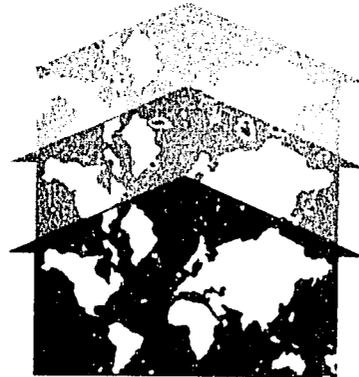


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SENEGAL URBAN DEVELOPMENT ASSESSMENT

February 1984



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AGENCY FOR
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PLANNING AND DEVELOPMENT
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PN-AT-858

SENEGAL URBAN DEVELOPMENT ASSESSMENT

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Prepared for

**Office of Housing and Urban Programs
Agency for International Development
Washington, DC**

February 1984

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CHAPTER I INTRODUCTION AND SUMMARY

A. INTRODUCTION

An Urban Development Assessment was conducted in Senegal during the month of May 1983, to determine:

- whether there are sufficiently important problems or opportunities in urban Senegal to warrant the adoption of an explicit urban development strategy for the use of AID resources;
- which urban areas within the settlement system should be given priority attention; and
- which sectoral policies and programs should be given priority attention.

To address these issues, the Urban Development Assessment (UDA) team visited urban areas in the Sine Saloum, Casamance, and Fleuve regions to review their potential for future development. Complementary to regional visits, the team also interviewed officials of national government agencies, including the Ministries of Urbanism, Plan, Economy, Finance, and Equipment as well as parastatals responsible for provision of urban services.

This analysis followed the general outline suggested for conducting urban development assessments shown in the publication, "Suggested Outline and Approach for Conducting Urban Development Assessments in Developing Countries," prepared for the Office of Housing and Urban Programs of USAID by PADCO, Inc., February 1983. The methodology used for analyzing individual settlement growth potential (results are discussed in Chapter V) was developed for the National Urban Policy Study of Egypt and is described in "Analytical Methodology for Preparing National Urban Policy Recommendations." (January 1984) also prepared by PADCO for the Office of Housing and Urban Programs. Briefly, this methodology permits rapid assessment of the costs of different urban population distribution and investment allocation strategies.

This chapter provides an introduction to Senegal's urban system and a summary of the report's conclusions and recommendations. The following chapters cover in more detail urban populations and settlements, national urban policies, the conditions of the three target regions, overall settlement projections, and recommendations for USAID urban programming.

This final report represents a substantial revision of the draft Urban Development Assessment submitted to AID in August 1983. This report contains revisions based on extensive comments received from the West Africa Regional Housing and Urban Development Office, AID's Office of Housing and Urban Programs, USAID/Dakar, and the Government of Senegal. Among the principal revisions are: a more balanced consideration of the implications of continuing past geographic investment patterns versus shifting resources toward regions other than Dakar; addition of an analysis of the impact of assuming the national population growth rate will decline; and extensive editorial changes to make the report more readable and correct errors in the draft. This report does not, however, offer

a "Preferred Urban Development Strategy" for Senegal or the three regions of USAID interest. This Urban Development Assessment is intended to assist AID and the Government of Senegal in evaluating the trade-offs and implications of different urban development strategies. The ultimate choice of a strategy will depend on balancing numerous financial, technical and policy criteria.

1. Overview

Since 1980, USAID programs in Senegal have been concentrated in the Sine Saloum, Casamance, and Fleuve regions. To conserve scarce development resources, the USAID Mission desired that the Urban Development Assessment be focused on these regions, to complement the development objectives of rural programs. This is a legitimate concern on the grounds of conserving scarce developmental resources and, more broadly, because agricultural production will continue to provide the major source of inputs for future industrial or urban development in Senegal. Historically, it has been the lack of linkages between the agricultural (primary) sector and what might be called urban sectors of the economy--industry and services--that have resulted in the slow growth of Senegal's economy.

While future USAID urban interventions may be concentrated in the regions where it has rural programs, a review of the entire settlement system is necessary to determine the scale and nature of future urban populations in the target regions. Thus, during the Urban Development Assessment, data were collected on the entire system. Furthermore, in projecting regional urban populations, an overall review of likely urban growth was performed to ensure that programs developed at the regional level coordinate with programs developed for other regions and national programs.

Decentralization is almost always an implicit component of regional development strategies even if it is not clearly stated. Generally, decentralization takes two forms: (1) administrative and/or political decentralization and (2) economic decentralization. The former is usually concerned with the transfer of decision-making authority from the central government to local governments while the latter is concerned with reducing inequities between primate cities and other portions of the country. The latter form of decentralization is also frequently concerned with reducing the growth of primate cities by encouraging growth in other urban and rural areas or, to phrase it differently, to stop the migration from other areas to primate cities. Because employment is the primary motivation for migration, this concern translates operationally into developing new employment opportunities outside of primate cities at rates faster than might otherwise occur.

As a country develops, its urban system (or system of cities) plays an increasingly important role in the country's economic growth. This is evidenced both by the shift in economic structure from agricultural activities to industrial and service sector activities and by shifts of

population from rural areas to urban areas. In many developing countries, urbanization has been characterized by the rapid development of primate cities which generate much of the urban contribution to economic growth. While this process has been viewed as largely negative, since it has resulted in highly visible localized urban problems, it has also resulted in the development of economic resources that did not previously exist. Thus, if decentralization away from primate cities is to occur, it must proceed at a rate which does not substantially reduce the primate city's contribution to the economy.

In developing regional and urban investment strategies, it is important to seek out cities where the maximum contribution to the country's economic growth will be made, otherwise, scarce development resources may be wasted and decentralization not achieved. As these initial target cities develop, they should become the base from which additional decentralization efforts to other areas can be launched. This incremental process of regional urban development is necessary to both conserve scarce resources and to ensure success in the decentralization process.

This concern that investment resources be efficiently utilized does not mean that areas of the country without strong economic potential should be neglected. It is important that the benefits of development be shared widely throughout a country. However, when programs for such areas are developed, concern for equity should not result in costs unaffordable to the country as a whole. While this analysis tried to identify those settlements with high economic potential for more intensive development programs, it was assumed at the same time that all settlements would require some investment (primarily in infrastructure) aimed at reducing deficits and generally improving the quality of life.

2. Economic Growth and Urbanization

Senegal's economic growth will continue to be a major factor in limiting the options available for development of urban strategies. Past investment trends relied on relatively large scale, inefficient industrialization and have not created a sound base for future industrial growth. Thus at current investment rates, the bulk of GDP growth will continue to be based on the agriculture and services sectors, and the desired diversification of the economy will probably not occur, at least to the extent anticipated. Furthermore, and equally significantly, at existing population growth rates, real per capita GDP could actually decline over the next 20 years unless more efficient solutions to future spatial and sectoral development are sought. Even at investment rates projected by the VIeme Development Plan--16 percent of GDP--investment choices will probably result in low levels of GDP growth. At the sectoral efficiencies (rates investment to output) shown in the VIeme Development Plan, investment would have to be increased to 21 percent of GDP and consumption significantly curtailed to achieve even modest real per capita GDP growth. At current investment rates, there will not be sufficient resources to finance, even with substantial foreign assistance, sufficient employment growth to accommodate future urban population growth.

Thus, most new urban employment growth will occur in services sectors rather than in directly productive sectors.¹ Even at a 19 percent investment rate, between 1985 and 2000 services sector employment will grow three times more rapidly than industrial employment, adding approximately 2.4 new service jobs for every new industrial job. This very rapid service sector growth will mean that most new urban dwellers will find future employment in low productivity, informal sectors. While growth in informal sector activities is not in itself or bad phenomenon, the lack of opportunities for more formal activities directly involved in productive output will mean that most new employment will have relatively little impact on GDP growth. Furthermore, lack of productive growth may also result in significant unemployment and underemployment.

Even though the primary sector's share of GDP is not projected to increase, and under a scenario of more efficient industrial growth would decrease, the sector will continue to be a major source of employment for both rural and urban areas.² According to the 1976 census, primary sector employment accounted for 35 percent of urban employment in settlements with populations less than 20,000. Furthermore, even when primary sector employment figures are adjusted to account for the low base due to unmeasured traditional and informal employment, primary sector employment will grow by about 11 percent through the year 2000. Thus for many settlements, the agriculture sector will continue to be the primary source of urban and rural employment.

3. Population and Urbanization

The second major factor in future urbanization is rapid overall population growth. Even at official growth rate projections of 2.8 percent (which are optimistically low), Senegal's total population will reach 9,830,000 by the year 2000. At more likely projections of national population

¹Throughout this report, the services sector is defined as the tertiary sector minus transport and communications, plus activities measured by the quaternary sector and, to the extent it is measured, the informal sector. It is recognized that there are some discrepancies in this definition since informal sector activities are largely excluded from national accounts. However, types of informal employment are included in employment figures which were used by the team to determine regional and urban employment patterns. Therefore, to be consistent to the extent possible, known informal employment was included in services sector employment to give a more accurate picture of urban employment.

²Although the most frequent definition of "urban" in Senegal is "settlements having populations greater than 10,000," this limitation excludes many of the smaller settlements in the three regions where AID currently has programs. Therefore, we have used broader definitions to include all settlements which were communes in the 1976 census. This includes 34 settlements having populations in 1976 ranging from 2,700 to 954,000.

growth (approximately 3.2 percent), Senegal's total population will reach 10.8 million by the year 2000. Given the relatively limited employment potential in rural areas, even with the rapidly expanding primary sector employment growth quoted above, Senegal's future population is likely to be at least 50 percent urban by the year 2000. At present, it is estimated that approximately 2.5 million people -- or 39.6 percent of Senegal's population -- live in urban areas. By the year 2000, Senegal's urban population will double to roughly 5.2 million.

This rapid expansion of urban population will result in an equally rapid expansion of the labor force. At constant labor participation rates, roughly 853,000 new job applicants will enter the urban labor market between 1985 and 2000. However, even at relatively high rates of investment, without dramatic increases in investment efficiency, only roughly 462,000 new jobs will be created during the period in urban areas. Similarly, even if all new primary sector jobs are located in rural areas (unlikely to be the case given the close relationships between rural and small urban areas), primary sector job growth will not be adequate to support new demand for rural employment. During the 15-year period 1985-2000, an estimated 541,000 new rural jobs will be required even if the structure of Senegal's population changes from 30 to 50 percent urban. However, primary sector employment growth will add approximately 443,000 new jobs, a shortfall of roughly 100,000 rural jobs.

4. Existing Urban System

Senegal's urban system is characterized by the extreme primacy of Dakar, which had a metropolitan population of approximately 1.4 million in 1983. There are 32 other smaller settlements, the largest being only 11 percent of Dakar's size. This primacy means that if the most efficient settlement location strategy were to be adopted, most future investment would be located in Dakar. To characterize it in another way, Dakar, with approximately 22 percent of the total 1983 population and receiving about 30 percent of investment resources, currently produces about 50 percent of total GDP. Thus, to follow a policy of rapid decentralization aiming at a reduction in the growth of Dakar would require major investments in less productive locations and would result in loss of economic growth. For example, to reduce Dakar's population growth rate from approximately 5 percent to 3 percent would result in costs for urban job creation which are approximately 13 percent greater than if current investment patterns were maintained. The difference between the two development costs is roughly equal to the total five-year investment that would be available to the transport sector under high projections of economic growth.

B. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

1. General Urban Investment

The immediate need to improve national economic performance mandates that efficiency criteria, i.e., increased productivity for investments made, must be the overriding criterion for most new urban investments in the short to medium run. Furthermore, the need to dramatically expand the supply of employment at the same time requires an emphasis on investments with early pay-off. Finally, due to the relative lack of public resources, a greater burden of investment costs must be shifted to either beneficiaries or to the private sector.

Given the predominance of Senegal's primary sector as a resource base for further industrial growth and the relative inefficiency of transformation of agricultural output into industrial output (Senegal, between 1960 and 1980, created only .39 of additional industrial output for every dollar of additional agricultural output while middle-income countries, as a whole, generated an additional \$2.60 in industrial output for every \$1.00 of additional agricultural output)³ much greater efficiency in the choice of new industrial development will be necessary if significant resources are to be generated by the sector for economic growth.

This need for efficient industrial choices translates into finding efficient locations for new industrial and, thus, urban growth and selection of industries that are relatively labor intensive or are linked to industries that are. Since the bulk of investment resources over the medium-term are likely to be foreign, donor agencies have an important role to play in assuring that the standards of projects are affordable and that there is sectoral coordination in the development of new urban programs.

Efficiency also relates to regional development policy. Regional investment policies should seek to support and build on likely growth potential in agricultural areas (agricultural is being used to include all primary sector activities) or build on past industrial investment already in place. Due to financial constraints as well as infrastructure constraints, such as power supplies, major urban development efforts outside of Cap Vert initially should be focused on one or two areas. The most likely areas for such a focus are:

- Thies, actually an extension of the Cap Vert agglomeration;
- Kaolack and surrounding settlements in Sine Saloum; and
- St. Louis-Richard Toll-Dagana area.

³Source: PADCO analysis from the World Bank 20-year baseline data found in 1982 Development Report.

Historically, with the exception of Kaolack, all of these settlements have had relatively high population growth rates. The Thies system of settlements, actually stretching from Dakar to Diourbel, has benefited most directly from the agglomeration economies which have developed in Dakar. Thus by 1983, Thies, with an estimated population of 146,000, was the second largest city in Senegal. However, because of its proximity to Dakar, Thies probably could not be the focus of a regional development strategy. Its growth is too dependent on Dakar for independent development. However, it could potentially absorb some of the population growth that would otherwise be drawn to Dakar if appropriate policies were developed for Thies.

Traditionally, Kaolack has been a major distribution center with interlinked markets stretching throughout Senegal. It has also been the center of major industrial investment such as groundnut processing and salt. This combination of past industrial investment and location as a major distributor of goods to surrounding rural areas have made Kaolack the third largest city in Senegal, with an estimated 1983 population of 126,000. However, the past industrial investment has had relatively few linkages with other industries, and thus has not spurred new development. As a result, Kaolack's growth has stagnated. Investments now being made in power-generating capacity and rail, road and water transport, combined with diversification of its agricultural base, may create the impetus from which stronger growth may be launched.

During the period directly after independence, when the nation's capital was moved from St. Louis to Dakar, the loss of services employment resulted in stagnation of St. Louis's growth. However, in spite of this apparent drop in economic activity, St. Louis has continued to have high growth rates, approximately 4.1 percent per year during the 1960-1976 period. It also has a relatively high proportion of industrial employment. Outside of Dakar, Senegal's other settlements average about 4 percent of their employment in manufacturing while St. Louis has about 7 percent. Finally, the supporting growth of major agro-industries in the Ross Bethio and Richard Toll areas, combined with irrigation projects throughout the Fleuve, provide the future potential for developing an urban region that would eventually support growth throughout the Fleuve.

Clearly, not all investment resources can be focused in the Dakar-Thies, Kaolack, and St. Louis-Dagana regions, even though these regions have the greatest likelihood for greatest economic growth. However, the development strategies for other regions should be geared more to maintaining their current share of urban population rather than to growth. These strategies should seek to alleviate existing infrastructure deficits. The scale and timing of programs should be such that costs can be recovered by users. Where feasible, industrial investments should be made which aim at processing regional agricultural output, but industrial development would not be a major objective of such strategies.

2. Regional Urban Investment Strategies

The present economic climate makes development of urban programs difficult in any part of the country. However, guidelines can be offered to indicate when and how such programs should be started. Initially, they should be located in areas that have relatively good existing infrastructure or have current construction programs underway to mitigate existing deficits. At present, scarce investment resources should be aimed at improving existing plant and infrastructure rather than expansion of capacity. When new programs are started, they should be initiated in relatively few places, and should build on capacities already in place to minimize the costs. Furthermore, the development of new infrastructure capacity should be linked to the development of new productive capacity. In most of urban Senegal, this means development of new industry; however, in smaller, more rural areas, it can also be linked to development of expansion of agricultural output necessitating increased supporting urban infrastructure.

3. Fleuve

The development of the St. Louis-Dagana area into a strong urban region provides a major opportunity for supporting the large scale agricultural programs being implemented in the Senegal River Basin and, over the long-term, creating an urban alternative to Dakar. However, although the subregion shows potential, its development involves considerable risks. St. Louis is perhaps the only large settlement in Senegal which has major physical constraints to urban expansion. At the same time, significant expansion of the Richard Toll-Dagana area without complementary development of St. Louis would probably not be successful. At approximately 100,000 population, St. Louis now has a labor force which is sufficiently diversified to provide secondary and tertiary services which would be necessary for development of the potential of Richard Toll-Dagana. Development of primary processing industries in the Richard Toll-Dagana area combined with secondary, port-related industries in the St. Louis area for which a larger, more diversified labor force is necessary could mean that by the year 2000, the subregion could have an urban population of approximately 420,000.

In practically all urban areas, assistance to SONEES is required to develop water supply programs. Planned expansion of electrical power generating capacity makes St. Louis the best location for development of new industrial plants requiring power supplies. In the St. Louis area, additional work is needed to upgrade existing low-income areas within the city and identify future settlement areas for new urban population. It would also seem appropriate to study ways to assisting development of the St. Louis port and industrial complex to handle processing increased agricultural production resulting from irrigation programs. Since adequate road infrastructure already exists throughout the region, some additional study is necessary to determine whether it would be most cost-effective to develop river transport networks or rely on the existing road networks. The outcome of this study would determine the nature of port

development in St. Louis and of river infrastructure throughout the Fleuve.

As with St. Louis, support to development of water supply systems is necessary in both Richard Toll and Dagana. Both have inadequate power capacity to support much new industrial investment. Additional industry in the region would be desirable to support the major investments already in place.

The following industries are suggested for the St. Louis-Richard Toll-Dagana area:

- Food processing
- Light mechanical industries
- Port-related industries (St. Louis only)
- Possibly clothing (but not textiles)

Initially, development of the St. Louis-Dagana area would probably mean that population would be drawn from other surrounding settlements in the Fleuve, slowing their development. However, the development of a stronger source of markets within the region would probably eventually provide the basis for some growth in other settlements as well.

In particular, in the post-1990 period after the Manatali Dam is in operation and double-cropping of expanded irrigated perimeters develops, expanded (although small-scale) development of more remote settlements such as Bakel may become feasible. Under such a scenario, Bakel's population would increase from approximately 11,000 in 1983 to 27,000 by 2000.

Such development would have to be based on very small-scale labor-intensive primary processing activities which have low energy requirements and few skilled labor requirements (rice milling and storage are examples). Supporting investments in water supply and other types of urban infrastructure would be necessary to alleviate deficits and provide for new population growth. Prior to development of these programs, indications of successes in regional agricultural programs and in the development of the St. Louis-Dagana area should be apparent to create sufficient demand for expansion of urban services in smaller areas.

4. Sine Saloum

Past industrial investment has developed a base from which current urban population in the Kaolack area (including Kaffrine, Nioro du Rip, Fatick and other smaller settlements) could grow from about 202,000 in 1983 or 7 percent of Senegal's urban population to 413,000 or 8 percent by 2000. To some extent, the region's existing infrastructure and industrial base means that urban growth could occur more easily than in the Fleuve. However, for that to happen, a greater diversification of the region's agricultural base into export commodities will be necessary, as

past regional industrial growth has been based on groundnuts and salt, both of which have limited growth potential. Current plans to develop a textile factory in Kaolack using cotton produced in Sine Saloum and Senegal Oriental are an example of such potential.

Development strategies for Sine Saloum should aim at developing Kaolack into an industrial center and at developing surrounding Sine Saloum settlements into supporting primary processing and warehousing centers feeding into Kaolack. To accomplish such a strategy, complementary development into Kaolack's port would probably be necessary. However, the region's generally good road network could probably support such growth without major new investments in capacity.

Other intra-urban infrastructure programs being developed throughout the region are strengthening the region's base for urban growth. In Kaolack, Fatick and Kaffrine, programs to expand water supply are already being developed. Similarly, Kaolack's power-generating capacity is being expanded to serve both Kaolack and surrounding settlements stretching into Diourbel. While these immediate term programs will support growth through 1990, after that time, additional infrastructure investment will be necessary if continued growth is to occur.

5. Casamance

Although the Casamance has a relatively well-developed, integrated system of settlements, the lack of past industrial investment makes the region's urban areas less attractive than those in either the Fleuve or Sine Saloum. This lack of an industrial base combined with overall resource constraints at the national level means that without major investment programs, the Casamance may lose its current share of urban population (approximately 7.8 percent of the 1983 population).

If economic recovery does begin to occur, small-scale programs aimed at ensuring that settlements in the Casamance maintain their relative share of urban population could be initiated to provide the base from which more ambitious urban development could be launched in the future. Initially, the focus should be in the Ziguinchor area. Such programs would aim at strengthening the region's industrial base primarily through expansion of food processing industries, such as fruit juices, processed vegetables, and preserves. More intensive fish-related activities may also be appropriate.

Within the Basse Casamance, urban investments should build on rural projects already underway; for example, development of the food processing industries already mentioned. Parallel to that is the need to continue to upgrade existing infrastructure -- particularly intra-regional infrastructure -- linking rural areas to urban areas. Attention needs to be paid to marketing of agricultural produce, both within the region and between Casamance and other parts of Senegal. To that end, it may be feasible to improve port facilities at Ziguinchor to strengthen links bet-

ween it and Dakar. Equally important, marketing and warehousing activities within settlements of the Lower Casamance need to be strengthened through improvements to markets and provision of transport infrastructure.

Development of the Upper Casamance settlements will probably have to proceed at a slower rate than the Lower Casamance due to even greater isolation from the other parts of the settlement system. Although the subregion produces a variety of agricultural produce -- cotton, ground-nuts and animal products -- its urban areas lack sufficient infrastructure to process the produce. Furthermore, expansion of processing activities in Sine Saloum and the Lower Casamance will probably make it uneconomic to develop such activities in the Upper Casamance. Therefore, in the near future, urban programs in the Upper Casamance should probably be focused on storage and marketing of agricultural produce for eventual processing in other areas (with the possible exception of meat-packing, which may be more efficient in either Kolda or Velingara). Some expansion of infrastructure capacity may be necessary to support such activities, but generally programs underway are designed to meet immediate population requirements.

6. Technical Assistance

There is a need to work with other donor agencies and the Government of Senegal in developing overall urban investment strategy. Several agencies are now involved in the urban development process and have been developing programs independently of each other. For example, the current World Bank Engineering Credit, which is providing assistance for the preparation of the Seventh National Plan, has as some of its objectives the support of policy and institutional analysis needed for longer-term urban interventions. Since all possible development resources will be necessary to reverse the current negative economic trends and develop the base from which economic expansion in regional centers can be launched, it would seem appropriate to work with the World Bank and other donors in developing urban institutional capacity. Some of the specific areas that should be examined are:

- Programs to strengthen the technical capacities of central and local authorities to identify, develop and implement urban programs. This is particularly important for regional economic development offices in identifying and promoting new industrial projects. It is also important for authorities in charge of public utilities so that their programs are coordinated with other development activities;
- Assistance in mobilizing local resources;
- Assistance to parastatals in eliminating subsidies and improving programming objectives and performance; and
- Programs to improve urban management through training geared to the prefect and sous-prefect level of administration.

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CHAPTER II

GENERAL URBAN PATTERNS AND TRENDS

A. NATIONAL POPULATION TRENDS

The April 1976 census reveals that the Senegalese population doubled within the last 25 years (see Table II.1). The gross birthrate was estimated at 4.6 percent in 1970-71 (National Demographic Survey) and 4.8 percent in 1978 (National Fertility Survey). This increase in the birthrate is due to several factors: improved sanitary conditions (not including contraceptive methods); marriage occurring generally at a young age (15.6 years), especially in rural environments; and socio-cultural and economic factors favoring numerous descendants. The total fertility rate is now around 193.6 births annually per 1,000 women aged 15 to 49 years. In 1970-71, Senegal reported the lowest mortality rate in West Africa, 2 percent. The estimated life expectancy is 44 years and is higher in the cities.

The Senegalese population shares a common characteristic with that of other developing countries: its youth. In 1976, more than half the population was at least 20 years old, 43 percent at least 15 years old, and only 4 percent more than 64 years old. Those people who are of intermediate age (15-64 years) represent only 53 percent of the population, which gives rise to a dependency rate of 90 percent. (see Table II.2.)

B. REGIONAL POPULATION DISTRIBUTION

An overview of population densities clearly shows a division between the eastern part of the country, which is sparsely populated with the exception of the river banks, and the western part, which contains the large urban centers. The highest densities are located on the Dakar-Thies axis and in the peanut farming region of Diourbel/Sine Saloum. (see Table II.3 and Map 1)

Comprising .3 percent of Senegal's total area, Cap Vert contained, in 1976, 19 percent of the national population. Its population density was 1,735 persons per square kilometer. Thies and Diourbel both had around 100 persons per square kilometer. On the other extreme, the five largest regions had an average population density of 16 persons per square kilometer.

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TABLE II.1
SENEGAL NATIONAL POPULATION

Year	Total Population	Annual Growth Rate	Growth Rate 55-76	Growth Rate 60-76
1955	2,600,000			
1960	3,110,000	3.6%		
1970	3,956,616	2.4%		
1976	5,068,741 ¹	4.4%	3.2%	3.1%

¹ This figure is based on the "readjusted" 1976 census, which takes into account the transient population.

Source: Census figures

TABLE II.2
DISTRIBUTION OF THE TOTAL RESIDENT POPULATION BY AGE GROUPS AND SEX

Age	Male		Female		Both	
	(1000)	%	(1000)	%	(1000)	%
0-4	461	18.6	458	18.1	919	18.4
5-9	359	14.5	346	13.7	704	14.1
10-14	272	11.0	260	10.3	532	10.6
15-64	1269	51.3	1364	54.0	2635	52.7
65 +	105	4.3	94	3.7	200	4.0
n.d.	5	0.2	3	0.1	8	0.2
Total	2473	100.0	2525	100.0	4998	100.0

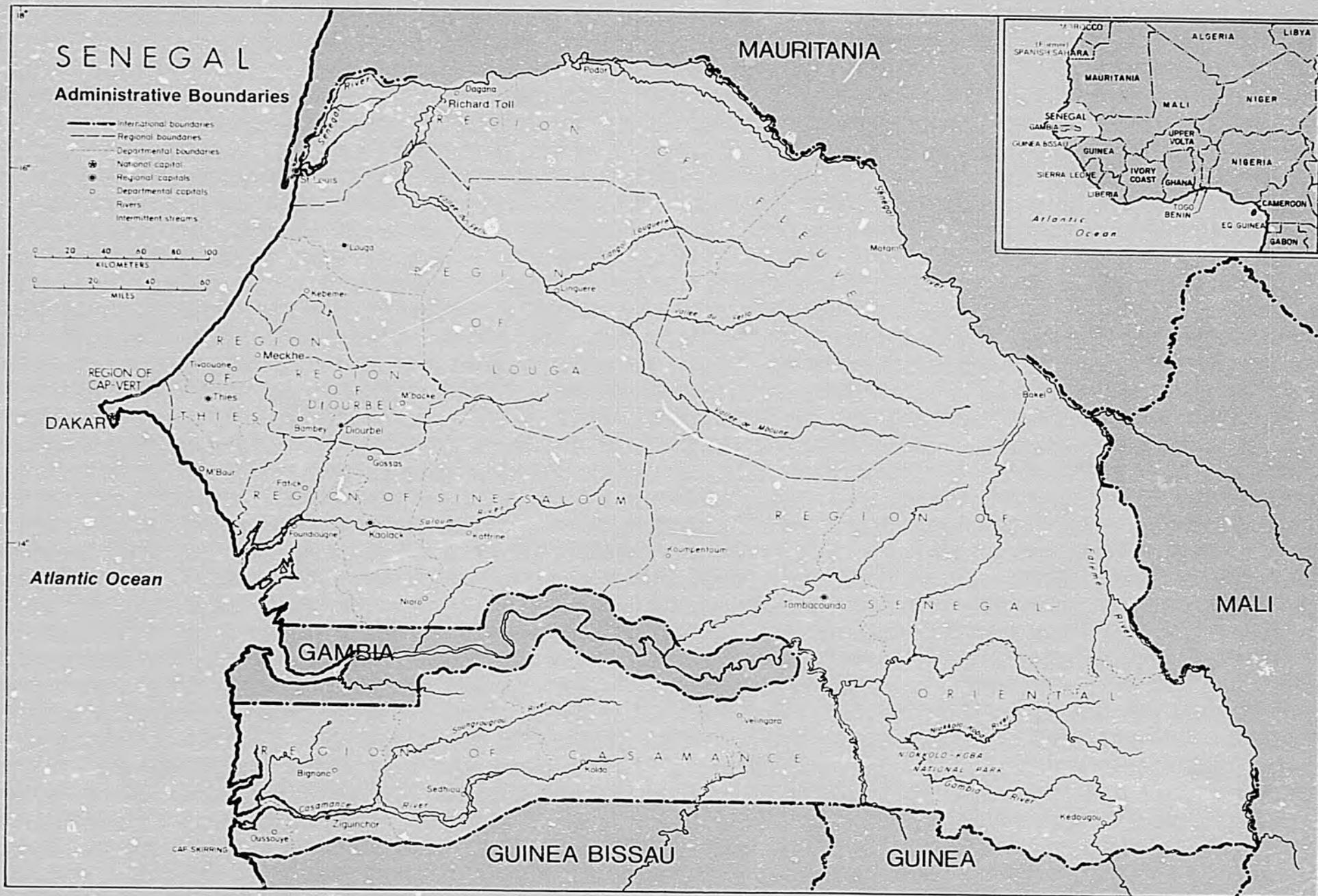
Source: 1976 census

TABLE II.3
POPULATION DISTRIBUTION ACCORDING TO REGIONS AND POPULATION DENSITIES

Regions	Area		Population		Densities inhab/km ²
	(km ²)	(%)	(1000)	(%)	
Cap Vert	550	0.3	954	19.0	1,735
Thies	6,601	3.3	685	14.0	104
Diourbel	4,359	2.2	429	8.5	98
Sine Saloum	23,945	12.2	1,020	20.0	43
Casamance	28,350	14.4	741	15.0	26
Louga	29,188	14.9	426	8.4	15
Fleuve	44,127	22.4	522	10.3	12
Senegal Oriental	59,602	30.0	291	6.0	5
Total	96,722	-	5,906	100.0	26

Source: 1976 census

MAP 1



C. POPULATION MOBILITY

1. Permanent Migration

The volume of interregional migration is considerable. In 1976, 655,000 Senegalese (not counting people born abroad) lived in a region other than the one where they were born. (see Appendix Table A.1)

Cap Vert receives about half the permanent interregional migrants. Over one-third of the 1976 population of the Dakar agglomeration consisted of migrants. The populations of Thies and Diourbel include a large number of inhabitants born elsewhere (14 and 11 percent of the population, respectively). All regions other than Cap Vert are affected by substantial emigration, but Senegal Oriental and Thies have positive net flows of migrants. (see Table II.4.) At the city level, migration accounts for a significant proportion of the population growth. Table II.5 shows that this is true for secondary cities in Senegal. Casamance, Thies, and Fleuve contribute the great majority of their migrants to Dakar.

Figures on the evolution of permanent migration from 1961 to 1976 (see Appendix Table A.2) show an increase in the number of interregional migrants (approximately 5 percent per year), but little change in the relative volume of departures to Dakar. On the other hand, a World Bank report notes that there is evidence to suggest that relative migration to Dakar may have declined slightly during the 1970s.¹

Appendix Table A.2 indicates the major changes resulting from migrations from the groundnut farming regions to other areas. In 15 years, the migratory balance of Sine Saloum went from +78,000 to -24,000. Despite a declining number of immigrants, Senegal Oriental remains the only region, with the exception of Dakar, to have a positive migratory balance in 1976. This partly reflects the government's long-standing program of resettlement in Senegal Oriental (the "New Lands" program).

In regards to the other regions, figures show a general trend of increasing net outflow of migrants from 1961 to 1976, with the exception of Fleuve and Thies, where the situation has appeared almost stationary since 1971.

2. Seasonal Migrations

The volume of seasonal migrations depends upon the rhythm of intense agricultural activities during the dry season over a cycle of approximately 6 months. During the slack period, workers move to other regions or urban centers to find employment. For many people, these temporary shifts eventually turn into permanent relocation.

¹World Bank, Senegal Urban Sector Memorandum, Part 2, June 1, 1983, p. 3.

TABLE II.4
MIGRATION RATES BY REGION, 1960-1971
(Percent of Initial Year Population)

Region	Immigration	Emigration	Net Migration
Cap Vert	28.5	3.4	25.1
Casamance	1.9	5.3	-3.4
Diourbel	4.2	8.8	-4.6
Fleuve	2.1	16.0	-13.9
Senegal Oriental	13.6	5.8	7.8
Sine Saloum	-0.7	7.7	-8.5
Thies	9.6	7.8	1.8
All Regions	7.6	7.6	-

Source: World Bank, from Department of Statistics

TABLE II.5
URBAN POPULATION BY BIRTHPLACE AND LENGTH OF RESIDENCE
(Selected Cities), 1974

City	Residents Born Outside the City (Percent)	Percent Residing in City Less Than Five Years
Thies	73	8
Kaolack	73	13
Kiourbel	68	14
Tambacounda	89	19
St. Louis	40	6
Ziguinchor	73	16

Source: World Bank, Senegal Urban Sector Memorandum, 1983

It is difficult to determine the volume of seasonal migration. According to unofficial estimations, 15 to 20 percent of the rural inhabitants (around 600,000 to 800,000 people in 1983) move each year between December and June. Dakar receives 80,000 to 100,000 of these migrants.

Because of seasonal migration related to employment, "double (or multiple) residence" is a common phenomenon among Senegalese. This pattern is encouraged by networks of contacts around the country based on family, ethnic, and religious ties.

3. International Migration

In 1970-71, the Demographic Survey estimated that 210,000 members of the Senegalese population lived abroad. Of this group, 83 percent lived in other African countries and 17 percent outside of Africa, mainly in France. At the present time, immigration restrictions in France have modified emigrants' destinations abroad.

The number of foreigners living in Senegal in 1976 was 119,000, according to the census (2.4 percent of the country's total population). A large number of the foreigners in Casamance have come from Guinea-Bissau and Gambia as a result of unrest there. The populations of Sine Saloum and Senegal Oriental also include a significant number of foreigners from the borderlands. (See Appendix Table A.3.)

D. SETTLEMENT SYSTEM

In 1976, the population of Senegal was divided among 13,606 settlements, of which 12,137 (97 percent) sheltered less than 1,000 inhabitants per locality. In their entirety, these small localities comprised half of the total population (2,508,000 inhabitants). (see Table II.6.) Twenty-one settlements had more than 10,000 inhabitants, with a total of 1,680,000 people. Following the official definition of urbanized populations, agglomerations of more than 10,000 inhabitants, the urban population in 1976 represented more than 33 percent of the total population. This percentage ranks Senegal among the most urbanized countries in West Africa. (see Table II.7.)

The Bureau of Statistics defines three categories of settlements according to their size:

- rural settlements: less than 10,000 inhabitants
- urban settlements: ranging from a minimum 10,000 to 200,000 inhabitants
- Dakar-Rufisque ranked with Cap Vert

TABLE II.6
DISTRIBUTION OF SETTLEMENTS ACCORDING TO THEIR SIZE
(1976 Census)

Size of Settlements	Number of Settlements	Population
Less than 1000 inhabitants	12,137	2,508
1,000 - 4,999	423	695
5,000 - 9,999	25	179
10,000 - 19,999	9	117
20,000 - 49,999	6	151
50,000 - 99,999	3	213
100,000 and more	3	1,205
Total	13,606	5,068

Source: 1976 Census

TABLE II.7
CHANGE IN DISTRIBUTION OF SETTLEMENTS BETWEEN 1960 AND 1976

Agglomerations (size)	1960		1976		Annual Growth Rate
	(1000)	(%)	(1000)	(%)	
-10,000 habitants	2,399,4	77.4	3,392,2	66.8	2,2
10,000 to 200,000	286,2	9.2	700,2	13.8	5,8
200,000 and + (Dakar)	424,4	13.6	954,4	19.4	5,2
Total Population	3,110,0	100.0	5,068,7	100.0	3,1

Source: 1976 Census

From 1955 to 1976, the number of agglomerations containing 10,000 to 200,000 inhabitants almost tripled (increasing from 6 to 17). Secondary city population growth has been as high as that of Dakar. (see Table II.5.)

