The provisioning of African cities, with Ouagadougou as a case study

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And also in:


Population growth and urbanization in Africa

Africa is still one of the world’s least urbanized regions. In 1960 – at the time when most of Europe’s colonial possessions in Africa had become or were about to become independent states – only 10-13% of Africa’s total population lived in cities, that is, 33 million people as opposed to the 220 million inhabitants of the vast rural areas (Broek and Webb 1967, p.426; World Bank 1983, pp.190-191). Only along the Mediterranean coast and in South Africa and Congo-Brazzaville did more than a quarter of the population live in cities. South Africa was the most urbanized country on the continent (47%, using a very broad definition) and the only African country with more than 40% of its population living in urban areas. Only three cities in tropical Africa had more than half a million inhabitants: Ibadan and Lagos in Nigeria, and Kinshasa in Congo/Zaire.

Between 1960 and 1980, Africa’s population growth rate was explosive, with an average annual rate of 3.2%. The rural population increased from 220 million to 370 million, and the urban population more than tripled, from 33 million to 110 million. Almost a quarter of the African population lived in cities in 1980. Tunisia had become the most urbanized country on the continent (52% of its people living in cities), but South Africa, Algeria, Egypt, Morocco, Congo-Brazzaville, and Zambia had an urban population of at least 40% (World Bank 1983, pp.148-149; World Bank 2000, pp.274-277).

Between 1980 and 2000, population growth slowed to 2.5% per annum, but the urban explosion continued, with annual increases of the urban population close to 5%. Africa’s urban population almost tripled (to 300 million), and the rural population further increased, to 500 million people. Table 1 shows the geographical differences in this urbanization process, comparing 1960 with 2000 (World Bank 1983, pp.190-191; World Bank 2000, pp.274-277).

A considerable number of people nowadays live in a predominantly urban country (>50%) or which are about to become so (40-50%): Together 379 million out of Africa’s almost 800 million people in the year 2000. In northern Africa, these urban countries form a contiguous zone from Mauritania, through Morocco, Algeria, and Tunisia to Libya and Egypt. In southern Africa, South Africa, Botswana, Zambia, and Mauritius belong to this category. In west and west-central Africa, Senegal, Ivory Coast, Benin, Nigeria, Cameroon, Congo-Brazzaville, and the Central African Republic have become also urban countries. Other African countries still have a more rural character, although almost all of them have experienced rapid urban growth (the only exceptions being Burundi and Rwanda). All African countries, with the exception of these two, made a jump from one ten-percent category to at least the next one. Table 1 shows that 10 African countries made a jump of between 10 and 20 percentage points, although in absolute numbers the increase is even more impressive. A rural country like Burkina Faso had an urban population of barely 5% in 1960 (less than 200,000 people); in 2000, the percentage had quadrupled to almost 20%, or close to 2 million urban people, representing a tenfold increase. Nineteen African countries had made an urbanization jump of 20-30%, and eleven a jump of more than 30%. Out of this group of relatively very fast
urbanization two countries – Botswana and Mauritania – went from a very low urbanization level (less than 5% in 1960) to more than 50% in 2000.

Table 1
Africa’s urbanization process: Urbanization rates in percentages in 1960 and 2000 compared

<table>
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<tr>
<th>Urbanization percentage in 2000</th>
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<tr>
<td>Urbanization percentage in 1960</td>
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<td>Burundi</td>
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<td>Burkin Faso</td>
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Note: There are no data for Somalia or Liberia (together approx. 12 million people in 2000)

Out of Africa’s 300 million urban people in the year 2000, 100 million live in 39 urban agglomerations of more than 1 million people. Table 2 and Map 1 give an overview of all urban regions in Africa with more than 1 million inhabitants.

Table 2: All urban regions in Africa with more than 1 million inhabitants in 2000

