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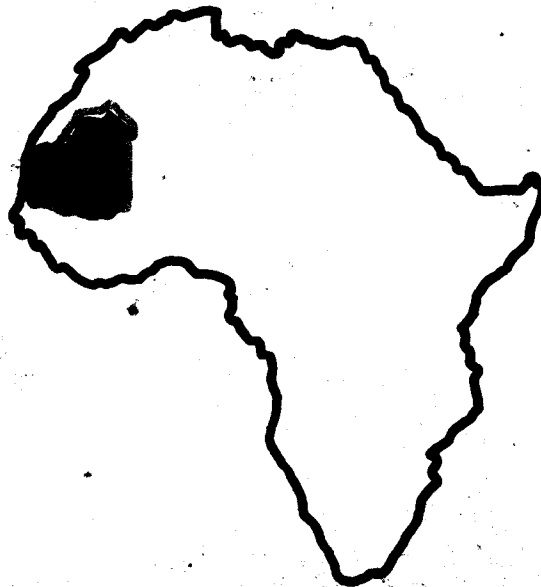


# **RAMS PROJECT**

**Rural Assessment and Manpower Surveys**

**Employment Implications of Alternative  
Development Strategies**

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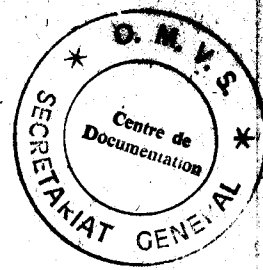


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### Summary and Conclusion

The current employment situation in Mauritania is in a serious state. It is conservatively estimated that 70,000 people, or about 14% of the labor force, are unemployed. Most of them live in the large towns and cities, but their unemployment is not fundamentally due to the fact that urban opportunities for productive activity are lacking, but rather, the root cause can be traced to the rural sector not being able to provide enough employment outlets. Urban employment at its core is, therefore, a rural problem.

Another aspect of the crisis in the rural sector is under-employment. Lack of knowledge of modern techniques, disease and malnutrition which limit productive effort, isolation of producers from markets -- all these factors reduce the contribution to national output that the agricultural and pastoral population of Mauritania can potentially make.

The macro-economic weakness of Mauritania where low average incomes lead to small markets for all but the most basic necessities, in turn, implies that few processing or manufacturing operations will be economically attractive. Thus, the unsatisfactory labor situation persists, and the overriding concern with financial stability diverts the attention of planners and donors from the needed restructuring of the economic base of the country. Finally and quite independently, the history of Mauritanian development demonstrates the inattention to, and the implicit bias against, labor-intensive and capital-saving methods of production. The concept of "employment creation" exists but only in the sense that ministries and public enterprises are over-staffed to absorb some of the better educated or well-connected job-market entrants.

If the policies and attitudes toward employment remain unchanged, the portrait for the future is equally dismal. The labor force outlet i.e., the people available for work, will grow at a rate close to or exceeding that of the overall population, 2.5% per year. In addition to the stock of 70,000 people who are currently unemployed, and the many thousands who could produce (and thus earn) more than they do now, the net additions to the labor force will total about 330,000 between 1980 and 2000. In five-year intervals corresponding to the Plan periods, the labor force will grow by:

an annual average of 13,600 from 1980-1995;  
15,400 from 1985-1990;  
17,400 from 1990-1995;  
20,000 from 1995-2000.

In sum, it will be necessary for the Mauritanian economy to generate 400,000 new jobs, -- a doubling of employment -- in order to reach its goal of full employment by the year 2000.

Based on an evaluation of the employment implications of the alternative development strategies identified by RAMS, it can be concluded that the goal of full employment will almost certainly not be reached. Using a set of arguable, but reasonable assumptions, the labor requirements of the alternative production portion can be projected into the future, as is done in this paper.

Assuming that no changes are made in policies and practices regarding labor absorption, the Mauritanian economy will find it difficult to employ even a large part of the 400,000 jobs. The most pessimistic variant of the projections, in fact, estimates that the amount of labor required in the year 2000 will be no greater than the amount required today; hence, the entire increase in the labor force will be without work. The "medium" variant is not much brighter: 300,000 people, more than one-third of the labor force, will not be utilized. The most optimistic variant, which is associated with the fulfillment of ambitious rural-sector development goals, suggests that the best possible employment picture is that there will be 100,000 unemployed in year 2000, an amount representing 12% of the labor force.

The projections are made under the assumption that no positive steps would be taken to increase the ability of the economy to generate employment opportunities. The RAMS Policy Options in Employment and Manpower are designed to demonstrate that it is possible to increase the amount of employment created under any of the production scenarios. Option C is a continuation of current attitudes and policies. In the private sector, it implies a minimization of employment and the maximization of the capital-intensity type of production. In the public sector, it assumes that hiring is done without regard for the use to which the employee is put. Option A is a complete reversal of current practice. It is based on full utilization of all Mauritanian manpower; its approach is to ensure that the entire labor force is occupied before any scarce resources are permitted to be used to increase the productivity and incomes of those currently employed. Option B is intermediate between A and C. Its goal is the generation of large amounts of productive employment, through a blend of the social concern of labor absorption and the economic concern of efficiency in production.