The population distribution between Dakar and secondary cities has remained stable. The Dakar agglomeration's share of total urban population was 59.6 percent in 1960 and 58.4 percent in 1976. Secondary cities (+10,000 inhabitants) represented 40.4 percent of the urban population in 1960 and 41.6 percent in 1976.

If present trends continue, the population in settlements of 10,000 or over will comprise half of the national population by the year 2000, with Dakar accounting for 29 percent of the total.

An alternative way to classify the urban population in Senegal is by communes. Communes are urban centers which have been designated as administrative units. They are analogous to municipalities in other countries. In 1976, Senegal had 34 communes with a population of 1,713,000, or 33.8 percent of the total population. Seventeen of these communes had less than 10,000 inhabitants. The use of this definition does not greatly affect the estimate of the urban populations, since the majority of communes have over 10,000 people. Table II.8 shows urban settlement sizes and growth rates. The table also gives projections of the populations of these settlements assuming a continuation of growth rates observed between 1961 and 1976. At these rates the urban population would reach approximately 5.2 million by the year 2000. About 40 percent of that growth would result from migration. The rest would be from natural increase, projected at 3.2 percent.

As in the majority of West African countries, the urban hierarchy in Senegal is characterized by the predominance of the capital. (see Map 2.) This predominance is shown by demographic measures as well as economic and political functions. Moreover, Dakar has maintained its distinctive status as the capital of West Africa during the colonial period, particularly as it opens up to the outside world.

At the present time, the capital's boundaries correspond to those of the Cap Vert region. The area includes approximately 20 percent of the country's population and half of the urban population. The annual growth rate of Cap Vert was 5.55 percent over the period 1961-1976, according to census data. The growth of the city of Dakar itself was estimated for the Dakar Master Plan at 7 percent annually from 1971-1976. The Dakar-Rufisque region and its satellites included close to 1,400,000 inhabitants in 1983 according to PADCO estimates. The second city in Senegal, Thies, numbered only 146,000 in 1983. At its historic rates of growth, the Dakar metropolitan region would reach approximately 3.5 million by 2000 (PADCO projections). About 42 percent of this population increment would consist of migrants. The remainder would be due to natural increase.

TABLE II.8
SETTLEMENT STATISTICS FOR 1961, 1976 AND 2000

Region	Settlement	Population		Average Annual Growth Rate 1961-76 (%)	Population Year 2000		Implied Migration (000s)	Migration As A Proportion of Total (%)
		1961 (000s)	1976 (000s)		Due to Natural Increase (000s)	At Average Annual Growth Rates (000s)		
Cap Vert	Dakar	424.4	954.4	5.55	2033	3490	1458	41.76
Casamance	Ziguinchor	29.8	69.6	5.82	148	270	122	45.19
	Kolda	6.1	18.9	7.83	40	115	75	65.13
	Bignona	5.4	14.5	6.81	31	70	40	56.15
	Sedhiou	3.0	9.3	7.83	20	57	34	65.16
	Velingara	2.6	8.8	8.47	19	62	43	69.72
	Oussouye	0.8	2.5	7.89	5	15	10	65.60
Diourbel	Diourbel	28.6	53.7	4.29	114	147	33	22.28
	M'Backe	8.0	25.4	8.01	54	161	107	66.46
	Bambey	6.0	9.8	3.32	21	21	1	2.86
Louga	Louga	16.3	33.6	4.94	72	107	35	33.06
	Linguere	2.5	7.8	7.88	17	48	32	65.51
	Kebemer	3.0	6.8	5.61	14	25	11	42.50
Fleuve	St. Louis	48.8	88.7	4.06	189	231	42	18.13
	Richard Toll	1.9	10.7	12.21	23	170	147	86.59
	Dagana	4.5	10.2	5.61	22	38	16	42.50
	Podor	4.7	6.8	2.49	14	12	-2	-17.94
	Matam	6.0	9.8	3.32	21	21	1	2.86
Senegal Oriental	Tambacounda	11.1	25.1	5.59	53	93	39	42.28
	Bakel	3.0	6.6	5.40	14	23	9	39.68
	Kedougou	2.0	7.7	9.40	16	67	50	75.36
Sine Saloum	Kaolack	69.6	104.2	2.73	222	199	-23	-11.66
	Kaffrine	2.5	11.4	10.64	24	129	105	81.21
	Fatick	7.2	10.0	2.21	21	17	-4	-25.91
	Nioro du Rip	3.0	7.9	6.67	17	37	20	54.76
	Foundiougne	1.7	2.7	3.13	6	6	0	-1.59
	Gossas	5.0	7.4	2.65	16	14	-2	-13.73
	Guinguineo	6.7	10.9	3.30	23	24	1	2.24
	Sokone ¹	3.0	5.8	4.49	12	17	4	25.83
Thies	Thiea	69.1	115.2	3.47	245	261	16	5.99
	M'Bour	14.0	36.9	6.67	79	174	95	54.83
	Fivaousne	8.0	17.0	5.15	36	57	21	36.24
	Meckhe	5.6	8.7	2.98	19	18	-1	-5.24
	Khombole	4.1	6.8	3.43	14	15	1	5.21
Senegal Totals	818.0	1725.6	5.10	3675	6212	2537	40.84	

¹ Growth rates based on average growth rates in Sine Saloum settlements outside Kaolack.

Source: PADCO projections and 1961 and 1976 census

Cap Vert serves as the economic center of the country. The Cap Vert agglomeration contains 87 percent of modern jobs, 90 percent of foreign businesses, and 90 percent of industrial firms. It produces 51 percent of the gross domestic product. The gross domestic product per active adult of Cap Vert is 5.4 times higher than that of other regions.

Communes account for 19 percent of the population in the seven regions other than Cap Vert. This figure represents a high degree of urbanization, even with the exclusion of Dakar. The regional capitals account for two-thirds of the urban population in their respective areas. (see Table II.9.)

In 1983, four regional capitals had more than 100,000 inhabitants: Thies, Kaolack, St. Louis and Ziguinchor (PADCO estimates). The other regional capitals had populations between 67,000 and 72,000. The majority of the communes (24 of 34) are small settlements of less than 20,000 inhabitants.

Although Dakar has been growing rapidly, one of the features of the Senegalese settlement system is the stability of the distribution of urban population. The relative share of Cap Vert's urban population to that of the rest of the urban population has remained more or less constant. (see Table II.8.) This reflects the rapid growth rates in smaller settlements. Furthermore, as shown in Table II.10, although Cap Vert's share of the urban population would increase to about 60 percent by the year 2000, only Thies and Sine Saloum would show a significant decline in their share of urban population (from 10 percent in 1976 to 8 percent in 2000). All other regions would increase or maintain their shares of urban population. Sine Saloum's share of urban residents is projected to decline in this period as a function of its declining economic base (peanuts) until its economy can become more diversified. Thies' proportion of urban dwellers is projected to decline because of the stronger pull of nearby Dakar.

The development of Senegalese cities is historically linked to colonization and the growth of the groundnut trade. The three most important influences on city location were: the soil potentiality in surrounding rural areas devoted to groundnut cultivation, the availability of labor, and access to the coast and its ports. The cities' principal function was trade, and their most important economic activities were related to warehousing groundnuts and consumer products.

The traditional "heart" of each urban center was the European "port", that was located along the shipping dock (in the case of river ports) or in the city center, and that contained the chief administrative and commercial functions. Surrounding this nucleus was the "African" city, consisting of sprawling areas of informal development. The activity in some of these centers declined with the advent of railroad construction and the establishment of a road network. These networks gradually replaced the waterways and allowed for the growth of other agglomerations, such as Thies (rail link between Dakar and St. Louis, and between Dakar and Kayes), Diourbel in the heart of the groundnut farming region, and Louga between Dakar and St. Louis.

TABLE II.9
DISTRIBUTION OF THE REGIONAL POPULATION
(1976 Census)

Regions (excluding Cap Vert)	Total Communal Population		Regional Capital Population		Percent of Communal Population/ Total Communal Population	Population Outside Communes		Total Regional Population 1 + 4	
	inhab. (1000)	% District of 5	inhab. (1000)	% of 1		inhab. (1000)	% District of 5	inhab. (1000)	%
Casamance	123,6	17	69,6	56	16.0	617,5	83	741,1	100.0
Diourbel	88,9	21	53,7	60	12.0	339,9	79	428,8	100.0
Fleuve	120,4	23	88,7	74	16.0	401,7	77	522,1	100.0
Senegal Oriental	39,4	14	21,1	54	5.0	252,1	86	291,5	100.0
Sine Saloum	160,3	16	104,2	65	21.0	860,0	84	1,020,3	100.0
Thies	184,6	27	115,2	62	24.0	500,2	73	684,8	100.0
Louga	48,2	11	33,6	70	6.0	377,6	89	425,8	100.0
Total	765,4	19	486,1	64	100.0	3,349	81	4,114,4	100.0

TABLE II.10
 PROJECTIONS OF REGIONAL SHARE OF URBAN POPULATION IN 1976, 1982 and 2000

Region	Population in 1976				Population in 1982 in Major Cities		Projected 2000 Population in Major Cities	
	Total (000s)	Urban (000s)	% Urban	Share of Urban Population (%)	Totals (000s)	Distribution (%)	Total (000s)	Distribution (%)
Cap Verte	990.3	986.4	99.61	57.75	1382	58.91	3803	59.82
Casamance	740.8	125.9	17.00	6.55	164	6.99	517	8.13
Diourbel	427.6	86.2	20.16	5.20	121	5.16	329	5.18
Louga	420.1	35.3	8.40	2.42	57	2.43	155	2.44
Flueve	531.5	109.6	20.62	7.39	168	7.16	472	7.42
Senegal Oriental	287.8	25.8	8.96	2.31	57	2.43	183	2.88
Sine Saloum	1113.5	131.4	12.96	7.97	169	7.20	388	6.10
Thies	703.0	173.4	24.67	10.42	228	9.72	510	8.02
Totals	5114.6	1674.0	32.73	100.00	2346	100.00	6357	100.00

Source: PADCO projections from census data

During the 1960s, the nationalization of groundnut commerce forced the closure of the trading houses in Dakar, where Senegalese commerce traditionally had its center. The centralization of groundnut collection in regional capitals also contributed to the economic decline of some of the small centers, whose function as marketing towns provided the principal reason for their existence.

Despite the recent decline in the economic base of regional cities, there is potential for renewed growth of economic activity in centers other than Dakar. For example, the program now underway to develop the Senegal River Basin may provide new opportunities in Thies and St. Louis. Tourism may offer Ziguinchor the possibility of growth. Other centers such as Kaolack stand to benefit from intensification, but more importantly, diversification of agriculture in the hinterlands.

E. TRANSPORTATION NETWORK

Senegal's transportation network is relatively well developed. (see Map 3.) It consists of an extensive road network serving most major settlements, a rail system primarily stretching from Dakar to the Mali border via Tambacounda, and a lesser developed system of river transport linked to internal and external ports. Although this transport infrastructure exists, the system is dominated by road transport. Approximately 95 percent of all traffic, excluding phosphates, moves by road. In 1978, it was estimated by the National Transport Study that the roads carried between 585 million tons/kilometers and some 2,015 million passengers/kilometers (the latter in public transport only) for an average trip length of 120 kilometers.

1. Roads

Senegal's road network is extensive. Approximately 25 percent, or 3,500 kilometers, of the network is paved. This paved network links together all of the regional capitals and most of the department capitals. It provides strong linkages both within and among regions.

Administratively, the national road system consists of primary roads, mostly paved, linking major settlements. These roads are developed and maintained by the Public Works Department of the Ministry of Equipment and Transport. Regionally, the national road network is fed by a system of regional and departmental roads under the jurisdiction of regional governments.

Responsibility for maintenance of national roads has been somewhat decentralized. Actual maintenance and execution of new projects is carried out by eight regional offices of the Public Works Department. The headquarters office in Dakar conducts only administrative functions such as coordination, overall planning for the system, budgeting, and major procurement.

2. Railroads

The Senegal railroad system consists of 1,032 kilometers of single track, except for the 70 kilometer double track linking Dakar and Thies. From Thies, the network's main line stretches 644 kilometers to Mali with branches to Kaolack and Touba. A second line of the network stretches from Dakar to St. Louis, feeding the northern tier of the country.

Unlike the road transport system, the rail system has suffered from neglect. Approximately 30 percent of the rolling stock is more than 25 years old. Furthermore, of its 24 locomotives, only 60 percent are available for use at any one time.

Traffic on the rail system has declined in recent years. In 1966-67, the rail system carried roughly 3.8 million passengers; however, due to competition from superior road transport services, the rail system carried only 873,000 passengers in 1981. Similarly, freight traffic has declined; but, due to the extraction of phosphates and trade with Mali, the decline has been less dramatic. Nevertheless, these two product flows represented more than 88 percent of total rail traffic in 1981.

Past transport investment policies have resulted in a paralleling of much of the rail network with paved roads. This means that, for many types of transport uses, rail transport is economically more costly than road. The National Transport Plan in 1981 estimated that the average passenger/kilometer cost for road transport was approximately CFAF 3 to CFAF 7, while rail passenger/kilometer costs were CFAF 10.8. Similarly, the ton/kilometer cost was about CFAF 16.5 for rail transport and CFAF 12-16.6 for road transport. This situation has occurred in part due to past policies of subsidizing rail transport through introduction of low rail tariffs, resulting in system deficits. Due to national budget constraints, these rail deficits have been only partially financed by state subsidies. This in turn has resulted in a lowering of efficiency of the rail network, manifested in delays in service, operational problems, and a general decline in maintenance of the system. At present, the system within Senegal operates economically for a few bulk commodities only, such as phosphates and groundnuts. It does, however, still maintain its competitive advantage for the Mali trans-shipment, a type of transport that has little impact on the growth of the Senegal settlement system.

The Regie des Chemin de Fer Du Senegal (CFS) is administratively in charge of operation of the rail system. CFS is a public corporation under the Ministry of Equipment and Transport; however, it has little autonomy as it does not control its budgeting, employment, or tariff policies. These are controlled by either its parent Ministry or the Ministry of Finance. Different proposals are being discussed for changes in the operating structure of the system. These include: reducing the Government's ownership to the track only and allowing other companies to operate the system, conversion of CFS into a more independent body,

and creating a separate agency for handling international traffic, allowing the CFS to focus on domestic problems.

3. Ports

Senegal's port system consists of a major international facility located in Dakar and smaller secondary ports in Kaolack, St. Louis, and Ziguinchor. Due to the excellent port facilities in Dakar and the excellent condition of road transport, tonnage in other ports has declined. Thus, international shipment from other ports is essentially limited to groundnut products from Kaolack and salt.

Poor access to other ports severely limits coastal shipping. For example, a sandbar at St. Louis allows its port facilities to serve only ships of less than 400 tons, hardly adequate for coastal shipping. Similarly, the port in Kaolack is constrained by a three meter water depth due to a sandbar that requires continuous year-round dredging. However, after dredging, ships up to 3,000 tons can ply the river. Ziguinchor's shipping traffic is limited to a 3.5 meter depth, or ships having a maximum of 1,500 tons.

Although present capacities are low, the potential for some increase in coastal shipping should be investigated, particularly for bulk shipments, as transport costs are likely to be much lower than road transport. In particular, an increase in shipments between Dakar and Kaolack, and Dakar and Ziguinchor, would appear to be feasible. Northbound coastal shipment, which is now almost nonexistent, may be able to grow once projects on the Senegal River make it navigable year-round.

F. FUNCTIONS OF REGIONAL CITIES

Table II.11 depicts the sectoral distribution of employment by city, according to the 1976 census. The large proportion of agricultural workers represents, without a doubt, the key characteristic of the regional cities. In over half the communes more than a third of the workers are primarily engaged in agriculture. At the level of department capitals, only Fatick, Matam, and Khombole have less than 30 percent of their inhabitants working in agriculture. Even the regional capitals are influenced by this sector. Among these, Louga, Kaolack, and Thies appear the least dependent upon these activities, with 16, 13, and 12 percent agricultural workers, respectively.

Employment in the business-services sector is not as varied among the communes. Kaolack appears on the forefront, with 30 percent of the inhabitants in this sector. This is higher than Cap Vert, with 28 percent of workers in business-services. Employment in this sector in the other regional capitals is generally in the range of 20 to 25 percent, and in the remaining communes around 15 to 20 percent.

TABLE II.11 .
DISTRIBUTION OF ACTIVITY SECTOR BY REGIONAL CAPITAL
AND COMMUNE IN PERCENTAGE (1976 Census)

	Agriculture	Business and Services	Handicrafts and Industries
Ziguinchor ¹	24	18	43
Kolda	45	15	33
Sedhiou	42	12	36
Velingara	53	11	31
Dussouye	50	24	12
Total	33	18	38
Diourbal ¹	25	20	45
M'Backe	39	22	40
Bambey	26	22	43
Total	28	21	43
Louga ¹	16	25	48
Linguera	45	11	32
Kebemer	NA	9	NA
Total	24	21	36
St. Louis ¹	26	20	38
Richard Toll	--	--	--
Dagama	41	11	40
Podor	41	15	27
Matam	27	19	34
Total	28	18	36
Tambacounda ¹	28	23	38
Bakel	41	14	34
Kedougou	47	19	26
Total	34	21	35
Kaolack ¹	13	30	47
Kaffine	38	18	37
Fatick	21	26	21
Nioro du Rip	49	13	32
Foundiougne	38	14	30
Gossas	60	11	24
Guinguireo	53	15	27
Sokone	48	13	30
Total	25	25	40
Thies ¹	12	23	51
M'Bour	30	26	36
Tivaouane	30	16	45
Mekhe	36	17	41
Khombole	29	21	44
Total	19	21	42
Total Communes 151,264 Workers	20%	21%	39%
Cap Vert	9%	28%	46%

¹ Indicates regional capital

Note: The percentages across the three employment categories add up to less than 100 because the figures omit professional, technical, and administrative workers.

Source: 1976 Census of Employment

In relation to the other two sectors, the business-services sector appears relatively weak, despite the important market functions of the urban centers. This is partly because commercial services require relatively few employees in relation to other types of employment.

Table II.11 does not include administrative functions, which provided significant amounts of employment. In addition, the table does not mention the religious functions of the pilgrimage cities, such as M'Backe, Touba, Tivouane, and Mediana-Gounass, which have a profound seasonal impact on employment distribution.

It is important to note that there are limitations to the 1976 census data on employment. Only 2 percent of the total female population in Senegal is counted in the working population, a figure which is certainly underestimated. On the other hand, children aged 6 to 14 years are included in the working-age population, because of their participation in production, especially in the rural areas. This probably overstates the proportion of agricultural employment. According to the 1976 census, the working-age population (older than 6 years) comprises 76 percent of the total population, and the working population (working population plus the population presently unemployed but looking for work) comprises 29.5 percent of the total population.

G. GENERAL EMPLOYMENT CHARACTERISTICS

In 1979, the Bureau of Statistics carried out the first employment survey having national coverage. It is the only complete survey that accounts for seasonal employment in the work population and which shows the importance of the informal sector in the diverse branches of activity. This survey was compiled from the 1976 census figures, based on a sample of 65,000 workers.

Of a population total estimated at 5,507,000 residents in 1979, 3,593,000 (65.2 percent) were older than 10 years. The working population (employed workers and those workers looking for employment) represents 71 percent of the population older than 10 years of age. (see Table II.12.) The female activity rate (60 percent of the women over age 10) indicates the importance of their participation however underestimated it may have been in the 1976 census. The proportion of people classified as "working population" varies greatly between urban and rural areas: the labor force claims 50 percent of urban dwellers 10 years of age and older while comprising 84 percent of rural dwellers.

The large number of workers counted as employed (66 percent of the population over 10 years of age) obscures the existing underemployment, which is indicated by the number of seasonal workers, informal jobs, and agricultural jobs. (see Table II.13.)

TABLE II.12
POPULATION OVER 10 YEARS OF AGE: ACTIVITY RATE
(Population in 000s)

	Urban Area		Rural Area		Totals					
					Men		Women		Total	
Population + 10 years	1325	100%	2241	100%	1739	100%	1854	100%	3598	100%
Employed workers	557	41%	1821	81%	1354	78%	1024	55%	2378	66%
Unemployed workers	118	9%	56	3%	66	5%	88	5%	174	5%
Non-workers	667	49%	364	16%	299	17%	742	40%	1041	29%

Source: 1979 Employment Survey

TABLE II.13
DISTRIBUTION OF HABITUALLY EMPLOYED WORKERS ACCORDING TO THE
LABOR SECTOR AND THE NATURE OF ACTIVITY
(in 1000s)

Habitual Activity	Sectors			Total
	Traditional	Modern	Informal	
Permanent	62	294	207	563
Temporary	4	51	16	71
Daily	2	13	3	18
Occasional	1	15	17	33
Seasonal	1,200	463	16	1,679
Total Inhabitance	1,271	847	260	2,378
Total Percent	53.5%	35.6%	106.9%	100.0%

Source: Employment Survey, 1979

The high activity rate in the rural areas (81 percent of the rural population over 10 years old, and 51 percent of the country's total labor force) results in part from the high percentage of seasonal workers in the traditional sector, where the major rural activities are concentrated: 94 percent of the jobs in this sector are seasonal.

The seasonal pattern of employment represents one of the most remarkable characteristics of employment in Senegal. It is paralleled by the mobility of the population. Even in the modern sector, more than half of the jobs (55 percent) are seasonal. Permanent activities account for only 24 percent of the total working population.

It is interesting to note the high proportion of modern-sector jobs which are seasonal (related to agro-processing, mainly sugar) as well as the high proportion of permanent jobs in the informal sector.

1. Sectoral Distribution

The distribution of employment according to major branches of activity (see Table II.14) indicates that the primary sector (agriculture) is overwhelmingly the largest group. Since the 1970-71 period, the proportion of agricultural employment has dropped slightly and the proportion of industrial employment has increased slightly; however, the fraction in services employment has grown significantly (from about 4 percent to 13 percent).

The disaggregation of employment by branch of activity is as follows:

2. Modern Sector

According to the Senegalese Planning Office, only establishments which have attained an annual turnover of more than CFAF 10 million are included in the modern sector. This sector numbers:

<u>In 1979</u>	<u>In 1981</u>	
58,000	61,156	employed in public administration
20,000	20,875	employed in parastatal establishments
<u>108,000</u>	<u>136,093</u>	employed in private and semi-private organizations
186,000	218,094	Total

Comparing the above 1979 figures with the total permanent modern sector employment (294,000) given in Table II.13, it appears that approximately one-third of the modern permanent workers are employed in the largest organizations with the remaining modern permanent workers in small enterprises.

TABLE II.14.
NATIONAL EMPLOYMENT BY SECTOR

	Workers (000s)	Percent
Agriculture	1,742	80.9
Mining industries	2	0.1
Manufacturing industries	86	4.0
Electricity, water	10	0.5
Public works	24	1.1
Business, hotel trade	192	8.9
Transportation	17	0.8
Banking	35	1.6
Administration, teaching	45	2.1
Total	21,53 ¹	100.0

¹ Not counting undeclared activities.

Source: 1979 Employment Survey

Despite the high rate of employment growth in the modern sector, large-sized organizations (over 8 percent per year in 1979-81), the modern sector is so small that it will not cover a significant portion of Senegal's employment needs in the short to medium run. The disequilibrium between the supply and demand for modern jobs threatens to increase as the school enrollment rate improves and the duration of schooling is prolonged for boys as well as for girls. The public sector, in particular, is affected by the decrease in the availability of jobs, due to the financial austerity of the present government. The private and semi-private sectors offer little encouragement: from 1971 to 1978, an average of 6,000 new jobs were created annually.

3. Informal Sector

Informal jobs comprise about 40 percent of non-agricultural employment in Senegal (based on figures from Tables II.13 and II.15). According to the 1980 household survey carried out by the SONED-BCEOM Group in Dakar, 45 percent of the city's jobs were categorized in this sector. These results show that the capital is on a par with the national average for this sector.

The majority of informal jobs are classified as belonging to business and hotel trade. There is no disaggregation of the informal sector crafts industry, which is included in manufacturing or in business. The Department of Development in Industry and Craftsmanship calculated the number of craftsmen in 1981 at 125,000; in the urban areas, 68 percent work in production activities, 20 percent provide services, and 12 percent are artists.

Due to its easy accessibility, informal employment serves as a safety valve for new city dwellers, for whom the modern sector can offer few opportunities. However, the informal sector must not be considered synonymous with unproductive unemployment. Informal sector workers offer a wide range of products and services, many of which correspond to the demands of middle income households.

4. Unemployment

Urban unemployment figures are difficult to compile because data vary according to the definition of working age, occupation, and underemployment. The 1979 job survey estimated 174,000 unemployed workers nationally (5 percent of the population over 10 years old). (see Table II.12.) The largest part of the unemployed consists of young people. About 30,000 unemployed workers (17 percent of the population) represent youth less than 15 years of age, of whom a large number are drop-outs. For them, the return to rural activities can be considered only as a last resort and failure.

TABLE II.15
DISTRIBUTION OF HABITUALLY EMPLOYED WORKERS ACCORDING TO THE
BRANCH OF ACTIVITY AND THE SECTOR
(in thousands)

Sector	Agriculture Livestock Forestry Fishing	Mining Industries	Manufacturing Industries	Electricity Water	Public Works	Business Hotel Trade
Traditional	1,271	0	0	0	0	-
Modern	468	2.0	52.0	6.0	16.0	56
Informal	3	-	34.0	4.0	8.0	136
Total	1,742	2.0	86.0	10.0	24.0	192
Percent	73.2	0.1	3.6	0.4	1.0	8.1

Sector	Transportation	Financial Firms	Administration Teaching	Undefined ¹	Undeclared	Total
Traditional	0	0	0	0	0	1,271
Modern	11	16	26	166	28	847
Informal	6	19	19	7	24	260
Total	17	35	45	173	52	2,378
Percent	0.7	1.5	1.9	7.3	2.2	100.0

¹ Consists of mainly small-scale enterprises engaged in activities which overlap two or more sectors.

Source: 1979 Employment Survey

In a country where employment is subject to seasonal fluctuations, as in Senegal, the distribution by sector of activities (especially in the rural area, but also in the urban area) is only partially indicative of reality. The designation of the principal activity is somewhat arbitrary, as are the estimates of rural and urban incomes. Some of these data will be analyzed in the following section.

H. REGIONAL DISTRIBUTION OF EMPLOYMENT

The data on the distribution of employment by regions (from the 1979 employment survey) confirm the overwhelming concentration of economic strength in Cap Vert. According to the 1979 survey (see Table II.16), Cap Vert has the dominant proportion of employment in all sectors except agriculture.

On the regional level, Sine Saloum, Louga, and Diourbel-Louga have the highest proportions of non-agricultural activities; yet upwards of 80 percent of their workers are involved in agriculture. Industrial activities, even including agro-industries and probably a part of artisan industries, have a limited impact on the structure of employment.

A comparison of Tables II.15 and II.16 shows the tremendous differences between the total working population and the wage-earning population in terms of both magnitude and distribution. Out of a total working population of over 2 million, only about 285,000 are wage-earners. In other words, the vast majority of workers are in the informal sector. Formal sector workers are concentrated in Cap Vert, which has only about 10 percent of the total employment, but 54 percent of wage earners. This helps put in perspective the slightly higher than average proportions of industrial and commercial workers in Diourbel, Louga, and Sine Saloum. Going by the percentages in Table II.15, these three regions would have a total of about 106,000 manufacturing and commercial workers; however, according to Table II.16, the same three regions have only about 32,000 non-administrative wage-earners in all sectors.

I. EDUCATION

With 370,000 students registered in primary schools in 1979, the enrollment rate (children 6 to 13 years) remains low (31.5 percent in 1979), but increased 6 percent annually from 1961 to 1979. The trend to educate girls has not evolved rapidly, as only 39 percent of the students in 1979 were female. There are also regional disparities in education statistics. Only 12 percent of the children in Louga are in classrooms compared with 37 percent in Casamance.

TABLE II.16
PERCENT OF WORKING POPULATION BY ACTIVITIES AND BY REGION
(1979 Employment Survey)

	Cap Vert	Casamance	Diourbel	Louga	Fleuve	Senegal Oriental	Sine Saloum	Thies	Total
Agriculture (%)									
Agriculture	8.9	94.5	85.4	78.4	94.3	90.6	82.8	92.3	80.9
Mining industries	0.5	-	-	-	-	-	0.3	0	0.1
Manufacturing industries	21.6	1.0	2.7	5.4	0.7	1.7	2.6	1.4	4.0
Electricity, water	3.3	-	-	-	0.7	0.2	0.3	-	0.5
Public works	7.0	0.3	0.4	0.5	-	0.4	1.0	0.4	1.1
Business, hotel	34.3	2.4	8.9	10.9	2.9	5.2	10.1	4.5	8.9
Transportation	5.2	0.3	0.4	0.5	-	0.2	0.6	-	0.8
Banking	7.5	0.5	1.3	2.7	0.7	0.6	1.0	1.0	1.6
Administration, teaching	11.7	1.0	0.9	1.6	0.7	1.1	1.3	0.4	2.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Persons	211	381	226	185	140	480	308	222	2,153
Wage earners (1000)									
									Inhab. (1000)
Individual	39	4	7		8	3	10	11	82
Private firm	64	4	2		5	1	5	6	87
Semi-private firm	11	2	3		2	1	2	2	20
Administration	38	6	6		9	3	12	11	85
Other	1	0	0		1	0	1	--	3
Undeclared	2	1	0		0	0	2	--	5
Total	155	17	18		25	8	32	30	285
Percent of general total	54.4	6.0	6.3		8.8	2.8	11.2	10.5	100.0

Note: Figures omit 225,000 workers whose sector was "undefined" in the survey.

Source: 1979 Employment Survey

The average number of students per class (51 students) reveals a shortage of educational equipment in relation to demand, especially in Cap Vert and the regions of Casamance, Thies and Sine Saloum. The percentage of students in the last year of primary school and admitted to the secondary level (20 percent) reflects structural problems of the educational system. The consequences are serious both on national production and the psychological development of young "drop-outs." In relation to the 1960s, the number of students in middle schools has increased by 11.9 percent annually from 1961 to 1979, and in secondary schools by 14.2 percent annually during the same period. In 1979, 15,700 students, nearly half of whom were in Dakar, registered for secondary education. However, the number of drop-outs is estimated to be greater than 5,000 per year.

Practically non-existent in the early 1960s, secondary technical education in 1979 accounted for 1,966 students, 77 percent of whom were located in Dakar. In addition, 1,457 students are in professional schools.

University education has a larger student population (8,680 students registered in the University of Dakar in 1977) and still possesses some of the characteristics of the colonial era: at present, 25 percent of the student population is foreign.

A policy for the decentralization of educational facilities has been initiated: middle and secondary schools have opened in the regions; a School of Education will open in Kolda; and construction has begun on a university in St. Louis.

J. INCOME DISTRIBUTION

At the lower end of the national income distribution, there is a wide disparity between rural and urban incomes. According to figures compiled by Senegal's Economic and Social Council and cited by the World Bank², the average annual income for low-income rural workers in 1975 was CFAF 62,300, while that of low-income urban workers in the private sector was CFAF 276,700 (a ratio of 4.4:1). Small-scale artisans and merchants - informal sector workers - in urban areas were estimated to earn CFAF 94,300, 35 percent more than the rural income level. These figures are consistent with and largely explain Senegal's high rates of rural to urban immigration.

1. Regional Income Differences

Table II.17 presents median household income levels for Dakar and six regional capitals. The figures are based on a survey covering households with regular incomes, so the absolute values should be interpreted as maximum income estimates. The indexes demonstrate clearly that Dakar's standard of living is much higher than that of the regions.

²World Bank, Senegal Urban Sector Memorandum, 1983.

TABLE II.17
 MEDIAN AND MEAN HOUSEHOLD INCOMES
 REGIONAL CAPITALS, 1979-1980
 (CFAF PER MONTH)

City	Median	Index
Diourbel	22,000	42
Kaolack	30,000	58
St. Louis	25,000	48
Tambacounda	50,000	96
Thiès	30,000	58
Ziguinchor	40,000	77

Dakar (all residents)	58,000	112
Dakar (African residents)	52,000	100

Source: World Bank, based on BCEOM, Budgets Familiaux dans les Capitales Regionales, Dakar, 1975.

Table II.18 presents income distributions for the six regional capitals, also for 1979-80. These figures suggest that higher median incomes are associated with decreasing income concentration.

The World Bank's estimated Gini coefficients for Dakar, Tambacomda, and Ziguinchor -- the betteroff cities -- are .40, .36, and .41 respectively, while for Diourbel, Kaolack, and St. Louis the Gini is around .50.

2. Cap Vert

Background surveys carried out in 1980 for a Dakar Master Plan produced income distribution data for Cap Vert (see Table II.19). The 1981 median income was about CFAF 44,000 (the likely reason that this figure is lower than the one in Table II.17 is that the latter covers only households with regular incomes). According to the 1980 surveys, the median formal sector income was approximately CFAF 51,000, while the informal sector income was CFAF 36,500.

These income distribution figures put into perspective the problems of providing affordable shelter to lower-income urban dwellers in Senegal. Assuming a household burden of 25 percent of income for housing, even the most minimal shelter solutions are unaffordable to the poorest quarter of the population in Dakar and the poorest third in regional cities.³

3. Remittances

The studies on which the income figures in Table II. are based also revealed that remittances from abroad, generally from relatives, constitute a significant share of urban households' incomes. In 1975, remittances accounted for about 17 percent of all income for residents of Dakar. For residents of the regional capitals in 1974, remittances represented from 2.5 percent to as much as 16.5 percent of income. The great majority of these transfers came from relatives in other African countries. The proportion of remittances in family income declines with total income level, from around 22 percent in the lowest brackets to around 11 percent in the highest. Thus, remittances contribute somewhat to mitigating income disparities.

³World Bank, Senegal Urban Sector Memorandum, 1983, p.19.

TABLE II.13
ESTIMATED DISTRIBUTION OF MONTHLY HOUSEHOLD INCOMES,
REGIONAL CAPITALS, 1979-1980¹

Income Category (CFAF)	Diourbel		Kaolack		St. Louis		Tambacounda		Thies		Ziguinchor	
	%	Cum. %	%	Cum. %	%	Cum. %	%	Cum. %	%	Cum. %	%	Cum. %
0 - 3,500	6.8	6.8	7.7	7.7	5.7	5.7	1.5	1.5	4.8	4.8	5.0	5.0
3,500 - 8,800	16.1	22.9	18.0	25.7	12.9	18.6	2.8	4.3	14.5	19.3	7.4	12.4
8,800 - 17,500	20.2	43.1	5.9	31.6	17.4	36.0	10.4	14.7	14.8	34.1	8.9	21.3
17,500 - 26,000	16.1	59.2	14.1	45.7	13.0	49.0	13.5	28.2	9.4	43.5	9.7	31.0
26,000 - 35,000	12.3	71.5	9.2	54.9	7.6	56.6	7.5	35.7	11.8	55.3	16.1	47.1
35,000 - 44,000	2.5	74.0	8.2	63.1	7.1	63.7	9.1	44.8	9.9	65.2	8.3	55.4
44,000 - 53,000	3.1	77.1	8.5	71.6	4.6	68.3	6.7	51.5	6.2	71.4	11.6	67.0
53,000 - 70,000	8.8	85.9	11.8	83.4	7.8	76.1	17.1	68.6	8.6	80.0	8.5	75.5
70,000 - 87,000	3.1	89.0	5.0	88.4	8.1	84.2	11.6	80.2	6.0	86.0	8.5	84.0
87,000 - 120,000	2.7	91.7	4.5	92.9	6.1	90.3	15.9	96.1	5.8	91.8	11.1	95.1
120,000 - 140,000	3.2	94.9	.3	93.2	.7	91.0	.6	96.7	2.4	94.2	1.5	96.6
140,000 +	5.1	100.0	6.8	100.0	9.0	100.0	3.3	100.0	5.8	100.0	3.4	100.0

¹ Households with regular income. Such households are estimated to represent as percent of total:

Diourbel	75.9%
Kaolack	68.2%
St. Louis	96.0%
Tambacounda	63.2%
Thies	100.0%
Ziguinchor	72.6%

Source: Mission estimates based on BCEOM, Budgets Familiaux dans les Capitales Regionales, Dakar, 1975.

