry seasons: from January to February (short) and from June to August (long). Agricultural production is planned to correspond to the climatic conditions, with the season A taking place from September to December (short) and the season B taking place from February to July (long). A third season (season C) can take place in the irrigated land (marshland) between June and October. Although the cropping season calendar is similar for all of Burundi, the rainfall varies between 1300 and 1600 mm a year though the Ruzizi Plain in the West and between 700 and 1000 mm in the Northeast. The average temperature is mild, rang-

ing from 16°C to 25°C, with higher temperatures recorded in the West. The season A contributed in average to 35% of the production, the season B to 55% of the production and the season C to 10% (De Bonis 2008).

Food crops. Food crops occupy a large proportion of agricultural land in Burundi (85% of the cultivated area or 28% of the Burundi's total land). The leading food crops, ranked by the volume of production, are bananas, roots and tubers, pulses, cereals, vegetables and fruits, and oilseeds. The importance of food crops to the national economy is considerable. Food crops contribute 46% of the total GDP and 80% of the agricultural GDP. Bananas alone cover 17% of the cultivated area, account for 45% of the total food production in volume, and provide 30% of the smallholders' incomes. Most food crops in Burundi are produced for own consumption. The share of surplus production marketed varies from one commodity to another. For all food crops combined, it is 20% in average.

Livestock. Animals are an important feature of the rural landscape. Livestock are an essential component of the household strategies to reduce poverty and vulnerability. Between 40 and 60% of rural households own livestock (40–60% own goats and/or sheep, about 25% own poultry, 10–20% own cattle, and 5–10% own pigs). Livestock production is tightly linked to crop production, which is not surprising, given the multi-faceted production systems and the self-reliance that are characteristic for the small household farms. Livestock contribute 12% of the GDP, and fisheries contribute 2–3%. In addition to providing income, food, and manure, livestock are valued as an indicator of wealth and social status.

Export crops. Export crops contribute 8% of the GDP and generate 90% of the export earnings. Coffee, the main contributor by far, is produced by about 800 000 households and accounts for 90% of the export revenue. Tea is currently the Burundi's second-largest cash crop. It is produced by four large estates and over 50 000 smallholders, and it provides 12% of the total export earnings. In the past years, coffee productivity has been mediocre even though coffee has benefited substantially from public investments. The coffee and tea sub-sectors are currently undergoing regulatory reforms and privatization to improve their competitiveness and to increase their contribution to growth.

Horticulture. In the recent years, Burundi has renewed efforts to expand horticulture for the domestic

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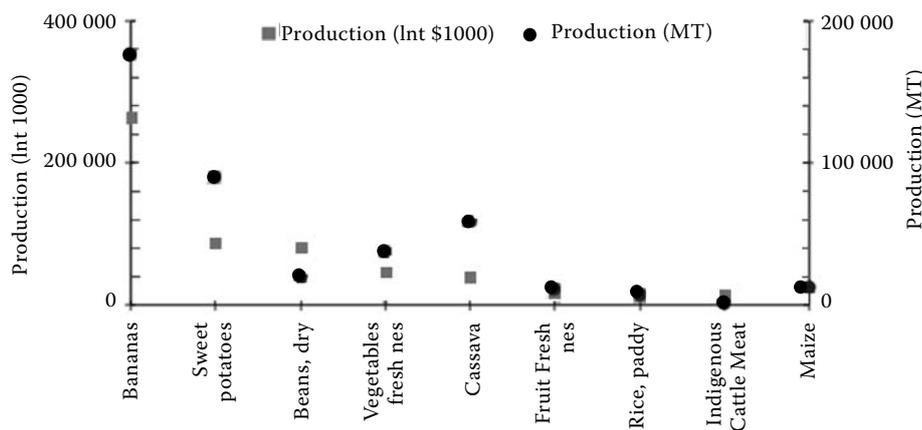


Figure 1. Key production crops

Source: FAOSTAT

urban and the export markets. The country's long history of fruit and vegetable production for home consumption and the local rural markets is a strong foundation from which to launch the future growth in horticulture. Overall, the horticulture sub-sector (excluding bananas) is the Burundi's fourth most valuable agricultural sub-sector (earning more than US\$60 million in 2005), surpassed in value only by bananas (cooking and beer bananas), dry beans, and sweet potatoes (USAID 2006).

With the intensive use for the production of food and some export crops, the Burundi's land resources are now characterized by a significant land degradation, with soil erosion due to the cultivation on steep slopes and the degradation of watersheds (Figure 1). A little room for the expansion remains; by some estimates, all land will be in use by 2020. The overwhelming majority of Burundi's cropland is rainfed; only 1.6% of all cropland is irrigated. For the year 2000, 51% of the Burundi's land area were in crops and 37% were maintained in pasture (Baghdadli et al. 2008).