There are several elements of policy and institutional change that would be useful components of a development strategy based on Options A or B. First, it is important to ensure that the prices of capital and labor are appropriate, that is, that they reflect the relative ability of the two factors and provide the right incentives to enterprises making decisions about factor proportions. Currently, capital is under-priced; there are reduced import duties on machinery, low interest rates on financial

capital, and incentives for capital use in the Investment Code. Labor in the modern sector may also over-priced; the Labor Code gives workers benefits and rights that doubtless discourage hiring. If the bias against labor-intensive modes production is to be eliminated, the first step is to eliminate the direct subsidies to capital and (if possible) to eliminate the provisions that raise the cost of labor. Going even further, it is possible to design an Entrepreneurial Code, replacing the current Investment Code, which would reward labor intensity and the rational use of scarce capital.

A second element of a policy package for employment generation is the regionalization of non-agricultural production. The planned effort to revitalize and expand the rural sector will require substantial increases in processing, storage, transport, and trade. The rise in rural incomes will also increase the market size for a variety of manufactured goods. Before Nouakchott becomes the center for all of the secondary and tertiary activity spawned by rural development, action should be taken to identify a group of small cities and towns which could be regional development poles. With appropriate incentives and financing, these towns could develop the processing and commercial activities for their hinterland. The small-scale, localized enterprise to be established would doubtless employ more labor than would larger-scale analogous enterprise in Nouakchott.

A third element is to redirect educational resources towards literacy training for the majority, and away from complete programs of formal education for a handful. (See RAMS report "Education as a Development Tool.") While this policy change would not directly encourage employment generation, it would permit those who now cannot perform jobs requiring reading, writing, and calculating skills to do so, and permit others to be more productive in the activities they already perform. Furthermore, if literacy raises productivity (especially in agriculture), aggregate demand will rise, perhaps to the point where the economic market will support a broader range of economic activities.

The fourth and final element is to redefine, within the modern sector, the education and training required for each type of job. Currently, jobs in both the public and private sectors have quite arbitrary educational prerequisites, usually school diplomas. Frequently, little of the education is really necessary for the performance of the job and, therefore, the job could be held by someone with lesser credential. The savings in scarce educational resources could be substantial if the modern sector would focus on this problem and eliminate the wasteful use of educated manpower in jobs which do not require it.



The principal conclusion of this paper is that Mauritania's employment situation is one of the most serious elements of its economic development problem. The most optimistic forecasts of economic growth that can responsibly be made do not yield optimistic prognoses for employment. If a large part of the labor force is unemployed, and another part is underutilized, the country will almost certainly face a social crisis that it cannot now imagine. To redirect policy towards a greater concern for the employment problem will inevitably reduce the likelihood of social tension and economic stagnation. It is clear that whatever growth policy the Mauritanian Government pursues in the future it will have to take into account job creation as its objective.

#### Chapter 1    Supply of Labor 1977

The Mauritania labor force numbered 451,000 in 1977 of this number 76.5%, or 345,000, represented the rural work force. In other respects the 451,000 was distributed as follows:

Sedentary (rural and urban)	301,000
Nomad	150,000
-----	
Rural Sedentary	195,000
Urban Sedentary	106,000

Table I shows the sectoral distribution of the sedentary work force. Agriculture with 47.5% by far occupied the largest number of workers. The next most numerous categories were commerce and transport with 37,220, or 12.4%, and apprentices, retirees, etc., with 37,100, or 12.3%. In the urban areas, commerce and transport employed 23,320, apprentices et. al. numbered 21,200, and construction and public works come to 13,840.

The regional distribution of the sedentary population by occupational groupings is exhibited in Table 2. Nouakchott attracted the largest number of persons (52,220), with the regions of Gorgol (35,800), Trarza (30,860), Guidimakha (28,166), Brakna (26,690) and Hodh Oriental (25,440) showing an excess of 25,000. Outside of the capital city, the concentration of workers was in the southern part of the country.

A review of the regional distribution of agricultural households reveals a similar concentration of population, (see Table 2). The largest number was situated in the Senegal River Valley in the regions of Gorgol, Assaba, and Brakna. Among them, they account for approximately 50% of the total households.

Nomads, as shown in Table 4, were a bit more dispersed, though still concentrated in the southern regions. The region of Trarza had 106,000 nomads (24% of the total), Hodh Oriental 85,700 (19.5%), and Hodh Occidental 64,000 (14.5%). A third concentration was in the middle south (Tagant, Assaba and Brakna) with 136,500 (31%).

The manpower stock, defined as the collective population in the employable age group 15-64 years of age, has shown an average annual increase of 2.23% between 1965 and 1977, the years of the two most recent censuses. This represented an increase from 544,000 to 709,000. Over one-third (254,321) of the latter were in the age group of 15-24 years. Females exceeded males, 130,226 as compared with 124,95. It should be noted, however, that a larger number of males become part of the labor force.