TABLE II.19

CAP VERT
1981 INCOME DISTRIBUTION

Monthly Household Income (CFAF)	Percent Population	Percent Cumulative
Less than 7,500	4	4
7,500 - 18,500	15	19
18,500 - 38,500	25	44
38,500 - 63,500	22	66
63,500 - 95,000	14	80
95,000 - 150,000	11	91
over 150,000	9	100

Source: Preliminary surveys by BCEOM/SONED, cited by the World Bank.

CHAPTER III

REVIEW OF NATIONAL POLICIES INFLUENCING URBANIZATION

National development policies, whether they are sectoral or spatial, have major impacts on urban processes. The following review of national policies is divided into four major sections:

- Review of National Spatial Objectives
- Review of Economic Policies and Trends
- Review of Shelter Policies and Urban Infrastructure Systems
- Recommendations on Planning, Shelter, and Water Supply

A. NATIONAL AND SPATIAL DEVELOPMENT OBJECTIVES

Since its independence, Senegal has prepared six four-year plans to carry out its national policy for economic and social development. The long-term objective is to bring the country to the rank of a semi-industrial (socialist and democratic) nation by the year 2001 (the last year of the Xeme Plan).

This development and growth objective has been thwarted by economic stagnation in recent years. As a result, Senegal has had to revise its Plans to emphasize economic recovery. Senegal's current practice is to adjust its plans every two years or so. Thus, in its revised Vieme Plan, relatively low economic growth rates of 3 percent of Gross Domestic Product (GDP) have been targeted.

The Senegalese Government has attempted to promote economic and social development, and reduce regional disparities through land policy. The priorities set forward are "the decongestion of the groundnut basin through upgrading of new lands in Eastern Senegal and Upper Casamance" and "the restructuring of the national territory in order to reduce regional discrepancies and allow towns and settlements to develop so as to offset Dakar's outgrowth."¹

To meet these objectives, the Government has designed an institutional framework within which the local authorities can operate more freely, and has adopted legislation to promote the decentralization of industries through development of regional industrial domains, licensing of new enterprises, and a public investment policy favoring infrastructure and services outside the Cap Vert area. Lack of resources has prevented implementation of most of these policies.

¹Vieme National Plan.

Finally, the Government has created a new decentralization agency, the "Secretariat a la Decentralisation." These measures, it is hoped, will result in new productive investments in the regions if the Government finds the means to develop the infrastructure and the "industrial domains" it has planned and the financing to organize the selected development centers.

B. REVIEW OF ECONOMIC POLICIES AND TRENDS - 1977-1983

Between 1977 and 1983, the evolution of the national economy was mainly characterized by low growth, lower than the population growth, and by large disparities from one year to the next. (See Table III.1) During this period, the GDP grew at a real rate of 1.6 percent per year on average, whereas the population growth is estimated at 3 percent per year. During these seven years, the real GDP decreased over four years--1977, 1978, 1980, 1981--and increased only in 1979, 1982, and 1983.

This irregular evolution is primarily the result of the persistent droughts that, besides having short-term negative impact, seem to have generated an alarming long-term trend: the activity of the primary (agricultural) sector has remained at a standstill during the last 15 years. The sector contributes only about 21 percent of the national product.

The difficulties of the Senegalese economy have been amplified by a rather strong deterioration (15.7 percent) of the terms-of-trade during the period, after having remained relatively stable during the 15 years following independence. The combination of the two factors has resulted in a sharp decline of exports and turned the large trade deficit into a structural problem.

The second structural imbalance concerns the national savings which, at the end of the period, cover only 18 percent of capital formation (including the variation of stocks) compared to 50 percent in 1977. The Government is essentially responsible for this deterioration since its current expenditures are increasing faster than the national income. Per capita consumption by households decreased by 4 percent in real terms during the period. The slight recovery witnessed during the last two years seems to be due mainly to the private sector; Government net savings continue to be negative, and household savings remain almost stable in constant francs.

The trade balance (see Table III.2) has deteriorated sharply mainly because of low growth in exports. A series of disastrous crops followed by a strong decrease in groundnut prices have lessened the importance of this sector in the foreign currency earnings of the country. In addition, the weakness of the phosphates world market (hit by the world recession) has led, during the past five years, to a stagnation of the phosphate export value in current francs. Fishery exports, on the other hand, have shown a very positive evolution during the same period.

TABLE III.1
NATIONAL ACCOUNTS

	1977	1978	1979	1980 ¹	1981 ¹	1982 ¹	1983 ²
GDP (current prices, billion CFAF)	483,6	494,7	581,9	642,8	689,4	823,6	932,1
As Percent of GDP:							
• Primary	27.4%	21.1%	24.0%	18.7%	17.6%	22.2%	20.9%
• Secondary	23.4	24.4	24.2	26.2	27.9	24.5	25.3
• Tertiary	49.2	54.5	51.8	55.1	54.6	53.3	53.8
Nominal Growth Rate	5.3	2.3	17.6	10.5	7.2	19.5	13.2
Deflator	8.2	6.5	6.9	12.1	9.8	8.9	9.8
Growth Rate in Real Terms	-2.7	-3.9	10.1	-1.5	-2.4	9.8	3.1
• Household Consumption	75.2	77.8	76.8	77.4	78.7	77.3	77.4
• Administration Consumption	16.1	18.4	19.1	21.2	21.4	19.7	18.8
Total Consumption	91.3	96.2	95.9	98.6	100.1	97.0	96.2
Domestic Savings	8.7	3.8	4.1	1.4	-0.9	3.0	3.8
Gross Formation of Fixed Capital and Change in Inventories (gross investment)	17.5	17.4	18.6	17.2	20.6	20.0	20.7
Domestic Demand	108.8	113.5	114.4	115.8	120.7	117.0	116.9
Exports	43.3	30.3	34.5	25.8	26.4	28.0	28.9
Imports	52.0	44.0	49.0	41.6	47.2	45.9	45.8
Memorandum Items							
Consumption Per Capita in Real Terms (1977=100)	100.0	97.8	101.6	98.8	96.5	96.7	96.1
Terms of Trade (1977=100)	100.4	103.4	95.9	91.5	98.6	87.2	86.3

¹ Estimates

² Projections

Source: Department of Planning and Cooperation

TABLE III.2
EVOLUTION OF THE BALANCE OF PAYMENTS
(billions CFAF)

	1977	1978	1979 ¹	1980 ¹	1981 ¹	1982 ¹	1983 ²
FOB Exports (including groundnut products)	163.9 (74.2)	90.1 (23.5)	133.4 (41.7)	103.8 (19.9)	117.7 (9.2)	163.0 (44.6)	182.0 (53.0)
FOB imports (including petroleum products)	-189.8 (-23.4)	-167.9 (-23.9)	-220.1 (-29.2)	-211.0 (-58.2)	-248.2 (-71.6)	-286.0 (-76.0)	-311.0 (-82.0)
Trade Balance	-25.9	-77.8	-86.7	-107.2	-130.5	-123.1	-122.0
Services and Transfers Without Cost (including interests on public debt)	9.4 (-4.5)	24.2 (-6.9)	22.0 (-9.5)	18.6 (-13.7)	17.8 (-17.5)	5.6 (-19.8)	4.0 (-41.0)
Current Balance (percent of GDP)	-16.5 (3.4%)	-53.6 (11.3%)	-64.7 (11.6%)	-88.6 (15.3%)	-112.7 (8.1%)	-117.5 (14.9%)	-124.0 (13.6%)
Capital Balance (including gross public borrowing)	14.2 20.7	34.6 46.5	45.1 64.9	52.1 80.3	66.6 95.6	72.5 103.3	57.0 70.0
(including amortization of public debt)	(-6.5)	(-11.9)	(-19.8)	(-28.0)	(-29.0)	(-30.8)	(-33.0)
Balancing Item	-0.9	-2.5	-6.3	+13.2	--	--	
Global Balance	-3.2	-21.5	-24.7	-22.1	-44.7	-45.0	-67.0
Memorandum Item							
Evolution of Trade Terms	12.6%	41.0%	7.0%	-8.3%	6.2%	-9.7%	0.0%

¹ Provisional

² Projection

Source: BCEAG, Department of Economy and Finance

To increase the competitiveness of exports, in September 1981 the Government introduced a set of export subsidies applying in the first stage to five products: textiles, fertilizers, farm equipment, shoes, and canned fish. These subsidies were recently extended to cover market-garden produce and mechanical equipment.

Table III.2 also shows that the current balance of payments deficit has equaled more than 10 percent of the gross domestic product since 1978. In addition to the deterioration of the trade balance, Senegal is experiencing a worsening of its capital availability (capital balance). Three factors account for this: the rapid growth of interest payments on the public debt, and increasingly unfavorable exchange rate (50 percent of the outstanding public debt is made payable in dollars), and lack of real growth in export receipts.

Public Finance Situation

In spite of a reduction of current expenditures in real terms during the past three fiscal years, net public savings have not been positive since 1977/78. This means that public funds cannot contribute to the financing of new development projects and that local contributions to donor-financed projects already itemized in the national investment budget have to be financed through additional external borrowing, unless the projects are to be cancelled.

The severe constraints resulting from the public finance situation will be a burden on the country's development over the medium term. Improvement of the situation will be very slow. Government revenue already represents about 18 percent of GDP, which is relatively high. The main effort, therefore, must be concentrated on reducing current expenditures. However, rapid improvement in the situation is unlikely, as measures to reduce current expenditures have already been implemented over the past three years, and there is little room for further major reductions.

As a result of this situation, development projects will have to be selected according to their impact on public finances. Projects which can generate fiscal revenue or projects with recurrent expenditures that can be borne by the beneficiaries must be given the highest priority.

Monetary policy

Senegal and the other members of the West Africa Monetary Union have a common financial institution, the Central Bank for West African States (BCEAO) which has its headquarters in Dakar. This institution is based on a centralization of its members' foreign currency reserves, a common monetary and exchange rate policy, and free movement of capital within the monetary zone. A member's central bank has to keep 65 percent of its foreign currency reserves in an account with the French Treasury; these can be drawn down if they are positive, and members can be allowed overdrafts if their funds are exhausted. In exchange for these guarantees, the French Government is represented on the Board of the Central Bank which monitors the money supply and determines the level of interest rates. Credits from

the BCEAO to the treasuries of member countries are limited to 20 percent of the fiscal revenues earned the previous fiscal year.

Senegal's membership in the BCEAO complicates the nation's ability to mobilize investment resources. On the one hand, the BCEAO promotes fiscal restraint, since a country has limited ability to draw down on its reserves. On the other hand, the BCEAO constrains Senegal's ability to respond to economic crises by devaluating its currency, because all member countries must decide to devalue together. Investment is further affected by Senegal's relatively high inflation rate, reflected in the fact that from 1977 to 1982 the money supply grew at an average rate of 15 percent annually, while real GDP growth averaged 1.6 percent annually.

International Aid Programs

In addition to bilateral and multilateral food programs, Senegal has received substantial aid from the international community since 1975. This aid consists, on the one hand, of financial assistance to help reduce the public finance deficit and, on the other, of credits to finance projects in the Development Plan.

Non-allocated aid comes from five sources: the International Monetary Fund, the World Bank, the European Community through STABEX, and lastly, France and the Arab oil exporting countries, which have set up an important program of exceptional aid since 1980. Senegal has also resorted to its drawing rights on the BCEAO account with the French Treasury and has benefited from the rescheduling, in 1981 and 1982, of its public or guaranteed credits and of some non-secured bank loans.

The deteriorating financial situation has created a growing dependence on external borrowing to finance Development Plan projects. External resources accounted for 40 percent of the financing of the IVeme Plan (1973-1977) and 67 percent of the Veme Plan (1977-1981). The external borrowing of 213 billion CFAF in the latter period consisted of 78 billion CFAF from private sources, 53 billion CFAF from drawings on multilateral funds, and 82 billion CFAF from bilateral financing. The revised version of the VIeme Plan (1981-1985) predicts that 67 percent of the investments, representing 448 billion CFAF, will be directly financed by foreign loans. Two-thirds of this amount, 292 billion CFAF, had already been secured halfway through the Plan. (See Appendix Table A.5)

Perspectives

The Government appears willing to resolutely pursue efforts toward economic recovery. Among the measures introduced recently which are intended to readjust financial equilibriums, three seem to be of the highest priority:

- Pursuing the reduction of the State's current expenditures in real terms: the efforts should be directed toward reducing the transfers to the para-public enterprises.

- Improving the productivity and efficiency of enterprises.
- Increasing cost recovery from users of services, especially water, health, housing, and education.

Despite these measures, there is limited hope for sustained economic recovery unless there is a strong regeneration of the productive sectors, especially agriculture. To complement the fiscal and monetary policies, policy changes in three areas would be useful: public investment, industrial policy, and agricultural policy.

Public Investment

The project selection process could be improved in terms of both the feasibility of individual projects and the programming of multiple projects. For instance, projects could be classified in order of priority. High priority should be given to the completion, operation, and maintenance of current projects. Also, in planning, the volume and composition of the investment program should be linked to projections of economic performance on the macro-economic and sectoral levels. Employment and productivity should be the two major performance criteria.

Industrial Policy

Revision of industrial policy is underway. An initial tariff reform, a new investment code, a set of export subsidies, credit and insurance facilities for exports, revision of the list of firms eligible for the export processing zone, and improvement of the agency responsible for the promotion of sectoral activities have been introduced since 1979. It would now be appropriate to carry out a detailed analysis, as the Plan suggests, of the factors that hinder local industry in international competition.

Agricultural Policy

The policy described in the current Plan and in the Structural Adjustment Program is very ambitious. Essentially, it proposes to change drastically the sector's environment by giving priority to price incentives and by turning responsibility and control over to the farmers, input suppliers, credit institutions, and distributors. The State's intervention would be limited to two main functions: monitoring of the incentive system (which will include a stabilization mechanism), and the supplying of services considered vital for the security and progress of rural areas. These services consist of a minimum stock of selected seeds, pesticides, the dissemination of research, and an efficient management service.

This innovative policy is large in scope, requires a reorientation of incentives among groups, and relies on more dynamic behavior on the part of farmers. The following specific measures should be considered for the agriculture sector:

- Improve the productivity of the local distribution networks of PRODUITS VIVRIERS. The goal of reducing food imports, especially rice, can be achieved only if the price is set to guarantee a minimum reasonable return to local producers.
- Improve the efficiency and productivity of the regional development authorities. The Government has already started to do this by setting production targets for workers. Another measure would be to give more importance to the services these authorities could offer in cooperative management for activities linked to agricultural production (such as the apparently successful promotion of blacksmiths), and in the preparation of local projects financed by municipalities and rural communities.

Industry: Recommendations Concerning Geographic Distribution of Industrial Investments

The Government of Senegal wants to promote new industrial development outside the Cap Vert area using a combination of infrastructure construction, strengthening of local promotion and marketing agencies and financial decentralization incentives.

All regions do not offer the same potential for industrialization. This depends on natural endowment, on local human resources, and on the size of the regional markets. In addition, the various industrial subsectors have different degrees of suitability for decentralization. The combination of the regions' and the subsectors' features will determine the ideal profile of local industry and should shape the Government's policy.

Table III.3 shows a number of indicators that help in measuring each subsector's potential for decentralization. The first two columns show indicators of the inputs' share of direct imports and the percentage of exports in production. Generally, industries showing high indicators are likely to be based in Dakar. The next two columns show the need for skilled labor. The lower the need, the higher the opportunity for decentralization. Columns 5 and 6 show the profitability of the Government's industrial policy. The lower the local cost of a sector's earned or saved foreign currency, the more the sector is suited to the domestic situation. High protection of a sector reflects the Government's willingness to develop it, although it does not yet enjoy a sufficiently comparative advantage. Column 7 shows the labor intensity in the production process; the greater the share of labor in production, the greater the suitability for decentralization. Column 8 shows the sectors that are more suited to the development of a fabric of small local enterprises. Columns 9 and 10 measure the multiplying effects before and after investment and help determine which sectors have a significant integrating impact.

Table III.4 presents more directly the lessons to be learned from this set of indicators, and shows the subsectors that should be given priority according to the decentralization criteria. Following this simple multi-criteria analysis, the enterprises can be divided into three main groups:

TABLE III.3

SECTORAL CHARACTERISTICS OF THE MANUFACTURING INDUSTRY

Branches	Input's Share of Imports	Production's Share of Imports	Percentage Workers Assigned in Productive Sectors	Average Salary Compared to Industry Average	Cost in Domestic Resources	Effective Protection Rate	Labor Intensity	Enterprise Average Size	Backward Linkages	Forward Linkages
	(percent)	(percent)	(percent)	(percent)			(percent)		(percent)	(percent)
Fish canning and freezing	2.9	10.5	91.0	68.8	0.76	0.80	60.5	270	226.5	1.7
Agribusiness	1.0	--			0.45		50.2	--	259.5	11.1
Food processing	40.1	16.2	90.0	5.4	1.07	1.27	50.2	272	164.6	21.5
Beverages	23.8	--			2.82		50.2	--	61.5	0.0
Oils	2.9	77.3	80.6	105.9	0.45	0.80	23.1	600	292.8	0.7
Cereals and flours	47.8	9.5	90.4	80.7	2.58	1.61	35.1	77	185.8	10.9
Sugar and confectionery	57.8	1.5	85.3	72.3	2.82	1.27	40.5	511	37.8	12.9
Tobacco and matches	60.9	20.6	44.6	123.1	2.17	1.50	32.0	251	33.3	0.0
Textile	36.9	25.0	83.3	93.1	0.95	1.80	47.9	400	105.4	70.6
Clothes, leather	45.3	33.1	82.8	87.1	0.71		55.6	203	50.7	0.6
Wood	34.3	35.0	91.5	62.8	1.10		45.9	96	132.9	13.5
Paper, cardboard	77.9	11.6	88.3	100.4	1.10	1.50	32.1	56	26.0	70.0
Publishing, press	31.7	13.6	64.0	109.8	1.10		44.2	20	45.4	19.4
Chemical, plastics	84.9	20.0	88.6	114.0	1.70	1.55	28.8	224	53.2	75.3
Extraction industries	17.7	94.0	81.5	137.1	0.54	0.86	38.7	293	105.3	25.1
Building materials	8.5	18.3	63.7	143.0	0.44	0.87	35.1	139	151.3	71.2
Mechanical industry	38.1	13.0	49.5	97.4	0.46	0.67	55.3	92	130.5	98.6

Sources: Columns 1,4,7,9,10 Detailed Economic Accounts, 1979
Columns 5,6 The World Bank, 1979
Columns 2,3,8 General Census of Modern Sector Enterprises, 1977

TABLE III.4
INDUSTRIES WHICH OFFER THE BEST CHARACTERISTICS FOR
LOCATION OUTSIDE CAP VERT

Well-Suited for Regionalization	Limited Dependence on Imports	Labor Intensive Industries
Agribusiness Mechanical industry Paper, cardboard Printing Building materials Textiles	Building materials Extraction industry Agribusiness Textiles	Clothing, leather Mechanical industry ¹ Agribusiness Textiles Wood, paper, cardboard Extraction industry
Low Need for Skilled Labor	Strong Backward Linkages	Strong Forward Linkages
Wood Clothing, leather Agribusiness Textiles Mechanical industry ¹	Agribusiness Building materials Mechanical industry Textiles Extraction industry	Mechanical industry Chemicals Building materials Textiles Paper, cardboard

¹ Assembly only

- **Highest Decentralization Potential:** agribusiness, clothing, and mechanical industries;
- **Qualified Decentralization Potential:** textiles, clothing, and building materials (decentralization depends on availability of raw materials);
- **Decentralization Not Advisable:** paper, chemicals, plastics (high dependence on imports).

C. SHELTER POLICIES AND INFRASTRUCTURE SYSTEMS

National Level Planning

Planning for shelter and intra-urban infrastructure is the responsibility of several government agencies. The Ministry of Urbanism, through its Department of Urbanism, is responsible for the formulation and development of policies regarding town planning and housing. It prepares urban policy objectives and investment plans in consultation with the Ministry of Plan. Once financing is approved and obtained by the Ministry of Finance, the Ministry of Urbanism implements its projects mainly through its Department of Construction for housing and occasionally through the Department of Urbanism directly for land development.

The Ministry of Equipment (Infrastructure, Public Works, Transportation and Water Supply) is responsible for the construction and maintenance of primary urban roads, while urban services are provided by SONEES (water supply), SENELEC (electricity), SOTRAC (urban transport) and the Ministries of Health and Education. However, each of these, since they are either ministries or agencies of separate ministries, prepare and execute their own investment programs independently of each other and of the Ministry of Urbanism. It is only through the preparation of national and regional plans by the Ministry of Plan that these sectoral programs are integrated, and that integration is only of budgets. Preparation of major spatial and sectoral plans (such as the Cap Vert Master Plan or the national Transport Plan for the year 2001) have, to some extent, confronted the need to integrate national sectoral and spatial plans; however, these lacked overall national policy guidance reflecting comprehensive urban strategies.

Regional and Local Planning

Law 72-02 (1972) is the most recent legislation aimed at decentralization. Under it, the country is divided into regions, departments, and communes (settlements or urban areas). The reform is aimed at further specifying the functions of regionalized national ministries and parastatals and strengthening local participation in planning processes.

Virtually all ministries and national parastatals operate on a decentralized basis through the establishment of regional and, in some cases, departmental offices. These regional and departmental offices are delegated the functions of administration and service provision and have control over expenditures at the regional level of capital and recurrent budgets.

The governor of each region (as local representative of the president) and each minister has executive authority over each of these localized agencies, while at the department level, the prefect exercises this authority on behalf of the governor. However, due to centralized planning and budgeting--most major decisions are still made centrally--there are frequent conflicts among different levels of government.

During the administrative reforms of 1972, committees were established as advisory bodies in response to the concern for increasing local involvement in planning, regional and departmental development. They are responsible for project analysis, assistance in preparation of development programs, and technical advice on project execution. These bodies are representative in nature as they include the heads of all dispersed national agencies and community and business leaders. They are presided over by either the governor or prefect.

At the level of the largest communes, the department is largely redundant. Thus, subsequent to the 1972 law, departmental level authority was abolished for Dakar, and the regional capitals and communes came directly under the governor. In Dakar and in some of the other large capitals, actual authority for the commune is exercised under municipal administrators.

The Ministry of Urbanism

The Ministry of Urbanism prepares two types of urban plans. The first are master plans (plan-directeur), which are prepared directly by the Department of Urbanism. When developed, the plans are discussed with local authorities and must finally be approved by Regional Development Committees and the National Urban Planning Council. Once these approvals have been obtained, the plans are finally approved by the President of the Republic prior to actual implementation.

The second type of plan is the urban structure plan (plans d'urbanism). These plans require a less lengthy approval process as they are prepared initially by the prefects, often with assistance from the Ministry of Urbanism, and need be approved only by either the municipal council or governmental departments concerned. Both types of plans are viewed as a means of controlling the development process. Thus, all new housing subdivisions must conform to either a master plan or structure plan. In the absence of either, new subdivisions must be approved by the regional level urban planning council. Similarly, building permits can be granted only for structures located in planned areas. All other structures are illegal and subject to removal.

The development of master plans and urban structure plans has been quite slow, partially because of the lengthy procedures needed by both to prepare and adopt such plans. Their delay has also been caused by the lack of resources in key agencies supplying data inputs (such as the Lands and Record Department, located within the Ministry of Finance and Economic Affairs). Lack of master plans has been cited as a reason for not preparing

investment plans for infrastructure, such as water supply or drainage, since these sectoral plans are supposed to conform to master plans.

The Ministry of Urbanism's Department of Construction has two parastatals responsible for implementation of its housing programs: the Office des Habitation a Loyer Modere (OHLM) and Societe Immobiliere du Cap Vert (SICAP).

Office des Habitations a Loyer Modere (OHLM) is a publicly owned institution under the Ministry of Urbanism established to build middle-income housing. Since 1960, it has produced approximately 9,000 units, mostly serviced with infrastructure for either lease or purchase. The bulk of these units was produced prior to 1976 when concessional financing was available from the French Caisse Centrale de Cooperation Economique at interest rates between 3 and 5 percent, depending on the type of sale involved.

Since 1976, only about 1,000 units have been built, largely due to the lack of finance and a general increase in standards. For example, in 1971-72, average unit costs were approximately CFAF 1,506,000, while in 1977-78, the average costs were approximately CFAF 7,474,000, an increase of almost 500 percent. However, during the same period, construction costs increased only about 200 percent. The remaining increase in costs was due entirely to increased building standards. At current amortization rates (approximately 12 percent over 15 years), such units are affordable only to households with incomes above the 85th percentile.

Since the withdrawal of concessional lending, OHLM has relied on governmental subsidies for its operation. These subsidies have been derived largely from the Fonds d'Amelioration de l'Habitat, a tax on employers and salaried workers created to finance public housing (see below). However, due to heavy subsidies in OHLM projects, sometimes ranging up to 50 percent of unit costs, this source of financing has been inadequate. Thus, OHLM projects have been at a virtual standstill since 1978.

Societe Immobiliere du Cap Vert (SICAP) was established to manage and maintain civil servant housing and to build housing as a part of urban development plans in Cap Vert. Since its creation in 1951, it has constructed approximately 10,500 units. However, like its counterpart, OHLM, it has suffered from a lack of resources since 1976.

Similarly to OHLM, SICAP has followed a trend towards increasing standards during a time of restricted resources. Thus, the quantity of housing produced has dropped. (Table III.5 illustrates the change in SICAP housing policies since 1970.)

TABLE III.5
SICAP HOUSING PROJECTS - SELECTED YEARS

Period	Number of Units	Housing Density (unit/ha)	Average Value (Current) (CFAP 000s)
1951-60	3,594	60	567
1961-70	4,215	38	973
1972-80	2,516	22	4,755

Source: PADCO analysis from SICAP housing data quoted in Urban Sector Memorandum, 1982.

The combination of uneconomic rents for Government housing and a series of subsidies for its sale of units (SICAP still charges the same terms to purchasers as it did when it received concessional financing) have resulted in severe debts. As of 1980, its working capital deficit was approximately CFAF 5 billion, or approximately equal to the total budget of the Ministry of Health. About 62 percent of its estimated CFAF 11 billion debt is in short-term notes, further complicating its financial position. Although a plan has been developed for financially rescuing SICAP, the organization remains in financial straits.

Housing Sector Conditions

Since the 1970s, the Government has stated as its policy the intention to provide adequate shelter for Senegal's population. However, to implement this policy, it has increasingly relied on two public sector organizations--the OHLM and SICAP--to build relatively high standard units. The average costs of the 1,621 units built by the two institutions under the Veme Plan were CFAF 9.2 million, affordable to only 15 percent of the population at current amortization rates.² Estimates of private sector construction indicate that approximately 90 percent of the 210,000 new units constructed in urban areas between 1970 and 1980 were private. Public sector construction accounted for only 10 percent, or 20,000 units. At current costs, this private sector construction accounted for a total investment in housing of CFAF 150 billion or, on the average, CFAF 715,000 per unit.

Other than public sector housing, the Government of Senegal, with World Bank financing, has developed sites and services projects in Dakar and Thies. The Dakar sites and services project, whose management was entrusted to the Direction des Parcelles Assainies of OHLM, was targeted for 10,500 units affordable to groups having incomes between CFAF 25,000 and 60,000, or approximately between the 25th and 60th percentiles of Dakar monthly income. At the standards represented by the project, typical unit costs were in the range of CFAF 103,000, close to 80 percent lower than current programs of the two public sector organizations.³ Increases in housing standards during project implementation have resulted in subsidies of total costs in the range of 30 percent.

In response to the withdrawal of the French Caisse Centrale de Cooperation Economique (CCCE) from housing finance in Senegal, the Housing Bank of Senegal (Banque de l'Habitat du Senegal, BHN) was established as a financial intermediary for loans and advances from the treasury. BHN's purposes are:

²VIeme Plan Quadriennal de Developpement Economic et Social, Ministere du Plan et de la Cooperation, 1981-1985, pp.314-315.

³These costs include land and infrastructure plus estimates of private sector investment in housing at the site. Source: Senegal Urban Sector Memorandum, The World Bank, June 1983.

- To provide loans to the two public sector housing organizations to construct housing;
- To encourage the growth and diversification of the housing industry, especially housing construction techniques; and
- To encourage the rate of savings for housing through developing attractive savings instruments for both employees and their employers.

However, prior to the establishment of BHN and subsequent to the 1974 withdrawal of CCCE, the Fonds d'Amelioration de l'Habitat (Urban Housing Improvement Fund) was set up as a conduit for funds targeted for public housing. This fund, administered by the Ministry for Urbanism, was financed through employers' contributions (50 percent), taxes on wages and salaries, and real estate taxes. In FY1979-1980, the fund amounted to about CFAF 2.2 billion. With the 1980 establishment of BHN, the bulk of the fund's resources were transferred to the BHN and is available to borrowers for long-term housing finance or developers and contractors on a short-term basis. BHN's longer-term goals are to provide financing for lower income groups at concessional rates; however, it is too new to have developed sufficient resources to do so.

As in the Veme Development Plan, the total investment for housing in the Vieme Development Plan is targeted for public sector organizations: the OHLM and SICAP. CFAF 16.1 billion is allocated to these two organizations for the construction of 2,732 units (approximately 49 percent of which would be built in Cap Vert Region) at an average cost of CFAF 5.6 million. Sites and services, which are to be extended to the regions, would receive investment resources of approximately 3 percent of total housing expenditures.

Water Supply

The bulk of urban water supply needs are met by groundwater sources via wells. However, approximately 20 percent of the Cap Vert supply, and all of the needs of St. Louis, Richard Toll, Dagana, Podor, Matam, Bakel, and Kedougou, are met through surface water resources. With the exception of St. Louis and the Cap Vert Systems, these surface water supplies are provided without treatment; thus, the quality of water supplies varies greatly.

Water for the Cap Vert System is derived from a series of 37 boreholes both inside and outside of Cap Vert, and from the Gnith treatment plant on the Lac de Guiers on the Senegal River. Total production in 1982 was estimated at 158,000 cubic meters per day or an average rate of consumption of 120 liters per capita per day. Approximately 369,000 people, or 30 percent of the system's service population, have access to potable water via 40,000 individual connections. Another 50 percent of the population are served by public standpipes whose consumption is paid for by the Municipality. The remaining 20 percent do not have access to public supplies and either purchase water from vendors or use shallow wells of uncertain quality. Only

15 percent of total consumption is industrial, 45 percent is residential, and the rest is either governmental or commercial.

Increasingly, the aquifers that feed the Cap Vert System are being used to capacity. Future water supplies will have to be imported from either the Lac de Guiers source or other places.

Outside the Cap Vert region, SONEES operates 36 piped water systems in secondary cities. These 36 systems serve an estimated 1980 population of 950,000. The average daily production and estimated average per capita consumption for the bulk of these settlements are shown in Table III.6.

As can be seen from Table III.6, the average consumption of potable water for urban Senegal is approximately 85 liters per capita per day. However, this average is heavily distorted by the size of the Cap Vert system. If the Cap Vert consumption is subtracted from the total, the average consumption in secondary settlements is only 41 liters per capita per day--sufficient to provide daily water requirements, particularly for standpipe consumption, but inadequate for most non-residential uses.

The average consumption figures shown in Table III.6 are somewhat misleading. In many settlements having low consumption figures, the actual service population as a percentage of total population is also low, indicating that for the households served, actual consumption is much higher. For example, in Kolda, only 35 percent of the population is served by the public water system. Thus, for the population actually served, average daily consumption is in the range of 27 liters per capita per day. Similarly, in Ziguinchor, only 50 percent of the population is served; average consumption is about 57 liters per capita per day--still low--but providing adequate standards.

As suggested by the table, serviced populations represent a small proportion of the populations of many of the settlements in the Fleuve. In both Richard Toll and Dagana, piped water supplies are provided without treatment and are inadequate for the rapidly growing population. Much of the population gets water from either the canal or the river during rainy seasons. Similarly, in Podor and Matam, limited quantities of untreated water are provided by the SONEES system, but these are inadequate, forcing people to get water from the Senegal River. The ease of obtaining water from surface water sources, and a lack of knowledge about the health risks involved, have combined to reduce demand for safe water supplies in many smaller settlements, making extension of the systems less of a priority for the settlement's population than if the risks were more widely known.

TABLE III.6
SETTLEMENT STATISTICS FOR INFRASTRUCTURE IN 1982

Region	Settlement	Population		Average Annual	Estimated 1982 Population (000s)	Daily Water Production (M3)	Average Consumption (L/C/D)
		1961 (000s)	1976 (000s)	Growth Rate 1961-1976 (%)			
Cap Vert	Dakar	424.4	936.4	5.78	1382	158000	114
Casamance	Ziguinchor	29.8	69.6	5.82	98	2122	22
	Kolda	6.1	18.9	7.83	30	257	9
	Bignona	5.4	14.5	6.81	22	238	11
	Velingara	2.6	8.8	8.47	14	125	9
	Diourbel	Diourbel	28.6	53.7	4.29	69	3932
Diourbel	M'Backe	8.0	25.4	8.01	40	1949	48
	Bambey	6.0	9.8	3.32	12	722	61
	Louga	Louga	16.3	33.6	4.94	45	1457
Louga	Linguere	2.5	7.8	7.88	12		0
	Fleuve	St. Louis	48.8	88.7	4.06	113	4833
Fleuve	Richard Toll	1.9	10.7	12.21	21	230	11
	Dagana	4.5	10.2	5.61	14	96	7
	Podor	4.7	6.8	2.49	8	187	24
	Matam	6.0	9.8	3.32	12	249	21
	Senegal	Tambacounda	11.1	25.1	5.59	35	1240
Oriental	Bakel	3.0	6.6	5.40	9	270	30
	Kedougou	2.0	7.7	9.40	13	268	20
Sine Saloum	Kaolack	69.6	104.2	2.73	122	6572	54
	Kaffrine	2.5	11.4	10.64	21	613	25
	Fatick	7.2	10.0	2.21	11	479	42
	Nioro du Rip	3.0	7.9	6.67	12	366	31
	Foundiougne	1.7	2.7	3.13	3	139	43
Thies	Thies	69.1	115.2	3.47	141	7726	55
	M'Bour	14.0	36.9	6.67	54	3728	69
	Tivaouane	8.0	17.0	5.15	23	842	37
	Meckhe	5.6	8.7	2.98	10	503	48
Senegal Totals		792.4	1708.1	5.25	2348	197143	84

Source: Various reports of SONEES

Given the constraints, SONEES operates its systems reasonably well; however, inadequate financial resources have resulted in the lack of expanded systems to meet population growth. Outmoded treatment practices together with storage and distribution problems have resulted in reduced efficiencies and interruptions in service. Although statistics are not available, many of the older systems (where treatment is available) suffer from infiltration risks due to low pressures in the distribution networks.

The principal objectives of the Vieme Development Plan regarding water supply are:

- Satisfaction of the needs of the 37 water supply systems of the SONEES;
- Improvement in the quality of water supply in Fatick, Bambey, M'Backe, Kedougou, Kaolack, Podor, and Matam; and
- Renovation and maintenance of supply networks to reduce losses (estimated by the Plan to be 20 percent of production in 1975).