For the Burundians, land is not only vital to their food security and livelihood – it is also a symbol of their ethnic and family identity. In the pre-colonial era, the Burundian territory was ruled by a monarchy (a king, or *mwami*, and princes, or *ganwa*), under which there were largely autonomous and loyal chiefdoms. Those royal elites were the cattle-owning Tutsis, who comprised approximately 14% of the population. The Hutus comprised 85% of the population and were primarily engaged in agriculture. The hunter-gatherer Batwa or Twa made up the remaining 1%. The designations of Hutu, Tutsi and Twa referred primarily to the lineage and occupation, stratified along the lines of wealth and socio-political standing. This social hierarchy also governed the distribution of land based on the patron-client relationship. Conflicts among the *ganwa* eventually transformed these relationships

into more feudal-like arrangements with the Tutsis as the overlords and the Hutus reduced to serfs.

Over the past fifty years, however, the distribution of land among various groups has been altered as the Hutu-dominated parties have challenged the Tutsi authority. The ensuing violence has forced the Tutsi families to flee, and the Hutu families have claimed their lands. The destruction of the natural forestlands reduced the land available to the Twa who have, as a consequence, become further marginalized economically. Further, the Burundi's population has increased by a factor of four, and the landholdings have been divided to accommodate the claims of sons for the family land. The population density in Burundi is now among the highest in Africa, at 300 inhabitants per km², and the farm population density is even higher – at 640 inhabitants per km². The average size of family farms is less than 0.5 hectares and divided up into two to four parcels.

The return of nearly 500 000 refugees primarily from the neighbouring Tanzania has increased the pressure on the Burundi's land. Approximately 15% of the Burundians are now landless, many of whom were displaced by the conflict and have not returned to their homes or have returned to find their land occupied. 8% of persons displaced by the conflict are landless. Among the minority Twa population, at least half are landless, having been forced out of the forests they depended on for their livelihoods and not being able to secure any other land (Baghdadli et al. 2008).

Burundi's unique history of the periodic violent conflict accompanied by large population displacements has also made the security of the land rights problematic. When the families have been forced to flee during the successive waves of conflict, others have come forward to claim and occupy their land. The 1986 Land Code has been used to settle the rights in favour of some occupants who have been on the land

at least 30 years, while denying the rights of refugees from 1972–1973 to return to their land. When the displaced families have returned, it has not always been possible for them to present claims strong enough to support the eviction of the replacement families, even when there is some residual memory among the community members of the original land rights. The result is that the rights to land have become highly uncertain for millions of Burundians, and the disputes are common. Creative approaches to provide land for the returnees have been developed (e.g., peace villages) but there is reportedly some dissatisfaction with these solutions (Baghdadli et al. 2008). The new Land Code may help to resolve the legal issues in land disputes (property rights), but it will not end the battle over the resources which, in some cases, is a struggle for survival. The Malthusian logic will always prevail where there is no control over the population growth. In other words, the only way to resolve the land shortage problem is by reducing the population density which, in turn, can be achieved only by cutting down the birth rate and/or through the emigration to other sub-regional countries under a regional cooperation agreement. This is a long-term solution to the problem (Kamungi et al. 2005).

Conditions for the growth of food production

With the food demand increasing at an annual rate of 3 to 6%, it is urgent to improve the contribution of the subsistence crops and livestock subsectors. The potential for improvement is great, and beyond the need for reforms that will benefit all sectors, the improvements will require public investments to enhance the productivity and better market access. Necessary changes in the short-run include fostering the use of high quality seed and fertilizer, and improving the management of small livestock. In the long run, the research-extension links should be strengthened, the producer organizations should be encouraged and supported, and the sustainable land and water management practices should be promoted. Investments in the infrastructure and market intelligence will be needed to meet the demands generated by the development of urban centres and to foster the competitiveness of Burundian agricultural commodities relative to those from the region (World Bank 2010).

Currently, the vicious circle of land scarcity – environmental degradation – conflict has led to a stalemate

across the economic, social, and physical spectrums. The challenges are interlocking and daunting: to manage the conflict, to increase the productivity, to develop the income-generating activities in agriculture and elsewhere, to find ways to reduce the population pressure on the land, to protect the environment, and to accommodate the returning refugees and displaced persons.

Boosting agricultural production and productivity

There are some possibilities for improving agricultural productivity in Burundi. First, the country benefits from a heavy rainfall 6–9 months of the year, allowing two production seasons annually. Second, a dense hydrographic network is in place, including the Tanganyika Lake, the lakes in the North of the country, and several rivers. Third, labour is abundant and young. Fourth, a highly fertile land naturally exists in the regions of Imbo, Murmiwa, Bweru, Bugesera, Moso, and Kirimiro. These areas present opportunities for the agricultural intensification (Kamungi et al. 2005).