A comparison of the manpower stock figures between 1965 and 1977 and an analysis of the composition of the 1977 figures provides clues regarding the extent of migration of young males from rural centers. While the 1977 population as a whole showed that the 15-24 age group constituted 35.8% of the manpower stock, the figure rose to 37.3% among sedentary males and fell to 33.2% among nomad males. Stated differently: while the ratio of the sedentary population to the nomad population was 2:1, the sedentary/nomad ratio in this age group rose to 3:1. Sedentary youths numbered 178,409 as against 75,912 for nomad youths. Rural females in this group were less inclined to migrate. Rural females were in a 3:1 ratio with respect to urban females which is consistent with the distribution between the rural/urban population.

## Chapter 2 Literacy and Educational Levels of the Population and Labor Force (1977)

Literacy is used as an index not only to measure the educational level of a nation's population but also to judge, the quality of the labor force. It is a basis for helping determine future requirements for training and is, therefore, a broad gauge for assessing the range of available and prospective manpower skills. Although not required to accomplish successfully some jobs, it is a useful index for most and an absolute essential to many jobs.

In Mauritania, the literate population numbered 191,000, or 17.0% of the population 6 years and over in 1977. Of these, 55,000 read and wrote Arabic and French, and 1,000 read and wrote other languages. The literacy level for urban residents was 92,000 (37%) and for rural residents 99,000 (12%). Only 10% of the nomads were considered literate. Table 5 provides further details.

Table 1

The Sedentary Labor Force: Sectoral Distribution  
in Rural/Urban Areas (1977)

<u>Sector Group</u>	<u>Urban Areas</u>		<u>Rural Areas</u>		<u>Total</u>	
	Number	Percent	Number	Percent	Number	Percent
Agriculture	7,730	7.3	135,080	69.3	142,810	47.5
Industry	3,170	3.0	620	0.3	3,790	1.3
Artisanry	5,640	5.3	6,840	3.5	12,480	4.0
Administration and Communication	6,760	6.4	610	0.3	7,370	2.5
Construction and Public Works	13,840	13.1	2,720	1.4	16,560	5.5
Commerce & Transport	23,320	22.0	13,900	7.1	37,220	12.4
Professional and Technical	1,680	1.6	410	0.2	2,090	0.7
Armed and Security Forces	7,760	7.3	8,070	4.1	15,830	5.3
Service and Social	14,830	14.0	10,870	5.6	25,700	8.5
Apprentices, Retirees and Inexperienced	21,200	20.0	15,900	8.2	37,100	12.3
<b>Total</b>	<b>105,930</b>	<b>100.0</b>	<b>195,020</b>	<b>100.0</b>	<b>300,950</b>	<b>100.0</b>

Table 2

## Sedentary Labor Force: Occupational Groupings by Region (1977)

Occupational Group	Nouak-chott	Hodh Orient.	Hodh Occid.	Assaba	Gorgol	Brakna	Trarza	Adrar	Dakhlet Noudhibou	Tagant makha	Guidi-Tiris Zemmour	Inchiri Total	
Agriculture	1,550	15,640	18,060	21,800	27,040	17,610	10,450	8,380	410	6,080	25,050	850	142,610
Industrial	500	-	20	10	60	50	150	60	1,630	30	90	320	3,750
Artisan	2,490	1,660	890	760	1,250	1,360	1,610	600	250	720	660	90	12,460
Admini.													
Communications	4,430	170	170	120	350	250	300	200	740	70	20	80	7,280
Construction, Public Works	8,200	560	590	390	740	960	1,040	840	1,560	290	280	150	16,320
Commerce, Transport	10,780	2,142	1,320	2,840	2,070	2,110	6,980	1,570	3,020	640	820	500	6,630
Professional, Technical	1,020	70	60	60	40	60	120	40	160	30	160	60	2,030
Armed Forces, Securities	3,240	560	190	80	230	320	1,020	2,750	560	390	60	270	11,070
Services, Social	7,490	1,900	1,800	1,670	1,450	2,160	4,130	880	1,120	1,290	430	380	25,440
Apprentices, Retirees and Others without Occupations	12,520	2,740	1,710	4,080	2,570	1,810	5,110	1,410	880	1,130	740	510	36,670
Total	52,220	25,440	19,810	31,310	35,800	26,690	30,860	11,730	10,330	10,670	28,166	7,880	294,260

Source: National census.

Table 3

Agricultural Households and Population

Region	Households	Population
Nouakchott	522	3,386
Hodh Oriental	6,756	39,236
Hodh Occidental	5,639	34,455
Assaba	8,911	52,967
Gorgol	13,733	92,057
Brakna	8,887	56,874
Trarza	4,818	32,109
Adrar	1,957	11,608
Nouadhibou	187	882
Tagant	2,687	17,240
Guidimakha	6,913	55,798
Tiris Zemmour	39	245
Inchiri	343	1,957
-----		
Total	61,392	398,814

Source: Census Printout

Table 4  
Nomad Population (1977)

Region	Persons	%
Nouakchott	-	-
Hodh Oriental	85,700	19.5
Hodh Occidental	64,000	14.5
Assaba	43,400	9.9
Gorgol	16,400	3.7
Brakna	50,600	11.5
Trarza	106,100	24.0
Adrar	17,700	4.0
Nouadhibou	100	-
Tagant	42,500	9.7
Guidimakha	9,000	2.0
Tiris Zemmour	700	0.2
Inchiri	7,800	1.8
-----		
Total	440,000	100.0

The educational level of the sedentary population is given in Table 7. About 170,000 persons received some education, 60% of whom in the formal public school system and the balance in family or organized traditional religious form. Nearly 85,000 had at least some primary education, another 17,540 some secondary education, and nearly 3,500 advanced technical or professional education.