To accomplish these aims, the Plan envisions investment of CFAF 8.7 billion. Approximately 56 percent of the planned expenditures for water supply would be allocated for the Cap Vert Region, and an additional 20 percent would be allocated for completion of the renovation and extension of the St. Louis system. The remainder of the planned investment is allocated to specific projects throughout the regions, such as construction of new water storage facilities in Richard Toll, provision of water treatment plants in Bakel, or extension of the networks to be financed under the World Bank project mentioned below.

SONEES has developed a program for rehabilitation and extension of its water system. With World Bank financing, it plans to invest CFAF 5.6 billion (approximately CFAF 19,700 per additional served population) in rehabilitation and expansion of services in 11 secondary centers: Louga, Linguere, Ziguinchor, Thies, Kolda, Bambey, Diourbel, M'Backe, Fatick, Kaolack, and Tambacounda. Between 1980 and 1989, this program is projected to serve an additional 285,000 persons in these 11 centers, a total population of 705,000. Through separate German Government financing, plans have been developed and implementation begun for rehabilitation and expansion of the St. Louis water system. Plans for rehabilitation of many of other smaller systems have also been developed; however, resources for implementation have not been obtained to date. In many of these smaller systems, SONEES has problems recouping its costs because the operating costs of the smaller systems are frequently greater than the revenues received from water tariffs set for national consumption.

Urban Sanitation

The bulk of Senegal's urban settlements are not served with public sanitation systems. Only the cities of Dakar, St. Louis, Kaolack, Thies and Louga are served by waterborne sewerage systems. In these cities, relatively small pro-

portions of the settlements' total populations are actually served. The remainder of the urban population relies on private disposal systems: pit latrines, privies, or septic tanks. While the low densities in many of these settlements make such individual systems an adequate means of waste disposal, uncontrolled development of many of them in low-lying, flat areas subject to flooding during rainy seasons creates a serious health risk.

To counter these risks, relatively high-standard sewerage systems have been implemented in Kaolack and Thies. Sewerage master plans have been prepared for similar systems in St. Louis, Diourbel, Tambacounda and Ziguinchor. However, the high costs of these systems will probably necessitate continued operating subsidies as users may be unwilling, or unable, to pay connection costs or monthly service costs. The system in Kaolack is an example: only 120 connections have been made to the system although it was designed to serve the entire city's population through the year 2000. Households in Kaolack already have individual systems or are unwilling to pay sanitation connection costs, as they perceive these costs to be a public responsibility rather than private.

The lack of surface water drainage combines with poor solid waste disposal in many settlements--particularly river settlements in Casamance, Sine Saloum, and Fleuve, where heavy clay soils restrict percolation--to create flooding and public health risks. Indiscriminate dumping of solid waste further compounds drainage problems, clogging those surface water drains that do exist and stopping natural runoff channels. In many settlements, growth of unplanned low-income housing has occurred in flood-prone areas. This type of development has been particularly prevalent in larger settlements such as Kaolack, St. Louis, and Ziguinchor where large informal areas have developed.

The Vieme Development Plan's objectives in sanitation are:

- Implementation of already established plans for treatment and disposal of solid waste in various settlements;
- Execution of sanitation infrastructure in Dakar and the regional capitals;
- Development of sanitation master plans for Bambey, M'Backe, Kolda, Linguere, and Fatick;
- Promotion of public health education in rural areas and the introduction and maintenance of pit latrines;
- Establishment of legislation setting standards for sanitation.

The primary expenditures for sanitation are aimed at completing projects begun during the Vieme Development Plan and not completed: sewerage in Dakar, St. Louis, and Ziguinchor accounting for almost 57 percent of the CFAF 6.2 billion allocated for the subsector.

Transport Planning and Investment Policy

The National Transport Plan, finalized in 1981, serves as the basis for developing priority transport projects throughout Senegal. This Plan was developed under the aegis of the Directorate of Studies and Programming of the Ministry of Equipment and Transport. Using the Plan, the Directorate prepares project and policy recommendations for the Ministry of Equipment and Transport. These are then reviewed by the Ministries of Plan and Finance for consistency with the national four-year Plan.

The responsibility for transport investment planning falls under the jurisdictions of the Ministries of Plan, Finance and Equipment. The Ministry of Plan has final responsibility for preparation of four-year Plans, while Finance specifies the structure and level of taxes and oversees actual revenues and expenses of transport parastatals.

Past national Plans have placed high priority on transport. It absorbed approximately 20 percent of total public investment during the Veme Plan.

Transport investments in the Revised VIeme Development Plan account for 18 percent of total investments. The reduction in planned investment is due to a shift in policy towards completion of past projects rather than embarking on new projects. Altogether, the new project component of the subsector accounts for only 16 percent of total planned investments. As in previous plans, the road transport subsector still absorbs the bulk of proposed new investment (48 percent of total planned investment or 34,000 million CFAF). This investment is largely aimed at completion of projects, such as the 20 km remaining to be paved between Oourossogui and Bakel in the Fleuve.

To date, the World Bank has been the most active donor agency involved in the transport sector. As of 1982, it had disbursed about US \$138.6 million, primarily on highways (\$69.7 million) and railroads (\$48.9 million). The railroad projects have focused on rehabilitation, improvements to operating procedures, and training and technical assistance. Highway projects have focused on maintenance, strengthening of the existing networks, feeder roads, and technical assistance. In addition to those mentioned, the Bank has also assisted in aviation and ports; and, in conjunction with other financing sources, assisted in development of the Dakar Fishing Port.

Electricity

Electricity generation in urban Senegal is based entirely on a network of thermal (gas or diesel) power stations linking together major settlements in the Cap Vert, Thies, Diourbel, Sine Saloum, Louga, and Fleuve regions. Smaller settlements not served by the interconnected network are supplied electrical power by small, individual thermal generators. All of these thermal stations are under the aegis of the national electrical power operating agency, SENELEC, with the exception of Ziguinchor which is still serviced by a private company.

As shown in Appendix Table A.6, the bulk of the interconnected network's generating capacity is located in the Cap Vert region. From there, electrical power is distributed to other cities via a major transformer station in Thies or directly utilized in the Cap Vert region.

Although cities in Kaolack and St. Louis are linked together with other settlements, the network actually functions as three independent systems due to stability limitations of the distribution network's 30 KV lines. The first system consists of the Cap Vert, Thies and Dioubel regions. The second (southern) system consists of Kaolack and other settlements in Sine Saloum, while the third (northern) network consists of St. Louis and Louga City. The dividing line between the Kaolack and Cap Vert systems is roughly Fatick, while Louga is the dividing point in the north.

Smaller settlements not connected to the interconnected power network are served by individual thermal generators typically having capacities less than one megawatt. Since demand is low in most of these settlements and consists primarily of residential users, the individual generators are frequently operated only a portion of the day. The only settlements that have power throughout the day are Ziguinchor (a major load center), Kolda, Sedhiou, and Velingara. Due to the small demand, the age of many of the generators, and the isolation of many of these individual networks, operating costs tend to be relatively high. Appendix Table A.7 shows a summary of electrical power statistics for these settlements through Senegal.

Electricity consumption increased at an average annual rate of 7.7 percent between 1974 and 1979. As of 1982, the average consumption for major urban settlements in the interconnected network and Ziguinchor was approximately 246 KWH per capita. However, due to the predominance of the Cap Vert system, demand in the rest of the system averaged only 106 KWH per capita. Historically, the bulk of new demand has resulted from increased residential use on low voltage systems rather than industrial demand.

The Cap Vert network has seen the most rapid growth rate of electrical power consumption; however, consumption in the Kaolack and St. Louis systems has grown at 9 and 12 percent respectively. Demand in smaller settlements has been erratic. In an internal SENELEC memorandum, a study of all of the smaller systems showed that demand had actually dropped between 1981 and 1982. This drop was due to aged equipment that had not been replaced.

While the number of low-voltage users has increased throughout Dakar and regional capitals more or less evenly (between 1978 and 1980), the number of low-voltage users in regional capitals increased at about 4.2 percent (in Dakar, the increase was 3.7 percent). These increases have been confined to residential users. All new medium-voltage users have been located in Cap Vert.

SENELEC future demand projections for the interconnected network and Ziguinchor are shown in Appendix Table A.8. The rapid growth rates for the

high tension network result from plans to replace the existing 30 kV transmission network with high tension 132 kV lines rather than a dramatic increase in high consumption customers. Overall, total demand is projected to increase at rates similar to historical increases in power demand in Senegal, or 7 percent per annum.

Within the major regions served by the interconnected network, SENELEC's projected demand figures suggest a greater move towards decentralization of consumption. Although total demand in Cap Vert is projected to increase at an annual rate of 10.4 percent between 1983 and 1992, per capita demand is projected to increase only slightly from 288 kWh per capita in 1983 to 295 kWh per capita in 1992, or at an annual rate of .2 percent. The most rapidly growing portion of the interconnected network is the St. Louis-Louga load centers, where per capita demand is projected to increase by 7.7 percent annually.

If the rapidly urbanizing centers of the Casamance continue to grow at historic rates, population growth will outstrip projected growth in demand. This could result in reduced consumption from 89 kWh per capita in 1983 to 66 in 1992. Whether or not this drop in demand per capita actually occurs depends very much on future development plans for new high transmission lines from other sources of electrical power generation. SENELEC is currently studying development of high transmission lines originating from Thies that would supply the Casamance with power from a proposed 100 MW hydro-electric plant at Manatali Dam in Mali. There are also proposals to develop a 65 MW hydro-electric generating plant at Kekreti on the Gambia River, but these are still in very preliminary stages of development.⁴

Both of these hydro-electric projects are long-term in nature. The Manatali Dam will not have sufficient head to permit generation of electricity until after 1990, and the projects on the Gambia River are still in initial pre-feasibility stages.

The uncertain nature of the demand in the smaller isolated load centers makes developing detailed demand projections for them difficult. Outside the Casamance, the total installed capacity represents only about 3.6 MW or about 2 percent of total capacity nationwide. However, SENELEC currently has plans to expand the generating capacity of its central at Matam to approximately one megawatt so that it can electrify surrounding villages in the Matam area. In the eastern portion of the Fleuve, SENELEC plans to extend the interconnected network from St. Louis to Ross Bethio and develop additional generating capacity in the Dagana-Richard Toll area.

⁴The very low load factors projected for most of the systems outside Cap Vert suggest that considerable excess capacity may exist. However, before this capacity can be used, 30 kV transmission lines would have to be replaced with higher tension lines to improve the system's stability and antiquated generating plants replaced with newer ones.

The development of a new 7 MW diesel plant in Kaolack has been sized to serve demand in both Sine Saloum and Diourbel once it is commissioned in 1984. The development of medium and high tension transmission lines will then extend the interconnected network to Kaffrine, and eventually to Sokone in the south-western portion of the region. Even with the load of the new textile factory, over the medium term, Kaolack should have surplus electrical capacity. Like the rest of Senegal, this capacity will not permit development of highly energy-intensive industries such as aluminum; nevertheless, this surplus capacity should make Sine Saloum settlements attractive to new industrial investment.

D. RECOMMENDATIONS ON PLANNING, SHELTER, AND WATER SUPPLY

Planning:

- Develop mechanisms for more intersectoral coordination at the central level. Create new or strengthen existing inter-ministerial working groups and decision-making committees; give these power over planning and budgeting processes.
- Provide greater authority to governors and prefects over planning and budgeting. Give local leadership a more substantive role in budgetary decision-making.
- Strengthen the regional and departmental development committees by giving them significant decision-making power (or restructure the committees to create stronger local authority).
- Upgrade local government personnel through training programs and improved incentives (better salaries and more responsibilities).
- Modernize the city planning system by eliminating the current practice of preparing static master plans, especially by central authorities. City plans should not be merely land use plans, but should include public finance and multi-sectoral plans (housing, water, sanitation, health, education, transport) in a flexible format and on a medium-term time horizon. Provide training and technical assistance to local government personnel so they may take responsibility for preparing plans. Eliminate the lengthy bureaucratic approval process for city plans.

Shelter:

- Phase out middle-income housing programs from public-sector agencies. Focus programs on low-income shelter needs.
- Adopt core housing, sites and services, and upgrading approaches as primary. Revise standards downward to create shelter solutions affordable to lower-income families.

- Adopt institutional policies leading to financially self-sufficient shelter programs: maximum feasible cost recovery from beneficiaries and financing terms that minimize the need for subsidies to the institution or to beneficiaries.

Water Supply:

- Continue upgrading of supply and distribution systems, giving due emphasis to repairing and improving existing infrastructure.
- Adopt programs to improve operation and maintenance of water systems (training, personnel upgrading, new equipment, technical assistance).
- Adopt policies leading to greater cost recovery (pricing and billing).
- Improve public health education to promote awareness of the benefits of safe water.

CHAPTER IV

**REVIEW OF URBANIZATION IN SINE SALOUM,
FLEUVE AND CASAMANCE**

This chapter focuses on Sine Saloum, Fleuve, and Casamance because these regions are priorities of USAID/Senegal. The intent here is to identify ways in which urban development may complement ongoing rural development activities. The following discussion of the urbanization process in Sine Saloum, Fleuve and Casamance covers the settlement systems at the regional level and provides a review of the impacts that existing or planned agricultural projects might have on urbanization. Although data differs from one region to another, each section discusses regional population, growth trends of major settlement systems, linkages that the system has with rural areas and other portions of Senegal, and urban conditions such as water supply and sanitation.

A. SINE SALOUM

1. Urban Population

Sine Saloum as of the 1976 Census had about 21 percent of the nation's population or about 1.02 million inhabitants. At current rates of migration (discussed in Chapter II), Sine Saloum's share of the population will slip from its present 21 percent to 19 percent by the year 2000. Sine Saloum has a relatively low proportion of its population in urban areas even though it contains Senegal's third largest city, Kaolack. Its total urban population (people living in communes having populations greater than 10,000) was 160,000 in 1976 or about 9 percent of the total urban population in Senegal. Furthermore, due to a general slowdown in its agricultural base -- the primary source of inputs for Sine Saloum's urban industries -- the rate of urban growth has been relatively slower in Sine Saloum than in other parts of Senegal. Between 1961 and 1976, Sine Saloum's urban population increased at a rate of 3.5 percent, while the national urban growth rate over the same period was approximately 5 percent. This slower rate of urban growth has been caused by a general outmigration of both rural and urban population to, primarily, Cap Vert.

2. Settlement System

The settlement system of Sine Saloum can be characterized as a radial system: Kaolack, the regional capital, at the center of a series of arms reaching out to other regions in Senegal. Kaolack's primacy within the region is actually greater than that of Dakar's nationally. In 1976, Kaolack had about 65 percent of Sine Saloum's total urban population while Dakar had about 55 percent of the nation's urban population. Furthermore, within Sine Saloum, Kaolack had a 1976 population about 9 times greater than the next largest settlement, while the ratio between

Dakar and the next largest settlement nationally, Thies, was 8.3. This degree of primacy within Sine Saloum is due to the location of almost all major industries within the region in Kaolack. It is also due to the development of strong marketing networks feeding agricultural produce from surrounding rural areas to Kaolack for processing while simultaneously sending urban produce, largely imported from Dakar, to rural areas.

After Kaolack, the next largest settlements consist of five department capitals ranging in size in 1976 from 7,400 to 11,400. In order of population, these are Gossas, Nioro du Rip, Fatick, Guinguineo, and Kaffrine. Due to an overall slowdown in the revenue received from groundnuts, (historically the region's main source of both urban and rural income), population growth in most urban settlements has been much slower than national average urban growth. Only two settlements, Kaffrine and Nioro du Rip, sustained urban population growth rates faster than national average urban population growth rates between 1961-1976 (5.04 percent). Their rates of growth were 10.6 and 6.7 percent respectively.

The more rapid growth in these two cities stems from the diversification of their agricultural base away from the region's traditional cash crop, groundnuts, and their location on prime transport networks to other parts of Senegal. Nioro du Rip is located on the main road link between Kaolack and the Casamance via the Gambia; Kaffrine is on both the main road and rail links between Dakar and Mali. Furthermore, Nioro du Rip's and Kaffrine's departments are leading producers of cotton, maize and other non-groundnuts cash crops.

If Kaolack's 1961-1976 population growth rate of 2.7 percent were sustained over the period 1976 to 2000, it would have a 2000 population of 199,000. However, considering the national rate of population growth, approximately 3.2 percent, this 2000 population actually represents a loss to other areas of about 23,000 people, a population greater than all but 10 of Senegal's 34 urban communes.

Kaolack's relatively slow growth rate is due largely to the limitations of the formal sector in Kaolack. This consists of two large industrial firms with few linkages to other industries in the region and a large number of commercial enterprises also having few links to local industries. Employment potential linked to formal sector activities has not developed to the extent necessary to stimulate more rapid growth. Stagnation of the industrial sector can also be seen in the region's urban GDP per capita, approximately \$52 in 1975, compared with the national urban per capita GDP of approximately \$90. Urban GDP per worker in the region was roughly \$127 in 1975 while national output per worker was in the range of \$276.¹

¹Economic trends and Prospects of Senegal, World Bank, December 1978.

The potential for agricultural diversification will have major impacts on the development of Kaolack. Two projects in particular may help to reverse slow growth trends. The first is the development in Kaolack of the SOFITEX fully integrated textile factory, that is targetted to employ 1,200 workers and is expected to cost about CFAF 12 billion. To date, construction has not started though a new power plant has been sized to supply it. The second project, USAID's millet and sorghum project, is discussed below.

3. Urban Employment

Primary sector employment in Sine Saloum's smaller settlements constitutes a major component of their overall employment structure and also illustrates their rural nature. For example, when Kaolack's employment statistics are subtracted from Sine Saloum urban employment, agricultural employment (including fishing and animal husbandry) is 44 percent of total urban employment. In Kaolack, it is only 13 percent, illustrating its more urban character. This high agricultural employment in smaller settlements is partially due to their size and also to the lack of medium- or large-scale industrial employment that would attract a higher proportion of non-agricultural workers.

Kaolack's dominance in the region is illustrated by the distribution of industrial employment. The 1976 Census enumerated 73 percent of Sine Saloum's total industrial employment in Kaolack² (approximately 12,000 industrial workers). These workers were primarily engaged in two large-scale industries: groundnut processing and salt manufacturing. A distribution of employment in Sine Saloum communes is shown in Table IV.1. In Sine Saloum, the overall structure of employment is relatively similar among settlements since the Census classifications for industrial workers yield a fairly consistent share of total urban employment (approximately 67 percent of non-agricultural workers).

4. Regional Economic Linkages

Linkages among settlements within Sine Saloum and with settlements outside the region are dominated by the primacy of Kaolack. Basically, at least in terms of product flow, Kaolack receives more goods than it sends to the rest of the region. Much of the income received from sale of agricultural produce in Kaolack is used to purchase manufactured goods from other regions, primarily construction materials and consumer goods from Cap Vert and fertilizers from M'Bour in the Fatick region.

²Since two of Kaolack's large industries are actually located outside its commune boundaries, department industrial employment figures were used for Kaolack's industrial employment rather than the commune data. This may lead to some distortion of industrial employment; however, since there are no other communes in Kaolack's department, the distortion is probably not great.

TABLE IV.1
DISTRIBUTION OF PROFESSIONAL ACTIVITIES BY SETTLEMENT IN SINE SALOUM

Settlement	Scientific Professional & Technical		Executives & Top Civil Servants		Admini- strative Personnel		Commerce		Services		Agricul- tural & Fishery		Craftsman Workers Drivers		Totals
	(000a)	(%)	(000s)	(%)	(000a)	(%)	(000s)	(%)	(000a)	(%)	(000a)	(%)	(000s)	(%)	(000a)
Kaolack	1,239	6.23	62	0.31	829	4.17	4,600	23.13	1,344	6.76	2,559	12.87	9,252	46.53	19,885
Kaffrine	96	3.31	5	0.17	88	3.03	420	14.46	103	3.55	1,108	38.15	1,084	37.33	2,904
Fatick	134	7.54	8	0.45	83	4.67	260	14.62	192	0.80	379	21.32	722	40.61	1,778
Gasas	55	3.01	4	0.22	50	2.73	161	8.80	34	1.86	1,095	59.87	430	23.51	1,829
Guinguineo	75	3.56	0	0.00	25	1.19	253	12.01	54	2.56	1,121	53.20	579	27.48	2,107
Foundiougne	54	10.93	3	0.61	30	6.07	19	3.85	51	0.32	188	38.06	149	30.16	494
Sokone	62	5.84	0	0.00	23	2.17	110	10.37	35	3.30	508	47.88	323	30.44	1,061
Nioro du Ri	63	3.58	7	0.40	45	2.55	173	9.82	56	3.18	863	48.98	555	31.50	1,762
Totals	309	4.26	14	0.19	173	2.39	716	9.87	230	3.17	3,775	52.05	2,036	28.07	7,253

Source: 1976 census

In addition, much of the flow of goods to Kaolack is in the form of produce having a high weight per value ratio (e.g. groundnuts and cotton) while products received from Kaolack are relatively high-value consumer goods. The only exceptions are imported foodstuffs, such as rice, which form a major flow from Kaolack to its surrounding subregions such as Niore du Rip and Kaffrine. (see Table IV.2)

Kaolack, being the major industrial center south of the Cap Vert-Thies area, receives fairly heavy flows of agricultural produce from both surrounding Sine Saloum subregions and other regions. Primary sources of inputs, in order of their significance, are Niore du Rip (groundnuts, cotton, rice and other cereals), Kolda (groundnuts and cotton), Velingara (cotton and groundnuts), Tambacounda (primarily cotton), and Kaffrine (groundnuts, cotton and some cereal crops). Many of these products are either processed in Kaolack and then exported or are exported directly from its port, which partially explains Kaolack's relatively heavy weighting in terms of a market for produce from other regions and weaker standing as a source of inputs for other regions. As does much of Senegal, Kaolack receives heavy flows of produce from M'Bour in terms of fertilizers.

Although the transport study from which these data are taken is not very clear on secondary markets, it would appear that most of the manufactured goods received by Kaolack are consumed in Kaolack rather than shipped to other points. Flows of manufactured and consumer goods into Kaolack are about three times greater than are flows of similar goods away from Kaolack. As already mentioned, this is partially due to direct purchase of manufactured and consumer goods from Cap Vert or other regions. It is also due to the manufacturing structure of Kaolack's industries that are aimed largely at export rather than local consumption.

Trade with the Cap Vert region is characterized by a much heavier flow of goods to Cap Vert than from it. However, this imbalance is not entirely explained by inflows of high weight to value ratios as Cap Vert is a major supplier of building materials, particularly cement, in addition to consumer and manufactured goods.

5. Urban Infrastructure

a. Water Supply

Virtually all urban settlements in Sine Saloum are served by public water supply systems. The bulk of the service is via standpipes rather than individual connections. In Kaolack and Fatick, where recent statistics are available, individual connections accounted for 40 and 22 percent of the total population served by the systems. In both, the actual populations served by the systems ranged from 85 to 90 percent.

TABLE IV.2
TRANSPORT FLOWS OF SINE SALOUM:
TONNAGE
PRINCIPAL SOURCES OF INPUTS*

Subregion	Groundnuts		Groundnut Oil		Fertilizers & Agri-cultural Products		Fuels		Rice & Maize		Building Materials		Cotton		Consumer Goods & Manufactured Goods		Totals Quantity						
	Source	Quantity %	Source	Quantity %	Source	Quantity %	Source	Quantity %	Source	Quantity %	Source	Quantity %	Source	Quantity %	Source	Quantity %							
Kaolack	Nioro	18000	5.95	Kaolack	7400	2.44	Cap Vert	10000	3.30	Cap Vert	57500	19.00	M'Bour	49200	16.25	Tambaco	11500	3.80	Cap Vert	15400	5.09	187000	
	Kolda	12500	4.13				Thies	2400	0.79	Nioro	1500	0.50	Cap Vert	28400	9.38	Yelinge	8600	2.84	Diourbe	3400	1.12	56800	
	Kaffrine	19000	3.30				Kaffrine	100	0.03				Thies	12300	4.06	Kaolack	3800	1.26	Nioro	2400	0.79	28600	
	Others	21000	6.94						0.00				Others	6600	2.18	Others	2700	0.89	Others	2700	0.89	30300	
Totals		61500	20.32		7400	2.44			0.00														
Kaffrine			0.00	Kaolack	1700	3.11	Cap Vert	9900	18.10	Cap Vert	18000	5.95		89900	29.70				23900	7.90		30200	
			0.00				Thies	12500	22.85				M'Bour	6500	11.88				4900	8.96		34200	
			0.00				Kaolack	200	0.37				Cap Vert	4500	8.23				Kaolack	1700	3.11	19800	
			0.00						0.00						0.00				Diourbe	400	0.73	600	
			0.00						0.00						0.00				Nioro	100	0.18	100	
Totals			0.00	Kaolack	1700	3.11	Cap Vert	22600	41.32						0.00					7100	12.98	34700	
Nioro du Rip			0.00		1900	5.97	Cap Vert	7600	23.90	Cap Vert	4100	7.50			0.00					1100	3.46	20700	
			0.00				Kaolack	3000	9.43				M'Bour	2500	7.84					900	2.83	11100	
			0.00						0.00				Cap Vert	2200	6.92							0	
Totals			0.00		1900	5.97			0.00						0.00							0	
			0.00						0.00						0.00							0	
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Many of these urban water supply systems are old, having been built during colonial times, and have not been expanded to meet population growth. Average production figures for most settlements tend to be low, ranging from 54 liters per capita per day in Kaolack to 21 in Nioro du Rip. In many, the age of networks combined with a lack of resources for maintenance has resulted in low efficiencies. For example, in both Kaolack and Fatick, efficiencies are in the range of 70 percent or less, i.e., 30 percent of water produced by the system is lost through leakage or unmetered connections.³

b. Sanitation

In many low density Sine Saloum cities, public sanitation systems are unnecessary; private pit latrines or septic tanks function very well. Thus, only Kaolack has a public waterborne sewerage system. Although the system was designed to serve Kaolack's projected year 2000 population, only about 120 connections have been made because of the lack of a perceived need for it and the cost of connection.

Drainage becomes a much more serious problem in several Sine Saloum settlements, particularly Kaolack and Fatick. In Kaolack, large informal settlements have developed close to the Sine Saloum River on low-lying flat land subject to flooding. During the rainy season when the river rises, severe health risks result. These problems are compounded by the use of solid waste for infill which clogs drainage channels and creates stagnant bodies of water. Fatick's drainage problems are due to its proximity to the sea which causes salt intrusion and flooding.

c. Other physical infrastructure

Several infrastructure projects in the region's settlements should begin to build the base on which future development can become more attractive. The World Bank, in conjunction with SONEES, has a regional water supply project for both Fatick and Kaolack which will increase capacities and renovate existing treatment, storage and distribution systems. New electrical power capacity is being added to Kaolack to serve both it and its surrounding region stretching to and including Diourbel.

Regional road networks are in relatively good condition, facilitating movement of goods from rural areas to urban areas. In the Kaolack and Kaffrine sub-regions, paved roads average about 88 percent of the total length of road networks, while in Nioro du Rip they average almost 100 percent of all roads. Throughout the country, only the Cap Vert, Thies and St. Louis-Dagana areas average higher percentages of paved roads.

³Staff Appraisal Report, Senegal, Eleven Cities Water Supply Project. IBRD, September 17, 1982.

Port capacity may continue to be a constraint to Sine Saloum's development. Currently, Kaolack's port handles about 2 percent of Senegal's total port-related traffic. However, since its port requires continual dredging and even then has only a three meter depth, the potential for increased traffic to and from it is limited.⁴ Thus, if there were a significant increase or diversification in agricultural production, existing port facilities would not be adequate, and other more costly modes of transport would have to be used. While this constraint is recognized, there is at the moment no comprehensive plan for improving Kaolack's port.

d. Health and education

At least in terms of students per classroom, overcrowding appears to be greater in the more urbanized departments of Sine Saloum than the less urbanized. In 1981, the commune of Kaolack had approximately 63 elementary students per classroom while the region as a whole had about 50. Gossa, one of the least urbanized departments, had about 42 students per classroom.

Secondary health care in the region is centralized with all of Sine Saloum's hospital beds located (1,299 in 1979) in Kaolack. This amounts to about 1 bed per 884 persons, or on the average, a standard which is about 42 percent in Sine Saloum higher than Senegal as a whole. The USAID/Senegal's village health program in rural Sine Saloum is aimed at providing primary health care to approximately 300 villages in the region. In urban areas, the principal focus of health planning for Sine Saloum under the Vieme Development Plan is for rehabilitation of existing infrastructure.

6. AID Programs In Sine Saloum

USAID's development strategy in Senegal is currently aimed at supporting the Government's national objective of achieving food sufficiency through production, storage and trade of agricultural produce. USAID's second and related emphasis is to improve the delivery of health services at local levels in order to boost productivity and support development of population planning programs. USAID's program in Sine Saloum currently consists of rural health care. However, after FY85, when the millet and maize programs of the upper Peanut Basin are shifted from Thies and Diourbel regions to Sine Saloum, AID will be actively involved in the region's productive sector. Complementary to these programs, although not located in the Sine Saloum, are USAID's research projects for millet transformation and grain storage. The first is aimed at commercial production of millet products as a substitute for imported wheat and rice, while the second aims at grain storage.

⁴Senegal Transport Sector Memorandum. The World Bank. October 30, 1982.

All of these programs will probably have urban impacts through increased production of crops requiring processing, storage and marketing. The reduced crop production in Sine Saloum over the last few years makes projection of urban impacts of success in these projects difficult. There are, however, several indicators, both nationally and internationally, which can give an idea of the impacts of increased crop production on urban areas. Historically, roughly 530,000 hectares of groundnuts, with an average yield ranging from 1,500 kg/hectare in the late 1960s to 840 kg/hectare in mid 1970s, have supported 800 to 1,200 direct industrial workers in the Kaolack area. This production has also supported growing populations in Kaffrine and Niore du Rip, whose urban employment is largely located in sectors associated with agriculture: warehousing and services geared to serving rural areas.⁵

Internationally, as previously quoted, for every \$1 increase in agricultural GDP, middle income countries have added on the average \$2.95 of industrial output and \$3.21 of services output. Over the same twenty year period, middle income countries have converted this increase in output to approximately 1.03 new industrial jobs and 1.56 new services jobs per each increment of output in industries and services. In Senegal, these increases have been less dramatic, as only \$2.28 have been added in both industry and services output for every \$1 increase in agricultural output and only about 0.08 new industrial and services jobs have been created.⁶

Thus, if the millet project is successful in increasing output from approximately .7 metric tons to 1.2 metric tons per year (due to reduced rain, Sine Saloum's actual production has been dropping; by 1978 it was only .5 tons per hectare), this would yield a total increase from 178,000 to 400,000 tons assuming no increase in the 333,000 hectares currently devoted to millet and sorgum. In 1980 prices, this would yield an increase of approximately CFAF 6,994 million, or after the value of inputs is subtracted, a total value added of CFAF 6,052 million. At the middle income rate of conversion of agricultural to industry and services output this increase would yield roughly CFAF 37 billion in urban output. At historic Senegalese rates the increase is about CFAF 13.8 billion. At current average urban job costs, these increases in output would yield 11,300 new jobs at the middle-income country rate and 4,210 new jobs at historic Senegalese rates. At the current population-to-formal sector job multipliers, i.e., the urban population supported by a single formal sector job (5.7), this total formal employment would support an additional urban

⁵Etude des Statistiques Agricoles de la Region du Sine Saloum. Ministere de l'Economie et des Finance, Direction de la Statistique, Bureau Regional du Sine Saloum. August 1982.

⁶PADCO analysis from World bank data found in World Development Report, 1982 of the World Bank.

population of 24,000 to 64,000 within the region, assuming all of the processing is done within Sine Saloum.

This project and the textile factory discussed above represent a major diversification of the region's traditional agro-industrial base. The millet project is largely an import substitution project oriented toward food sufficiency, while the textile factory is being developed for export markets. To the extent that they are realized, both may create urban employment in larger and smaller centers, as food processing and textiles have strong backward and forward linkages to other industries.

B. THE FLEUVE

1. Urban Population and Urbanization

Even though the Fleuve is a relatively rural region, it still had about seven percent of Senegal's total urban population in 1976 (about 126,900 persons). This share of urban population has remained fairly constant since 1961. However, during that period, its urban population as a whole has been growing at an average of 4.2 percent annually, a rate which although less than the national urban growth of 5.04 percent, has still resulted in a net in-migration to urban areas. Between 1961 and 1976, rural to urban migration has accounted for about 43 percent of the growth of urban settlements in the Fleuve. If these rates of growth were projected to the year 2000, the Fleuve would have a total urban population of 472,000, of which roughly 204,000 would be migrants.

The distribution of the Fleuve's urban population is heavily weighted towards the western end of the Fleuve in the subregion stretching from Dagana to St. Louis. At current rates of population growth, these areas would have approximately 93 percent of total urban population by the year 2000. This distribution of urban population in the lower portion of the Senegal River Basin is not a recent trend. The movement of urban population from the east to the west has been continuing since 1961, when approximately 83.7 percent of the urban population was located in the lower portions of the Fleuve. By 1976, migration to the lower Fleuve had resulted in about 87 percent of urban population being located there.

International emigration has played an important role in the development of urban areas in the Fleuve. Since the bulk of this migration is temporary, the emigrants from the Fleuve continued to remit their savings back home. This income has severely been used to finance housing costs in settlements throughout the Fleuve. It has also served as a steady source of income for many families, at least partially eliminating the need for development of alternative income sources. Thus up until very recently, the pattern of development for small settlements was to first invest in housing. These investments have had only marginal impact on the region since most of the materials were purchased outside of the Fleuve. The only regional impacts would have been in tapping a local supply of labor for construction. After

housing, construction, remittance income has frequently been used to finance trading activities. It is only recently that remittance income has been used for productive activities, such as irrigation. The extent of this shift in investment patterns is not known.

2. Settlement Systems

Like the Sine Saloum, the settlement system of the Fleuve is characterized by a polarization of urban settlements. St. Louis, the capital of the region, has 70 percent of the region's urban population. There, however there the comparisons stops. In contrast with the Sine Saloum's radial pattern, the settlement system of the Fleuve is linear. It stretches along the Senegal river from St. Louis all the way west to Bakel, where the river leaves Senegal and goes into Mali.

Historically, the small interspersed settlements along the developed as trading posts, each serving a rural hinterland. The construction of a railroad between Dakar and Mali and paved roads roads between St. Louis and Bakel (all but about 20 kilometers between Bakel and Ousseyeou is complete) caused a decline in river traffic to the point where it is now almost non-existent. This accentuated the decline of most of the smaller settlements along the river and the polarization of St. Louis within the region.⁷

The development of the sugar factory at Richard Toll as a major source of employment has further stimulated the shift in population towards the lower river basin. However, since the Richard Toll-Dagana area is still small, and employment potential is limited even with the sugar factory fully operational, migration to the area tends to be short-term even though it has resulted in very rapid growth rates for the two settlements. Thus a two-staged pattern of migration occurs. After initially seeking work in the Richard Toll area, migrants then proceed on to St. Louis or outside the region.

a. St. Louis

As mentioned above, the Fleuve's settlement system is dominated by St. Louis. Throughout the 60s and 70s it experienced a fairly steady rate of growth of about 4 percent annually. This pattern of stable growth was interrupted during the drought of the early 70s when Sahel victims temporarily migrated to St. Louis. After the drought, the bulk of these migrants returned to their original locations.

Most growth has occurred on the periphery of St. Louis in largely informal developments. St. Louis originally developed on an island, with

⁷A more complete description of the historic growth of Fleuve settlements can be found in Volumes D and E of the Etude Socio-Economique du Bassin du Fleuve Senegal for the Haut Commission du O.M.V.S., 1980.

later growth on the nearby mainland. By the late 1970s, most of the area of the mainland had infilled to the point where expansion is now limited by surrounding swamps and the river itself. Thus, in 1974, a master plan was prepared for a "new" St. Louis on a tract of land northeast of the present city. Although the plan has never been officially approved, work has started on a university located by the master plan to the north of the new development area. Once this project is complete, it may stimulate further development in the new town site.