<table>
<thead>
<tr>
<th>Pop. (mill.)</th>
<th>Urban regions</th>
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<tbody>
<tr>
<td>&gt;10</td>
<td>Cairo, Egypt (14.5)</td>
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<tr>
<td>3-6</td>
<td>Lagos, Nigeria (6.0), Kinshasa, DR Congo (4.6), Addis Ababa, Ethiopia (4.0), Alexandria, Egypt (3.8), Casablanca, Morocco; Antananarivo, Madagascar (both 3.6), Abidjan, Ivory Coast (3.4), Cape Town/ Khayelitsha/Cape Flats, South Africa; Arusha, Tanzania (both 3.1), Greater Khartoum, Sudan (3.0)</td>
</tr>
<tr>
<td>2-3</td>
<td>Algiers, Algeria (2.8), Soweto, South Africa (2.7), Kano, Nigeria (2.6), Johannesburg, South Africa (2.5), Dakar, Senegal; Dar es Salaam, Tanzania (both 2.3), Ibadan, Nigeria (2.0)</td>
</tr>
</tbody>
</table>
| 1-2 | Tunis, Tunisia (1.8), Accra, Ghana and Lusaka, Zambia (1.7), Rabat, Morocco and Nairobi, Kenya (both 1.6), Harare, Zimbabwe, Mogadishu, Somalia and Durban, South Africa (all
1.5), Luanda, Angola and Bamako, Mali (both 1.4), Conakry, Guinea, Oujda, Morocco and Pretoria, South Africa (all 1.3), Ouagadougou, Burkina Faso, Maputo, Mozambique and Douala, Cameroon (all 1.1), Lubumbashi, DR Congo; Yaounde, Cameroon; Ogbomosho, Nigeria; Port Elisabeth, South Africa; Kumasi, Ghana (all 1.0)

Sources: Own estimates based on http://www.urbanobservatory.org/indicators/database/pdf/population.pdf, April 2001 (UNCHS); http://www.weltalmanach.de/staaten (Der Fischer Weltalmanach); Grote Winkler Prins Encyclopedie; ‘Landenreeks’ series of KIT/NOVIB/11.11.11; Grote Bos Atlas (52nd edition, 2001). The population data are an estimate of urban and peri-urban populations living in an urban region. Often it goes beyond the population of a metropolitan administrative area, and includes the administrative regions immediately bordering the urban or metropolitan administrative region.

Figure 1 gives an overview of these urban regions in Africa. Contrary to popular belief, half of all major African urban regions are located in the interior of the continent, while the other half are located at or near the coast, directly connected to international harbors.

Figure 1 Major urban regions in Africa

Figure 2 shows the changes in population density between 1960 and the mid-1990s (Dietz et al. 2001, p.43). The figure shows a dramatic redistribution of Africa’s population in the last four decades, with some areas being depopulated (e.g. dryland areas hit by climate change, as well as areas hit by violence and insecurity) and the population of other areas more than quadrupling. Almost all coastal areas belong to these zones with very fast population increases, but also some inland areas around capital cities and in expanding mining areas show considerable population growth. Much of this growth in population densities goes together with urban expansion.

Figure 2 Changes in population densities in Africa, 1960 to mid-1990s

It is difficult to rely on forecasts about African population growth and urbanization. The demographic impact of Aids and TB, widespread violence, deterioration of state-provided health care, and emigration can become considerable. It is not likely that the African net population growth rate will be beyond 2% per annum during the 2000-2030 period (cf. Reitsma 1997, p.163). We may assume that rural population growth will not be much more than 1% per annum, resulting in a rural population of 650-700 million people. For the urban population, a combination of natural growth of 1-2% per annum and continuing rural-urban migration may result in a net urban growth of 2-3% per annum. In 2030 there might be 650-700 million urban Africans, or twice as many there are today. This means that there might be more urban than rural people at that time. Providing these urbanites with basic consumer goods will remain a major challenge.

Note that as Aids happens to be a disease with a strong urban concentration in most areas in Africa, and Aids deaths are reaching alarming numbers in some urban regions (in Southern Africa in particular), the above-given scenarios are even more speculative than they normally would be.

A changing focus on urban development

Africa’s urban boom started during the late colonial times and in the first decade after political independence. The social-psychological atmosphere in most areas was one of hope and a strong belief in planned and fast development. Urban-industrial expansion was thought to be the engine of social modernization and economic growth, with the countryside feeding the coffers of the new governments by providing them with agricultural and mining products to export. Consequently, little attention was paid to providing urban consumers with rural products (Binns, 1994). Unlike most other historical processes of urbanization in the world, the continued rapid urban growth in Africa after 1970 took place in a situation of slackening growth, increasing climatic, economic, and political insecurity, and – after 1980 – economic and political collapse and social-psychological despair in many countries in
the region. For large numbers of rural people, urbanization became a flight from rural misery and catastrophes, and the ‘migratory basis of urban growth’ as it was called by Little (1974, quoted in Verkoren and van Westen 2000, p. 173) was one of the main driving forces of urban growth at that time. Droughts in the Sahel, in the Horn, and in Southern Africa created a massive rural-urban (and rural-rural) migration process, with such cities as Nouakchott in Mauritania suddenly swelling from 20,000 inhabitants in 1960 to over 200,000 within just a few years, and to over 600,000 now (and Mauritania’s urban population from less than 5% in 1960 to over 50% now). Mali and Burkina Faso provide other examples, where the capital cities Bamako and Ouagadougou had annual population growth rates of more than 10% during the drought years between 1976 and 1983, and where Bamako in those few years was suddenly confronted with a quarter of a million poor, and often rather desperate new inhabitants (Broekhuis and de Jong 2001, p.86). In other areas, violence created rural no-go areas with hundreds of thousands of refugees living in refugee camps (e.g. the refugee city of Goma after the Rwanda massacres) and in urban refugee areas (e.g. Kuhlman 1994, about the city of Kassala, catering for the refugees from Ethiopia/Eritrea).