Intensification. The continuing shortage of agricultural land means that the future growth in the food crop production must derive from intensification. To encourage a more intensive agriculture and livestock methods, and to improve the market access is a very long-term effort, the beginning of which may be made by encouraging the use of the selected seeds, fertilizers, tools, and the competent extension services that benefit from the relevant research such as that by the Burundian *Agricultural Research Institute, ISABU*. The market access is not constrained so much by the rural road infrastructure, which is better than in other countries, but by a lack of communications, commercial information, and well-located rural market sites (World Bank 2010).

Agricultural research. Burundi's national agricultural research system is beginning to rebuild following the damage suffered during the recent civil conflict, but much remains to be done. The priority needs include not only rebuilding of the physical facilities, but also developing a cadre of trained researchers. The research on food crops is unlikely to attract any private sector investment, so the government needs to make a long-term commitment to the food crop research, and it should move swiftly to develop a comprehensive long-term national agricultural

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research strategy. It will be particularly important to strike an appropriate balance between the basic research and the applied research. Given the small size of the country, the basic research will often be difficult to justify, and the most cost-effective strategy will be to import and possibly modify technologies developed elsewhere into the region. Also important will be to ensure that the food crop research remains demand-driven, with the demand defined not only in terms of the preferences of the food crop producers, but also in the terms of the food crop marketers and final consumers.

Agricultural extension. An effective extension service is needed in Burundi not only to ensure the transmission of knowledge and technology from the research system to farmers, but also to ensure that the needs of farmers and consumers are effectively channelled back to the researchers.

Strengthening Input Distribution Systems. A sustainable intensification of the Burundi's food crop subsector will not be possible without significant increases in the use of purchased inputs by the farmers, especially seeds of the improved varieties, chemical fertilizers, and crop protection chemicals including pesticides, herbicides, and fungicides. These inputs will not be available in a timely fashion and at affordable prices unless the input markets are working well. Strengthening the input supply systems therefore must be an important priority. Efforts to strengthen the input distribution systems should focus initially on two areas.

Private firms have limited incentives to invest into the plant breeding research and seed multiplication for food crops, so the public investment is justified. The government should take the lead in revitalizing the local plant breeding capacity, which in most cases should focus not on breeding new varieties but rather on importing and screening the varieties developed outside the country. The government research stations should also assume the responsibility for multiplying the seed and planting materials and making them available to farmers at the prices that farmers are willing and able to pay. Opportunities should be identified to cede the selected activities to private firms (for example, the production of hybrid seed).

An urgent priority for the government should be to stimulate the development of a viable fertilizer industry by strengthening the demand and increasing supplies. Fertilizers are currently very expensive, not only because of the very high costs involved in importing small quantities, but also because the

limited number of market participants concentrates the market power. The government should therefore develop a national fertilizer strategy to encourage the emergence of a sustainable fertilizer distribution industry led by the private sector. During the initial stages of implementation, a targeted support may be needed to assist the fertilizer distributors and to make fertilizers more accessible and more affordable to farmers. The support should not be provided through the across-the-board subsidies designed to reduce the retail price of fertilizers, but rather in the form of the “market-smart” subsidies targeted at the key nodes in the market.

Water conservation and management. Practices that will slow and eventually reverse the water losses include the contour bunding and tied ridging, the use of a simple water diversion and retention structures such as the check dams and mini-reservoirs, and the use of water harvesting practices. Many of these practices are labour intensive, but relatively few require extensive the capital investment, so most can be undertaken by the farmers working singly or in groups, without the need for any extensive public investment.

Irrigation and drainage. There is a room for a considerable expansion of irrigation in Burundi. The experience shows, however, that just because the irrigation is technically feasible, it does not mean that it is economically profitable or institutionally sustainable. In undertaking the development of the Burundi's irrigation potential, the investments in irrigation must be appropriately targeted in the terms of location and scale.

Resolving the land and the IDP conflict

In Burundi, the access to land can be inherited, purchased, granted by the government, or leased. The Land Code includes provisions with respect to the land access and conveyance that are not enforced because of the existence of a parallel traditional system that takes precedence over the law. The 1986 Land Code requires all transactions involving land to be recorded in the land deeds but, in practice, very few such transactions are actually recorded. Land ownership is verbally recognized by the extended family and neighbours. In time, the registration of the land titles free of any recording fees could alleviate the problem of land disputes between the blood relatives (Kamungi et al. 2005).