Historically, river traffic was an important economic force in the development of St. Louis. However, the combination of movement of the nation's capital to Dakar upon independence and the development of year-around alternative transport routes has met a decline in river traffic and in St. Louis' role as a port. Furthermore, except for the sugar factory in Richard Toll, the region has had little industry. Most of the new employment activities supporting St. Louis' growth have been in fishing and informal sector activities.

b. Ross Bethio

Although the *arrondissement* of Ross-Bethio contained what might be characterized as an urban settlement in 1976, it did not have commune status and thus could not be compared with communes. As it is the site of the Diama Dam being constructed to halt salt intrusion of the Senegal River, Ross Bethio may experience some growth due to traffic between Mauritania and Senegal. However, its location away from the main transport network and closeness to St. Louis will probably prevent large scale growth.

c. Richard Toll

The very rapid growth of Richard Toll has been entirely due to the construction of its sugar factory. Initially, the factory was located in Richard Toll because a canal from the Lac de Guiers already existed and irrigation perimeters had already been developed for an earlier rice project. This installation of large scale industry has led to a growth rate for Richard Toll of 12 percent annually, the most rapid growth rate in the country. This growth has spurred the development of new housing areas to the west of the present city.

Without the addition of more formal sector industrial investment, it is unlikely that this growth will be sustained at historic rates since the sugar factory has limited new potential for employment without expansion. Thus, unlike other smaller settlements along the Senegal River, Richard Toll suffers from an unemployment problem as complementary employment in other sectors has not developed to absorb the surplus labor. The combination of sugar fields, the canal, and swampy areas limit the physical expansion of Richard Toll. It does have some possibilities for expansion along the road near the sugar factory as a continuation of the present new housing site. Future expansion of the city is envisioned by the city's master plan along the road to the east.

d. Dagana

Dagana has also benefited from the development of the sugar factory at Richard Toll, since the factory draws employment from a 25 kilometer radius. It is also the site of a factory developed for canning tomatoes. However, this investment has had only limited employment effects as the factory is only operational during the few months of the year when the river is not saline.

e. Podor

Podor has been growing much more slowly than the settlements of the river basin. Its 1961-1976 population growth rate has been only 2.5 percent, indicating a loss of population since the natural rate of increase is higher (over 3 percent nationally). This stagnation has been due to the lack of industrial investment to provide alternative employment to agricultural or informal activities, and since the 1970s to the construction of the St. Louis-Ourossogui road in an alignment completely bypassing Podor.

The settlement suffers from flooding during the rainy season when the river rises. However, the rural area around Podar has a large irrigation potential. If the zone develops agriculturally, Podor may be able to grow as an important service center.

f. Matam-Ourossogui

The Matam-Ourossogui area has generally declined since the stagnation of river traffic.⁸ Matam itself suffers from the lack of physical expansion potential due to the river and surrounding low-lying areas. Its growth has also been negatively affected by the construction of the inter-regional road from St. Louis through Ourossogui rather than Matam.

Matam's isolation from the rest of the region has been worsened by the failure of bridges along its access road from Ourossogui. Physically, Ourossogui has unlimited expansion possibilities. The development in Ourossogui of new commercial facilities, a new hospital, and other service facilities may strengthen its development potential at the expense of development in Matam. Thus, it is likely, that the center of development which is feasible in the subregion will permanently shift from Matam to its satellite, Ourossogui.

⁸For this analysis, Ourossogui has been combined with Matam. Since Ourossogui was not a commune in 1976, its urban population could not be compared with other commune populations. Unofficially, the Etude Socio-Economique du the Basin du Fleuve rated Ourossogui's population at 4,600 in 1978 increasing at a rate of 4.3 percent since 1964.

g. Bakel

Bakel is actually located in Senegal Oriental. Until recently it had only limited access to the rest of the Fleuve settlements. However the completion of the extension of the St. Louis-Ourossogui road to Bakel will tend to tie it more closely to the rest of the Fleuve settlements.

Historically, Bakel served as the last major outpost of the middle and lower Fleuve settlements. Since independence, it has maintained its role as the terminus of the Senegalese settlement system. As such, its growth has been more rapid than that of other smaller Fleuve settlements away from the influence of St. Louis.

Between 1961 and 1976, Bakel sustained a population growth rate of 5.4 percent. Continued growth at these rates may be limited by the lack of alternative development potential in the region and Bakel's location away from other parts of the settlement system. At present, expansion of its trading functions within its own department is limited by the relatively small population of its administrative area, 34,700 in 1977.

3. Urban Employment

a. Structure

The structure of urban employment in the Fleuve reflects the concentration of the Fleuve's settlements in the lower basin. According to the 1976 census, 93 percent of non-agricultural employment was located in the region stretching from Dagana to St. Louis. Although employment figures in Richard Toll are distorted due to the circumference of the sugar factory's employment base, nevertheless the urban advantages of the western subregion are illustrated by the 1976 employment data.⁹ (see Table IV.3)

As in Sine Saloum, agricultural employment is an important source of urban employment. It averages about 46 percent of all 1976 urban employment in the Fleuve. However, unlike Kaolack which has only about 13 percent of its employment in agriculture, St. Louis has a much larger proportion of its labor force engaged in agricultural activities, 26 percent. This is due to a very large portion of its labor force engaged in fishing.

⁹As is noted on Table IV.3, the 1976 Census did not disaggregate Richard Toll's population from the department of Dagana. Furthermore, since the sugar factory draws employees from surrounding villages, urban employment is distorted by the extent to which employees work for the factory but live elsewhere than Richard Toll. For similar reasons, agricultural employment is also distorted for Richard Toll. In allocating industrial employment regionally, agricultural employment is also distorted for Richard Toll, because in allocating regional employment, agricultural workers employed by the sugar factory were subtracted from the region's industrial and urban employment. That adjustment could not be made at the settlement level due to a lack of data.

TABLE IV.3
STRUCTURE OF EMPLOYMENT IN FLEUVE SETTLEMENTS

Settlement	1976 Census Employment (000s)				
	Agriculture	Total Urban	Industrial Component of Employment	Others	Estimated Formal Sector Industrial
St. Louis	3,766	10,546	6,754	3,792	704
Richard Toll ¹	13,130	8,825	2,423	6,402	253
Dagana	859	1,242	845	397	88
Podor	424	611	400	211	4
Matam	62	170	113	57	1
Bakel ²	504	715	497	218	5
Totals	18,745	22,109	11,032	11,077	1,056

PERCENT DISTRIBUTION OF EMPLOYMENT IN 1976

Settlement	Agriculture	Total Urban	Industrial Classification	Others	Estimated Formal Sector Industrial
St. Louis	26	74	64	36	7
Richard Toll ¹	60	40	46	54	5
Dagana	41	59	68	32	7
Podor	41	59	65	35	1
Matam	27	73	66	34	1
Bakel ²	41	59	70	30	1
Totals	46	54	57	43	6

1 Since 1976 Census did not list Richard Toll as a commune, employment data is department data net of Dagana, St. Louis and the arrondissement of Ross Bethio.

2 Included in Fleuve even though actually located in Senegal Oriental.

3 Estimated formal sector industrial employment shows Census industrial classifications weighted by the regional distribution of industrial employment so that informal employment and non-industrial employment included in Census classifications are excluded.

4 Total urban shows commune employment minus agriculture employment.

Source: 1976 Census and PADCO analysis

According to the Vieme Development Plan, the Fleuve has 10.4 percent of the nation's formal sector industrial workers. These are predominantly located in Richard Toll and St. Louis, which together have about 84 percent of total industrial employment. With the exception of a brick factory outside St. Louis, this industrial employment is entirely concentrated in food processing industries, notably the sugar factory serving the entire country at Richard Toll.

b. Small Scale Enterprises

Small scale, largely informal activities predominate in most settlements throughout the Fleuve, St. Louis included. Typically, this employment is classified into three categories:

- "artisans d'arte" (workers engaged in production of craft objects),
- traders, and
- production workers.

Commercial activities have always been important to the economies of Fleuve settlements. Much of the small scale employment continues to depend on trading activities.

However, the introduction of larger scale formal sector industrial investment has had a major impact on the structure of small scale enterprises. In Richard Toll the proportion of small scale traders with inventories larger than one million CFAF is much larger than in the rest of Fleuve settlements: 66 percent vs. an average 14.5 percent for all Fleuve settlements except St. Louis. This process of formalization of the small scale sector can also be seen in the number of employees in firms. Throughout the Fleuve settlements, only about 18 percent of the firms have more than one employee. In Richard Toll 33 percent of the enterprises have salaried workers. By way of comparison, in Bakel, only 7.5 percent of the firms have salaried employees (see Table IV.4). The Matam-Ourossogui area also has a larger proportion of firms with salaried workers, but these firms are less well developed; the bulk of them have capital assets of less than CFAF 500,000 (87 percent in Matam and 91 percent in Ourossogui).

The smaller enterprises, partly because of their limited resources, do have stronger links with their surrounding areas than do the larger firms. As a whole, 67 percent of the firms located in Fleuve settlements purchase their inputs from surrounding areas, while in Richard Toll, virtually all firms purchase their goods outside the region. On the other hand, the bulk of those trading activities which occur outside the immediate area of the settlement where the enterprise is located are outside the region altogether, usually in Dakar. Within the region, small enterprises have relatively few linkages among subregions of the Fleuve. However, many of the smaller enterprises do have fairly strong links with surrounding rural areas as a source of inputs.

TABLE IV.4
COMPARISON OF SMALL SCALE ENTERPRISES IN THE FLEUVE

Settlement	Value of Stocks		Number of Employees		
	Less 500,000	Greater 500,000	Less	1 to 5	5 or More
Richard Toll	6.5	66.5	67.0	23.0	10.0
Dagana	38.0	9.0	85.5	14.5	2.5
Podor	59.5	21.0	91.0	6.5	-
Matam	26.5	3.5	75.5	24.5	-
Ourosoogui	71.0	16.0	76.5	23.5	-
Bakel	81.5	10.5	92.5	7.5	-
Totals	47.0	18.5	81.5	16.0	25.0

TABLE IV.5
DISTANCE TRADERS TRAVEL FOR SOURCES
ON INPUTS (IN PERCENT OF FIRMS)

Settlement	Distance Travelled (KM)		
	0 to 10	11 to 30	More Than 30
Richard Toll	38	45	17
Dagana	69	14	17
Podor	72	4	24
Ourosoogui	62	20	19
Matam	71	14	15
Bakel	46	6	48

Source: Etude Socio-Economique du Bassin du Fleuve Senegal,
p. D.124.

For example, in Matam, 71 percent of the firms purchase their inputs within 10 kilometers of Matam. In Bakel, however, partially because of the small size of its service population and its trading activities with Mali and Mauritania, 48 percent of the firms purchase inputs from markets which are more than 30 kilometers away. (see Table IV.5)

4. Regional Economic Linkages

Linkages between the Fleuve and other regions are much weaker than for Sine Saloum or Casamance. This is partially explained by the geography of the Fleuve settlement system; the linear configuration of the Fleuve increase the distances between Fleuve settlements and other parts of Senegal. Also, the dispersed, largely rural population of much of the Fleuve results in much weaker regional markets than in other more densely populated regions. Finally, with the exception of the sugar factory at Richard Toll, the Fleuve produces relatively few cash crops which would link it more strongly to other regions.

The structure of intra-regional trade within the Fleuve and with other regions is dominated by the primacy of the St. Louis-Dagana area (see Table IV.6). This area accounts for 83 percent of the combined product flows to the three Fleuve subregions and Bakel. Furthermore, the bulk of all trade, in terms of product flows to and from the region, are with Cap Vert.

Unlike the Sine Saloum settlements which supply the Cap Vert region with produce, the balance of the product flows between Cap Vert and the Fleuve is weighted heavily towards Cap Vert. The Fleuve settlements receive 2.3 tons of products from Cap Vert for every ton they supply to it. In the case of the Fleuve, this imbalance is not explained by high weight/value ratios, as all of the Fleuve's produce is agricultural, and thus has a high ratio of weight to value. Rather the imbalance is caused by remittance income coming into the region from foreign sources. This revenue is used to purchase building materials and consumer and manufactured goods from Cap Vert. Thus, it has little impact on developing Fleuve industry or agriculture.

Within the Fleuve, St. Louis is a relatively strong supplier of inputs to both the Dagana and Podor-Matam subregions. St. Louis represents a strong market for Dagana produce (largely sugar), and the second largest market for the Podor-Matam area after Cap Vert making it an important factor in the growth of the region.

However, other than commerce with St. Louis, there is little interchange between the other subregions of the Fleuve. Product flows within the region follow the structure of the region's settlement system. As the size of the settlement increases the amount of product flow to it increases.

However, due to the distances and road conditions, Bakel has no links with any of the other subregions of the Fleuve. Its primary sources of inputs and markets is the Cap Vert region, followed by Tambacounda.

TABLE IV.6
TRANSPORT FLOWS OF FLEUVE
TONNAGES

PRINCIPAL SOURCES OF INPUTS

Subregion	Groundnut Oil and Derivative		Fertilizers & Agricultural Products		Fuels		Rice & Maize		Building Materials		Consumer Goods and Manufactured Goods		Total Flows
	Source	Quantity %	Source	Quantity %	Source	Quantity %	Source	Quantity %	Source	Quantity %	Source	Quantity %	
St. Louis	Cap Vert	5000 9.40 0.00	Cap Vert	800 1.50 0.00	Cap Vert	7000 13.16 0.00	Cap Vert	2800 5.26 0.00	Thies C.Vert	14000 26.32 8800 16.54	Cap Vert	11100 20.86 Dagana 3300 6.20 Podor-M. 400 0.75	40700
Totals		5000 0.00		800 0.00		7000 13.16		2800 5.26		22800 42.86		14800 27.82	53200
Dagana	Cap Vert	800 1.50 0.00	Cap Vert	1200 2.26 0.00	Cap Vert	27700 52.07 0.00	Cap Vert	2200 4.14 St. Louis 1200 2.26	Thies	7200 13.53 2500 4.70	Cap Vert	5400 10.15 St. Louis 5000 9.40	44500
Totals		800 1.50		1200 2.26		27700 52.07		3400 6.39		9700 18.23		10400 19.55	53200
Podor-Matam	Cap Vert	700 3.93 0.00	Cap Vert	1100 6.18 0.00	Cap Vert	2500 14.04 0.00	Cap Vert	4100 23.03 0.00	Cap Vert	6900 38.76 0.00	Cap Vert	2200 12.36 St. Louis 300 1.69	17500
Totals		700 3.93		1100 6.18		2500 14.04		4100 23.03		6900 38.76		2500 14.04	17800
Bakel	Diourbel	500 6.38 0.00	N.A.	0 0.00 0.00	Cap Vert	900 19.15 0.00	N.A.	0 0.00 0.00	Cap Vert	3000 63.83 0.00	Cap Vert	500 10.64 0.00	4700
		500 6.38		0 0.00		900 19.15		0 0.00		3000 63.83		500 10.64	4700
		6800 5.28		3100		38100 29.56		10300 7.99		42400 32.89		28200 21.88	128900

PRIMARY MARKETS FOR FLEUVE SUBREGIONS

St. Louis	Cap Vert	300 2.65 0.00			Dagana	1700 10.62			Dagana	5000 44.25		6500
Totals		300 2.65			Cap Vert	300 2.65			Cap Vert	4200 37.17		4500
Dagana						1500 13.27			Podor-M.	300 2.65		300
Totals					Cap Vert	700 6.80				9500 84.07		11300
Podor-Matam						0.00			Cap Vert	7000 67.96		7700
Totals						700 6.80			St. Louis	3300 32.04		3300
Podor-Matam						700 29.17				0.00		0
Totals						0.00				10300 100.00		11000
Bakel ²						0.00			Cap Vert	1300 54.17		2000
						0.00			St. Louis	400 16.67		400
Totals						700 29.17			Louga	300 12.50		300
										1700 70.83		2400
												2900
Totals		0 0.00		3200 11.59		0.00		2900 10.51				27600
										21500 77.90		27600

¹ Shows either three largest sources of markets or inputs only.
² Cotton

Source: National Transport Study 1978 Origin and Destination Surveys and PADCO analysis.

5. Infrastructure

a. Water

Intra-urban infrastructure is generally weak throughout the region. All of the major settlements have municipal water supply systems, but all besides St. Louis are lacking treatment facilities. Most of the systems are relatively old and have not been upgraded to meet new population demands. Thus, outside St. Louis, which has a production of 43 liters per capita per day, the average daily per capita consumption is 16 liters. Richard Toll and Dagana, due to their more rapid population growth, suffer particularly from low production of water supply. Water supply problems are further compounded in Richard Toll by a high water table, making installation of water networks more difficult.

The inadequate capacities in other Fleuve settlements requires most residents to use alternative sources of water. Frequently, the only alternatives are the Senegal River, which at least during the dry season, is of uncertain quality. In virtually all settlements, expansion of service would require almost completely new systems, as excess production, storage or distribution capacity generally does not exist.

The Vieme Development Plan for the Fleuve includes only development of water storage facilities in Richard Toll and extension of the network in St. Louis. It notes the need to develop plans for supplying water to 18 other settlements. However, at least in the Vieme Development Plan, financing for these projects is not available.

b. Sanitation

The small size of most settlements in the Fleuve makes installation of waterborne sewerage systems extremely expensive. In St. Louis a system is now under construction. The total cost of the St. Louis system is about CFAF 2 billion. For the rest of the urban settlements in the Fleuve, individual systems are the only alternative.

In virtually all settlements, St. Louis included, drainage is a severe problem during the rainy season when the river rises. Natural flood channels have been blocked by residential development or are inoperative because of high waters. In Matam and Podor the low-lying surrounding areas further slow proper drainage, creating health hazards, particularly in the more dense areas of Matam.

The need for improving drainage is recognized by the Vieme Development Plan for the Fleuve. However, the small size of the settlements combined with the lack of finance has meant that no work has started on developing drainage master plans. The bulk of resources allocated for the sanitation subsector has been devoted to completion of the St. Louis sewerage system started under earlier national plans.

c. Education

Urban education facilities tend to be more overcrowded than rural facilities in the Fleuve. In urban areas, the average primary school class size is 62 students, while it is 24 in rural areas. However, under the VIeme Development Plan, the bulk of resources is being devoted to completion of the Gaston Berger University at St. Louis. Development of new classroom space accounts for only 1 percent of the projected expenditure of the Plan. This is because the Plan lists as an objective the more intensive usage of existing facilities to reduce the need for new space.¹⁰

6. USAID Programs in the Fleuve

The Integrated Development of the Senegal River Basin Project is a major international program involving Senegal, Mauritania and Mali to develop irrigation perimeters and supporting rural infrastructure in the Senegal River basin of the three countries. To accomplish this program, USAID has joined with a number of international donors to finance different elements of the program. Briefly, the program consists of construction of two dams: Diama Dam to control salt intrusion of the Senegal River near Ross Bethio, and Manatali Dam at Keyes in Mali and to permit year-round irrigation to control the flow of the river so that it is navigable year round. The increase in irrigated area and expected outputs of the program in Senegal are shown in Appendix Table A.9.

The Integrated Development of the Senegal River Basin Project consists of the Bakel area projects already under implementation and overall development of 5,000 hectares of irrigated perimeters, along with necessary infrastructure needed to support the agricultural areas. The project will be implemented under the auspices of the Societe d'Amenagement d'Exploitation des Terres du Delta (SAED), a regional development agency with responsibility for development of the Senegal River Basin.

A project on the scale envisioned in developing the Senegal River Basin is likely to have major urban impacts on the Fleuve settlements and other settlements in two ways:

- Direct creation of urban employment, especially in food processing industries, and
- Increased demand for urban products due to increased rural incomes.

It is also likely to spur the growth of some settlements. Here, the discussion is limited to the potential for new urban employment. The most advantageous areas for locating that new employment and its impacts on the total growth of the settlement system are presented in Chapter V.

¹⁰VIeme Development Plan Quadriennal de Developpment Economique et Social 1981-1985. Region de Fleuve. Ministere du Plan et Cooperation. 1981. p.138.

At historic rates of conversion of increased agricultural output to industrial and services output, the CFAF 14.7 billion in increased agricultural output expected from the Basin project would yield an increase in combined industry and services output of CFAF 30.5 billion. Over the 20 year period, 1960-1980, Senegal created approximately .08 new industry and services jobs for every CFAF 359 increased industrial and services output. At this rate of conversion of increased output to new employment, approximately 7,600 new jobs would be created. This in turn at current ratios of urban population to employment (5.7 persons per job) would support a new urban population of approximately 43,500.

However, if Senegal becomes more efficient in converting agricultural GDP to urban GDP, this same increase in output could create approximately 98,000 new jobs. This in turn could support a population of 550,000. While this later estimate is probably high, it does give a potential of the total benefits of major agricultural programs on urban areas.

To date, increased incomes in both rural and urban areas has not stimulated the development of new industries or agricultural investment to a large extent. Remittance income has been largely used to import manufactured goods and building materials from other regions, primarily Cap Vert. Outside of St. Louis, the only area where this trend has been reversed is in Richard Toll, where large scale industrial investment has created markets of its own. It has also had a substantial impact on increasing incomes in the subregion. The average incomes in the Richard Toll-Dagana area are higher than in the rest of the Fleuve. These increased incomes have partially been the cause for more formalized structure of small-scale enterprises in Richard Toll. The presence of foreign workers and visitors to the factory have affected Richard Toll in a similar manner. However, the small size of Richard Toll makes it difficult to use the experience there as an example for what would happen in other places in the Fleuve if similar investment occurred.

C. CASAMANCE

1. Regional Potential

Due to the 19th century political divisions through which the Gambia separated most of Casamance from the rest of the country (see Map 1, Chapter II), this isolated region has developed unique characteristics. The region is divided into three different zones, each with its climatic, ecological and socio-economic features:

- a. **Basse-Casamance** is inhabited by Diola farmers, known for their intensive rice cultivation techniques and their minimum commercial activity. This zone, which possesses great agricultural potential yet remains insufficiently exploited, is characterized by frequent drought. This condition has led to a reduction of farmed areas, salty soils, lack of drinking water in villages, and an increase in the number of seasonal and permanent emigration of its population.

Basse-Casamance has progressively developed a cash economy. The configuration of its rivers encircles many localities; in addition, the existing roads often cannot be used during the rainy season. These two factors, along with weak marketing structures, have not allowed the area to develop its resources. While this is currently the principal rice-producing region of the country, Basse-Casamance is not self-sufficient as far as rice is concerned, and must rely upon imports to compensate for food deficits.

- b. **Haute-Casamance** is the country of the sedentary Peuls. Women grow rice on low ground and men farm plateaus and raise livestock. Haute-Casamance, a country characterized by a strong traditional immigration which increased after Guinean independence, possesses lands favorable to cotton and peanut farming. This modern economic region previously served only as the transit area at the time of the slave trade.
- c. **Moyenne-Casamance**, the country of the Mandingues and where cash crop was introduced by the middle of the 19th Century, represents a transition area between the two other regions. Currently, it continues to cultivate peanuts and rice, and an effort was made to develop the agricultural production through the Sedhiou Rice Growing Project. Moyenne-Casamance, like Haute-Casamance, is self-sufficient as far as rice concerned.

Integrated rural development projects are being planned for the whole area. SOMIVAC, established in 1976, is responsible for the coordination; PIDAC works in the Bignona, Ziguinchor and Oussouye areas; MAC in the Ziguinchor area and south of Sedhiou; PRS in Sedhiou; and SODEFITEX in Velingara.

The goals of these programs are to guarantee food self-sufficiency and to limit the rural exodus. Urban impacts of these programs will depend on the extent to which they include development of marketing, conservation, processing, and equipment maintenance facilities.

2. Regional Population Characteristics

In 1976, 741,000 inhabitants lived in the region. It is difficult to predict future trends, because of the sizeable flow of foreign populations (constant flow of refugees from Guinea-Bissau,¹¹ immigrants from Guinea¹² and regional emigration). The population projections in

¹¹According to World Bank estimations, in 1975 there were 71,000 refugees from Guinea-Bissau in Casamance.

¹²Between 1958 and 1968, Peul migration in the Velingara and Kolda districts was estimated at 42,000.

Table IV.7 are based on growth rates estimated by the Planning Office (Vieme Development Plan) (see Table IV.7).

The average density in the area coincides with average density in Senegal. In 1976, 15 percent of the total population lived in Casamance, which has about 15 percent of the national territory. The density distribution within the area follows the same pattern as in the country as a whole: the coast area (Basse-Casamance) is more populated than the eastern area. However, the low densities in Haute-Casamance do not necessarily correspond to a lower density of settlement. Excluding the protected forests, which cover 30 percent of this area, densities amount to 24 inhabitants per km². (see Table IV.8)

3. Human settlements

The six district capitals -- Ziguinchor, Oussouye, Bignona, Sedhiou, Kolda, and Velingara -- counted for 17 percent of the population in 1976. Ziguinchor represents 56 percent of the urban population. Kolda and Bignona are the next most populated cities. Rural population is scattered throughout 2,755 villages, more than half of which contain less than 100 inhabitants. (see Table IV.9) With the exception of Ziguinchor, the Casamance's districts are overwhelmingly rural. Kolda is the most urbanized area (14 percent of the district population), while in the Sedhiou district, only 4 percent of the population lives in cities.

Assuming that the annual urban growth after 1976 followed past trends in the short term, urban population (or, more specifically, population living in cities) would have risen from 17 percent in 1976 to 22 percent in 1983.

4. Seasonal emigration in Casamance

Studies by the World Bank¹³ and SOMIVAC¹⁴ indicate that over 10 percent of the population of the Casamance migrate out of the region during the dry season. About 80 percent of these seasonal migrants are from Basse-Casamance, which loses around 20 percent of its population during the dry season. Most emigrants go to the capital.

¹³Henke L. Van Loo and Nella S. Star, La Basse-Casamance, sud-ouest du Senegal, Leyde 1973

¹⁴L.V. Thomas, Esquisse sur les mouvements de population et les contacts socio-culturels en pays d'ila, Bull. IFAN, tXXII, serie B, no 3-4

TABLE IV.7
POPULATION EVOLUTION IN CASAMANCE

Year	Population	Annual Growth Rate			
		1960-70	1970-76	1976-80	1980-83
1960	530,000	1.90%			
1970	640,000		2.47%		
1976	741,859			(2.59%)	
1980	820,806 (est)				(2.60%)
1983	886,507 (est)				

Source: Vieme Development Plan
() Planning office estimates

TABLE IV.8
CASAMANCE DENSITY DISTRIBUTION ACCORDING TO
ENVIRONMENTAL AREAS AND DISTRICTS (1976)

Area	Districts	Population	Surface	Density in/km ²
	Kolda	130,082	8,284	15,70
	Velingara	95,207	5,434	17,52
Haute-Casamance		225,289	13,718	16,42
Moyenne-Casamance	Sedhiou	212,927	7,293	29,19
	Bignona	149,010	5,295	28,14
	Oussouye	28,948	891	32,48
	Ziguinchor	113,779	1,153	98,78
Basse-Casamance		291,737	7,339	39,75
All of Casamance		729,953	28,350	25,74

Source: 1976 Census

TABLE IV.9
POPULATION DISTRIBUTION IN CASAMANCE BY
DISTRICT AND BY AREA

	District Population (1000)	Urban Population (1000)	%	Rural Population (1000)	%	Annual Urban Growth Rate 1960-1976	Urban Population 1983 (1000)
Ziguinchor	113,8	69,6	61	44,2	39	5.82	103
Oussouye	29,0	2,5	9	26,5	91	7.89	4
Bignona	149,0	14,5	10	134,5	90	6.81	23
Sedhiou	213,0	9,3	4	203,7	96	7.83	16
Kolda	130,1	18,9	14	111,2	86	7.83	32
Velingara	95,2	8,8	9	86,4	91	8.80	16
Total	729,9	123,6	17	606,3	83	6.65	154

Source: 1976 Census

TABLE IV-10
AVERAGE CASH INCOME IN ZIGUINCHOR BY SECTOR OF ACTIVITY
(SONED Survey, April 1980)

	Workers		Annual Average Cash Income Year Worker (1000 CFAF)
	Number	Percent	
Agriculture	2,541	20.3	42
Fishing	342	2.8	359
Livestock	101	0.9	181
Handicrafts	1,169	9.3	111 ¹
Commerce	985	7.9	218 ¹
Wage Earners	4,233	33.8	569
Retirement	1,240	9.9	252
Rent	693	5.5	83
Gifts	1,202	9.6	130
Total	12,506	100.0	282

¹ Statistics calculated by SONED, on the basis of half the reported income of craftsmen and merchants (who report their gross income, not their profit).

The income earned by seasonal migrants outside the region represents a substantial portion of total income to the Casamance. In addition, aid is provided to villages in the Casamance by "Village Associations" in the cities. These associations are made up of permanent emigrants from one village who maintain close ties to their place of origin. These village associations perform two functions: first, they provide welcoming organizations which support the emigrant by recreating village associations in the urban setting; and second, they work towards the modernization of the village by providing, through the participation of both villagers and city people, teams that are not only socio-educative (nurseries, youth club-houses, and maternity clinics) and cultural (mosques), but also productive (truck gardening, poultry raising, etc.). The effect of these associations is twofold: they encourage departures for the city, where they provide effective welcoming functions; but they also improve conditions for those staying behind in the villages, thus encouraging rural stability.

5. Economic Activities in Casamance

a. Urban Farmers

According to SOMIVAC estimates, 91 percent of the working rural population is made up of farmers, which in 1983 represented about 300,000 working people. In the urban setting, there are about 30,000 agricultural workers (including fishermen) out of a working population estimated at 62,000.

Urban structure of Casamance cities is characterized by agricultural activities: in Ziguinchor, according to SONED estimates,¹⁵ about 5,000 families cultivate rice inside the city perimeter or in its immediate surroundings.

A large part of urban rice cultivation (and a less important part of truck farming) is used for family consumption. Truck farming is performed with a more profitable purpose in mind: products are sold in markets of the regional capital, or, mainly in the case of Oussouye, in hotels and camping sites for tourists. The cultivation of traditional fruits -- lemons, mangos, oranges and bananas -- represents part of the urban landscape of the regional capital. Traditional crops are marketed in Dakar through a poorly organized retail network, while modern crops are marketed through specialized companies. In Ziguinchor, besides the small sheep and pig raising at the family level, one finds hen houses established by civil servants on the outskirts of the city.

¹⁵Urban Plan - White Book - Ziguinchor

In Casamance cities, raising of livestock provides work for only a few people, but its importance is enhanced by cattle pens (like in Zolda and in Ziguinchor) and by slaughterhouses, which often have poor quality equipment and are inconveniently located.

b. Fishermen

In a 1982 Census, the Regional Service for Sea Fishing counted 4,920 fishermen: (about 8 percent of the working population): 29 percent in the Sedhiou District, 28 percent in the Bignona District, 35 percent in Ziguinchor District and 7 percent in the Oussouye District. Shrimp fishermen work for processing factories in Ziguinchor.

Fishing in the open sea is concentrated in the area of Kafountine (Bignona district) and also the Oussouye district (Kabrousse and Carabane). Diolas fish only in rivers and in the "bolongs". Their production is meant for the local consumption (Ziguinchor market, Cap Skirring hotels) or is smoked or dried and sent to Gambia, to Dakar or to other districts. There would be more fishermen of mangrove oysters if there were a more efficient way to transport their products to the urban markets. Compared to the rest of the country, motorization of pirogues has been developed only minimally (12 percent of pirogues are fitted with a motor.)

c. Wage earners of the primary sector

Compared to other regions, Casamance has numerous wage earners working in private and semi-private firms in the modern primary (agricultural) sector. In 1978, according to surveys conducted by the Department of Professional Training and Technical Education, Casamance included 1,057 wage earners in this sector¹⁶, a figure which represents 43 percent of the national total of primary modern sector salaried employment.

d. Craftsmen

In 1980, "la Chambre des metiers" the House of Crafts, counted, in the Ziguinchor district alone, 1,311 workshops with 5,478 craftsmen, among whom 2,941 worked in the arts and crafts, 1,809 in crafts production, and 728 in service crafts.

Tourism development explains the high percentage (54 percent) of arts and crafts workers. These handicrafts are supported by SOSEPRA (Senegalese Society for the Promotion of the Arts and Crafts) which in 1971 created an artisanal village in Ziguinchor. During the tourist season, the average daily income per workshop is 8,000 CFAF (SONED Survey - Ziguinchor Urban Plan.)

¹⁶Which does not include the agro-industries, classified among the manufacturing industries.

e. Small and medium-sized businesses

The Ziguinchor Industrial Park was established in the regional capital in 1973. SODIZI¹⁷ under the protection of SONEPI (Societe nationale d'etudes et de promotion industrielle -National Society for Studies and Industrial Promotion) selects craftsmen or small and medium-sized businesses, establishes them in the park, and provides support. SODIZI encourages the establishment of small businesses which use local products (oyster shells, laterite for building materials, palmyra and rattan for cabinet-making and woodwork); SODIZI develops the appropriate technologies. For example, there is a metallic fabrication business that manufactures oil pressing-machines which are widespread in Casamance. Currently, a total of 64 individuals work in the park:

Businesses	Number of Persons Employed
Holdfast (slack lime and geoconcrete bricks)	30
Auto mechanics	8
Metallic Construction	5
Rattan cabinet making	10
Palmyra cabinet making	6
General mechanics	5

f. Modern industrial businesses

Compared to the other regions of Senegal the industrial sector is not well represented in Casamance (it was estimated at 444 individuals in 1978 by the Department of Professional Training and Technical Education). Processing and packing activities for peanuts (SEIC) and shrimps in Ziguinchor and for cotton in Velingara and Kolda represent the main activities of the modern industrial sector. Ziguinchor's main industries employ 700 to 900 people (400 on a permanent basis).

g. Market trade

Merchants and shopkeepers exchange and sell their products primarily in urban markets. The absence of rural markets, as they exist in the Center-West of the country, is explained by the lack of fixed commerce in the area.¹⁸ The needs of rural populations in Basse-Casamance are met by peddlers. However, since 1965 rural

¹⁷Its main shareholders are the Chamber of Commerce and Industry in Ziguinchor, the professional Center in Nema, SONEPI, SEIC, SODEC in Lyndiane and Senegalese contractors.

¹⁸National Atlas of Senegal - ORSTOM

markets have been opening in Haute-Casamance, near the Gambian and Guinean borders.

In 1980, SONED estimated there were 1,980 merchants in the five Ziguinchor markets, about 1,500 of them in the St. Maur market. No statistics for Kolda exist, but there are 164 "souks" (or sale premises), which serves as an indication of the importance of commerce in that city.

6. Public sector activities and management services

Public and industrial activities are the only ones which really differentiate rural and urban populations. The executive function performed by regional cities is more obvious in small cities, where there are limited forms of employment: in Ziguinchor, teachers represent 11 percent of paid employment, regional administration 13 percent, health 4 percent, and technical services for organized utilities with 913 employees in 1980, represent 20 percent of paid employment.

7. Urban income

According to SONED surveys, wage earners account for 34 percent of all workers but earn 68.2 percent of the cash income in the regional capital. (see Table IV.10) The figures in Table IV.10 clearly show the low agricultural income (although underestimated because only cash income has been considered) and the large size of gifts, both in the annual value and in the number of individuals who profit from it.

8. Regional Economic Linkages

The inter and intra regional economic linkages in Casamance are dominated by the city of Ziguinchor (see Table IV.11). Ziguinchor receives the bulk of the tonnage of imports from outside the region and sends out more than half of the tonnage of the regions exports. In absolute terms, Ziguinchor receives more than it sends out (this is also true of the region as a whole). Most of Ziguinchor's purchases are of consumer goods, manufactured goods, building materials, and rice and maize from Cap Vert.