Next to these calamity-driven driving forces of urbanization, rural-urban migration is also very much caused by expanding education. In sub-Saharan Africa in 1970, 50% of the relevant age group was enrolled in primary education, 7% in secondary education, and only 1% in tertiary education. In 1992, this had increased to 67%, 18%, and 4%, respectively, and the education enrollment of girls had increased from 41 to 60% in the primary school age group and from 5 to 16% in the secondary school age group (World Bank 1995, p.217). This had a double impact on urbanization. First, there was an urban concentration of (better) schools, which resulted in rural-urban school migration, and part of these children remained in the urban environment afterwards. Second, education - also in the countryside - often resulted in alienation from the rural background as children were trained for a perspective of white-collar jobs, and it created expectations of much better prospects in urban compared to rural environments. The expanding government-related job market in African cities in the 1960s and 1970s, filled by the early generation of educated Africans, who often had a rural background and who maintained many rural ties, had also created urban footholds for children longing for an urban education and for urban jobs. In the 1990s, this picture changed, though. In a number of countries, the enrollment percentages stopped rising. In war-ravaged countries this is understandable: In a country like Angola the primary enrollment plunged from 83% in 1980 to 35% in 1997. But also in countries without a civil war, enrollment figures showed dramatic decreases: Tanzania’s primary enrollment was 34% in 1970, 68% in 1980 and 1992, but only 48% in 1997. In many other countries, enrollment figures stagnated: Burkina Faso’s primary enrollment went from 13% in 1970 and 15% in 1980 to 31% in 1992, and only 32% in 1997 (data from World Bank 1995, p.216 and 2000/2001, p.284). As some of the countries also made their school curriculum more rural, one may expect that the education-driven urbanization in the 1990s became less pronounced.

The rapid urbanization together with stagnating or deteriorating economic and social conditions led to a situation of what Armstrong and McGee called ‘urban involution’ in an Asian context (Armstrong and McGee 1976), and which de Bruijne, following Geertz and Wertheim called ‘shared poverty’ in a ‘dualistic urban economy’ (de Bruijne 1976, p.135). It created a large number of urban inhabitants who did not work in the so-called formal sector, but in the mushrooming, chaotic, and mostly (but not always) low-rewarding informal sector, even if they had a rather high level of education. For many urban households, not specialization but diversification became the key to survival, as well as an astonishing mobility and mobile attitude, called ‘circular migration’ by some scholars (Mortimore 1998). Many people who were counted as urban by censuses and in surveys in fact combined urban and rural residences and livelihoods, a situation called ‘multi-spatial livelihoods’ by Foeken and Owuor (2001). Many rural people had strong and fluctuating urban linkages, and many rural families had one or more part-time members who were part of a mobile labor force, moving from place to place, often combining geographical pathways which contained more than one city and more than one rural area. Urban-rural networks enabled support from rural parts of the livelihood of people to urban parts and the other way around, depending on seasons, and on ‘relative stress’ (Foeken 1997; Foeken and Mwangi 1998; Foeken and Owuor 2000). Not only were urban people supported with food provided by their rural family members, many urban people still cultivated their own fields in their rural area of origin and/or in newly acquired fields in the rural areas around the urban region,
where they also reside during part of the year. Many urban parts of multi-locational extended households’ livelihoods also consisted of forms of urban agriculture, and many rural parts had urban elements in them. Both from a demographic and from a livelihood perspective the differences between urban and rural became blurred. From a social-psychological perspective, it is better to regard people as mobile and multi-locational (as well as multi-occupational) than to use such rigid categories as urban and rural, or agricultural and non-agricultural.