Table 2. Some current provisions of the land code, and proposed revisions

Issue	Current law	Provision
Area of rural land that can be distributed by authorities (private domain of the state)	Minister: 50 ha Governor of Province: 4 ha Commune Administrators: in practice, up to 20 ha	Minister: 2–10 ha Governor of Province: 2 ha Commune Administrators: none
Land ownership registration	Certificate de Possession issued by commune authorities for a small fee – but no legal recognition. Acte de Notoriete/certificate d'enregistrement used in urban areas – issued in Bujumbura	Certificate de Possession to be legally recognized. Acte de Notoriete to be abolished. Certificate d'enregistrement to be issued at Provincial level. Systematic registration of lands planned – so that titles may be used for collateral and to avoid disputes.
Maximum length of land lease	99 years	50 years
Swamp exploitation	No legal individual ownership of swamps, currently (state ownership) No fee paid	Those using swampland, and living nearby, will be able to purchase their plots. Annual fee will be payable by others for access.
Max. landholdings	None	None – but local provincial laws may impose them
Female access to land (inheritance)	None	None – but clause will call for 'situation to be analyzed in order that the succession law may be revised
Land Administration structure	Centralised; minimal civil society participation	Land Commissions to be formed at commune and national level.
Period of Prescription	30 years (i.e. if land is unused for 30 years it reverts to the state – important for refugees)	15 years

Source: Kamungi et al. (2005)

Another effect of the returns, in some areas, is an increase in land prices. In Ruyigi, for example, agronomists reported in April 2004 that the price had increased by 50% in the course of few months, forcing some people to cultivate the marginal areas as they were unable to access the fertile land (Table 2). While supporting the refugee repatriation and the resettlement of the IDPs, the Government of Burundi has not developed effective legal mechanisms to address the land-related disputes arising from the occupation, restitution and compensation. Given the war fatigue felt by the population after the decades of violence and displacement, any measures to address the inequitable land distribution that has dichotomized the society into the haves (the rich and the rulers) and the have-nots (the poor and the masses) is welcome. The historical dynamics of the land ownership, its social value and approaches to

address the land disputes, for example, through the *Bashingantahe*¹, have been overshadowed by the political dimensions that foreground the commercial value of land, the access to which is promoted for the long-term economic security. Corruption has permitted a fraudulent transfer of the prime land, such as the plots near the Bujumbura airport, to influential individuals and politicians, while the commissions appointed to look into the land availability for the resettlement of refugees have appropriated the land for themselves (Athman et al. 2006).

Developing agricultural and non-agricultural income generating activities

Regardless of the effort made to resolve the land problem, the shortage of land has reached such an

¹In current usage, the term *bashingantahe* (singular *umushingantahe*) refers to men of integrity who are responsible for settling conflicts at all levels, from the top of the hill to the courts of kings.

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extreme that the agricultural sector can no longer support the entire population, which means looking for other employment options, both within (agro-processing industries) and outside the agricultural sector. Since agriculture dominates the Burundi's productive sector, any job creation strategy should be grounded in the agricultural activities. The employment generation efforts should focus mainly on promoting rural development and encouraging the private investment in this sector. There are many different factors which, working together, can help to achieve the corresponding employment and income targets. Examples include financing, training, infrastructure, expertise, market access, trade policy and productivity. All these factors are important and operate in the true systemic fashion, but the top priority should be the skills training. There needs to be a good employment and, thus, the income generation potential throughout the supply / production value chain. There are also the employment and income generation opportunities outside agriculture, in the informal sector and in microenterprises in the agriculture-related areas (the manufacturing of farm implements, agro-processing industries, etc.) (Kamungi et al. 2005).

Reinforcing producer organizations. Strong producer organizations will be needed if the food crop production is to move away from its traditional subsistence orientation toward more a more market-oriented orientation. Achieving a successful transformation will depend on the farmers' ability to identify the actual and potential market opportunities, to access the cutting-edge technology, to procure the essential production inputs, to produce high-quality products that meet the requirements of an increasingly quality-conscious market, and to negotiate effectively with the input suppliers as well as the buyers. Efforts must be made to directly strengthen the technical skills of farmers. Efforts must also be made to strengthen the institutional foundations of producer organizations by funding the projects designed to launch the farmer associations, producer cooperatives, and other communal bodies and equip them with the knowledge, resources (including financing), technical capabilities, and management skills needed to operate effectively.

Investing in rural infrastructure. Surveys of the business community consistently point to the weak infrastructure as one of the most critical factors constraining growth.

– *Transport.* The most important intervention to develop the food crops subsector is strengthening

the rural roads to facilitate the access to markets for inputs and outputs.

- *Energy.* An access to electricity is not a major problem for the food crop production, which consumes very little power, but the lack of, or an unreliable, electricity supply prevents the development of food processing.
- *Information and communication technology.* Specialized radio broadcasts could be organized to serve the needs of the food crop producers (such as market information, extension advice).

Improving the delivery of financial services to the rural sector. Many investments designed to enhance the agricultural productivity – at both the farm level and the post-harvest level – depend on the access to the appropriate financial services. Strengthening the rural financial systems is important for agriculture in Burundi.