Ziguinchor is its own market for a good part of the primary goods it sends out (groundnut oils and derivatives, rice and maize), and it also exports these goods to other settlements within the region. Ziguinchor imports the rice and maize from Cap Vert. Ziguinchor also exports a large quantity of finished products to Cap Vert and Thies; this consists mainly of processed food products.

TABLE IV. 11
TRANSPORT FLOWS OF CASAMANCE
(Tonnage)

PRINCIPAL SOURCES OF INPUTS¹

Subregion	Groundnut Oil And Derivative		Fertilizers & Agricultural Products		Fuels		Rice and Maize		Building Materials		Cotton		Consumer Goods And Manufactured Goods		Total Flow
	Source	Quantity Percent	Source	Quantity Percent	Source	Quantity Percent	Source	Quantity Percent	Source	Quantity Percent	Source	Quantity Percent	Source	Quantity Percent	
Ziguinchor	Ziguinchor	2,800 2.79	Cap Vert T. Nord Kaolack	1,600 1.59 900 .90 300 .29	Cap Vert	7,200 7.16	Cap Vert Ziguinchor Kaolack	18,000 17.91 7,100 7.06 2,500 2.49	T. Sud Cap Vert	23,000 22.89 14,800 14.73	-	-	Cap Vert Kolda Others	20,400 20.30 1,200 1.19 1,200 1.19	73,000
Subtotals		2,800 2.79		2,807 2.79		7,200 7.16		27,600 27.46		37,800 37.61				22,300 22.19	100,500
Kolda	Ziguinchor	1,900 6.62	Cap Vert Kaolack Ziguinchor	1,300 4.53 300 1.05 100 .35	Cap Vert	2,600 9.06	Cap Vert Ziguinchor	6,600 23.00 6,300 21.95	T. Sud Cap Vert	3,800 13.24 3,400 11.85	Ziguinchor	700 2.44	Cap Vert Kaolack	1,200 4.18 500 1.74	18,100
Subtotals		1,900 6.62		1,700 5.92		2,600 9.06		12,900 44.95		7,200 25.09		700 2.44		1,700 5.92	28,700
Velingera	Ziguinchor	300 2.91	Cap Vert Tamba Others	1,200 11.65 600 5.83 400 3.88	Cap Vert	500 4.85	Kaolack Cap Vert	1,000 9.71 600 5.83	Cap Vert	1,500 14.56	Velingera	1,700 16.50	Cap Vert	2,600 25.24	8,800
Subtotals		300 2.91		2,100 20.39		500 4.85		1,600 15.53		1,500 14.56		1,700 16.50		2,600 25.24	1,200 400
DIAS		5,000 3.58		6,600 4.73		10,300 7.38		42,100 30.18		46,500 33.33		2,400 1.72		26,600 19.07	139,500

PRIMARY MARKETS¹

Ziguinchor	Ziguinchor Kolda Velingera	2,800 8.24 1,900 5.59 300 .88	Kolda Velingera	100 .29 100 .29	-	Ziguinchor Kolda	7,100 20.88 6,300 18.53	-	Ziguinchor	700 2.06	Cap Vert T. Nord Others	10,900 32.06 2,400 7.06 1,400 4.12			21,600
Subtotals		5,000 14.71		200 .59			13,400 39.41			700 2.06		14,700 43.24		34,000	
Kolda															
Subtotals															
Velingera															
Subtotals															
DIAS		5,000 8.32		200 .53			13,400 22.30				15,700 35.94		800 4.85	16,500	

¹ Three largest sources or inputs or markets only

Other settlements within the Casamance region primarily export cotton. The greatest amount goes directly to Kaolack; most of the rest goes directly to Cap Vert. The other Casamance settlements also send out some processed food products to Cap Vert and Ziguinchor. The smaller Casamance settlements rely for inputs mainly on Cap Vert (fertilizers and other agricultural inputs, fuels, building materials, and consumer and manufactured goods).

9. Urban development

a. Building sites for urban use

Ziguinchor and Ouscouye were recently provided with an Urban Plan (1980). Studies on Bignona are being conducted by an Italian consulting firm. For Kolda, studies were conducted by BCEOM in 1975, but no program has been implemented. The rapid development of this city and its migratory vocation in Haute-Casamance require that its studies be updated.

In Casamance, as for the other areas in Senegal, a major urban planning goal is to reduce the erratic multiplication of housing areas. However, public credit made available for urban building sites usually allows only for site preparation, such as the marking of lots, but does not allow for the provision of adequate infrastructure. Cities seldom succeed in procuring the necessary infrastructure resources on their own.

In some cities, such as Velingara, villagers have resisted the expansion of the urban perimeter. These individuals use urban infrastructure but do not want to be incorporated into the city as a means to avoid paying taxes.

In all cities, urban infrastructure is inadequately maintained and suffers from deterioration due to age. Maintenance and repair costs are high. For example, it is estimated that in Kolda, the cost of cleaning out the conduits for rain water drainage, which are partly filled and covered by sand, comes to CFAF 2 million.

b. Supply of drinking water

Available data on the cities do not accurately reflect the general situation: older areas have long been equipped and supplied with drinking water by individual outlets; the new outskirts are generally supplied by public water-fountains; and the distribution network does not reach the newest spontaneous growth areas. In many cities, wells are located inside or outside of the lot perimeter.

In Ziguinchor, in 1980, 6 districts out of 16 were equipped with private water connections. From 1980 to 1982, the number of water fountains increased from 25 to 82. In almost all the districts, each building plot has a well. Wells serve as the only water source for 60 percent of inhabitants who are in unequipped areas.

c. Sanitation

Drainage of rain water presents problems, particularly in Ziguinchor, Bignona, and Kolda. In Ziguinchor, drainage of rain water is regarded by all the officers of technical services as a priority infrastructure. A feasibility study conducted by Ital-consult in 1976 was never completed. Works implemented by SATOM made some improvement, but the city of Ziguinchor is waiting for a financing source for the purchase of an entire infrastructure package whose cost was estimated at CFAF 3 billion in 1983, about 800 million of which would be allocated for drainage of rain water (7,000 meters of linear sewer to be laid).

No city in the area is equipped with a sewer network, except the network of the OHLM housing complex of Boudody in Ziguinchor, whose small waste treatment station often breaks down. Waste is then emptied into the river. In the "Port" district of Ziguinchor, septic ditches were measured out for European families, and do not correspond to the present density of the lots. The municipality is unable to provide regular emptying service. It is equipped with only one vehicle, which functions continuously throughout the day when it is not broken down. In the rainy season, the ditches are filled with water and overflow.

d. Educational system

The number of schools, relatively high in the rural areas, and growing, shows the decentralization effort made by the Senegalese Government (see Table IV.12). This effort does not meet the aspirations of the rural population, which attempts to compensate for the lack of schools by constructing provisional school buildings on their own. Moreover, the rural schools do not always provide for all elementary grades. The children must, therefore, leave the village in order to continue their schooling in district centers.

The number of pupils per class reflects the lack of school facilities in the urban setting. In Ziguinchor, registration of pupils has been delayed until the age of 7 to 8 years, for lack of room in the schools.

Middle and secondary education is provided in the cities for pupils from the rural areas. However, there is no public housing provided for the students. This problem is solved individually by families who are willing to take care of them. Since the number of pupils increases rapidly, some families take care of several children, and it will be necessary, in the near future, to find other solutions to alleviate the burden of this situation both for the child and for the host family.

TABLE IV.12
PUBLIC ELEMENTARY SCHOOLS 1980-81

Districts	Number of Classes		Number of Pupils Per Class		Number of Pupils	
	City	Village	City	Village	City	Village
Ziguinchor	119	96	83.4	50.7	9,931	4,863
Bignona	39	276	75.3	55.2	2,938	15,223
Oussouye	11	38	64.5	69.9	710	2,657
Sedhiou	25	232	67.0	45.0	1,676	10,440
Kolda	37	75	77.5	31.3	2,866	2,349
Velingara	13	58	67.0	35.0	871	2,032
Casamance Total	244	775	78.0	49.0	18,992	37,564
Casamance Total with Private Schools	City + Villages 1,214		City + Villages 54		City + Villages 64,951	

In Kolda, the opening of the Teacher Preparatory School in October 1983 will attract about 1,000 students. The only possible shelter is offered by families. This means that approximately one family out of four should take in a student (sometimes in addition to elementary and secondary pupils who have already been taken in by families.)

Of course, the Ziguinchor shelters the greatest number of secondary school pupils. In 1980, secondary pupils numbered 6,740. At the Guignabo Lycee (2,700 pupils) 80 percent of the pupils come from villages and districts in the area.

In 1980, technical education was represented in Ziguinchor by the Agricultural Technical Agents School (68 students), the Water and Forests Technical Agents School (64 students), and the Regional Center for Women's Technical Education (95 students).

e. Health facilities

In 1980, Casamance had one physician for 37,845 inhabitants and one hospital bed for 1,500 inhabitants, according to data from the Medical District of Ziguinchor. The health sector is obviously poorly equipped. However, great disparities exist from one rural area to the other: Bignona has 27 rural maternity clinics and Sedhiou only five, while the Sedhiou district has 1.5 times more inhabitants than Bignona. For the size of its population, the district of Ousouye is relatively well equipped with rural maternity clinics.

The Ziguinchor regional hospital, built in 1970, has 92 beds. Its capacity must be increased. The health center in Boudoundi (142 beds) receives help from the Chinese Mission and helps outside the area.

In Kolda, the health center accepts patients from Velingara, Sedhiou and also Guinea. Its equipment does not adequately fulfill the centers' needs. Kolda will soon have a hospital (with funds from the World Bank).

10. USAID Program in Casamance

Currently USAID/Senegal has one major project in the Casamance region, the Casamance Regional Development Project. Focusing on Basse-Casamance, this project involves an expenditure of \$23.7 million over a seven-year period for the purpose of finding ways to improve agricultural production. The various activities under the project are being carried out through SOMIVAC, the regional development agency for the Casamance, and PIDAC, its extension arm in Basse-Casamance. The project's components are: (1) preparation of an agriculture development master plan for the subregion, (2) on-site research by local units of the national agricultural research organization (ISRA), (3) establishment of a 20 hectare seed farm, (4) literacy training for farmers' groups, (5) construction of warehouse and salt barrier dikes, (6) health and

socio-economic surveys, (7) a village health care program, and (8) construction of facilities for SOMIVAC, PIDAC, and ISRA. The project is expected to produce project proposals for international financing.

USAID is planning to explore the possibilities for investment in the Haute and Moyenne Casamance subregions as well. These areas are cited in the AID Country Development Strategy Statement as needing considerable basic infrastructure, including water, roads, and market facilities.

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CHAPTER V

URBAN STRATEGIES IN SENEGAL

A. INTRODUCTION

Developing countries have experienced dramatic increases in the proportions of their population living in urban areas over the past few decades. In low- and middle-income countries, the rate of urban population growth was, on the average, roughly double total population growth between 1960 and 1980. It is equally significant that a substantial share of this urban growth is occurring in the largest or primate cities of these countries. On the average, the largest or primate city in size in low- and middle-income countries doubled over the last 20 years. Unfortunately, these rapid increases in urban populations have been substantially straining countries' abilities to provide sufficient employment, shelter, and services.

The primary challenge involved in developing spatial strategies to meet this growth are the choices of particular settlements as locations for accelerated or reduced population growth. Development experience and research has shown that these strategies are not likely to be successful unless they are closely integrated with industrial policy in general and industrial location policy in particular. The magnitude and location of the employment base are the major factors influencing the location of population. If spatial and industrial strategies diverge significantly, spatial strategies will not succeed. At the same time, it is not equally efficient to locate economic activity anywhere. Thus spatial objectives need to be set with an awareness of the costs of inducing economic activities in areas targeted for growth.

Spatial policies should also be integrated with sectoral policies for housing and infrastructure. The amount of public expenditure depends on the levels of service provided (standards and service populations) and the amount of public investment recovered from users. The provisions of high levels of infrastructure in a particular location can be an inducement for business and people to locate there.

However, for integrated spatial and sectoral strategies to be feasible, it is essential that investment plans be realistically related to the ability of government to mobilize resources. Since it will generally be the case that the financial requirements for desirable programs will be greater than the amounts which can be raised, choices must be continually made. The decision to invest in one particular place or activity will often reduce the possibility to invest in other places or activities. Consequently, in analyzing urban strategies, it is important to test the effects of spatial and sectoral choices in a systematic manner. Finally, in making urban investment recommendations, the total investment requirements of the recommendations need to be measured against the likely total resources available to ensure the feasibility of those recommendations.

Thus PADCO has made projections of different urban strategies for Senegal. These serve to:

- Determine resources which are likely to be available to finance urban investment programs¹;
- Determine urban employment trends and identify whether or not current investment policies are likely to result in the urban employment growth needed to meet increases in urban populations;
- Determine urban areas within the settlement system which have existing economic strengths and thus should be the focus for regional development programs; and
- Provide guidance to USAID in developing urban investment strategies in its three regions of programmatic concern and to the Government of Senegal in developing national urban development strategies.

Regarding the latter, the projections which PADCO has made are not intended to identify a "preferred urban development strategy", although they may provide assistance in developing such a strategy. These projections were made to test the impact of current policies on urban areas and to provide guidance on the implications of alternative urban investment strategies.

¹Throughout this chapter urban resources refers to cumulative investment in industry and services along with 60 percent of the Energy, Water and Gas sector.

Urban employment refers to employment in industry (mining, manufacturing and construction) and services. These distinctions have been made since it is growth in these sectors which lead to increased demand in other "urban" sectors such as infrastructure.

If urban investment requirements exceed urban resources, either a shift from other sectors must be made to finance the deficits or an increase in gross investment must occur. If neither occurs, the result is likely to be reduced economic growth potential and/or insufficient resources to finance completion of urban development programs. These risks underline the importance of measuring urban programs against likely resources available to finance them.

B. METHODOLOGY USED FOR PROJECTIONS

The methodology used for making the Senegal urban projections was first developed by the PADCO Egypt National Urban Policy Study (NUPS). It has since been refined and adopted for use on micro-computers. Since the methodology is fully described in another report², it will only be summarized here. Briefly, the PADCO NUPS methodology:

- Projects national economic growth and determines economic resources likely to be available for financing urban investment strategies;
- Projects growth of urban employment;
- Allocates investment for new urban employment among a country's settlements according to marginal cost criteria;
- Allocates investment for supporting shelter and urban infrastructure according to various standards; and
- Determines the financial and economic feasibility of urban investment strategies.

The following data sources were used to form the basis for these projections:

1. Demographic and Urban Settlement Data

The primary source of demographic data was the revised 1976 national census. At the settlement and regional level, this data has been supplemented by a variety of studies conducted on migration, urban and rural population growth, labor force, and unemployment.

Although official population growth rates shown in the Vieme Development Plan are 2.8 percent per year, the actual rates which have occurred between 1961 and 1976, according to the revised 1976 census, are 3.2 percent. Thus, the actual rather than the official rates were used in the first set of projections. This results in a national population of 10.3 million by the year 2000.

²PADCO, Analytical Methodology for Preparing National Urban Policy Recommendations (RFS-40: Draft Task 1 Report), prepared for Office of Housing and Urban Programs, U.S. Agency for International Development, January 1984.

The Department of Statistics of the Ministry of Plan projects that urban population will be approximately 51 percent of the total population by the year 2000. Since this projection coincides with other projections of urban population, it was used as baseline projection for future urbanization. These population data are shown in Table V.1.

Typically, population programs take several years to yield results. Nevertheless, to show the impact of such programs on the development of urban strategies in Senegal, a second set of national population projections were developed to show a more optimistic scenario. This set of projections uses the official population growth rate. The resulting 2000 population at this rate is 9.8 million. These projections are also shown in Table V.1. Settlement populations were projected to the 1985 baseline year used by the methodology by assuming historic population growth rates. These 1985 population figures appear in Table V.2.

The only source of a sectoral distribution of employment at the settlement level is the readjusted 1976 census. However, since definitions used by the census are broader than those used in national account data, the industrial sector census data were weighted by regional level national account sectoral distribution of employment. (This distribution of formal sector employment is shown in Table II.15). Since virtually all industrial employment is located in the St. Louis - Dagana subregion of the Fleuve, Fleuve employment data was adjusted to reflect the subregion's concentration of industrial employment. These employment data are shown in Table V.2.

2. Economic Data

The primary source of macro-economic data was the VIeme Development Plan. These data were analyzed to project the relative efficiency of investment in terms of output to determine likely urban resources for urban investment strategies. The measure used to determine productivity of investment were incremental capital output ratios (ICORs), or the amount of capital which must be invested to achieve a unit of output. Since the plan does not provide disaggregated ICORs, these were calculated from the plan's projections of investment and gross domestic product.³

³Incremental capital output ratios are a well-known measure of capital productivity. However, there are some problems associated with their use. Typically they should be based on net fixed investment rather than gross investment. However, net fixed investment frequently is not available at a sectoral level. Furthermore, when using ICORs for projection purposes caution must be taken to ensure that the underlying trends projected by the ICORs represent the actual productivity of capital and not other short-term trends such as one-time capital-intensive investments.

TABLE V-1
POPULATION AND URBANIZATION PARAMETERS

	Populations in Thousands					Growth Rate (%)
	1976	1985	1990	1995	2000	
Total Population	5,068	6,611	7,664	8,886	10,341	3.0
Urban Population ¹	1,726	2,835	3,442	4,268	5,274	4.8
Urbanization Rate (%)	34.1	42.1	43.7	46.0	51.0	
Urban Labor Force ²	604	992	1,204	1,494	1,846	4.8

¹ Urban population in all settlements designated as communes in 1976. Thereafter, urban population is projected at rates used by the Direction du Statistique du Ministry du Plan.

² Assumed to be constant throughout period and is based on historic rates, see Chapter II.

Sources: 1976 Revised Census, Unpublished data of the Direction de Statistic du Ministry du Plan, and PADCO Estimates.

TABLE V.2
SETTLEMENT STATISTICS FOR EMPLOYMENT IN 1976 AND 1985

Region	Settlement	Total Census Employment (000s)	Census Indus- trial Workers (000c)	Formal Sector Share (%)	Formal Sector Industry (000s)	Projected Popula- tion in 1985 (000s)	Employment In 1985		
							Pro- jected Total (000s)	Formal Sector Industry (000s)	
Cap Vert	Dakar	185.2	106.1	65.23	69.21	1636	307.19	114.80	
Casamance	Ziguinchor	9.5	6.3	1.82	0.11	116	15.80	0.19	
	Kolda	2.5	1.6	1.82	0.03	37	4.93	0.06	
	Bignona	1.8	1.3	1.82	0.02	26	3.26	0.04	
	Sedhiou	1.1	.8	1.82	0.01	18	2.17	0.03	
	Velingara	1.1	.7	1.82	0.01	18	2.29	0.03	
	Oussouye	1.1	.7	1.82	0.01	5	2.13	0.02	
Diourbel	Diourbel	8.7	6.8	2.56	0.17	78	12.70	0.25	
	M'Backe	4	2.5	2.56	0.06	51	8.00	0.13	
	Bambey	1.5	1	2.56	0.03	13	2.01	0.03	
Louga	Louga	4.6	3.1	0.15	0.00	52	7.10	0.01	
	Linguere	2.7	1.8	.15	0.00	15	5.34	0.01	
Fleuve	Kebemer	.8	.1	.15	0.00	11	1.31	0.00	
	St. Louis	10.5	6.7	10.43	0.70	127	15.03	1.00	
	Richard Toll	8.9	4	10.43	0.42	30	25.11	1.18	
	Dagana	1.3	.9	10.43	0.09	17	2.12	0.15	
	Podor	.7	.4	1.09	0.00	8	0.87	0.01	
	Matam	.2	.11	1.09	0.00	13	0.27	0.00	
Senegal- Oriental	Tambacounda	5.3	2.6	1.25	0.03	41	8.65	0.05	
	Bakel	2.1	.5	1.25	0.01	11	3.37	0.01	
	Kedougou	1	.6	1.25	0.01	17	2.25	0.02	
Sine- Saloum	Kaolack	17.3	10.5	8.12	0.85	133	22.04	1.09	
	Kaffrine	1.8	1.1	8.12	0.09	28	4.47	0.22	
	Fatick	1.3	.8	8.12	0.06	12	1.58	0.08	
	Nioro du Rip	.8	.6	8.12	0.05	14	1.43	0.09	
	Foundiougé	.3	.1	8.12	0.01	4	0.40	0.01	
	Gossas	.7	.5	8.12	0.04	9	0.89	0.05	
	Guinguineo	1	.6	8.12	0.05	15	1.34	0.07	
	Sokone	.6	.4	8.12	0.03	9	0.89	0.05	
	THIES	Thies	16.7	11.3	10.64	1.20	157	22.69	1.63
		M'Bour	6.4	3.7	10.64	0.39	66	11.45	0.70
Tivaouane		2.1	1.6	10.64	0.17	27	3.30	0.27	
Meckhe		1	.7	10.64	0.07	11	1.30	0.10	
	Kombole	.9	.6	10.64	0.06	9	1.22	0.09	
Totals		305.5	181.11	-	73.98	2835	503.67	122.37	

Source: PADCO analysis

The second set of economic data derived from the plan was its sectoral investment priorities and gross investment objectives. The first shows the sectors of the economy on which the government intends to focus its investment to achieve national development objectives. The second shows the component of national output which will be saved for future investment. Since most developing countries do not generate sufficient capital to meet their total investment requirements, the gross investment figures also include foreign financing of investment either through commercial loans or donor grants and transfers. These national development plan data are shown in Table V.3.

The final set of data needed for projections of urban strategies is the rates at which new employment is created. These data proved to be the most difficult to determine in Senegal since national level sectoral disaggregated employment data was available only from a 1979 survey of employment already shown in Table II.15. Therefore, as very crude proxies for the employment effects of investment in Senegal, the following data sources were used:

- **Agricultural jobs:** World Bank appraisals of agricultural projects which showed agricultural jobs being created at the rate of one per CFAF 1.04 million.
- **Industrial jobs:** Ministry of Plan data for existing industries showing job creation at one job per CFAF 27 million. As an illustration, the variations in the scale of job creation, if large scale industry is included, this rate increases to CFAF 55 million, while if only small scale artisan level employment is used for projections, the rate is CFAF 5 million. The Vieme Development Plan projects employment gains in industry at a rate of CFAF 19.4 million per new job.
- **Energy and Infrastructure:** The Ministry of Plan estimates these job creation rates at CFAF 18.9 million.
- **Transport:** Due to wide variations in the data, no exact estimate could be made; thus the job creation rates used for energy and infrastructure were used as a proxy for transport.
- **Services:** Even though the Ministry of Plan projects development of capital intensive tourism facilities at the rate of CFAF 12 million per job, the bulk of services employment is small-scale, largely informal, thus estimates of informal sector job creation rates of one job per CFAF 1 million were used for the sector.

TABLE V-3
INVESTMENT PARAMETERS AND OBJECTIVES OF THE VIEME DEVELOPMENT PLAN

Incremental Capital Output Investment Ratios				Investment Priorities (%)	
Sector	1983	Period 1984	1985		
Primary ¹	8.6	8.6	8.6	Primary	20.8
Industry ²	16.2	11.9	8.6	Industry	41.0
Energy ³	3.6	8.5	8.5	Energy and Urban Infrastructure	16.5
Transport ⁴	8.3	8.3	8.3	Transport	15.5
Services ⁵	2.0	2.0	2.0	Services	-

- 1 Primary sector corresponds to the VIeme Development Plan primary sector: agriculture, livestock and fishing.
- 2 Corresponds to VIeme Development Plan industry and artisanal activities, construction and mining.
- 3 Includes VIeme Development Plan, energy, water, and gas plus the Quatornaire Investments.
- 4 Transport and communications.
- 5 Includes all other sub-sectors including public salaries, commerce, tourism, and public services.

Source: Ministry of Plan data for VIeme Development Plan readjusted, 1983

The range of job creation rates indicates the sensitivity of urban employment to different sectoral policies. If policies of capital intensive investment with relatively low productivity are followed, little employment will result even if these policies are counterbalanced by increases in gross investment. Similarly, even if policies emphasizing job creation are combined with policies which discourage savings, thus reducing investment rates, the impact will still be relatively few employment gains.

4. Shelter and Intra-Urban Infrastructure Standards

Standards and costs for infrastructure and services were derived from a variety of sources. Water standards were derived from the regional water supply project in 11 cities financed in part by the World Bank. In the project, approximately 285,000 new urban residents will be provided water supply at a cost of approximately CFAF 19,000 per capita. The basis supply standard of the project is 50 liters per capita per day. Thus except where major industrial development is contemplated, it was assumed that the major objectives of new water supply projects would be to alleviate existing deficits and provide new water supply service at a standard roughly equal to the national average consumption standard, 50 liters per capita per day.

Sanitation standards were more difficult to assess since very few settlements have public systems. Thus, it was assumed that new extensions to public sewerage systems would only be made in settlements already having public systems or when a settlement reaches a population of 250,000. This cut-off point was arbitrarily selected. Other population targets or criteria might also be selected to determine where new sewerage systems are to be constructed when developing preferred national urban strategies. The actual standards and costs of new additions to sewerage systems were derived from costs found in the Vieme Development Plan.

For other settlements, due to their pattern of low-density development, it was assumed that sanitation would continue to be financed privately and would be included in housing costs. Thus no separate provision was made for it.

Housing standards and costs vary widely. For example, in the low-income shelter project jointly financed by the World Bank and the Ministry of Urbanism, individual plot holders have been investing approximately CFAF 103,000 per unit. At current occupancy rates, this level of investment represents per capita shelter investments of CFAF 14,359 in 1980 prices.

At the other end of the scale, the average costs of new housing to be constructed by SICAP and OHLM, the two public sector housing agencies, is CFAF 4.7 million. This results in a per capita investment of CFAF 650,000.

Since roughly 90 percent of all new housing is provided by the private sector, the low income shelter project costs were used for the first set of projections. To show the impact of construction at higher standards, the SICAP/OHLM costs were used in the second set of projections.

Very rough estimates of urban circulation and transport costs were derived from the National Transport Plan, the Transport component of the Vieme Development Plan, and municipal budgets from several of the regional capitals. Again, it was assumed that the bulk of new investment in roads and public transport would occur in larger towns.

The Vieme Development Plan (and for that matter previous plans) has placed heavy emphasis on health and education. However, current fiscal problems have meant that these programs have been refocused on rehabilitation and provision of primary facilities. As an illustration of the implications of these reduced standards, our projections used the programs shown in the Vieme Development Plan on a per capita basis to estimate urban investment requirements in health and education.

Since different levels of infrastructure and shelter standards are usually provided for settlements having different functions, three different packages of infrastructure standards were developed. These packages were designated for major metropolitan areas, regional capitals and other settlements. These standards and per capita costs are shown in Table V.4.

The final set of standards shown on Table V.4 are gross density standards. These standards were arbitrarily selected since recent gross densities are not available for most settlements. They show a range of density standards and assume that larger cities are likely to have higher densities because of higher land prices resulting in more multi-storied structures.

The next major component of shelter and intra-urban infrastructure costs is regional variations in construction costs. The index used to represent these variations was developed by the Direction des Etudes et de la Programmation du Ministere de l'Equipment in 1981. These are shown in Table V.5.

TABLE V.4
STANDARDS AND COSTS OF NEW INTRA-URBAN INFRASTRUCTURE AND SHELTER
(1977 Prices)

Standards Package	Water ¹ (l/c/d)	Sanitation ² (CFAF/Capita)	Urban Transport ³ (CFAF/Capita)	Housing ⁴ (CFAF/Capita)	Health ⁵ (CFAF/Capita)	Education ⁵ (Persons/Hectare)	Gross Density
I. Low Standards							
Major Metropolitan	92	21,551	1,949	12,378	3,033	7,960	150
Regional Capitals	60	7,836	--	12,378	3,033	7,960	100
Others	50	--	--	12,378	3,033	7,960	70
II. High Standards							
Major Metropolitan	150	21,551	1,949	560,000	3,033	7,960	150
Regional Capitals	100	7,836	1,949	560,000	3,033	7,960	100
Others - large than 50,000	100	7,836	--	560,000	3,033	7,960	70
Others - less than 50,000	50	--	--	12,378	3,033	7,960	70

1 Low standards for the major metropolitan and regional capitals are based on 1982 estimated consumption figures. The "Others" figure is the 1982 average consumption figure. Per capita costs are based on the World Bank Water Supply Project having costs of CFAF 273 per additional liter of capacity or CFAF 19,000 per additional person. The High Standards were arbitrarily chosen.

2 Based on the costs of Dakar sewerage for the major metropolitan standards package and the costs of the Kaolack and St. Louis systems for the Regional Capital package.

3 Based on cost of transport projects in Dakar.

4 The lower per capita costs are based on the World Bank - GOS sites and services project in Dakar (CFAF 14,359 in 1980 prices). The higher costs in the High Standards packages are the average per capita housing investments for SICAP and DHLM housing found in the VIeme Development Plan.

5 Based on per capita costs derived from the VIeme Development Plan.

TABLE V.5
INDEX OF REGIONAL CONSTRUCTION COST VARIATION (1981)

Settlement/Region	Construction Cost Index
<u>Cap Vert</u>	
Dakar	1.00
<u>Casamance</u>	
Ziguinchor	1.40
Bignona	1.40
Oussouye	1.40
Sedhiou	1.45
Kolda	1.45
Velingara	1.45
<u>Diourbel</u>	
Diourbel	1.12
Bambey	1.12
M'Backe	1.15
<u>Louga</u>	
Louga	1.15
Linguere	1.20
Kebemer	1.12
<u>Fleuve</u>	
St. Louis	1.15
Richard Toll	1.35
Dagana	1.35
Podor	1.35
Matam	1.55
<u>Senegal Oriental</u>	
Tambacounda	1.35
Kedougou	1.65
Bakel	1.65
<u>Sine Saloum</u>	
Kaolack	1.15
Kaffrine	1.20
Fatick	1.15
Nioro du Rip	1.20
Foundiougne	1.20
Gossas	1.15
Guinguineo	1.15
Sokone	1.20
<u>Thies</u>	
Thies	1.05
M'Bour	1.05
Tivanouane	1.12
Meckhe	1.12
Khombole	1.12

Source: 1981 price statistics of the Direction des Etudes et de la Programmation, Ministère de l'Équipement.

C. PROJECTIONS OF URBAN INVESTMENT RESOURCES AND EMPLOYMENT

Two sets of macro economic projections were made to show likely resources available for development of urban strategies and urban employment. The first projection used data obtained from the Vieme Development Plan and showed in Table V.3. This resulted in relatively low economic growth and the risk of declining per capita gross domestic product if 1961 - 1976 population growth rates persist to the year 2000.

The second projection was more optimistic in its assumptions. It assumed greater productivity of investment in agriculture and industry than was found in the Vieme Development Plan. It also projected higher rates of gross investment through assuming greater domestic savings. This projection also showed the impact on future urban resources and employment if population programs are successful in maintaining the official rates of population increase (e.g. a growth rate of 2.8 percent).

1. Projections at National Development Plan Rates

The Vieme Development Plan places priority on the agricultural and industrial sectors. It projects total investment in these two sectors of 62 percent of gross investment. The plan shows modest increases in the rates of investment from an average of 13.7 percent during the Veme Development Plan to 16 percent during the Vieme Development Plan.

These rates along with the ICORs calculated from plan data were used to project likely resources available to finance urban investment programs and the creation of urban employment. The results of these projections are summarized in Table V.6.

This projection of gross domestic product illustrates the risk of reduced national income and increasing urban employment shortages resulting from a combination of high population growth and investment policies which yield relatively little output or urban employment. First, the growth of GDP resulting from the 16 percent investment rate is likely to be lower than the growth of national population. This would result in a negative growth of GDP per capita or the risk of reduced national income.

The ICORs calculated for these two sectors suggest that fairly capital intensive investment policies being pursued are unlikely to yield the growth in output necessary to spur economic recovery. Although the ICORs show a trend towards improved productivity in these two key sectors, the rate of improvement may not be rapid enough to result in desired growth.

TABLE V.6
SUMMARY OF GDP, URBAN RESOURCES AND EMPLOYMENT PROJECTIONS

	1985	1986- 1990	1991- 1995	1996- 2000	1985- 2000 Growth Rates (%)
Projections at Vieme Development Plan Rates					
I. Gross Domestic Product and Urban Resources (1977 CFAF Billions)					
Gross Domestic Product at end of Period	590	669	742	833	2.18
Gross Domestic Product Per Capita (CFAF 000s)	89	87	84	81	- .64
Total Resources Available for Investment ¹		510	570	637	
Urban Investment Resources ²		297	333	371	
II. Urban Population, Employment and Labor Force at end of Period (Thousands)					
Total Urban Population	2,835	3,442	4,268	5,274	4.80
Total Urban Employment ³	487	573	669	776	3.15
Urban Labor Force ⁴	992	1,204	1,494	1,846	3.96
Surplus or (Deficit)	-505	-632	-825	-1,070	
Projections of Scenario 2: Greater Productivity and Official Population Growth Rates					
I. Gross Domestic Product and Urban Resources (1977 CFAF Billions)					
Gross Domestic Product at end of Period	595	704	825	984	3.20
Gross Domestic Product per Capita (CFAF 000s)	92	94	96	100	.56
Total Resources Available for Investment ¹		660	815	1,103	
Urban Investment Resources ²		384	475	643	
II. Urban Population, Employment and Labor Force at end of Period (Thousands)					
Total Urban Population	2,736	3,260	3,939	5,015	3.86
Total Urban Employment ³	492	603	740	925	4.31
Urban Labor Force ⁴	957	1,141	1,378	1,755	3.86
Surplus or (Deficit)	-501	-538	-639	-830	

¹ Shows five year total cumulative investment resources available for all sectors. For the first projection, these cumulative investment resources were based on a gross investment rate of 16 percent of Gross Domestic Product. The second more optimistic scenario assumes a 20 percent rate for the 1986-1990 period, 21 percent for the 1991-1995 period and 24 percent thereafter.

² Shows five year cumulative investment for industry, services and urban infrastructure (the latter equals 60 percent of the energy sector in the detailed projections. Infrastructure and shelter investment was aggregated with the energy, gas and water sector to coincide with sectoral distributions of employment).

³ Shows employment created by economic growth. The employment projections are for the industrial and services sectors.

Source: PADCO NJPS Methodology Projections. See Appendix Tables A.10 and A.11 for parameters and A.12 and A.13 for detailed projections.

The second risk illustrated by the first set of economic projections is the likelihood of increased urban unemployment. Although the data are weak, the trends which result show that urban employment (i.e., employment in industry and services), may not keep pace with expected increases in the urban labor force. The result is likely to be either increased urban unemployment or increased informal sector activity. Growth in the informal sector is not, of course, a negative trend. However, such growth does point out the failure of formal sector employment policies to generate enough productive employment to meet the demands of a rapidly increasing urban labor force.

2. Scenario 2 Projection: Greater Productivity and Reduced Population Growth

The projections of national income and urban employment just described paint a bleak urban future. This need not necessarily be the case if different policies are pursued. To illustrate the impact of a different set of policies aimed at more rapid growth of urban employment and of national income, it was assumed that:

- National population programs would be successful in reducing population growth to the official projections of population growth; i.e., a 2.8 percent growth rate versus the 3.2 percent growth rate which occurred between 1961 and 1976.
- Rapid improvements in productivity of investment in agriculture and industry would occur.
- Employment policies would focus on more labor intensive investments such as those resulting in industrial job creation costs averaging about CFAF 10 million.
- Greater gross investment resources can be mobilized to result in increases of gross investment as a share of GDP from 20 to 24 percent.

The first assumption is based on official estimates of national population growth and the successes of population planning programs. In its 1983 World Development Report, the World Bank projects stabilization of the Senegalese population at the year 2045 and population growth rates between 1980 and 2000 of 3 percent. Thus, achievement of official population growth rates probably reflects an optimistic view on the rate at which population growth can be controlled.