However, despite the importance of direct provisioning of food, water, and energy in and around the cities by households themselves, and provisioning based on rural-urban family networks for urban inhabitants, the large majority of consumer basics for urbanites comes to cities through a commercialized network. The urban fraction of the population can no longer be regarded as a demographically marginal group. Its increase from 30 million in the late 1950s to over 300 million people now (and from 13% to over 35% for the continent as a whole) forced a complete reorganization of the supply-demand networks. One of the first scholars to write about the challenges of provisioning the urban masses, Vennetier (1976, based on research in the late 1960s) could still write that most of the rural people in Africa lived in an almost closed economy. If they were partly integrated into a commercial market, it was for export products, in a continuation of colonial patterns. Writing about the exploding cities of central Africa (e.g. Brazzaville and Bangui), he observed that suddenly a very big urban consumer market had emerged for products which had hardly ever been traded before. Supplying a fast-growing and generally poor urban clientele with cassava, grains, milk, meat, water, firewood, and charcoal became a major challenge for traders and their providers. In most colonial and early post-colonial countries, very little attention had been given to the improvement of production and marketing of food and energy products. Newly established governments suddenly saw their capital cities (and other towns) explode, and that the urban demand for basic necessities was not always adequately supplied. Hoarding, fluctuating prices, and large-scale market uncertainty sometimes resulted in riots and political tension, which could easily undermine the positions of the newly established political elites. Many of the new political leaders chose to step in with political means, by controlling markets and price formation and sometimes by taking over markets through pseudo-or para-government agencies which got monopoly positions. The corruptness of these agencies, their lack of quality, and their inadequate means often resulted in the breakdown of provisioning systems, and in the growth of all types of illegal and informal trading initiatives. The lack of efficiency was further aggravated by the grossly inadequate transport system, which after 1980 deteriorated in many countries, after having improved in the 1960s and 1970s. Urban life became expensive and the urban poor had to spend so much money on basics that they had to ‘ruralize’ their urban lives (see above), and in some countries quite a number of urban people had to go back to rural areas (at least for part of the year) to eke out a living there, especially in those cases where structural adjustment measures resulted in the retrenchment of large numbers of government personnel, or where civil servants were no longer paid regular salaries. In many capital cities, a rather large, government-related middle class had been formed, which functioned as a sponge for related migrants from their home areas. After 1985/1990 many members of the middle class were hit by the economic crisis, while at the same time the number of rural-urban migrants who would like to benefit from their rich relatives’ presence in the cities in many cases still increased. A considerable number of these rural-urban migrants had attained quite high educational standards and their outlook was obviously urban. The urban crisis of the 1990s forced people to reduce their standard of living and to lower their expectations to levels many regarded as being far below what they deserved. The despair this created made many urban centers turn into violent pools of criminal behavior, further threatening the orderly provisioning of basics.

In some countries there developed a strong reliance for many urban basics on imports from foreign (often far-away) sources, some of it connected to subsidized provisions (e.g. food aid). Some urban coastal centers became very dependent on imported food and energy sources. Dakar is a well-known example: In the early 1990s, 29% of Senegal’s import package consisted of food and 16% consisted of fuel (World Bank 1994, 188) and a lot of it was meant to appease the urban population of Dakar. But also Burkina Faso had a very high food and fuel element in its import package: 25% of its imports consisted of food and 16% of fuel, and also here a lot of it (although less compared to Dakar)
was meant to provide its urban citizens (particularly those in the capital, Ouagadougou) with basics from abroad.

Gradually, however, most African urban centers created their local rural hinterlands. It is an interesting hypothesis to state that these will resemble a von Thünen-type pattern, with water, firewood, milk, eggs, poultry, and horticultural products near (or in) the city and its outskirts, and grains/starch, charcoal, and meat coming from farther away, with the functioning transport lines as commercial fingers stretching out into the countryside, up to hundreds of kilometers away (Dijkstra 1997). In many cases, providing the urban poor with energy meant widening the circle of environmental destruction around the metropolis to perhaps hundreds of kilometers, as was the case with Dakar, Ouagadougou, and Nairobi, until prices for charcoal and firewood became so high that alternative sources (paraffin, electricity, gas) took over, part of it imported or produced with imported resources. In some places, this pattern is continuing.