Improving the business climate. A final priority for the government must be the creation of a predictable and stable business climate that will allow the individuals and firms to operate with certainty and confidence as they invest into the productivity improvements, search for new markets, and pursue activities that add value throughout the value chain (World Bank 2010).

Controlling population density

The population of Burundi is currently estimated at 7.5 to 8 million. This equates to the population density of 250–300 people per 1 square km, second only to Rwanda in Africa. The 3% annual growth rate – if sustained – will double these figures every 20 years. The population growth, combined with the traditional inheritance systems and the lack of economic alternatives, has resulted in the extremely fragmented agricultural plots which have shrunk to an average size of less than ½ hectare per family (FAO 2011).

The population problem is complicated and tied to certain perfectly rational cultural beliefs. The implementation of the population control policies needs to go hand in hand with the policies designed to alleviate poverty, to reduce income disparities, to improve training opportunities (particularly for women), to boost the employment opportunities for both men and women, to provide an universal access to the modern disease prevention methods and public

health programs (particularly the water supply and sanitation programs), and to improve the maternal and child health through proper nutrition to lower the child mortality rates. It is not a lack of good sense on the part of the general public that is at the root of the country's population problem. The endemic poverty and the low standard of living provide a good economic rationale for large families and a booming population. Resolving the population problems is a long-term undertaking, but certain policies could be implemented as the short-term measures (Kamungi et al. 2005).

Protecting environment

Due in part to these land tenure issues, Burundi is facing a number of challenges regarding the health of the country's environment. A widespread deforestation from the exploitation for firewood, charcoal and construction materials is rapidly degrading the remaining natural forests and the biodiversity dependent upon those ecosystems, as well as the diminishing water supplies for many populations. A large-scale reforestation can be accomplished by using both the government works program and a community participatory program. The government works programs have been successful in the past and could include the food/cash for work, the land or conservation credits for work and the youth reforestation groups. Useful will be to Conduct a *National Land Management Plan* that would address the large-scale reforestation and provide the national guidance on areas of prioritization. In addition, community participatory programs should also be an integral part of the reforestation effort.

Important is also establishing the protection for some remaining wetlands along the lakes, river and hillsides to retain the biodiversity features. The wetlands, which are state owned, covered more than 112 000 ha in 1992. Despite the fact that they are state owned, the existing laws are not enforced when trespassing occurs and the individuals cultivate and graze these sensitive areas. Wetlands surrounding the inland lakes of the Northern region are being lost at a rapid rate to cultivation. It is important not only to retain these unique features for their inherent benefits now, but if the vegetation, the hydrologic regime, and the habitat features are completely destroyed, recreating any of these features in the future would be more difficult, if not impossible.

Soil erosion, the loss of soil fertility could be decreased through (1) enforcing grazing exclusions on the marginal lands, sensitizing population to grazing problems, including the cattle owners, establishing specific water access sites for cattle to the streams or lakes to prevent the indiscriminate compaction and removal of the riparian vegetation. (2) diversifying crops and evaluating the environmental effects of encouraging the large scale rice production on the wetlands and floodplains for the areas of the country that have severely degraded watersheds and altered flooding regimes. (3) encouraging the reforestation and re-vegetation of the native species in the riparian areas along streams and discouraging cultivation along the stream banks.

The eco-tourism opportunities appear to be limited at this time, but as the government stability continues in the long term, the potential to develop this sector exist. Land management plans should include future plans to accommodate, protect and economically benefit from the ecotourism. The private sector should be engaged to advance the associated tourism opportunities and their economic potential. However, the revenues which come from the reserves should be reinvested in the reserve management and support the local communities. For example, the current fees for the admission to the *Rusizi National Park* are drastically under-valued (FAO 2011).

Government agricultural strategy

In July 2008, the GOB formulated a National Agricultural Strategy (NAS) (*Strategie Nationale Agricole 2008–2015*).

This programme is crafted around 8 sub-programmes:

- Sustainable management of natural resources;
- Intensive production of food crops;
- Diversification of farming systems;
- Crop protection, processing and marketing;
- Nutrition;
- Early Warning and Strategic Reserve Establishment;
- Support for the procurement of inputs, micro-finance, research, extension, and capacity building;
- Implementation support.

This program is funded by a proposed budget of 406 million US dollars. The Government of Burundi is obliged to finance 30% and to request 60% from the development partners and the beneficiaries will submit an in-kind contribution of 10%.

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The government has adopted a **National Food Security Program (2009)**. In line with the agricultural sector strategy and in light of the persistently of high food prices, the government has taken a number of short-term measures, including the tax relief on basic food products (beans, maize, and potatoes) and the reduction of tariffs on diesel imports.