Literacy levels by occupational groups for the sedentary population are shown in Table 6. The highest number were in commerce and transportation and agriculture. Literacy rates, however, were highest in the professional and technical, and administration and communications categories. Nearly 90% of the population had no formal education.

Almost all of those with a formal education were in the sedentary population. Of those at the technical and professional education level, most were in salaried positions in the work force. Among those who had a secondary school level of education, there were as many students still in school as there were salaried workers. Among those who were at the primary school level, students out-numbered workers almost 4 to 1. There are also some "educated" unemployed: over 4,000 (5%) of the primary school graduates and over 1,000 (6.6%) of the secondary school graduates.

The vast majority of the nomad population, 329,865 or 92% of the total, received no education or only beginnings of a traditional education. Five percent or 19,203 received a traditional form of education; 8,319, or 2%, had an organized traditional education, 1,840, or 0.5% had some primary education, and 75, or 0.02% had some secondary or post-secondary education. The figures were lower for women than for men.

Of the sedentary labor force of about 301,000, some 69,000, or 23%, were literate. The remainder were in the sedentary inactive population, most of them students.

A critique of the education system is provided in the RAMS report On Evaluation of the Formal Education System in Relation to Development Objective, which illustrates the extent to which education is ill-adapted to the economic needs of the country. A disproportionately low percentage of the national budget is spent on non-technical and non-vocational training.

Table 5

Number of Literate Persons and Literacy Rates of the Population Age 6 and Over  
Rural and Urban (1977)

	Urban		Sedentary		Nomadic		Rural		Total National	
	Number (000)	%	Number (000)	%	Number (000)	%	Number (000)	%	Number (000)	%
Read and write French and Arabic	38	12	16	4	1	0.4	17	2	55	5
Read and write Arabic only	35	16	38	8	58	10	76	111	10	
Read and write French	18	8	5	0.8	1	0.07	6	0.5	24	2
Read and write Other Languages	-	-	-	-	-	-	-	-	-	-
Total Literates	91	37	59	12	40	10	99	12	191	17

Source: 1977 computer printout table T 17: data are summarized without adjustment.



Table 6

Literacy by Occupational Group of the Sedentary  
Labor Force (1977)  
(000)

<u>Occupational Group</u>	<u>Literate</u> (%)	<u>Illiterate</u> (%)	<u>Total</u> (%)
No Occupation	9,5 (26)	26,9 (74)	36.4
Agriculture	10,0 (7)	133,0 (93)	143.0
Industry	1,6 (44)	2,0 (56)	3.6
Artisan	2,2 (17)	10,7 (83)	12.9
Administrators and Communications	6,5 (88)	0,9 (12)	7.4
Construction and Public Works	4,8 (29)	12,0 (71)	16.8
Commerce and Transportation	16,6	20,5	37.1
Professional and Technical	1,7 (85)	0,3 (15)	2.0
Armed Forces and Security	9,2 (58)	6,6 (42)	15.8
Services and Social	7,4 (28)	18,9 (72)	26.3
Total	69,2 (23)	232,1 (77)	301.3

Source: 1977 Census Provisional figures.

Table 7

Educational Level of the Sedentary Population 6 Years of Age and Over  
by Activity Status, Type of Education and Sex (1977)

Level of Education	Unemployed	Salaried: Workers	Dependent Workers	Self-employed	Owners	Family Workers	Housewives	Handicapped	Students: active	Other In-active	Total
No education or beginner In Trad. Educ.	Male 19,880 Female 10,600 Total 30,480	33,620 4,390 38,010	5,820 5,860 11,680	78,100 14,990 93,090	220 10 230	30,650 26,540 57,190	0 144,430 144,430	7,020 21,620 28,640	4,880 2,800 7,680	67,920 79,460 147,380	248,110 310,700 558,810
Traditional Family Education	Male 3,760 Female 1,620 Total 5,380	4,260 140 4,400	410 80 490	15,260 1,460 16,720	190 0 190	2,170 15,340 2,730	0 15,340 15,340	1,700 3,460 5,160	370 50 420	1,780 1,630 3,410	29,900 24,340 54,240
Organized Traditional Education	Male 1,160 Female 90 Total 1,250	1,360 20 1,380	70 0 70	5,250 50 5,300	70 0 70	210 10 220	0 780 780	680 110 790	100 0 100	540 90 650	9,440 1,150 10,590
Primary Education	Male 2,790 Female 1,360 Total 4,150	10,760 1,340 12,100	410 10 420	2,500 80 2,580	30 0 30	800 110 910	0 2,940 2,940	140 30 170	39,180 19,780 58,960	970 920 1,890	57,580 26,570 84,150
Secondary and Higher Education	Male 980 Female 170 Total 1,150	6,540 880 7,420	40 10 50	330 30 360	40 0 40	20 0 20	0 560 560	40 10 50	6,550 1,260 7,810	80 0 80	14,620 2,920 17,540
Technical and Prof. Education	Male 40 Female 0 Total 40	2,430 330 2,760	0 0 0	20 0 20	10 0 10	0 0 0	0 70 70	0 0 0	490 60 550	10 0 10	3,000 460 3,460
Grand Total	Male 28,610 Female 13,840 Total 42,450	58,970 7,100 66,070	6,750 5,960 12,710	101,460 16,610 118,070	560 10 570	33,850 27,220 61,070	0 164,120 164,120	9,580 25,230 34,810	51,570 23,950 75,520	71,300 82,100 153,400	362,650 366,140 728,790