The Vieme Development Plan projects an overall ICOR of 4.57 for investment in all sectors even though individual ICORs in agriculture and industry range from 8.65 to 11.6. (These high ICORs suggest relatively low productivity in these two sectors.)

Greater productivity in these two sectors has occurred in other parts of Africa, and in lower-middle-income countries. 1979 projections made by the World Bank aimed at a general ICOR for investment in Senegal of 4.00, if appropriate, investment policies were followed.

The ICORs used for our second scenario assume that Senegal will be successful in reaching its overall investment objectives. They also assume that the high ICORs calculated from the Vieme Development Plan data are reflective of short-term investment trends.

The Vieme Development Plan calls for a growth of employment at the rate of 7,000 to 8,000 new jobs per year. This annual rate of employment growth is not likely to be adequate to meet the needs of an urban labor force expanding at the rate of more than 33,000 new entrants per year. Thus our second scenario assumes that greater efforts will be made to seek productive investments which yield high rates of job creation. Over the near term, this may require greater emphasis on the small-scale sector.

Historically, gross investment in Senegal has ranged between 12 and 16 percent. The Vieme Development Plan conservatively projects a continuation of gross investment at a 16 percent of GDP. Our assumptions are perhaps optimistic since we have assumed that Senegal can achieve investment rates maintained by other lower-middle-income countries between the 1960 and 1981 period; i.e., an increase in the weighted gross domestic investment as a share of GDP from 15 percent in 1960 to 25 percent in 1981.⁴

The results of these assumptions are shown in Table V.6. They indicate a modest growth of GDP per capita (i.e., at a rate of .56 percent versus the negative rate resulting from the first projection). The projection shows improvements in the growth rate of gross domestic product and employment.

Regarding urban employment, the rate of employment growth results in a reduction of the deficit of supply for urban employment over the demand for new jobs. By the year 2000, the second scenario shows an increase in urban employment of 150,000 jobs over the first projections. However, even in the second scenario, the deficit is still likely to exist, underscoring the need to pursue policies which result in rapid, productive employment growth in all sectors.

⁴World Bank, World Development Report 1983; P.156.

3. Conclusions about Growth in Urban Resources and Employment

The two scenarios presented represent two possible outcomes of following different development strategies in Senegal. Other scenarios could be developed to test other strategies. The purpose of these two projections is to illustrate the range of problems and to pose different solutions for meeting them.

The primary conclusions regarding these two projections are that efforts must be made to improve the productivity of urban and rural investment. Furthermore, if social objectives regarding improvements in national income are to be made while reducing unemployment, the focus of these efforts must be on growth-productive employment. This latter concern may well require a focus on smaller-scale activities, many of which are now informal. Finally, greater efforts must be made to encourage growth in urban employment even if population programs are successful in reducing population growth. The demand for urban employment is likely to continue to be large and require a focus on small scale urban job creation, even if official population projections of an annual growth rate of 2.8 percent prove correct.

Our more optimistic scenario relies on increases in the amount and efficiency of investment to reverse existing negative growth trends. At Senegal's historic low rates of domestic savings (the difference between total gross domestic product and public and private consumption), the investment targets assumed in the scenario may be difficult to achieve. Recent rates of public and private consumption have in some years exceeded total gross domestic product leaving little or no capacity for domestic financing of investment. This has left Senegal entirely dependent on foreign sources of investment financing. For example, as of 1982, domestic savings was only 3 percent of GDP, while investment was 20 percent leaving a foreign savings requirement (i.e., the combination of export earnings over import requirements plus other sources of foreign investment) of 17 percent.

Historically, lower-middle-income countries increased domestic savings from 14 percent of gross domestic product in 1960 to 19 percent by 1981. This suggests that improvements in the performance of domestic savings is feasible if policies are adopted which reduce subsidies in public investments such as housing programs, water supply, and sanitation while encouraging private investment through appropriate pricing, interest rate and savings policies.

The Government of Senegal has made attempts at improving its economic performance through reductions in subsidies and encouragement of productivity in parastatals. In the recent agreements with International Monetary Fund the GOS has stated a medium-term policy of:

- reorientation of the national investment program towards the most productive sectors and projects;
- improvement in the management of public finances and of parastatals to ensure implementation of necessary public investments; and
- a more systematic reliance on market mechanisms and economic incentives to encourage private investment.

In line with the first policy parameter, the VIeme Development Plan focuses 41 percent of investment in the industrial sector. However, it would appear that greater emphasis should be made in improving the productivity of that investment. One of the mechanisms for improving that productivity could well be increasing the processing of agricultural products since these are likely to remain the primary source of inputs for urban industrial efforts. The commercialization of millet processing is such a process. This project financed jointly by USAID and the GOS has proven that millet can be processed on a small scale basis to provide couscous, an urban food staple. Its capital investment requirements are low in comparison to its expected output and it is relatively labor intensive.

Spatial policies also have an important input in achieving the GOS' investment policies. It is to these policies that we turn in the next section; i.e., the location of the most productive places for new investment and policies for shelter and infrastructure which support those investment programs.

D. THE MOST PRODUCTIVE LOCATIONS FOR URBAN DEVELOPMENT

Not all urban areas are the best locations for achieving national objectives of reorientation of the national investment program towards the most productive sectors and projects. Nor are all urban places the best locations for achieving national spatial objectives such as reducing inter-regional inequities or balanced economic development. Some places, as a result of past investments and/or very strong development potential, will yield much higher economic and social returns than other places. Similarly, some locations have higher development costs and thus offer reduced economic and social returns.

The next step of the review of future urban strategies in Senegal was to analyze where in the settlement system the greatest growth potential exists and then to suggest other types of strategies which might be feasible. This section focuses in particular on urban potential of the three regions where USAID has projects. It is hoped, however, that this section will be of general use to the GOS in developing spatial strategies.

The mechanism used to determine those settlements with the greatest potential for economic growth was to estimate individual settlement employment growth rates at which the marginal costs of adding a new urban job were equal throughout the settlement system. This procedure which is called the "least cost solution" is described in detail in PADCO's paper on the NUPS Methodology (see footnote 2). Here we will deal with the results of the procedure. The major data inputs have already been described above, except for the estimates of urban investment resources and employment, which were derived from the Scenario 2 projection.

1. The Least Cost Solution

The least cost solution assumes that urban population growth is a function of employment growth. That is, the major determinant of migration to urban areas is the search for employment. Thus, the location of new employment is a major policy tool in implementing urban development strategies. Technically, the least cost solution determines settlement employment growth rates and thus population growth rates which result in the marginal costs of adding a new job (the incremental cost of adding new jobs due to growth) being equal throughout the settlement system. This procedure results in the lowest job creation costs since the greatest amount of employment is allocated to those settlements which have the strongest economic potential (agglomeration economies).

Under this scenario, the past investment policies which have resulted in growth of the Cap Vert region would continue to provide the attraction for new urban investment. This would cause employment growth in the region which by the year 2000 would result in a population of 3.67 million.

However, other settlements also have economic potential due to past growth. These are listed in Table V.7.

Overall, the least cost solution would concentrate population growth in the Cap Vert region and generate some urban growth in the Fleuve, Sine Saloum and Thies regions. Relatively no growth would occur in other regions.

2. Regional Development Strategies

The Government of Senegal has developed a National Spatial Plan. It has established as major objectives:

- The need for a more balanced development of the country;
- The need to reduce regional inequities which exist mainly between the Cap Vert Region and other regions;
- The policy of administrative and economic decentralization; and

TABLE V.7
SETTLEMENTS OUTSIDE OF CAP VERT WITH STRONG GROWTH POTENTIAL

	1985 Population (000s)	2000 Population (000s)
Thies	151	180
Kaolack	135	148
St. Louis	127	141
M'Bour	67	76
Diourbel	78	82
Richard Toll	30	47

Source: PADCO projections; see Appendix Tables A.14, A.15, and A.16.

- The need to establish an urban priority scale which identifies functions for each settlement.

The agglomeration economies which have resulted from past investment policies would continue to concentrate most urban investment in the Cap Vert, Sine Saloum, Lower Fleuve and Thies regions. This would result in the orientation of the urban investment program so that it supports GOS objectives of focusing on the most productive programs and projects. However, this concentration of investment would appear to conflict with the policies of the National Spatial Plan. Therefore, to test the degree to which regional development strategies could be initiated which would address regional inequities through greater investment away from the Cap Vert region, a second projection of settlement populations was made which had the objectives of:

- Encouraging greater urban growth in all regional settlements than would occur if the most economic and efficient settlement patterns were followed, and
- Maintaining the Cap Vert population at 3 million by the year 2000.

This strategy is called Regional Strategy I. A summary comparison of the regional urban populations and regional capitals is shown in Table V.8.

The mechanism for achieving the population distribution summarized in Table V.8 is the allocation of investment for job creation. Under Regional Strategy I, roughly 120,000 jobs are shifted away from the Cap Vert Region to other locations. Since the costs of creating jobs in these locations are higher than the Cap Vert region, the total job creation costs of Regional Strategy I are CFAF 1,415 billion in 1979 prices as compared to the CFAF 1,295 of the Least Cost Solution. This additional CFAF 120 billion is due to the need to compensate for the lack of skilled labor force and to add larger increments of administration and management outside Cap Vert.

Under Regional Strategy I, all settlements would receive sufficient job creation investment to permit growth in all three projection periods (85-90, 90-95, 95-2000). The urban areas of Thies, Sine Saloum and the Fleuve, due to already documented economic strengths, would actually increase their share of urban population by the year 2000. The Cap Vert Region would also continue to grow; however its share of urban population would only increase from 58 percent in the year 1985 to 60 percent in the year 2000. Although they would increase in urban population, Casamance, Diourbel and Louga would have reduced shares of urban population under the strategy. The Senegal Oriental region would maintain its 2.4 percent share of urban population.

TABLE V.8
COMPARISON OF LEAST COST SOLUTION AND REGIONAL STRATEGY I

Region Settlement	1985 Population	2000 POPULATIONS (000s)	
		Least Cost Solution	Regional Strategy I
Cap Vert	1,636	3,711	3,000
Dakar	1,636	3,711	3,000
Casamance	220	226	338
Ziguinchor	116	119	177
Diourbel	141	147	232
Diourbel	78	82	129
Louga	78	796	129
Louga	52	53	78
Fleuve	195	229	347
St. Louis	127	141	202
Senegal Oriental	69	71	122
Tambacounda	41	42	73
Sine Saloum	224	247	377
Ksolack	133	148	235
Thies	270	309	471
Thies	157	180	272

Source: PADCO projections. See Tables V.6 and V.7 plus Appendix Tables A.14 - A.23.

3. Intra-urban Infrastructure and Shelter Costs

The next major component of urban development strategies is the allocation of investment for shelter and infrastructure to support the population targets established for different settlements. This was done for both of the strategies using both sets of standards shown in Table V.4.

Once intra-urban infrastructure and shelter costs have been calculated, they can be added to job creation costs and the total compared with urban investment resources likely to be available, to determine the feasibility of different settlement allocation solutions. Table V.9 gives a comparison to the total costs of shelter and intra-urban infrastructure at the first set of standards shown in Table V.4.

It is significant to note that shifting populations away from the Cap Vert region may result in lower shelter and infrastructure costs. However, this can only happen if those populations are located in areas which have lower standards of infrastructure than the Cap Vert region. For example, the 711,000 people shifted away from the Cap Vert region in Regional Strategy I would in most cases have lower standards of sanitation since most secondary settlements would have larger proportions of their populations served by private systems rather than municipal systems. Furthermore, it was assumed in developing standards for smaller settlements that populations of less than one million would require less sophisticated transport systems or no public transport at all.

The situation is reversed, however, if policies of regional decentralization are pursued by providing high standards of infrastructure. For example, if policies were developed to provide shelter at the standards proposed for OHLM and SICAP found in the Vleme Development Plan for all urban areas rather than the sites and services standards shown above, the total costs of shelter and infrastructure for Regional Strategy I would increase tenfold from CFAF 215 billion to CFAF 2,266 billion over the 15-year period. These higher infrastructure standards also entail larger proportions of the total urban population being served by municipal sewerage and transport systems.

By way of comparison, the total infrastructure and service costs of Least Cost Solution are only doubled, to CFAF 2,200 billion, at these higher standards. This slightly lower cost of the Least Cost Solution is the result of location rather than standards since larger populations are concentrated in Cap Vert, which has lower construction costs than other regions. These higher shelter and infrastructure costs are summarized in Appendix Tables A.36 - A.39.

TABLE V.9
COMPARISON OF URBAN SHELTER AND INTRA-URBAN INFRASTRUCTURE
COSTS BETWEEN 1985 - 2000
(1977 PRICES)

Region	Least Cost Solution		Regional Strategy I	
	Total Costs Distribution (CFAF Billions)	(%)	Total Costs Distribution (CFAF Billions)	(%)
Cap Vert	210.8	91.1	150.1	69.8
Casamance	3.3	1.4	11.4	5.3
Diourbel	1.9	.8	6.8	3.2
Louga	0.9	0.4	3.9	1.8
Fleuve	4.4	1.9	11.8	5.5
Senegal Oriental	1.1	.5	5.0	2.3
Sine Saloum	3.9	1.7	11.9	5.5
Thies	5.0	2.2	14.1	6.6
Totals	231.4	100.0	215.0	100.0

Note: Totals may not add due to rounding. Costs include total 15 year costs of shelter, water supply, sanitation, urban transport, circulation (road networks), health, education and other social and physical infrastructure at low standards.

Source: PADCO analysis. See Appendix Tables A.24 - A.35.

4. Comparison of Urban Development Costs with Urban Resources

As noted in the introduction, the feasibility of developing urban strategies rests on the ability of the economy to sustain them. If the total costs of urban development programs are greater than resources for them, there is a strong likelihood that these programs either will not be completed or will require shifting investment from other desirable programs to finance them. Table V.10 gives a comparison of the total urban resources likely to be available to finance urban job creation and infrastructure with the total costs of the Least Cost Solution and Regional Strategy I. The table also gives a comparison of the two strategies at the higher standards derived from the Vieme Development Plan.

The total difference in costs between the two strategies at low standards is about 7 percent. Although this difference seems small, the deficit which would result due to the higher costs of the more decentralized strategy is slightly less than the total resources allocated to agriculture during the 1986 - 1990 period. While this deficit would not be incurred in one period, it would necessitate shifting resources from non-urban sectors to urban investment programs. This could result in a reduction of economic growth, and thus of total resources, since the agricultural share of the economy is large.

The impact of standards on urban investment programs is even more dramatic. At the higher standards proposed by the Vieme Development Plan, neither strategy could be implemented. In both cases, the deficits would equal the total urban resources available to finance urban investment programs. The very small share of urban investment proposed by the Vieme Development Plan for low-cost sites and services projects seem to run counter to national policies of achieving greater equity. If the higher standards were provided for all urban population, they would result in national resource problems.

5. Conclusions

As noted earlier, the aim of this chapter is to provide the Government of Senegal with assistance in developing national urban development strategies and to provide USAID specific assistance on evaluating the potential for urban programming in the Casamance, Sine Saloum, and Fleuve. While this chapter does not provide a "Preferred Investment Strategy", the following conclusions and recommendations are made regarding the three regions and broader urban strategies:

- At the national level, greater emphasis should be placed on developing urban investment programs which result in more rapid growth of productive urban employment.

TABLE V.10
COMPARISON OF URBAN DEVELOPMENT COSTS WITH URBAN RESOURCES

	<u>Total Costs 1986 - 2000 (1977 CFAF Billions)</u>			Surplus or Deficit
	Job Creation Costs	Shelter and Urban Infrastructure	Totals	
Total Urban Resources	1,243	259	1,502	
Low Standards ¹				
Least Cost Strategy	1,295	231	1,526	-24
Regional Strategy I	1,415	215	1,630	-128
High Standards ²				
Least Cost Strategy	1,295	2,200	3,495	-1,993
Regional Strategy I	1,415	2,266	3,681	-2,179

¹ Shows standards of shelter at sites and services costs found in the Pikine project and of municipal sanitation in Cap Vert and regional capitals. Other settlements are assumed to rely on private systems.

² Shows standards of shelter at those proposed for OHLM and SICAP by the Vieme Development Plan and of municipal sewerage systems for all settlements having 2000 populations greater than 50,000. Also includes municipal transport systems for settlements greater than 50,000.

Source: PADCO analysis

- As is consistent with national policies, greater emphasis should be given to industrial projects which offer higher and more rapid rates of return.
- Greater attention should be paid to developing urban shelter and infrastructure programs which are affordable to lower-income groups and which offer the potential for cost recovery, thus increasing investment resources.
- Initially, however, until economic recovery is firmly underway, the emphasis in urban investment should be on developing the urban areas with strong economic potential so that these regions can provide the economic resources needed for later implementation of decentralization programs. The regions which should receive focus are:
 - Cap Vert
 - Thies
 - Kaolack and its system of cities
 - St. Louis - Dagana urban subregion
- As a second phase of urban development strategy, plans should be developed for strengthening the following urban areas:
 - Ziguinchor and surrounding urban areas
 - Kolda
 - Diourbel and M'Backe
 - Louga and Linguere
 - Tambacounda
 - Bakel

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CHAPTER VI

RECOMMENDATIONS FOR USAID URBAN PROGRAMMING IN SENEGAL

A. INTRODUCTION

In Senegal, agriculture remains the chief input to the industrial sector. Both agriculture and industry have relatively low productivity, and, as mentioned earlier, the efficiency of transformation of agricultural to industrial output is low. This suggests that practically any urban investment which supports the development of agriculturally-related industry (food processing or textiles, for example) and supporting infrastructure would increase the benefits of existing AID agricultural programs in Senegal. However, the severe limitations on resources to finance those investments mandates that whatever new urban programs or projects are developed must be located in areas which will produce the greatest benefits at the least cost. Initially, this translates into further development of the agglomeration economies already existing in the Cap Vert Region.

This recommendation does not mean that all future urban investment must be in the Cap Vert Region. Concentrating all investment resources in Cap Vert would ultimately mean too rapid a growth there at the expense of past investment already in place in other regions. However, since development of regional urban centers will entail higher costs and the risk of loss of economic growth, regional development strategies must be carefully coordinated with development in Dakar to ensure that the costs and timing of such strategies are supportable by the nation as a whole. The following recommendations are made as to the timing and scale of urban development programs outside of Dakar.

Initially, investment outside of the Cap Vert region should be located in places that have the greatest potential for economic growth at the least cost. According to the analysis in Chapter V, these places are:

- The Thies region
- The region stretching from St. Louis to Richard Toll-Dagana, and
- The Kaolack system of settlements (Kaolack, Kaffrine, Niore du Rip, and possibly Fatick)

Within these regions, the programs should be developed that build on existing urban infrastructure and/or support either directly or indirectly the development of manufacturing industry.

Since USAID/Senegal is concentrating its regional programming on Sine Saloum, Fleuve, and Casamance, the discussion below deals with investment priorities in these areas.

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B. FLEUVE

In practically all urban areas, assistance to SONEES is required to develop water supply programs. Planned expansion of electrical power generating capacity makes St. Louis the best location for development of new industrial plants requiring power supplies. In the St. Louis area, additional work is needed to upgrade existing low-income areas within the city and identify future settlement areas for new urban population. It would also seem appropriate to study ways to assisting development of the St. Louis port and industrial complex to handle processing increased agricultural production resulting from irrigation programs. Since adequate road infrastructure already exists throughout the region, some additional study is necessary to determine whether it would be most cost-effective to develop river transport networks or rely on the existing road networks. The outcome of this study would determine the nature of port development in St. Louis and of river infrastructure throughout the Fleuve.

As with St. Louis, support to development of water supply systems is necessary in both Richard Toll and Dagana. Both have inadequate power capacity to support much new industrial investment. Additional industry in the region would be desirable to support the major investments already in place.

The following industries are suggested for the St. Louis-Richard Toll-Dagana area:

- Food processing
- Light mechanical industries
- Port-related industries (St. Louis only)
- Possibly clothing (but not textiles).

Owing to their weak industrial base, development of the other settlements of the Fleuve should proceed after development of the St. Louis-Dagana area. Development of the smaller settlements should have the following objectives.

- Development of primary processing and warehousing activities that provide initial markets for agricultural produce, and
- Stabilized population growth through maintenance of existing infrastructure and making additions to existing urban infrastructure at low standards to reduce existing deficits. Programs that should be considered for these settlements include: improvements to water supply, drainage, and limited expansion to power supplies.

C. KAOLACK SYSTEM OF SETTLEMENTS

Planned investments in textiles and power facilities combined with the past well-developed marketing systems of the industrial concerns already in place suggest that additional development of the Sine Saloum system of settlements can proceed at the least risk of overshooting overall national resource constraints. Furthermore, linkages between urban areas in the Sine Saloum and its hinterland, and with other urban areas are (after the Cap Vert Region) among the strongest in Senegal. However, as noted in Chapter IV, additional development of Sine Saloum's urban areas will depend very much on the degree to which agricultural production from the surrounding region can be diversified away from its traditional base of groundnuts. To this end, planned USAID projects for the region should have major urban impacts on Sine Saloum settlements.

If agricultuereal diversification is possible, Kaolack has the potential of becoming the largest major industrial area outside of the Cap Vert-Thies conurbation. However, to do so, improvements in its port facilities will probably be necessary. Furthermore, very large areas of Kaolack require improvements to drainage, water supply, sanitation, and possibly housing. There is also a need to develop new residential areas at low to moderate standards to accommodate future urban growth. After 1990, if economic recovery is positive, there will be a need to expand electrical power capacity in Sine Saloum as a whole.

The relatively strong linkages that now exist within Sine Saloum's subregions suggest that additional development of its settlements can proceed with only modest interventions. These could include: water supply, drainage (especially in Kaolack), some electrical power networks, and social infrastructure. Further development of agricultural programs within the region may identify the need to strengthen rural-urban linkages even further. However, at present, as these linkages are already strong, additional investment in transport networks other than maintenance would seem unwarranted.

Broad population and investment targets for the Fleuve and Sine Saloum settlements are shown in Table VI.1.

D. CASAMANCE SETTLEMENTS

The weakness of the industrial base of Casamance settlements means economic development there requires considerable investments, with the risk of overshooting national resource constraints. However, having recognized that risk, low intensity urban programs which aim at increasing industrial capacity of the region, primarily in food processing and fisheries, would have the greatest likely success in building a base from which future urban growth could occur. Due to the risks involved, these programs should be focused on the Ziguinchor area and later possibly Kolda. Initially, such programs would not have as a major objective reversing out-migration from this region.

TABLE VI.1
POPULATION AND INVESTMENT TARGETS OF REGIONAL STRATEGIES

Region	Total Urban Population (000s)		Total Investments Requirements CFAF Billions (1977 Prices)		
	1985	2000	Job Creation	Infra-structure ¹	Totals
<u>Sine Saloum</u>					
Least Cost	224	247	17	4	21
Regional Strategy	224	377	115	12	127
<u>Fleuve</u>					
Least Cost	195	229	23	4	27
Regional Strategy	195	347	114	12	126
<u>Casamance</u>					
Least Cost	220	226	5	3	8
Regional Strategy	220	338	91	11	102

Note: The Least Cost solution involves giving investment priority to the regions with greatest economic potential. (See introduction to this chapter and Chapter V.) The Regional Development strategy involves holding the population of Cap Vert to less than 3 million by the year 2000 and focusing growth on Casamance so that it maintains its share of urban population.

¹ Shows intra-urban infrastructure costs for water supply, portions of sanitation, transport, portions of road networks, housing, health, education and other social infrastructure. All standards are at basic levels.

Source: See Tables V.8 - V.9 and Appendix Tables A.19 - A.24

Over the medium term, other regions in the country have a much greater economic potential for absorbing new urban population than does the Casamance. However, as a longer-term goal, it may become feasible to develop strategies in the Casamance which would aim at maintaining its share of urban population. At current population growth rates, this would still mean that out migration would occur, but at a reduced pace. Such strategies would become feasible only later in the present decade and in the 1990s, once the Casamance industrial base is strengthened and adequate resources are generated in other regions to support such programs.

Programs to develop supporting infrastructure, primarily water supply and drainage along with social infrastructure, should be combined with overall urban development packages aimed at strengthening the urban functions of the region's settlements. As the region will continue to have lower power supply capacities than the other major urban areas of the country, careful monitoring of electrical power will be necessary to ensure that additions to either generating capacity or bulk transmission networks (if that should prove more economic) are made on a basis timed with other urban development investments. Although the subregions of the Casamance are relatively well-linked with national and regional road networks, local officials report the need to improve linkages within sub-regions between rural and urban areas. Such linkages could well include improving feeder road networks, although additional study is necessary to determine the scale and location of such programs.

E. TECHNICAL ASSISTANCE

There is a need to work with other donor agencies and the Government of Senegal in developing overall urban investment strategy. Several agencies are now involved in the urban development process and have been developing programs independently of each other. For example, the current World Bank Engineering Credit, which is providing assistance for the preparation of the Seventh National Plan, has as some of its objectives the support of policy and institutional analysis needed for longer-term urban interventions. Since all possible development resources will be necessary to reverse the current negative economic trends and develop the base from which economic expansion in regional centers can be launched, it would seem appropriate to work with the World Bank and other donors in developing urban institutional capacity. Some of the specific areas that should be examined are:

- Programs to strengthen the technical capacities of central and local authorities to identify, develop and implement urban programs. This is particularly important for regional economic development offices in identifying and promoting new industrial projects. It is also important for authorities in charge of public utilities so that their programs are coordinated with other development activities;
- Assistance in mobilizing local resources;

- Assistance to parastatals in eliminating subsidies and improving programming objectives and performance; and
- Programs to improve urban management through training geared to the prefect and sous-prefect level of administration.

F. SUMMARY OF PRIORITIES IN THE THREE REGIONS OF USAID CONCERN

Fleuve

Region-wide

- Water supply
- Study of where transport bottlenecks may exist (water and road)

St. Louis

- New industries requiring electrical power should locate here
- Upgrading low-income areas
- Port improvements
- Facilities for agro-processing

Richard Toll-Dagana

- Electrical power supply

Other

- Investments in other settlements should follow those above except for prevention of deterioration of services.

Sine Saloum

Region-wide

- Water supply
- Drainage
- Electric Power
- Social infrastructure

Kaolack

- Port improvements
- Water supply
- Drainage
- Sanitation
- Housing

Casamance**Region-wide**

- Food processing, fisheries investments
- Urban infrastructure and services
- Agro-related urban services (markets, input shops, etc.)
- Study of needs for improvements in feeder roads.

APPENDIX TABLES

TABLE A.1
DISTRIBUTION OF THE RESIDENT SENEGALESE POPULATION ACCORDING TO BIRTHPLACE¹
AND REGION OF RESIDENCE

PERMANENT MIGRATION (1976 Census)

Birthplace	Cap Vert	Casamance	Diourbel	Flaue	Louga	Senegal Oriental	Sine Saloum	Thies	Total
Cap Vert	533,297	7,786	5,310	9,010	2,983	2,186	8,954	22,589	592,115
Casamance	47,603	611,931	866	2,000	437	2,532	5,356	4,338	675,163
Diourbel	37,261	1,118	371,256	1,515	7,486	1,246	26,494	14,087	460,463
Flaue	69,155	5,790	3,397	470,487	5,987	4,697	10,014		
Louga	36,656	876	15,357	8,562	387,863	1,174	25,019	21,399	496,906
Senegal Oriental	5,445	3,995	396	1,468	410	231,888	4,222	1,188	249,012
Sine Saloum	49,428	4,537	9,569	2,683	3,940	7,268	862,821	14,504	954,750
Thies	75,590	1,807	12,127	3,053	6,868	1,310	13,383	572,620	686,758
TOTAL	854,435	637,840	418,278	498,878	415,974	252,301	956,263	663,571	4697,540¹
Number of Immigrants									
Inhabitant	321,138	25,909	47,022	28,391	28,111	20,413	68,423	90,951	630,358
Percent	51%	4%	7%	5%	4%	3%	11%	14%	100%
Number of Emigrants									
Inhabitant	58,818	63,232	89,207	111,886	109,043	17,124	91,929	114,138	655,377
Percent	9%	10%	14%	17%	17%	3%	14%	17%	100%
BALANCE	262,320	-37,323	-42,185	-83,495	-80,932	3,289	-23,506	-23,187	-25,019

¹ Not including the number of Senegalese born abroad.

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TABLE A.2
EVOLUTION OF PERMANENT MIGRATION SINCE 1961
(Thousands of People)

Regions	Immigrants			Emigrants			Migration Balance		
	1961	1971	1976	1961	1971	1976	1961	1971	1976
Cap Vert	134	247	321	21	34	59	112	214	321
Casamance	9	16	26	19	41	62	-10	-24	-37
Diourbel	22	39	75	112	136	198	-91	-97	-123
Fleuve	20	23	28	66	105	112	-46	-83	-83
Senegal Oriental	1	23	20	7	15	17	-7	7	3
Sine Saloum	108	81	68	31	78	92	78	4	-24
Thies	37	73	91	73	94	114	-36	-21	-23
Total	330	503	631	330	503	655	-	-	-25

Source: 1976 Census

TABLE A.3
DISTRIBUTION OF THE NON-SENEGALESE POPULATION
ACCORDING TO THE INHABITED REGION

Regions	Cap Vert	Casamance	Diourbel	Fleuve	Senegal Oriental	Sine Saloum	Thies	Louga	Total
Migrants	48,793	30,696	1,618	3,575	12,349	16,561	4,403	787	118,782
Percent of Total Migrants	41.1	25.8	1.4	3.0	10.4	13.9	3.7	0.7	100.0

Source: 1976 Census

TABLE A.4
EVOLUTION OF THE NATIONAL BUDGET
(billions CFAF)

	1977/ 1978	1978/ 1979	1979/ 1980	1980/ 1981	1981/ 1982	1982/ 1983 ²	1983/ 1874
Current Revenues	98.6	107.4	119.6	90.9	151.4	466.9	166.9
Current Expenditures	92.0	100.5	122.7	127.5	145.7	151.4	166.9
Balance of Special Accounts	-9.5	-5.5	-7.5	30.9	-15.5	0.0	-72.9
Revenues from Investment Budget	1.1	0.7	1.0	1.8	3.0	2.0	13.0
Expenditures from Investment Budget	5.8	10.9	23.8	21.3	25.7	23.0	20.0
Budget Balance Prior to External Borrowing	-6.6	-8.8	-33.4	-25.2	-37.0	-21.0	-80.1
External Borrowing	1.7	4.8	14.3	10.5	38.4	21.0	80.1
Budget Balance	-4.9	-4.0	-19.1	-14.7	26.2	0.0	-2.9
Invest Expenditures Financed with External Loans Outside of Budget (estimate)	35.0	50.0	62.0	55.0	40.0	55.0	50.0

¹ Provisional

² Estimate

³ 1983/84 Budget

Source: Ministry of Economy and Finance

TABLE A.5
SOURCES OF FOREIGN LOANS

	Disbursed 6/30/8	Committee 6/30/81	Available Balance for the Vieme Plan
France	24.2	40.8	16.6
World Bank	23.2	41.8	18.6
EEC	16.2	32.6	16.4
USA	7.9	12.5	4.6
Canada	7.4	8.4	1.0
RFA	7.3	10.2	2.9
BAD/FAD	6.5	15.0	8.5
BADEA/BID/OPEP	4.2	5.7	1.5

Note: Not including regional projects (OMVS, OMVG) or foreign loans not directly used for investment projects.

Source: Ministry of Plan and Cooperation, billion CFAF

TABLE A.6
PROJECTED ELECTRICAL DEMAND AND CAPACITY

Year	Demand (GWh)	Load Factor (%)	Total Projected Demand (GWh)	Installed Capacity (MW)	Service Populations (000s)	Demand Per Capita (kWh/C)
CAPE VERT, THIES NETWORK¹						
1983	494.5	70	588.8	164.2	1713	288.67
1985	599.4	70	713.6	179.2	1910	313.82
1990	763.3	70	908.7	335.2	2506	304.59
1992	819.3	70	975.4	400.0	2780	294.71
Growth Rates (%)	5.77		5.77	10.40	5.53	.23
KAOLACK-DIOURBEL						
1983	28.6	53	34.1	9.0	257	111.28
1985	45.5	53	54.2	16.0	274	166.06
1990	56.4	54	67.1	16.0	338	166.86
1992	61.1	54	72.7	16.0	366	166.94
Growth Rates (%)	8.80		8.78	6.60	4.01	4.61
ST. LOUIS-LOUGA						
1983	17.9	33	21.1	8.4	164	109.15
1985	22.8	33	26.8	8.4	197	115.74
1990	42.1	41	49.6	20.4	221	190.50
1992	51.2	41	60.2	20.4	241	212.45
Growth Rates (%)	12.39		12.35	10.36	4.37	7.68
ZIGUINCHOR²						
1983	9.2	58	10.7	5.5	103	89.320
1985	9.9	57	11.6	5.5	142	69.718
1990	12.7	56	14.0	8.8	190	66.842
1992	14.2	56	14.8	8.8	214	66.355
Growth Rates (%)	4.94		3.67	5.36	8.46	-3.25

¹ Per capita consumption figures are indicative of demand within different networks since small settlements for which detailed population statistics are not available are included in service networks, but not shown in service.

² After 1983, Bignona's population has been included in Ziguinchor service populations.

Source: SENELEC unpublished projections and PADCO population projections.

TABLE A.7
ELECTRICAL DEMAND AND CAPACITY IN SELECTED SETTLEMENTS

Region	Settlement	Demand (000s kWh)	Capacity (000s kW)	Demand Per Capita (kWh/capita)
Cap Vert	Dakar ¹	588800	164200	289
Casamance	Ziguinchor	10700	5500	89
	Kolda	1100	450	34
	Bignona	661	172	29
	Velingara	317	70	20
Diourbel	Diourbel ²	34100	9000	111
	M'Backe ²	34100	9000	111
	Bambey ¹	588800	164200	289
Louga	Louga ³	21100	8400	109
	Linguere	377	101	26
Fleuve	St. Louis ³	21100	8400	109
	Richard Toll	807	220	34
	Dagana ⁴	619	138	41
	Podor	265	94	33
	Matam	437	115	36
Senegal	Tambacounda	3799	960	103
Oriental	Bakel	185	70	19
	Kedougou	375	111	27
Sine	Kaolack ¹	34100	9000	111
Saloum	Kaffrine	594	150	26
	Fatick ²	34100	9000	111
	Nioro du Rip	420	112	35
	Gossas ²	34100	9000	111
Thies	Thies ¹	588800	164200	289
	M'Bour ¹	588800	164200	289
	Tivaouane ¹	588800	164200	289
	Meckhe ¹	588800	164200	289
Totals		664656	1.06E6	266

- 1 Shows total demand and capacity of settlements connected to the Cap Vert system.
- 2 Shows total demand and capacity of settlements connected to the Kaolack system.
- 3 Shows total demand and capacity of St. Louis system.
- 4 Although not shown here, Dagana also receives power from the CSS generating plant at Richard Toll.

Source: Various documents of SENELEC.

TABLE A.8
TOTAL INTERCONNECTED GRID DEMAND PROJECTIONS¹
1983-1992
(GWH)

	1983	1985	1990	1992	Growth Rate (Percent)
High Tension	97.3	186.0	272.2	317.5	14.0
Low Tension	277.9	300.6	376.2	414.9	4.6
Low Tension	194.1	209.9	281.5	316.2	5.6
Totals	569.2	696.5	929.9	1,048.6	7.0

¹ Includes Ziguinchor, but excludes other small settlements not connected to the interconnected grid.