Burundi has developed a draft **CAADP DOCUMENT (Comprehensive African Agriculture Development Programme)** planned for the period of 6 years (2010–2015) to coincide with the presumed completion of the Millennium Development Goals (MDGs). This program is in synergy with the Poverty Reduction Strategy Paper (PRSP), the National Agricultural Strategy, the Sector Policy and the National Program of Food Security and aims to consolidate the gains of other agricultural development projects.

Food situation overview

According to the recent estimates of the Food and Agriculture Organization of the United Nations (FAO, 2010), the number of hungry people worldwide is 925 million. Developing countries account for 98% of the world's undernourished people and have a prevalence of undernourishment of 16%. Most of the world's hungry people (62% of the total) live in Asia and the Pacific, the world's most populous region, followed by the Sub-Saharan Africa, home to 26% of the world's undernourished population. Burundi with 62%, Eritrea with 64% and Democratic Republic Congo with 69% are the world countries with the highest proportion of the undernourished in the total population (data are for the period 2005–2007). The levels of the dietary energy supply belong to the lowest in the world (1680 kcal/person/day in Burundi and 1590 kcal/person/day in Eritrea and the Democratic Republic Congo) (IFPRI 2010).

Despite the regional differences, the progress in reducing hunger remains slow. According to the IFPRI

Global Hunger Index² report 2010 (IFPRI 2010), since 1990, the world global score has declined by less than 25% (from 19.8 to 15.1). Most of this progress has been made in the Southeast Asia, Latin America and the Caribbean, which have lowered their Index scores by more than 40% over the past two decades. The Global Hunger Index scores, however, remain distressingly high throughout much of the Sub-Saharan Africa, which has made the least progress in combating hunger, with only a 13% decline in its score since 1990. Of the nine countries that have seen the largest increase in their Index scores, eight are in the Sub-Saharan Africa, and the Democratic Republic of Congo score has increased by an appalling 66%. The Comoros followed by Burundi are the countries with the second and third highest Global Hunger Index increase – by 21 resp. 20% (FAO 2011).

33 countries currently face a food security crisis, 14 of which have been in this situation for more than a decade (Figure 2). When the emergencies continue for such extended periods of time, the traditional humanitarian and development paradigms are not suitable for reaching the effective responses. Rather than engaging in ad hoc relief programs, the interventions should follow longer term strategies and build on the local institutions.

Many factors contribute to the poor track record in dealing with the protracted crises. Above all, the donors lack the right instruments to achieve better results. Most development interventions currently fall into one of three categories: (1) humanitarian aid, which neglects the long-term considerations; (2) development assistance, which relies on functioning state institutions; and (3) nation-building activities, which focus more on re-establishing the public sector than addressing the source of the problem (UNDP 2008).

None of these instruments alone can effectively combat the persistent food insecurity. Instead, the protracted crises call for an integrated approach to the development and humanitarian interventions.

²The GHI (Global Hunger Index) is a multidimensional approach to measuring hunger. It combines three equally weighted indicators: (1) the proportion of the undernourished as a percentage of the population (reflecting the share of the population with insufficient dietary energy intake); (2) the prevalence of underweight in children under the age of five (indicating the proportion of children suffering from the weight loss); (3) the mortality rate of children under the age of five (partially reflecting the fatal synergy between the inadequate dietary intake and unhealthy environments). The index ranks countries on a 100-point scale, with 0 being the best score (no hunger) and 100 being the worst, though neither of these extremes is achieved in practice. Values less than 4.9 reflect low hunger, values between five and 9.9 reflect moderate hunger, values between 10 and 19.9 indicate a serious problem, values between 20 and 29.9 are alarming, and values of 30 or higher are extremely alarming.