Source : Bureau of Statistics; based on 1977 census.

**Chapter 3 Projections of Labor Availability: Population, Manpower Stock, and Labor Force**

The 1977 Demographic Census found that, of the population of 1,339,700, 708,900 or 52.9 percent were between the ages of 15 and 64. This group is considered the part of the population potentially available for work<sup>1/</sup> and is labeled the manpower stock. In 1977, 451,600 or 63.7% of the members of the manpower stock were in the labor force, a group defined as those who were occupied in productive activities, or the employed, plus those who declared themselves to be looking for jobs, the unemployed.

The situation in 1977, together with projections of the important aggregates through 2000, are summarized in Table 3.1.

**Table 3.1**  
**Population, Manpower Stock and Labor Force, 1977-2000**

	(thousands of persons)					
	1977	1980	1985	1990	1995	2000
<u>Total Population</u>	<u>1,339.7</u>	<u>1,443</u>	<u>1,636</u>	<u>1,852</u>	<u>2,096</u>	<u>2,371</u>
Sedentary Population	895.7	1,034	1,273	1,522	1,792	2,089
Nomad Population	440.0	409	363	330	304	282
<u>Total Manpower Stock</u>	<u>708.9</u>	<u>756</u>	<u>864</u>	<u>984</u>	<u>1,121</u>	<u>1,276</u>
<u>Total Labor Force</u>	<u>451.0</u>	<u>482</u>	<u>550</u>	<u>627</u>	<u>714</u>	<u>813</u>
Sedentary Labor Force	301.0	343	427	515	611	717
Nomad Labor Force	150.0	139	123	112	103	96

Source: RAMS, The Employment Situation, 1980, Table 4.1.

<sup>1/</sup> In fact, many in the 12-14 age group are economically active; as are many of those above 65. Adoption of the 15-64 year age reflects RAMS' effort to concentrate on prime age, primary job people, those whose efforts and incomes are the key to the welfare of their families.

For the purposes of the foregoing projections, it has been assumed that:

1. Population growth is 2.5% per year.
2. The manpower stock remains at a constant proportion, about 53%, of the population.
3. The labor force participation rate remains constant at 63% of the manpower stock.
4. The nomad labor force remains constant at 34% of the nomad population.
5. The sedentary labor force is the total labor force minus nomads.

The very crude assumptions are considered to be the only practical ones that can be made, given the irregular quality of the 1977 demographic Census and the insufficient demographic detail available. It would clearly have been methodologically better to project the manpower stock based on sex and age-specific survival rates, and then the Labor Force based on age-and-sex-specific participation rates, but the quality of the underlying data, especially of the age group 0-9 in the census, made such projections liable to at least as great an error as the arbitrary procedure used herein. The difference between the estimates given here and those that would have been obtained from the "correct" procedure is very probably much less than 5% for the years to 1990, and 10% to 2000. An error of this magnitude is swamped by possible changes in labor force participation rates plus, of course, changes in fertility and mortality rates, as well as migration.

As seen in Table 3.1 the total labor force is projected to increase from 482,000 in 1980 to 813,000 in 2000. If the increase in the labor force is to be absorbed into economically productive activities, the Mauritanian economy must generate 331,000 new jobs in 20 years. Broken down by five-year period, the requirements are:

13,600	jobs <u>per year</u> from 1980-85
15,400	from 1985-90
17,400	from 1990-95
20,000	from 1995-2000.

Furthermore, at some point it will be necessary to absorb the existing unemployed, who numbered 70,000 in 1980 (see Chapter 4.)

These projections are believed to be very conservative in terms of the growth in the number of persons seeking economic activity. Historically, countries at Mauritania's stage of development tend to experience rising, rather than constant, labor force participation rates, as women are pushed

into activity by increasing difficulties of maintaining a family on one income (the father's), pulled into activity by rising expectations generated as literacy increases, and permitted to be active by a diminution of child-rearing responsibilities. Moreover, it should be recognized that women left behind to farm family plots, while their husbands seek remunerative employment in urban areas, are increasing the ranks of the employed, although published figures do not specify this factor.

Currently, age-specific participation rates for women in Mauritania are very low, not equalling 30% of the female manpower stock, even in the 15-24 year age group. (See Table 3.2). It is highly likely that female labor-force participation rates will begin to rise some time in the next decade, but it is important to forecast when this will occur. In the meantime, the country will have enough trouble, as Chapter 4, shows in providing employment to the new entrants projected on the basis of constant participation rates.