The provisioning of the rapidly growing urban regions in Africa with such basics as food, water, and energy by providers in rural areas surrounding the urban centers, very much depends on the agricultural possibilities of those rural environs of the big cities, on the organizational skills of entrepreneurs bringing demand and supply together, on the competition from overseas, and on the positive (enabling) or negative roles played by the government and agencies in civil society. The agricultural possibilities of the rural environment depend on the agro-ecological and the hydrological situation, on population densities, on the existence and quality of investments in skills, built environment (waterworks, agro-landesque capital, roads), means of transport, and communication. The existence of a trading community, its financial strength (and the quality and reliability of formal and informal credit and insurance systems), and its ability to work in often adverse circumstances comprise a crucial element. The public and semi-public sector may partly undertake these entrepreneurial roles, but since the mid-1985 this is strongly discouraged by the Bretton Woods institutions and many donor governments. The impact of abolishing these institutions and letting the market actors take over depended very much on the earlier effectiveness and efficiency of the non-formal traders’ networks. For livestock and meat, usually little changed as they were based on well-developed networks (Quarles van Ufford 1999, Quarles van Ufford and Zaal forthcoming), but with regard to grains, the impact was sometimes considerable (Meijling 1999). With a growing impact of what is popularly called the urban crisis in Africa, and the withdrawal or breakdown of state agencies which used to deal with food, fuel, and water provisioning, many civil society agencies took initiatives to improve urban life. Tostensen et al. (2001) put a lot of emphasis on the growing importance of what they call ‘associational life in African cities’, as the popular response to the urban crisis. “The onset of the urban crisis in the mid-1980s … seems to have had a dramatic impact on the number and nature of associations in urban areas. Their role increasingly became centered on providing urban services that the state could not deliver (such as housing, water and sanitation)” (Ibid., p.22). Conceptual boundaries between state, civil society associations, formal traders, and informal traders also become ever more blurred.

However, it is not wise to regard the current state’s function as completely marginalized. Even if governments are not at all directly active as traders, (pseudo-) government performance is important in maintaining law and order, in providing a legal and monetary framework for entrepreneurial activities, in improving and maintaining infrastructure, in (pseudo-) taxation behavior, and in cushioning or aggravating the impact of natural calamities (droughts/floods) on supply and demand. Contrary to the attitude in the 1960s to mid-1980s, with a government attitude preferring to import basic needs from abroad (paid for by aid money or commercial loans) this is now seen as undermining the production and trade activities of entrepreneurs in the urban hinterland. Urban elite groups and governments in coastal areas may be tempted to consume foreign produce, and not to invest in productive activities in their own rural hinterlands. Urban elite groups and governments in inland areas, far from coastal harbors with relatively cheap foreign imports of food and energy, can be expected to rely more on their own direct hinterland, even if that hinterland is not well endowed with productive opportunities.

The example of Ouagadougou
As an example of such an inland urban situation in a problematic agricultural environment, we will briefly look at the situation in and around Ouagadougou, capital city of the inland country of Burkina Faso, and at a distance of between 900 and 1,100 long, difficult, expensive and time-consuming kilometers from the coastal harbor cities of Lomé (Togo), Accra (Ghana), and Abidjan (Ivory Coast). We are mainly interested in the research question how the fast growing need for food, fuel, and water in this city has been accommodated. The geographical question to be answered is where these basic goods come from and what geographical trends can be discerned. But a related sociological question also interests us: Which agents played a role in bringing together supply and demand, and what alliances (if any) developed between state agencies and market agents?

Ouagadougou is one of the examples of fast demographic growth of both a city and its immediate surroundings in an inland and stressful part of Africa. At the time of independence in 1960, the city of Ouagadougou hardly existed. The Mossi area, of which it was an important traditional center, was still largely a rural zone, although rather densely populated by Sahelian standards. The sub-colony of Haute Volta was part of French West Africa. The overall colonial capital was Dakar in present-day Senegal, and Ouagadougou only had a minor function in the French administrative set-up. At independence, the city had a meager 59,000 inhabitants. In 1975 this had increased to 180,000, although with a doubling of the city’s administrative area (Verkoren and van Westen 2000). Then Burkina Faso was hit by a period of drought and drought-related disasters, resulting in a rapid rural-urban refugee migration. In 1985, Ouagadougou had 460,000 inhabitants. In the 1980s Burkina Faso experienced a major primary education boom, increasing the primary school enrolment from 15% to 30%, followed in the late 1980s and early 1990s by a secondary education boom (from 5% to 13%) (data: World Bank 1995 and 2000/2001). Ouagadougou was one of the core areas of educational expansion, and many rural-urban migrants were attracted by better educational and employment opportunities. The 1996 census counted 752,000 people in Ouagadougou proper; currently, the urban population is estimated to be close to 900,000, and will probably exceed one million in 2004. Grand Ouaga (Kadiogo Province and some urban fringe areas nearby) had a population of over 1.1 million people in 2000 (Ministère des Infrastructures 1997, p.27). In the first 15 years after independence, the annual growth rate of Ouagadougou proper was a considerable 7.7%, increasing to 9.8% per annum in the period of the droughts (1975-1985) and slowing down to 4.6% growth per annum between 1985 and 1996 (Ministère des Infrastructures 1997, p.19). Also the direct surroundings of the city itself (i.e., up to 30 km) experienced an increase in population and a rapid change in landscape and economic activities (de Jong et al. 2001). The three provinces Bazega, Kadiogo, and Oubritenga / Koureweogo together - which includes Greater Ouagadougou (see Figure 3) - experienced a population growth of 4% per annum between 1975 and 1996 (i.e., from 655,000 to 1,479,000). This means that the population of the non-Ouagadougou parts of these provinces increased from 475,000 to 727,000, an annual increase of 2%, which is below the annual population growth for Burkina Faso as a whole (which was 2.6% for this period). In relative terms this means that in 1975 the direct rural surroundings of Ouagadougou still had 2.6 times more people than the city itself. In 1996 there were more people in Ouagadougou proper than in the direct rural surroundings.