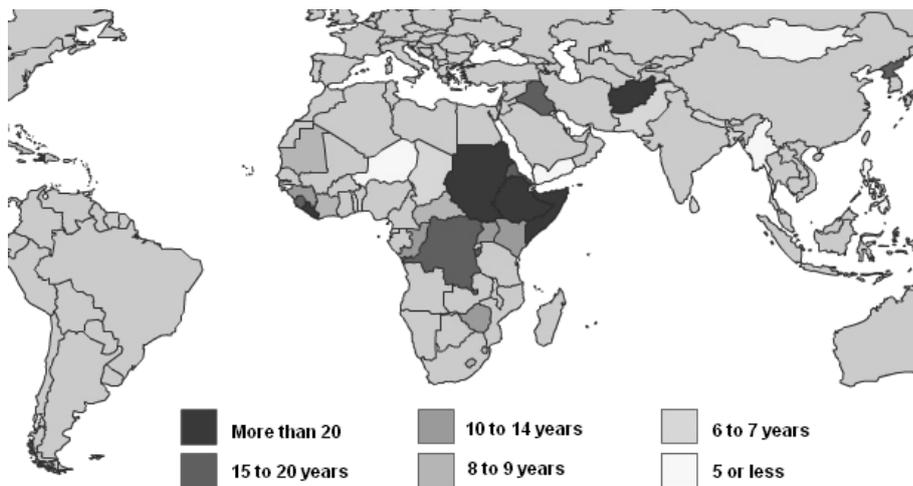


Figure 2. Location and duration of food emergencies

Source: FAO – GIEWS

The emergency relief programs should be coupled with efforts to prevent and mitigate the risks for future crises. Such initiatives need to strengthen a country's institutional framework and simultaneously address the short- and the long-term dimensions of an emergency. Unlike the emergencies following natural catastrophes, the protracted crises are often the result of the failed institutions and the conflicts over resources. They are characterized by poor or non-existent public services, a high susceptibility to violence, and the absence of regulation in the productive and trade sectors. As the countries become less able to protect their citizens, a widespread hunger is a common consequence. The Democratic Republic of Congo is a case in point. The years of violence have disrupted the livelihoods, distressed the relations between different communities and eroded the country's social fabric. The DRC's political and economic crisis has also had a heavy toll on the food security. The prevalence of hunger increased from 29% in 1990–1992 to 75% in 2004–2006 (UNDP 2008).

Food production and consumption on national level

Subsistence crops and livestock products represent the main source of income for most households. The performance of these subsectors is very low, and generates chronic food deficits, which underline the extreme vulnerability of the population. The imports of foodstuff are increasing steadily, depriving the country of the foreign exchange needed to import the capital goods, such as pharmaceutical drugs, fertilizers, or oil products. The yields are stagnating and the production is low. The yields of the major food crops have changed very little during the past forty years. The production of food crops has decreased significantly and the population of animal species suffered a precipitous decline since the onset of the latest period of civil unrest (Baghdadli 2008) (Figure 3).

During the normal conditions, the country can fulfil its own food needs. With the adoption of the Structural Adjustment Program in 1986, which continued until the end of 1992, the economic growth was positive and higher than the population growth (3.7% average annual growth versus 3% demographic growth). This situation was reversed with the socio-political crisis beginning in 1993. The insecurity and population displacement, due to the political crisis, have led to a significant rise in the poverty levels. Since 1993, the GDP decreased in average by 3% per year, bringing the cumulated decrease in production to 30% to date. This regression in the GDP led to a decrease in the per capita income – to \$83 in 2004, compared to \$214 at the beginning of the last decade. The country currently suffers from the food insecurity and depends in part on the food aid to meet its food needs. The percentage of the undernourished

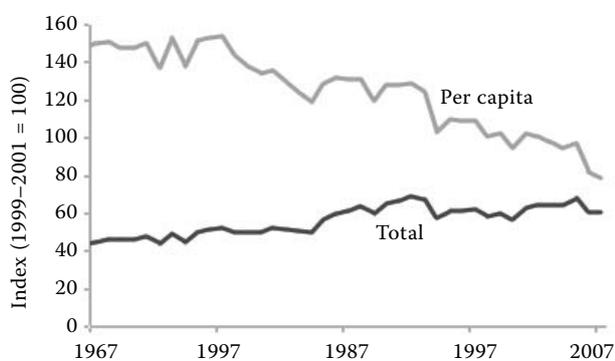


Figure 3. The total and per capita food production index

Source: World Resources Institute – Earth Trends. Available at <http://earthtrends.wri.org/>

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Table 3. Food deprivation and consumption indicators

	1990–92	1995–97	2000–02	2004–06	1990–92 to	1995–97 to	2000–02 to
					1995–97	2000–02	2004–06
annual change %*							
Food deprivation							
Proportion of undernourishment (%)	44	57	62	63	5.2	1.7	0.4
Number of undernourished (millions)	2.6	3.6	4.2	4.9	6.8	3.3	3.9
Food deficit of undernourished (kcal/person/day)	310	350	370	360	2.6	1.1	–0.5
Food supply							
Dietary energy supply (DES) (kcal/person/day)	1 860	1 690	1 630	1 630	–1.9	–0.7	–0.2
Total protein consumption (g/person/day)	58.1	50.4	44.1	43.2*	–2.9	–2.6	–0.5
Animal protein consumption (g/person/day)	4.3	3.1	2.5	2.5*	–6.6	–4.0	–0.4
Fat consumption (g/person/day)	13.7	11.3	10.2	10.3*	–3.8	–2.1	0.4

*ranked on the latest 3-year period

Source: FAO, Food Security Statistics (2009)

population increased from 44% in 1990–1992 to 63% in 2004–2006 (UNECA 2010).