A phenomenon of the ratio between total population and the labor force which is worth underscoring is the high dependency rate. That is, the number of family members dependent on a single wage earner is comparatively high in Mauritania.

Table 3.2  
Labor Force Participation Rates  
of the Sedentary Population age 15 and over  
1977

<u>Age Groups</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
<u>Total</u>			
15 - 64	89.4%	25.3%	56.6%
15 - 19	66.6	28.0	47.1
20 - 24	92.3	29.3	62.2
25 - 29	96.8	23.8	60.0
30 - 34	98.5	25.7	59.2
35 - 39	98.6	23.9	60.7
40 - 44	98.1	24.2	59.5
45 - 49	97.1	22.6	59.1
50 - 54	93.8	24.0	65.9
55 - 59	92.3	31.5	54.5
60 - 64	83.2	15.8	46.2
65 - 69	75.2	12.9	43.6
70 - 74	56.4	10.0	29.3
75 +	35.1	4.9	16.1

Source: RAMS calculations based on Census table SA 10.

## Chapter 4 Labor Requirements of the Mauritanian Economy, 1980-2000

### Introduction

This chapter analyzes the impact on employment of the sectoral production options formulated in the Rural Production Option Paper. The principal conclusion is that the range of feasible employment figures is very wide, depending both on the options that are chosen and on the intensity with which labor is used in production. It will be shown that the best outcome Mauritania can hope for is to maintain the current unsatisfactory degree of labor utilization; the worst one is that the volume of employment will not grow at all, and the 330,000 net increase in the labor force will not find any means to earn a livelihood.

In the past twenty years, Mauritania has pursued development policy based on the principle of building a modern industrial and commercial sector without looking to the base of all economies, the interior or the rural sector. The atrophy of agriculture and livestock since independence has been due to some extent to unfortunate weather, but a major contributory cause has been the neglect by the public authorities of the primary productive sector. In their understandable eagerness to develop a modern society GIRM officials misread the example of other societies and directly and indirectly, starved the rural sector by providing education, health, and employment opportunities in the cities.

The result of the first two decades of Mauritanian nationhood is an employment situation which is not praiseworthy and which, at best, will not improve by the year 2000. Twenty years of effort at modernization have produced 1,500 manufacturing jobs, less than 10,000 in mining, a few thousand in modern transport, commerce, and services, plus 9,000-odd in the government. In all, certainly less than 10% of the Mauritanian labor force is in the modern sector where virtually all of the government's development efforts has been concentrated in the past twenty years. Even on the assumption that the weather had always been favorable such an approach would have inevitably led to a dualism between Nouakchott/Nouadhibou and the rest of the country not much less pronounced than the current situation.

Obviously, the policy GIRM will follow in the current 1981-85 Development Plan and its successors will have a dramatic impact on employment. The purpose of the following projections of labor requirement is to show the effect of policy choices on the demand for labor.

It is important to understand the methodology used in making projections of labor requirements since there is no single, accepted method of establishing such projections. The reason is that there are too many variables, each with a large degree of uncertainty. Forecasts of the manpower stock (such as that of Chapter 3) are much simpler, because the persons entering the

15 - 19 cohort were born 15 years earlier (some predictable mortality, of course, occurs in between). Even forecasts of the size of labor force add a simple additional variable, that of the labor force-participation rate, a number which rarely changes rapidly, although with migration it is a variable actor in Mauritania. The supply of labor is therefore much surer five, ten or twenty years hence than is the demand for labor. On the other hand, there is no avoiding the attempt to make reasonable projections of the latter as part of the economic development planning process.

#### Baseline Data for Projections

The current employment situation, as estimated by RAMS, is depicted in Table 4.1 in the format to be used for the projections. The 1980 estimate of 482,000 members of the labor force, less the 413,000 employed, leads to an estimate of 69,000 unemployed, or 14.3% of the labor force. The table clearly shows the dominance of the primary sector in providing economic activity for the working population of Mauritania (68.9% of the total in 1980, divided almost equally between sedentary and nomadic active persons)<sup>1/</sup>. The table shows as well the relative weakness of the secondary sector, the one generally associated with the development process (only 8.2% in 1980).

Indeed, the truly "modern" sector -- mining, manufacturing, and a part of construction -- is so small that its ability to absorb a substantial proportion of the increase in available manpower in the next decade or two is severely limited. As RAMS' study The Employment Situation reveals, it is the artisanal production sector (the "informal" sector), the less organized parts of commerce, and the government that must play the most important role in affording employment opportunities to those who swell the ranks of the urban job-seekers.

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<sup>1/</sup> Aside from the 109,000 nomads in livestock, there are also about 22,000 nomads in agriculture.