Source: Direction des Recherches de la Planification et de l'Equipment. SENELEC. 1983

TABLE A.9
NEW IRRIGATED PARAMETERS AND OUTPUT IN SENEGAL RIVER BASIN

Item	1980		1985		1990-1991	
	Area	Tons	Area	Tons	Area	Tons
Paddy						
Rice	20.0	80	33.0	150	84.0	336.0
Tomatoes	1.5	20	3.0	50	13.0	195.0
Maize	2.8	7	7.5	20	13.0	39.0
Others	-	-	-	-	.5	11.5
Totals	37.5	107	43.5	220	110.5	581.5

PROJECTED OUTPUT IN 1979 PRICES, IN CFAF BILLIONS

Paddy			
Rice	3320	6225	13944
Tomatoes	340	850	3315
Maize	245	700	1365
Totals	3905	7775	18624

Note: The increase in production after 1985 is assumed to be due to double cropping made possible by year around irrigation.

Source: Meeting of Financing Sources: 25 to 28 November 1980. Indicative program: Hydroagriculture Development in Senegal River Basin. 1981-1990. October 1980. The Organization for Development of the Senegal River Basin.

TABLE A.10
ECONOMIC PARAMETERS
SCENARIO I

PARAMETERS & GDP		GDP	1985-1989	1990-1994	1995-2000
		Billions	-----ICORs-----		
1	Primary	128	8.600	8.600	8.600
2	Industry & artisan	109	11.900	11.900	8.600
3	Energy	13	3.600	8.500	8.500
4	Transport	43	8.300	8.300	8.300
5	Services	282	2.000	2.000	2.000
INVESTMENT BLOCK		Billions	-----INVESTMENT SHARES-----		
6	Primary	19	.208	.208	.208
7	Industry & artisan	38	.410	.410	.410
8	Energy	5	.165	.165	.165
9	Transport	14	.145	.145	.145
10	Services	17	.073	.073	.073
EMPLOYMENT BLOCK		(000s)	-----INVESTMENT LABOR RATIOS-----		
11	Primary	3	.962	.962	.962
12	Industry & artisan	116	.036	.036	.036
13	Energy	5	.053	.053	.053
14	Transport	32	.053	.053	.053
15	Services	324	2.000	2.000	2.000

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TABLE A.11
ECONOMIC PARAMETERS
SCENARIO II

PARAMETERS & GDP		GDP	1985-1989	1990-1994	1995-2000
		Billions	-----ICORs-----		
1	Primary	128	8.600	8.600	8.600
2	Industry & artisan	109	8.600	6.500	5.000
3	Energy	13	3.600	8.500	8.500
4	Transport	43	8.300	8.300	8.300
5	Services	282	2.000	2.000	2.000
INVESTMENT BLOCK		Billions	-----INVESTMENT SHARES-----		
6	Primary	19	.208	.208	.208
7	Industry & artisan	38	.410	.410	.410
8	Energy	5	.165	.165	.165
9	Transport	14	.145	.145	.145
10	Services	17	.073	.073	.073
EMPLOYMENT BLOCK		(000s)	-----INVESTMENT LABOR RATIOS-----		
11	Primary	3	.962	.962	.962
12	Industry & artisan	116	.036	.036	.036
13	Energy	5	.053	.053	.053
14	Transport	32	.053	.053	.053
15	Services	324	2.000	2.000	2.000

TABLE A.12
SENEGAL ECONOMIC PROJECTIONS (1985 TO 2000)
SCENARIO I

SECTORS	1985	1990	1995	2000	RATE
GDP PROJECTIONS IN CFAF Billions					
1 Primary	130	142	155	170	1.71
2 Industry & artisan	113	130	149	179	2.93
3 Energy	17	40	51	63	8.49
4 Transport	45	53	63	74	3.20
5 Services	286	304	324	347	1.22
TOTALS	590	669	742	833	2.18
PROJECTED SHARES OF SECTORAL INVESTMENT IN Billions					
7 Primary	20	22	25	28	2.18
8 Industry & artisan	39	44	49	55	2.18
9 Energy	16	18	20	22	2.18
10 Transport	14	16	17	19	2.18
11 Services	7	8	9	10	2.18
TOTALS	94	107	119	133	2.18
SECTORAL EMPLOYMENT IN THOUSANDS					
13 Primary	22	124	238	365	19.17
14 Industry & artisan	117	125	133	142	1.23
15 Energy	6	10	15	21	8.37
16 Transport	32	36	41	46	2.16
17 Services	338	412	496	588	3.53
TOTALS	515	707	922	1,162	5.22

GDP/CAPITA CFAF 89 87 84 81 -.64

INVESTMENT RATE 1986-1990= .160 ,1991-1995= .160 and 1996-2000= .160

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TABLE A.12 (Continued)

CUMMULATIVE GDP, 1986 TO 2000

SECTORS	1986-1990	1991-1995	1996-2000
1 Primary	685	749	821
2 Industry & artisan	613	705	832
3 Energy	152	231	289
4 Transport	249	296	348
5 Services	1,482	1,580	1,688
	3,181	3,561	3,978

CUMMULATIVE INVESTMENT - 1986-2000

7 Primary	106	118	132
8 Industry & artisan	209	234	261
9 Energy	84	94	105
10 Transport	74	83	92
11 Services	37	42	46
	510	570	637

TABLE A.13
ECONOMIC PROJECTIONS (1985-2000)
SCENARIO II

SECTORS	1985	1990	1995	2000	RATE
GDP PROJECTIONS IN CFAF Billions					
1 Primary	130	146	164	185	2.23
2 Industry & artisan	115	145	193	265	5.37
3 Energy	18	47	62	79	9.66
4 Transport	45	56	69	85	4.03
5 Services	287	310	337	370	1.60
TOTALS	595	704	825	984	3.20
PROJECTED SHARES OF SECTORAL INVESTMENT IN Billions					
7 Primary	25	29	36	49	4.38
8 Industry & artisan	49	58	71	97	4.38
9 Energy	20	23	29	39	4.38
10 Transport	17	20	25	34	4.38
11 Services	9	10	13	17	4.38
TOTALS	119	141	173	236	4.38
SECTORAL EMPLOYMENT IN THOUSANDS					
13 Primary	27	159	322	542	20.62
14 Industry & artisan	117	127	139	155	1.77
15 Energy	6	12	19	28	10.29
16 Transport	33	38	44	52	3.02
17 Services	342	438	557	718	4.75
TOTALS	524	773	1,080	1,496	6.77

GDP/CAPITA CFAF 92 94 96 100 .56

INVESTMENT RATE 1986-1990= .200 ,1991-1995= .210 and 1996-2000= .240

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TABLE A.13 (Continued)

CUMMULATIVE GDP, 1986 TO 2000

SECTORS	1986-1990	1991-1995	1996-2000
1 Primary	697	782	883
2 Industry & artisan	664	866	1,176
3 Energy	176	279	360
4 Transport	258	320	392
5 Services	1,501	1,630	1,781
	3,296	3,877	4,592

CUMMULATIVE INVESTMENT - 1986-2000

7 Primary	137	169	229
8 Industry & artisan	270	334	452
9 Energy	109	134	182
10 Transport	96	118	160
11 Services	48	59	80
	660	815	1,103

TABLE A.16

SETTLEMENT POPULATION PROJECTIONS AND
DIRECT INVESTMENT DURING 1996-2000

SETTLEMENTS	CHANGE IN EMPLOY- MENT (000s)	CHANGE IN POPUL- ATION (000s)	2000 POPUL- ATION (000s)	GROWTH EMPLOY- MENT (%)	RATES POPULA- TION (%)	AVERAGE COST/ JOB (Bill- ions)	TOTAL COSTS (Bill- ions)	FLEUVE							
								14 St. Louis	1	7	141	1.0135	1.0102	3,466	4
								15 Richard Toll	1	9	47	1.0217	1.0406	3,371	5
								16 Dagana		1	19	1.0143	1.0114	3,457	1
								17 Podor			8	1.0031	1.0021	3,592	
								18 Matam			13	1.0037	1.0005	3,583	
								Subtotal	3	17	229				9
CAP VERT															
1 Dakar	169	1,026	3,711	1.0567	1.0669	3,001	507								
Subtotal	169	1,026	3,711				507								
								SENEGAL ORIENTAL							
								19 Tambacounda		1	42	1.0020	1.0026	3,606	
								20 Bakel			11	1.0014	1.0026	3,612	
								21 Kedougou			17	1.0026	1.0021	3,598	
								Subtotal		1	71				1
CASAMANCE															
2 Ziguinchor			2	119	1.0032	1.0027	3,591								
3 Kolda				38	1.0032	1.0026	3,590								
4 Bignona				27	1.0032	1.0025	3,589								
5 Sedhiou				18	1.0035	1.0026	3,585								
6 Velingara				18	1.0034	1.0027	3,588								
7 Oussouve				5	1.0027	1.0068	3,597								
Subtotal	1	3	226												2
DIOURBEL															
8 Diourbel				2	82	1.0047	1.0047	3,572							
9 M'Backe				1	52	1.0040	1.0039	3,580							
10 Bambey					13	1.0037	1.0035	3,583							
Subtotal	1	3	147												2
LOUGA															
11 Louga				53	1.0011	1.0009	3,615								
12 Linguere				15	1.0012	1.0026	3,614								
13 Kebener				11	1.0014	1.0010	3,611								
Subtotal				79											
								SINE SALOUM							
								22 Kaolack	1	8	148	1.0103	1.0105	3,503	4
								23 Kaffrine		2	31	1.0103	1.0102	3,504	1
								24 Fatik		1	13	1.0106	1.0088	3,501	
								25 Nioro du Rip		1	15	1.0128	1.0084	3,473	
								26 Foundiougne			4	1.0057	1.0036	3,560	
								27 Gossas			10	1.0116	1.0073	3,488	
								28 Guinguineo			16	1.0109	1.0062	3,498	
								29 Sokone			10	1.0116	1.0073	3,488	
								Subtotal	2	12	247				7
								THIES							
								30 Thies	2	11	180	1.0145	1.0132	3,454	6
								31 M'Bour	1	5	76	1.0125	1.0134	3,477	3
								32 Tivaouane		2	31	1.0163	1.0128	3,433	1
								33 Meckhe		1	12	1.0154	1.0117	3,443	
								34 Komole		1	10	1.0148	1.0127	3,450	
								Subtotal	3	20	309				11
								TOTALS	178	1,061	5,019				538

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TABLE A.17
SUMMARY OF LEAST COST SOLUTION SETTLEMENT
POPULATION PROJECTIONS AND DIRECT INVESTMENT
DURING 1985-2000

REGION	1985 POPUL- ATION (000s)	1990 POPUL- ATION (000s)	TOTAL COSTS (Bill- ions)	1995 POPUL- ATION (000s)	TOTAL COSTS (Bill- ions)	2000 POPUL- ATION (000s)	TOTAL COSTS (Bill- ions)
CAP VERT	1,636	2,036	317	2,485	394	3,711	507
CASAMANCE	220	222	2	223	1	226	2
DIOURBEL	141	143	2	144	1	147	2
LOUGA	78	79	1	79	0	79	
FLEUVE	195	202	7	212	7	229	9
SENEGAL ORIENTAL	69	70	1	70		71	1
SINE SALOUM	224	229	5	236	5	247	7
THIES	270	279	8	290	8	309	11
TOTALS	2,833	3,259	342	3,938	415	5,019	538

MARGINAL COSTS 1986-1990= 3,868
MARGINAL COSTS 1991-1995= 3,793
MARGINAL COSTS 1996-2000= 3,630

TABLE A.18
PERCENT DISTRIBUTION OF SETTLEMENT POPULATION
PROJECTIONS AND DIRECT INVESTMENT DURING 1985-2000

REGION	1985 POPUL- ATION (%)	1990 POPUL- ATION (%)	TOTAL COSTS (%)	1995 POPUL- ATION (%)	TOTAL COSTS (%)	2000 POPUL- ATION (%)	TOTAL COSTS (%)
CAP VERT	57.7	62.5	92.8	68.2	94.9	73.9	94.1
CASAMANCE	7.8	6.8	.6	5.7	.2	4.5	.3
DIOURBEL	5.0	4.4	.5	3.7	.2	2.9	.3
LOUGA	2.8	2.4	.2	2.0	0.0	1.6	.1
FLEUVE	6.9	6.2	1.9	5.4	1.6	4.6	1.7
SENEGAL ORIENTAL	2.4	2.1	.2	1.8	.0	1.4	.1
SINE SALOUM	7.9	7.0	1.5	6.0	1.1	4.9	1.2
THIES	9.5	8.5	2.3	7.4	1.9	6.2	2.1

TABLE A.19

REGIONAL STRATEGY I
SETTLEMENT POPULATION PROJECTIONS AND
DIRECT INVESTMENT DURING 1985-1990

A-20

SETTLEMENTS	1985 POPUL- ATION (000s)	CHANGE IN EMPLOY- MENT (000s)	CHANGE IN POPUL- ATION (000s)	1990 POPUL- ATION (000s)	GROWTH EMPLOY- MENT (%)	RATES POPULA- TION (%)	AVERAGE COST/ JOB (Bill- ions)	TOTAL COSTS								
FLEUVE																
14 St. Louis	127							1	6	133	1.019	1.009	3,868		6	
15 Richard Toll	30							1	6	36	1.025	1.034	3,789		5	
16 Dagana	17								1	18	1.017	1.010	3,860		1	
17 Podor	8									8	1.012	1.005	3,961			
18 Matam	13									13	1.012	1.001	3,955			
Subtotal	195							3	13	208					12	
SENEGAL ORIENTAL																
19 Tambacounda	41								2	43	1.011	1.010	3,970		2	
20 Bakel	11								1	12	1.011	1.013	3,974		1	
21 Kedougou	17								1	18	1.012	1.006	3,965		1	
Subtotal	69							1	3	72					3	
CASAMANCE																
2 Ziguinchor	116	1	4	120	1.012	1.007	3,959								4	
3 Kolda	37		1	38	1.012	1.006	3,958								1	
4 Bignona	26		1	27	1.012	1.006	3,959								1	
5 Sedhiou	18		1	19	1.012	1.006	3,957								1	
6 Velingara	18		1	19	1.012	1.006	3,958								1	
7 Oussouve	5		1	6	1.012	1.020	3,963								1	
Subtotal	220	2	7	227											7	
DIOURBEL																
8 Diourbel	78	1	3	81	1.013	1.009	3,947								3	
9 M'Backe	50	1	2	52	1.013	1.008	3,953								2	
10 Bamby	13		1	14	1.012	1.008	3,955								1	
Subtotal	141	1	6	147											6	
LOUGA																
11 Louga	52		2	54	1.011	1.006	3,976								2	
12 Linguere	15		1	16	1.011	1.015	3,976								1	
13 Kebemer	11			11	1.011	1.005	3,972									
Subtotal	78	1	3	81											3	
THIES																
30 Thies	157							2	9	166	1.020	1.012	3,859		9	
31 M'Bour	66							1	4	70	1.018	1.013	3,877		4	
32 Tivaouane	27								1	28	1.021	1.010	3,842		1	
33 Meckhe	11								1	12	1.020	1.010	3,851		1	
34 Komole	9								1	10	1.020	1.011	3,855		1	
Subtotal	270							4	16	286					15	
TOTALS																
	2,833							106	426	3,259					345	

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TABLE A.20

SETTLEMENT POPULATION PROJECTIONS AND
DIRECT INVESTMENT DURING 1991-1995

SETTLEMENTS	CHANGE IN EMPLOY- MENT (000s)	CHANGE IN POPUL- ATION (000s)	1995 POPUL- ATION (000s)	GROWTH RATES (%)	POPULA- TION (%)	AVERAGE COST/ JOB (Bill- ions)	TOTAL COSTS							
FLEUVE														
14 St. Louis								4	21	154	1.045	1.030	4,215	17
15 Richard Toll								3	18	53	1.052	1.085	4,119	14
16 Daganan								1	3	21	1.046	1.032	4,205	2
17 Podor									1	9	1.037	1.022	4,333	1
18 Matam										13	1.037	1.005	4,326	
Subtotal								8	43	251				35
SENEGAL ORIENTAL														
19 Tambacounda								2	9	52	1.036	1.040	4,345	8
20 Bakel								1	4	15	1.036	1.054	4,352	3
21 Kedougou								2	2	20	1.037	1.026	4,339	2
Subtotal								3	15	87				13
SINE SALOUM														
22 Kaolack								6	29	169	1.043	1.038	4,251	24
23 Kaffrine								1	6	35	1.043	1.037	4,252	5
24 Fatick								2	15	1.043	1.031	4,249	2	
25 Nioro du Rip								2	17	1.045	1.026	4,222	2	
26 Foundiougne									5	1.039	1.022	4,303		
27 Gossas								1	11	1.044	1.025	4,236	1	
28 Guinguineo								2	17	1.043	1.022	4,244	1	
29 Sokone								1	11	1.044	1.025	4,236	1	
Subtotal								8	43	279				35
THIES														
30 Thies								6	33	199	1.046	1.037	4,204	26
31 M'Bour								3	16	86	1.044	1.041	4,227	13
32 Tivaouane								1	5	33	1.048	1.033	4,183	4
33 Meckhe									2	13	1.047	1.031	4,192	2
34 Komole									2	11	1.046	1.035	4,200	1
Subtotal								11	57	343				46
								TOTALS		131	681	3,941		448

TABLE A.21

SETTLEMENT POPULATION PROJECTIONS AND
DIRECT INVESTMENT DURING 1996-2000

A-22

SETTLEMENTS	CHANGE IN EMPLOY- MENT (000s)	CHANGE IN POPUL- ATION (000s)	2000 POPUL- ATION (000s)	GROWTH EMPLOY- MENT (%)	RATES POPULA- TION (%)	AVERAGE COST/ JOB	TOTAL COSTS (Bill- ions)							
FLEUVE														
14 St. Louis								8	48	202	1.0666	1.0553	4,250	33
15 Richard Toll								6	39	93	1.0731	1.1168	4,162	27
16 Dagana								1	7	28	1.0672	1.0581	4,241	5
17 Podor									2	11	1.0582	1.0439	4,367	2
18 Matam									1	14	1.0587	1.0101	4,359	
Subtotal								16	97	347				67
SENEGAL ORIENTAL														
19 Tambacounda								4	21	73	1.0573	1.0709	4,380	15
20 Bakel								1	8	23	1.0568	1.0896	4,386	6
21 Kedougou								1	6	26	1.0578	1.0508	4,373	4
Subtotal								6	35	122				25
SINE SALOUM														
22 Kaolack								11	65	235	1.0641	1.0673	4,285	46
23 Kaffrine								2	13	49	1.0640	1.0655	4,285	9
24 Fatick								1	5	19	1.0642	1.0572	4,281	3
25 Nioro du Rip								1	4	21	1.0661	1.0490	4,257	3
26 Foundiougne										6	1.0603	1.0429	4,337	1
27 Gossas									3	13	1.0651	1.0468	4,271	2
28 Guinguineo								1	4	21	1.0645	1.0427	4,279	3
29 Sokone									3	13	1.0651	1.0468	4,271	2
Subtotal								16	98	377				69
THIES														
30 Thies								12	73	272	1.0674	1.0647	4,239	51
31 M'Bour								6	35	122	1.0658	1.0714	4,260	25
32 Tivaouane								2	11	44	1.0688	1.0589	4,219	8
33 Meckhe								1	4	18	1.0681	1.0567	4,229	3
34 Kouole								1	4	15	1.0676	1.0621	4,234	3
Subtotal								21	128	471				89
								TOTALS		177	1,076	5,016		622

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 LOUSA
 11 Louga
 12 Linguere
 13 Kebemer
 Subtotal

3 17 78 1.0566 1.0508 4,390 12
 2 13 35 1.0567 1.0979 4,389 9
 1 3 16 1.0569 1.0459 4,387 2
 5 33 129 24

CASAMANCE
 2 Ziguinchor
 3 Kolda
 4 Bignona
 5 Sedhiou
 6 Velingara
 7 Dussouve
 Subtotal

7 40 177 1.0583 1.0525 4,366 29
 2 12 56 1.0583 1.0516 4,365 9
 1 8 39 1.0583 1.0492 4,365 6
 1 6 26 1.0586 1.0480 4,362 4
 1 6 27 1.0585 1.0500 4,364 4
 1 5 13 1.0579 1.1097 4,372 4
 13 77 338 56

CAP VERT
 1 Dakar
 Subtotal

96 548 3,000 1.0347 1.0412 2,759 249
 90 548 3,000 249

TABLE A.22

**SUMMARY OF REGIONAL STRATEGY I
SETTLEMENT POPULATION PROJECTIONS AND
DIRECT INVESTMENT DURING 1985-2000**

REGION	1985 POPUL- ATION (000s)	1990 POPUL- ATION (000s)	TOTAL COSTS (Bill- ions)	1995 POPUL- ATION (000s)	TOTAL COSTS (Bill- ions)	2000 POPUL- ATION (000s)	TOTAL COSTS (Bill- ions)
CAP VERT	1,636	2,003	287	2,452	258	3,000	249
CASAMANCE	220	227	7	261	28	338	56
DIOURBEL	141	147	6	173	21	232	42
LOUGA	78	81	3	95	12	129	24
FLEUVE	195	208	12	251	35	347	67
SENEGAL ORIENTAL	69	72	3	87	13	122	25
SINE SALOUM	224	235	11	279	35	377	69
THIES	270	286	15	343	46	471	89
TOTALS	2,833	3,259	345	3,941	448	5,016	422

MARGINAL COSTS 1986-1990= 4,125
MARGINAL COSTS 1991-1995= 4,910
MARGINAL COSTS 1996-2000= 5,310

TABLE A.23

**PERCENT DISTRIBUTION OF SETTLEMENT POPULATION
PROJECTIONS AND DIRECT INVESTMENT DURING 1985-2000**

REGION	1985 POPUL- ATION (%)	1990 POPUL- ATION (%)	TOTAL COSTS (%)	1995 POPUL- ATION (%)	TOTAL COSTS (%)	2000 POPUL- ATION (%)	TOTAL COSTS (%)
CAP VERT	57.7	61.4	83.2	62.2	57.5	59.8	40.0
CASAMANCE	7.8	7.0	2.1	6.6	6.2	6.7	8.9
DIOURBEL	5.0	4.5	1.7	4.4	4.8	4.6	6.8
LOUGA	2.8	2.5	.9	2.4	2.7	2.6	3.9
FLEUVE	6.9	6.4	3.5	6.4	7.8	6.9	10.8
SENEGAL ORIENTAL	2.4	2.2	.9	2.2	2.8	2.4	4.1
SINE SALOUM	7.9	7.2	3.2	7.1	7.9	7.5	11.1
THIES	9.5	8.8	4.5	8.7	10.3	9.4	14.4

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TABLE A.24
LEAST COST SOLUTION
SUMMARY OF INTRA-URBAN INFRASTRUCTURE COSTS
DURING 1986-1990

REGION	Costs in CFAF MILLIONS			GRAND TOTAL	COSTS PER CAPITA
	PHYSICAL INFRA- STRUC- TURE	HOUSING	SOCIAL INFRA- STRUC- TURE		
CAP VERT	31,639	8,996	9,722	50,358	27,431
CASAMANCE	467	807	302	1,575	7,127
DIOURBEL	259	420	167	846	5,964
LOUGA	159	231	85	475	6,065
FLEUVE	531	704	353	1,590	8,008
SENEGAL ORIENTAL	163	214	101	528	7,509
SINE SALOUM	509	722	328	1,559	6,879
THIES	633	822	400	1,856	6,765
TOTALS	34,359	12,970	11,458	58,786	19,300

Source: PADCO computer analysis

TABLE A.25

LEAST COST SOLUTION PERCENT DISTRIBUTION OF
INTRA-URBAN INFRASTRUCTURE COSTS DURING 1986-1990

REGION	In Percents			
	PHYSICAL INFRA- STRUC- TURE	HOUSING	SOCIAL INFRA- STRUC- TURE	GRAND TOTAL
CAP VERT	92.08	69.36	84.85	85.65
CASAMANCE	1.36	6.22	2.63	2.68
DIORBEL	.75	3.24	1.46	1.44
LOUGA	.46	1.78	.74	.81
FLEUVE	1.54	5.45	3.08	2.70
SENEGAL ORIENTAL	.47	2.04	.88	.90
SINE SALOUM	1.48	5.57	2.86	2.65
THIES	1.84	6.34	3.49	3.16

Source: PADCO computer analysis

TABLE A.26

LEAST COST SOLUTION
SUMMARY OF INTRA-URBAN INFRASTRUCTURE COSTS
DURING 1991-1995

REGION	Costs in CFAF MILLIONS				COSTS PER CAPITA
	PHYSICAL INFRA- STRUC- TURE	HOUSING	SOCIAL INFRA- STRUC- TURE	GRAND TOTAL	
CAP VERT	44,660	13,075	15,283	73,018	30,937
CASAMANCE	438	796	277	1,511	6,792
DIORBEL	247	418	157	822	5,731
LOUGA	146	225	73	444	5,652
FLEUVE	590	771	419	1,779	8,597
SENEGAL ORIENTAL	144	256	85	484	6,939
SINE SALOUM	535	752	356	1,644	7,069
THIES	698	881	461	2,039	7,175
TOTALS	47,458	17,177	17,111	81,742	22,716

Source: PADCO computer analysis

TABLE A.27
LEAST COST SOLUTION PERCENT DISTRIBUTION OF
INTRA-URBAN INFRASTRUCTURE COSTS DURING 1991-1995

REGION	In Percents			
	PHYSICAL INFRA- STRUC- TURE	HOUSING	SOCIAL INFRA- STRUC- TURE	GRAND TOTAL
CAP VERT	94.10	76.12	89.32	89.33
CASAMANCE	.92	4.63	1.62	1.85
DIOURBEL	.52	2.43	.92	1.01
LOUGA	.31	1.31	.43	.54
FLEUVE	1.24	4.49	2.45	2.18
SENEGAL ORIENTAL	.30	1.49	.50	.59
SINE SALOUM	1.13	4.38	2.08	2.01
THIES	1.47	5.13	2.69	2.49

TABLE A.28
LEAST COST SOLUTION SUMMARY OF INTRA-URBAN
INFRASTRUCTURE COSTS DURING 1996-2000

REGION	Costs in CFAF MILLIONS				COSTS PER CAPITA
	PHYSICAL INFRA- STRUC- TURE	HOUSING	SOCIAL INFRA- STRUC- TURE	GRAND TOTAL	
CAP VERT	53,261	12,697	21,502	87,460	27,351
CASAMANCE	86	54	79	219	975
DIOURBEL	82	44	66	192	1,318
LOUGA	11	7	10	29	365
FLEUVE	386	261	373	1,020	4,630
SENEGAL ORIENTAL	26	16	23	65	926
SINE SALOUM	288	166	255	709	2,935
THIES	496	257	386	1,139	3,803
TOTALS	54,636	13,499	22,695	90,836	20,283

Source: PADCO computer analysis

TABLE A.29

LEAST COST SOLUTION PERCENT DISTRIBUTION OF
INTRA-URBAN INFRASTRUCTURE COSTS DURING 1996-2000

REGION	In Percents			
	PHYSICAL INFRA- STRUC- TURE	HOUSING	SOCIAL INFRA- STRUC- TURE	GRAND TOTAL
CAP VERT	97.48	94.06	94.74	96.28
CASAMANCE	.16	.40	.35	.24
DIOURBEL	.15	.32	.29	.21
LOUGA	.02	.05	.05	.03
FLEUVE	.71	1.93	1.64	1.12
SENEGAL ORIENTAL	.05	.12	.10	.07
SINE SALOUM	.53	1.23	1.12	.78
THIES	.91	1.90	1.70	1.25

Source: PADCO computer analysis

TABLE A.30

REGIONAL STRATEGY I
SUMMARY OF INTRA-URBAN INFRASTRUCTURE COSTS
DURING 1986-1990

REGION	Costs in CFAF MILLIONS				COSTS PER CAPITA
	PHYSICAL INFRA- STRUC- TURE	HOUSING	SOCIAL INFRA- STRUC- TURE	GRAND TOTAL	
CAP VERT	29,930	8,589	9,033	47,552	26,137
CASAMANCE	621	903	444	1,968	8,794
DIOURBEL	355	478	253	1,085	7,535
LOUGA	215	266	137	619	7,780
FLEUVE	662	790	476	1,928	9,579
SENEGAL ORIENTAL	239	311	170	720	10,198
SINE SALOUM	661	809	462	1,932	8,411
THIES	807	920	546	2,273	8,177
TOTALS	33,490	13,066	11,520	58,074	19,065

Source: PADCO computer analysis

TABLE A.31
REGIONAL STRATEGY I
PERCENT DISTRIBUTION OF INTRA-URBAN
INFRASTRUCTURE COSTS DURING 1986-1990

REGION	In Percents			
	PHYSICAL INFRA- STRUC- TURE	HOUSING	SOCIAL INFRA- STRUC- TURE	GRAND TOTAL
CAP VERT	89.37	65.74	78.41	81.62
CASAMANCE	1.85	6.91	3.86	3.86
DIOURBEL	1.06	3.66		
LOUGA	.64	2.04	1.11	1.07
FLEUVE	1.98	6.05	4.13	3.32
SENEGAL ORIENTAL	.71	2.38	1.48	1.24
SINE SALOUM	1.97	6.19	4.01	3.33
THIES	2.41	7.04	4.74	3.91

Source: PADCO computer analysis

TABLE A.32
REGIONAL STRATEGY I
SUMMARY OF INTRA-URBAN INFRASTRUCTURE COSTS
DURING 1991-1995

REGION	Costs in CFAF MILLIONS				COSTS PER CAPITA
	PHYSICAL INFRA- STRUC- TURE	HOUSING	SOCIAL INFRA- STRUC- TURE	GRAND TOTAL	
CAP VERT	34,274	10,519	11,066	55,859	23,079
CASAMANCE	1,350	1,384	1,126	3,860	15,804
DIOURBEL	814	770	670	2,255	14,113
LOUGA	476	438	380	1,294	14,680
FLEUVE	1,401	1,306	1,183	3,889	16,972
SENEGAL ORIENTAL	594	538	497	1,629	20,408
SINE SALOUM	1,460	1,300	1,177	3,937	15,313
THIES	1,763	1,502	1,369	4,634	14,732
TOTALS	42,133	17,756	17,469	77,355	21,487

Source: PADCO computer analysis

TABLE A.33

**REGIONAL STRATEGY I
PERCENT DISTRIBUTION OF INTRA-URBAN
INFRASTRUCTURE COSTS DURING 1991-1995**

In Percents

REGION	PHYSICAL INFRA- STRUC- TURE	HOUSING	SOCIAL INFRA- STRUC- TURE	GRAND TOTAL
CAP VERT	81.35	59.24	63.35	72.21
CASAMANCE	3.20	7.80	6.44	4.99
DIOURBEL	1.93	4.34	3.84	2.91
LOUGA	1.13	2.47	2.18	1.67
FLEUVE	3.32	7.35	6.77	5.03
SENEGAL ORIENTAL	1.41	3.03	2.85	2.11
SINE SALOUM	3.46	7.32	6.74	5.09
THIES	4.19	8.46	7.84	5.99

Source: PADCO computer analysis

TABLE A.34

**REGIONAL STRATEGY I
SUMMARY OF INTRA-URBAN INFRASTRUCTURE COSTS
DURING 1996-2000**

Costs in CFAF MILLIONS

REGION	PHYSICAL INFRA- STRUC- TURE	HOUSING	SOCIAL INFRA- STRUC- TURE	GRAND TOTAL	COSTS PER CAPITA
CAP VERT	28,454	6,783	11,487	46,724	17,140
CASAMANCE	2,172	1,356	2,005	5,533	18,463
DIOURBEL	1,385	826	1,236	3,447	17,060
LOUGA	768	480	709	1,957	17,489
FLEUVE	2,315	1,498	2,180	5,993	20,039
SENEGAL ORIENTAL	1,050	638	955	2,643	25,181
SINE SALOUM	2,455	1,409	2,166	6,031	18,396
THIES	3,026	1,681	2,523	7,229	17,756
TOTALS	41,625	14,669	23,261	79,558	17,764

Source: PADCO computer analysis

TABLE A.35
REGIONAL STRATEGY I
PERCENT DISTRIBUTION OF INTRA-URBAN
INFRASTRUCTURE COSTS DURING 1996-2000

REGION	In Percents			
	PHYSICAL INFRA- STRUC- TURE	HOUSING	SOCIAL INFRA- STRUC- TURE	GRAND TOTAL
CAP VERT	68.36	46.24	49.38	58.73
CASAMANCE	5.22	9.24	8.62	6.95
DIOURBEL	3.33	5.63	5.31	4.33
LOUGA	1.84	3.27	3.05	2.46
FLEUVE	5.56	10.21	9.37	7.53
SENEGAL ORIENTAL	2.52	4.35	4.11	3.32
SINE SALOUM	5.90	9.61	9.31	7.58
THIES	7.27	11.46	10.85	9.09

Source: PADCO computer analysis

TABLE A.36
HIGH STANDARD II
INTRA-URBAN INFRASTRUCTURE COSTS DURING 1986-2000

REGION	Costs in CFAF MILLIONS			
	1986-90 TOTALS	1991-95 TOTALS	1996-2000 TOTALS	1986-2000 GRAND TOTALS
CAP VERT	454,700	661,760	660,750	1,781,900
CASAMANCE	37,685	37,120	2,651	77,456
DIOURBEL	19,670	19,530	2,188	41,388
LOUGA	10,795	10,470	350	21,615
FLEUVE	33,260	36,347	12,944	82,551
SENEGAL ORIENTAL	12,355	11,915	771	25,041
SINE SALOUM	33,852	35,309	8,227	77,388
THIES	36,652	41,446	12,741	92,839
TOTALS	640,730	853,910	705,320	2,200,200

Source: PADCO computer analysis

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TABLE A.37
HIGH STANDARD II
PERCENT DISTRIBUTION OF INTRA-URBAN
INFRASTRUCTURE COSTS DURING 1986-2000
(In Percents)

REGION	1986-90 TOTALS	1991-95 TOTALS	1996-2000 TOTALS	1986-2000 GRAND TOTAL
CAP VERT	70.94	77.50	94.35	80.99
CASAMANCE	5.88	4.35	.38	3.52
DIOURBEL	3.07	2.27	.31	1.88
LOUGA	1.68	1.23	.05	.98
FLEUVE	5.15	4.26	1.84	3.75
SENEGAL ORIENTAL	1.93	1.40	.11	1.14
SINE SALOUM	5.28	4.14	1.17	3.52
THIES	6.03	4.85	1.81	4.22

Source: PADCO computer analysis

TABLE A.38
HIGH STANDARDS II
INTRA-URBAN INFRASTRUCTURE COSTS DURING 1986-2000

REGION	Costs in CFAF MILLIONS			
	1986-90 TOTALS	1991-95 TOTALS	1996-2000 TOTALS	1986-2000 GRAND TOTALS
CAP VERT	433,350	528,370	355,490	1,317,200
CASAMANCE	42,438	66,130	67,006	175,570
DIOURBEL	22,522	36,988	41,079	100,590
LOUGA	12,532	20,944	23,633	57,109
FLEUVE	37,412	62,829	74,298	174,540
SENEGAL ORIENTAL	14,649	25,825	31,459	71,933
SINE SALOUM	38,170	62,362	69,793	170,330
THIES	43,507	72,199	83,455	199,160
TOTALS	644,600	875,650	746,230	2,266,400

Source: PADCO computer analysis

TABLE A.39
HIGH STANDARDS II
PERCENT DISTRIBUTION OF INTRA-URBAN COSTS
DURING 1986-2000
(In Percents)

REGION	1986-90 TOTALS	1991-95 TOTALS	1996-2000 TOTALS	1986-2000 GRAND TOTAL
CAP VERT	67.23	60.34	47.64	58.12
CASAMANCE	6.58	7.55	8.98	7.75
DIOURBEL	3.49	4.22	5.50	4.44
LOUGA	1.94	2.39	3.17	2.52
FLEUVE	5.80	7.18	9.96	7.70
SENEGAL ORIENTAL	2.27	2.95	4.22	3.17
SINE SALOUM	5.92	7.12	9.35	7.52
THIES	6.75	8.25	11.18	8.79

Source: PADCO computer analysis