It is estimated that only 75%, 40% and 22% respectively of energy, proteins and fats needs are assured. The daily intake consists in 90% of starchy foods (i.e. roots and tubers, bananas) with limited supply of proteins, lipids and micro-nutrients. In Burundi, the proposed consumption for a daily intake of 2100 calories consist of 47 kg of cereals, 52 kg of pulses (i.e. dry beans, green peas, etc.), 230 kg of root and tubers and 264 kg of bananas and plantains. With 1 108 000 tons of the cereals equivalent produced, the estimated shortfall for 2010 stands at 556 000 equivalent tons of cereals and the import volumes of 100 000 cereals equivalent leaves a serious gap of 456 000 that is supposed to be acquired through the food relief aid (USAID 2009) (Table 3).

The overall level of production in Burundi is adequate to supply 70% of the dietary needs (based on the standard of 2100 kcal/person/day). On this basis, an effective national deficit of a little over 500 000 MT of maize, or its nutritional equivalent, exists to be met by the commercial imports and the food aid. The level of commercial imports has not exceeded 7% of this deficit, and the food aid interventions have rarely contributed more than 13%, so that for the last five years, the majority of the population has subsisted on less than 80% of the standard nutritional requirements (UNICEF 2003).

As illustrated by Figure 4, the total food supply was firstly reduced from 1860 kcal/capita/day in 1990–1992 to 1710 kcal/capita/day in 1995–1997, and then further dropped down to 1680 kcal/capita per day in 2000–2002 resp. 2005–2007 period.

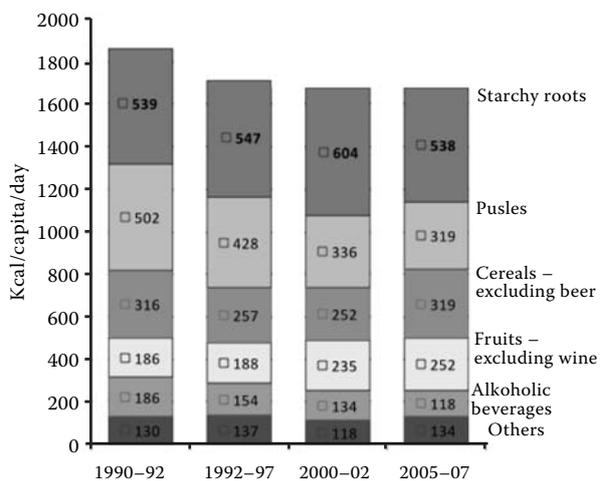


Figure 4. Food Consumption Pattern of Main Food Groups

Source: FAO Burundi Country Profile: Food Security Indicators, October 2010 update.

FAOSTAT: Food Consumption Pattern of Main Food Groups. Available at <http://www.fao.org/economic/ess/ess-fs/fs-data/ess-fadata/en/>

Malaria, diarrhoea, respiratory infections and the compounding effects of malnutrition are the main causes of mortality and morbidity among children and their mothers. In 2005, up to 53% of children younger than five years suffered from stunting due to the inadequate food, a low-quality diet, poor infant feeding practices, a poor household management of childhood diseases and the general decline of the health system. The maternal mortality is high, due to the complications during the pregnancy and childbirth, as well as too early and too frequent pregnancies. Over 50% of women deliver at home without the assistance of a qualified professional. By the end of 2007, the rate of deliveries assisted by skilled attendants was just 41.1%. 41 babies out of every 1000 live births die during the first four weeks after birth – about 16 000 child deaths per year (IMF 2009).

CONCLUSION

The LDCs belong to the category of countries, which are distinguished not only by the widespread poverty, but also by the structural weakness of the economic, institutional and human resources.

There has been developed a wide range of economic growth theories. Theoretical developments have been accompanied by a growing number of empirical studies. Economic growth means achieving a more massive economy – producing more goods and services on the one side of the national account (gross domestic product) and a larger total income on the other (gross national income). Development is interested not so much in the growth of the economy, but rather the conditions under which the production occurs and the results that issue from it. Development is important because it produces an economy, and more broadly, a society and culture, that determines how people live – in the terms of income, services, life chances, education, etc.

Food insecurity in both states follows a circular cause-and-effect pattern of very low and shrinking food production levels and an extreme and rising poverty. The decade-long downward trend of this spiral results from the effects of the mismanagement, war and continuing insecurity, and the lack of the geographical access to land and markets. This had a negative impact on the economic and nutrition indicators.

From the point of view of the possible solution of the food problem, the two greatest potential resources in these poor, food insecure countries are the people

and the productivity of the land and water. To defeat the chronic hunger and poverty, investments must be made in both people and productivity. Investing in people must come in the form of education, clean water and sanitation, health and social services and, in some cases, the direct food and nutrition support. In rural areas, such expenditures are essential if the corresponding investments in agriculture and its productive subsectors are to pay off.

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