Table 4.1

Employment in 1977 and 1980

	<u>1977</u>	<u>1980</u>
<u>Primary Sector</u>		
Agriculture (Irrigated) (Other)	<u>281,339</u> 125,796 (1,795) (124,001)	<u>284,241</u> 134,869 (4,311) (130,558)
Livestock (Sedentary) (Nomads)	152,470 (36,147) (116,323)	145,161 (36,147) (109,014)
Fishing	2,362	3,500
Forestry	711	711
<u>Secondary Sector</u>	<u>33,578</u>	<u>33,707</u>
Mining	7,278	5,701
Manufacturing - Modern	1,541	1,541
Artisan Production	15,194	16,900
Construction and Public Works	9,565	9,565
<u>Tertiary Sector</u>	<u>91,608</u>	<u>94,800</u>
Transport, Commerce, Services	62,709	65,901
Government and Financial Institutions	28,899	28,899
	<u>406,525</u>	<u>412,748</u>

Sources

1977: RAMS Employment Situation, Table 3.12 and passim.

1980: Agriculture and Fishing based on Rural Production Policy Option Paper.

Livestock assumes nomads sedentarize (and leave the sector) at 2.14% per year, per RAMS study

Demographic Projections; sedentary herders and Forestry remain constant.

Secondary and Tertiary Sectors from same source as 1977 figures, with slight adjustments.



### Assumptions Underlying Projections

Tables 4.2, 4.3, and 4.4 contain the assumptions underlying the projections of labor requirements, sector by sector from 1980 to 2000. The heterogeneity of the assumptions stems from the varying productive activities and of the ways in which labor enters into the production process. A few general comments and caveats are in order:

1. Most economic activities, whether agricultural or in manufacturing, have a large degree of flexibility in the ratios of labor to other inputs (land and/or capital). Sectoral output growth can occur with no increase in labor use, or employment can increase without any increase in output, or both can increase to the same to differing extents. Theoretically, firms (including traditional farmers) will attempt to choose the combination of productive factors that is the most efficient (lowest-cost) in producing the desired output, but in the real world (in developed as well as in developing countries) traditional practices and institutions make the observed patterns different from what economies would apply. Thus, there is no particular reason to assume any given relationship between output and growth, although one clearly must do so in order to project labor requirements.
2. A related point is that a given increase in output can be distributed among a greater or a lesser number of workers; in other words, output per worker, or productivity, can be higher or lower. This suggests that individual incomes can be higher or lower as well. Before a technology is chosen, it should be recognized that productivity improvements, and thus higher incomes, may well conflict with higher levels of labor utilization. This is as true in traditional sectors as in modern ones; for example, the number of animals tended by one herder of livestock may well have disastrous social consequences if it implies a reduction in the labor use of the livestock sector. Thus, an increase in labor productivity for a given level of output implies a reduction in labor requirements.
3. There is also no reason why a society should distribute the amount of work available in any particular fashion. For example, one society may prefer to employ everyone who wishes to work, even if it means that each worker will have only, say, four hours' work per day; another society may

prefer that, given the same labor requirements, that one-half of the population should work eight hours per day, and the remainder be without employment. Traditional societies in Africa have generally chosen the first, and modern capitalist societies the second, of these allocation patterns. One must take such realities into account in considering what is likely to happen in the future.

4. The word "employment" is used herein less enthusiastically than "labor requirements". Employment connotes a wage-labor system which is not universally present in Mauritania; indeed, RAMS' Employment Situation report observes that self-employed persons are the largest single group, with employees far fewer.

"Labor requirements" is a more general term, and is more satisfactory than "employment" in light of the two preceding observations; it suggests that an amount of work, and not a number of people, is what is required to produce a given amount of output.

The practical implication of the above observation is that the "employment elasticities of production increases" may vary over a rather wide range. As the tables show, the differences between High and Low variants of the projections of labor requirements are frequently due only to differences in the assumed value of the employment elasticity. As will be argued below, in Chapter 5, this elasticity can be viewed as a policy parameter; therefore, variations in its value can be used to demonstrate the power of expansion of a given sector of the economy.

### The Projections

Table 4.5.a indicates the projected labor requirements of the Primary (agricultural) sector, and Table 4.5.b, those of the Secondary and Tertiary sectors. The latter also gives a summary projection of overall labor requirements. It is evident from both tables that it will be quite difficult for the Mauritanian economy to generate productive employment for all those expected to enter the labor force in the next two decades. The "low" employment variant predicts a slow, steady decline in labor requirements in the primary sector, and stagnation overall. It should be remembered that for most sectors this variant is consistent with a continuation of past trends. Even the "high" employment variant, which for agriculture is based on the highly optimistic goals of food self-sufficiency by 2000 and a maintenance of current levels of manpower in the livestock sector, generates a rate of growth of primary sector employment below that of the rate of natural increase of the population.