**Figure 3 Ouagadougou and immediate hinterland**

From the surroundings of Ouagadougou, not only people but also activities have concentrated in the city, as in a wide area around Ouagadougou urban functions can hardly be found, having been attracted to the city proper. Migrants from all over Burkina Faso (and especially from the northern areas) have settled either in the city or in the surrounding countryside. There has been intensive demographic contact between the Greater Ouagadougou area and Ivory Coast as well. Between the 1960s and the mid-1990s, an estimated three million Burkinabé migrated to the urban and rural areas of this economically booming country. However, since the early 1990s, Ivory Coast has had major economic and security problems, and migration has stagnated. There are even signs that Burkinabé migrants are drifting back to Burkina Faso (including Greater Ouagadougou), because of the better security and higher annual economic growth rates in Burkina Faso (e.g. 2.7% growth of GNP/capita in 1998/99), compared to Ivory Coast (only 1.1%) and Ghana (2.1%) (World Bank 2000, p. 274). This has caused the continuous growth of Ouagadougou, including certain business parts and elite living
areas. This happened in a period when many large cities in the region, through a collapse of the state-supported administrative and industrial sectors in the 1990s, experienced a period of de-industrialization and economic stagnation, and a slow-down if not complete stop of migration-led urban growth (Verkoren and van Westen 2000).

Generally, many of the first-generation migrants to Greater Ouagadougou were actively involved in the production of food, wood, and charcoal for the urban population. Partly they did this in the rural parts of Greater Ouagadougou, and partly in the urban wastelands and the direct peri-urban fringe areas. This was not a random process. Analysis of SPOT remote imagery shows the results in terms of land use and land-use change (de Jong et al. 2001). From the center of the old colonial town to the fringes of the present city, typical land use patterns – characterized as intensive urban agriculture, commercial livestock production, and fruit production – spread outwards. Then comes a degraded fringe area where intensive agriculture and spontaneous settlement compete for space, followed by old peripheral areas slowly becoming densely populated, thereby attaching themselves to the earlier high-density central parts of the city (see also Beeker and G uièbo, 1994 and Tindano, 1989).

Beyond the peri-urban environment, agricultural and sylvicultural products come from areas all over Burkina Faso, with some areas specializing in cereals (millets and sorghum; the central and south-eastern areas of Burkina Faso), tubers (the south-western parts), meat (the north), and milk and vegetables (center-north), and irrigated areas in the south and south-west) (Rouers and van den Bos, 1999). For most products, the marketing chains are short. Produce is bought up in the producing areas, transported to the cities, and traded by wholesalers to retailers. Some wholesalers in the cereal business are also involved in import-export trade, and their investment capital can be considerable. Urban traders also invest in upgrading rural production processes by introducing new varieties and crops and new livestock breeds, and in providing capital for capital-intensive forms of production (poultry, irrigation, sheds).

Food

The result in terms of production increases in agriculture geared to the catering for the urban market has been relatively good. The agricultural expansion in the hinterland of Ouagadougou was hindered between 1976 and 1985 by 20-30% less rainfall than usual. In those years, food aid from abroad became an absolute necessity for survival, and as a cushion for extreme price fluctuations. Since 1986, the rainfall situation has followed an upward general trend (although with drought years in 1990 and 1996/97), enabling better production results (Put 1999). In addition, a lot of investments took place in environmental improvements (soil and water management, irrigation in valley bottom areas) (see Reij et al. 1996; Mazzucato and Niemeyer 2000) and in better agricultural tools (oxen traction) and skills (higher overall education levels, higher agricultural knowledge, and more and better knowledge and extension institutions). Burkina Faso as a whole doubled its food production volumes between 1980 and 1997, resulting in 34% more food per capita (own calculations, using World Bank 2000, p.288). The overall improvement of agricultural production enabled a rather successful commercialization of food products to cater for the rapidly expanding urban demand, even if this demand was different from the typical rural consumption patterns. This growing demand created price increases for such products as vegetables, wheat, rice, milk, meat, and eggs, which also spurred investments by urbanites in agricultural expansion in and around the city. The rich became involved by investing in capital-intensive forms of agriculture (e.g., poultry farms), and the poor by using wasteland and the areas around their houses for production for sale (next to production for home consumption, which they had always done whenever there were opportunities to do so). Spurred by high cereal prices in the 1980s, some of the urban agricultural investors also supported considerable production improvements in the staple food production (rice, sorghum, millet), resulting in higher yields (Yonli 1988), quite near areas of more traditional rural self-supporting production of millet and sorghum. Careful urban management in some parts of the expanding city enabled the production of garden agriculture, which was partly commercial as well. On the eastern side of the city, however, this poses a health hazard, because of considerable pollution in that area (personal comment, Coen Beeker). Still, a steady urban growth, together with variable, but basically rather stable, basic grains
production levels in the wider area around Ouagadougou, has meant a steady increase of the cereal deficit and thus an increasing need for cereals from further away (Rouers and van de Bos 1999). Depending on the rainfall situation and the geographic spread of infrastructure, prices for cereals in Ouagadougou reflect production circumstances in the N’Gourma region or regions further south, and may not be lower than those in the structurally deficit areas of the far north of the country, even though they are more stable due to better market integration of the Ouagadougou market in the national market (Zaal 1998). An early liberalization of the cereals trade (1978) has helped the early development of a trade network linking producers more directly to wholesalers from Ouagadougou, partly from the N’Gourma region, partly from the west (Dano, Nouna, Boromo and Bobo-Dioulasso) and from areas around Ouagadougou (Ziniaré, Kombissiri and further away Manga).

**Biomass fuel**

The production and trade of biomass for fuel can be regarded as more problematic compared to the production and trade of food for the expanding urban population. Biomass fuels are still the most important type of household fuel (for cooking and boiling water), and are also important as raw material for small-scale industrial production (e.g. brewing beer). Urban households in Ouagadougou have changed their biomass consumption from the use of wood to the use of charcoal, with the exception of the urban elites who combined this with the use of gas. A few remaining areas of urban wood (a forest and a park in the northern parts of the city) had effectively been illegally logged between 1986 and 1996, forcing almost all urban inhabitants to look for another fuel than fuel wood. There are still forest patches in the north-east, officially well protected but increasingly used for agriculture and no longer a source of firewood (de Jong *et al.* 2001, 3, 6). Instead, massive government and donor supported reforestation projects (14,000 ha and 10,410 ha, respectively) added to the policy measures of green belt, village forestry, and agro-forestry initiatives to provide fuel wood for the future. After 1985 the government’s influence in providing wood has become more pronounced, both by more strict implementation of rules and by becoming involved as traders: some sections of the Army have become deeply involved (pers. comm. Ouindinda Nikièma).

The costs of charcoal are still lower than alternative sources of energy, because the raw materials are regarded as a free good, and wages and profits in the charcoal production branch are relatively low. The biomass production sector provides a lot of employment for people in a large surrounding area of the city, up to 200 kilometers away. During the 1950s it used to be 20 km around the city. They also provide an opportunity for informal sector entrepreneurs to make a living, and for some rich merchants to invest in the more lucrative parts of the market and to make large profits. Gradually increasing prices (by a factor 22 between 1970 and 1992) and increased fuel efficiency (by using improved stoves) resulted in a strong reduction in the daily consumption of charcoal between 1974 and 1992 (from 2.8 kg to 0.5 kg). In the mid-1990s, the population of Ouagadougou consumed 300,000 tons of biomass fuels (wood-equivalents) per annum, or 400 kg/capita (Rouers and van den Bos 1999). In a large area around the city, the cutting of wood for firewood and especially charcoal production has resulted in large-scale landscape changes (‘an expanding ring of desolation’, according to Dankelman and Davidson 1988, 67, even though this strong wording should be placed perhaps against the more generally felt despair of the time) and in biomass fuels being collected from an ever-expanding area and sold for an ever-increasing price. Urban use clearly competes with rural use, as the larger part of biomass consumption in the 200 km circle around Ouagadougou is still consumed in rural areas (partly collected for household consumption, partly commercialized). However, wherever there are through-roads to the capital city, the trade in charcoal becomes urban-bound. According to some researchers, there the collected quantities of wood exceed the natural production substantially, resulting in net deforestation (Broekhuis and de Jong 2001, p.91). The situation became so alarming that the Burkinabé government, despite pressure from abroad to withdraw from direct intervention in matters of production and trade, decided to take action by means of price policies, trade regulation, and forestry plantations.

**Water**
The production of water for the growing urban population, in a dryland region that has a structural deficit of rainfall as compared to potential evaporation, is the most pressing task. There is a potential of major urban-rural strife here, as the urban water demand competes with increasing demands for water for people, animals, crops, and wood production in the rapidly changing watershed area feeding Ouagadougou with water. In 1996 it was estimated that 70% of all urban households were in one way or another connected to clean water sources, mainly through the dams and wells north of the city center, which provide the city with 15 million m² in a normal year, and 10 million m² in a dry year. However, the current demand is 16 million m² per year. Water consumption per capita has strongly decreased in Ouagadougou, reflecting increasing scarcity: From 57 liters daily in 1978 to 39 liters in 1986 and 26 liters in 1993 (Rouers and van den Bos 1999). The waterworks could not supply the growing number of clients sufficiently, partly because of technical problems (breakdowns, leaks), but mainly because of a supply-demand problem. In the dry season in particular Ouagadougou suffers from water shortages. In a relatively dry year, the available amount of water is as much as one-third less than in a normal year. Since 1994, the urban consumption of water at a low estimate of 40 l/cap/day has exceeded the availability of water in an average dry year; by 2003, it is expected that this phenomenon will occur in average normal rainfall years (Rouers and van de Bos 1999). A new dam across the Nakambé River at Ziga, 50 km north-east of Ouagadougou, should help ease the problem until 2010, when demand will be 52 million m².

As ever more peri-urban land is used for irrigated agriculture and semi-industrial agriculture (e.g. poultry), and water needs are most pressing in the dry seasons in the dry years there as well, there is major competition between agro-industrial pressure groups and domestic water users, and between the urban core areas and the peri-urban fringes. The liberalization of water provisioning, in the stressful situation Ouagadougou finds itself in, may result in a major struggle for water, and in the rapid commercialization of water and sharp price rises. The urban poor, particularly those in unauthorized settlements, are already faced with high and increasing water prices, and in some periods with loss of access to what may be regarded as the most basic of all basic needs. They may end up paying a high price for water from wells and boreholes within the city, instead of using public taps. However, water from wells is often polluted and public health may be at risk. Also, most wells are dry in the period between March and June, when needs are highest. As with wood-fuel provisioning, the government of Burkina Faso is now caught between a rock and a hard place, i.e., between the internal political need to step in again by providing cheap and reliable water for the urban population, and the externally induced wish to maintain a distance from market parties and to provide only a legal and incentive structure.

Conclusion

The experiences in Ouagadougou show that the challenges of organizing a major expansion of the provisioning of food, water, and energy to fulfill the needs of a rapidly growing urban population have been taken up with surprising success. Although government legislation and agencies are still important (in water provision in particular), liberalization and deregulation meant that most of the organizational challenge was taken up by private entrepreneurs, in the formal and informal sectors. Tensions between supply and demand become visible during dry seasons in relatively dry years. In the water and charcoal sectors, they forebode major structural problems. Access to water in particular, and competition for water between various uses, and between relatively rich and relatively poor sections of the urban population, may result in so much social stress that public interventions may become more important again. In fact, in the food sector this has happened whenever a drought threatened the food supply to the urban poor. Foreign aid provisions then cushioned the poor from the adverse impacts of these droughts. One may expect that also in the other basic provisions, government and pseudo/non-governmental agencies will in a flexible way step in, whenever the fluctuating context demands such, and then step out again when the situation normalizes. The recent role of sections of the Army in wood provisioning is an interesting example. This demands a good ability to intervene in a flexible manner, and then to withdraw in a flexible manner. In the case of Burkina Faso and Ouagadougou, many actors seem to have mastered this art of fluctuating care, leaving most of the organizational work under normal circumstances to private initiatives. In water provisioning,
however, privatization in a situation of high competition may result in a dramatic deterioration of the quality of life of the urban poor.

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