Table 4.2

Assumptions Underlying Projections of Labor Requirements:

Primary Sector

<u>Subsector</u>	<u>Variant</u>	<u>Assumptions</u>
<u>Agriculture</u> a. <u>Irrigated</u>	<u>High</u>	Irrigation evolves as in Rural Production "Option A <sub>1</sub> "
	<u>Medium</u>	Irrigation evolves as in Rural Production "Option A <sub>2</sub> "
	<u>Low</u>	Irrigation evolves as in Rural Production "Option A <sub>3</sub> "
		- For all variants, the land-labor ratio rises from 0.25 ha per worker in 1980 to 0.5 in 1985 to 0.75 in 1990 to 1.0 in 1995 and 1.5 in 2000.
		- Also, only beginning in 1990 are workers presumed to work full-time in irrigated agriculture; prior to that they are assumed to work 1/4 time in 1980 and 1/2 time in 1985.
b. <u>Other</u>	<u>High</u>	Oasis labor assumes constant at 25,000 over entire period. Remainder grows at rate of natural increase of population (2.5% per year). Same assumption as in Rural Production.
	<u>Medium</u> <u>Low</u>	"Other Agriculture" labor requirements remain constant. "Other Agriculture" labor requirements fall to maintain total Agricultural employment constant.
<u>Livestock</u>	<u>High</u>	Improved range and offtake permits the same overall livestock labor requirements to be maintained (nomads sedentarize, but continue to do livestock raising)
	<u>Medium</u>	Nomads sedentarize and leave the Livestock Sector, sedentary livestock labor remains constant.
	<u>Low</u>	Both nomads and sedentary herders decline, the latter at 2% per year
<u>Fishing</u>	<u>High</u>	Figures from Rural Production "Option P <sub>2</sub> "*
	<u>Medium</u>	Figures from Rural Production "Option P <sub>1</sub> "
	<u>Low</u>	Rough extrapolation of past decade.
<u>Forestry</u>	<u>High, Medium, Low</u>	essentially based on Plan de Redressement (1978) and conversations with USAID Renewable Resources project team.

\* See Tables 4.8-4.10 for details on the option.

Table 4.3

Assumptions Underlying Projections of Labor Requirements

Secondary Sector

<u>Subsector</u>	<u>Variant</u>	<u>Assumptions</u>
<u>Mining</u>	<u>High</u>	Mining returns to 1977 level by 1985, then employment rises by 1% per year, assuming reopening of Akjoujt mine and new discoveries.
	<u>Medium</u>	Mining returns to 1977 level by 1985, then employment remains constant.
	<u>Low</u>	Mining remains at employment level of 1980.
<u>Manufacturing</u>	<u>High</u>	1980-90 growth of output at rate given in Plan de Redressement (10%, then 8.9%), 1990-2000, <u>Macroeconomic Policy Options, Scenario B</u> (10% per year, then 6.9%). <u>Employment elasticity of 1/2.</u>
	<u>Medium</u>	1980-90 growth of output at rate given in Plan de Redressement (above). 1990-2000, <u>RAMS, Macroeconomic Policy Options, Scenario A</u> (8%, then 5.7%) Employment elasticity of 1/2. Same as <u>Medium</u> option but employment elasticity of 1/4.
	<u>Low</u>	Based in ILO, <u>Nouakchott Informal Sector Study</u> , and <u>RAMS Informal Census</u> ; output growth at same rate as <u>Manufacturing (high)</u> , employment elasticity of 2/4.
<u>Artisanal Production</u>	<u>High</u>	Output growth as <u>Manufacturing (Medium)</u> , employment elasticity of 2/3.
	<u>Medium</u>	Output growth as <u>Manufacturing (Medium)</u> , employment elasticity of 1/4.
	<u>Low</u>	1980-85, no growth. Then output growth as in <u>Plan de Redressement</u> for 1985-90 (9.4%), and as in <u>RAMS Macroeconomic Policy Options, Scenario B</u> , for 1990-2000 (4.8%, then 3.3%). <u>Employment elasticity of 2/3.</u>
<u>Construction and Public Works</u>	<u>High</u>	Same as <u>High</u> , except employment elasticity of 1/3.
	<u>Low</u>	<u>Scenario A</u> (3.3%, then 2.5%). <u>Employment elasticity of 1/3.</u>

\* Rate of growth of employment is one-half as great as rate of growth of output.

Table 4.4

Assumptions Underlying Projections of Labor Requirements

<u>Subsector</u>	<u>Tertiary Sector</u>	<u>Assumptions</u>
	<u>Variant</u>	
<u>Transport, Commerce and Services</u>	<u>High</u>	1980-90 as in Plan de Redressement (4.1% then 3.9%). 1990-2000 as in Macroeconomic Policy Options, Scenario B Same output growth as in <u>High</u> ; employment elasticity of 2/3.
	<u>Medium</u>	
	<u>Low</u>	1980-90 as in <u>High</u> ; 1990-2000 as in Macroeconomic Policy Options, Scenario A (4.4%, then 2.9%); employment elasticity of 1/2.
<u>Government and Financial Services</u>	<u>All Variants</u>	Military and Security Forces (15,547 in 1977) remain at that level throughout the period.
	<u>High</u>	Remaining 13,352 (1977 and 1980), then growing at rate of 5% per year (approximate historical trend).
	<u>Medium</u>	Remaining 13,352, then growing at rate of 3% per year (approximate growth of real government budget as taken from Health/Nutrition Options, Part I, Table 19)
	<u>Low</u>	Remaining 13,352 then growing at 1% per year.

Table 4.5a

Projections of Labor Requirements: Primary Sector  
(figures in thousands of full-time workers)

Subsector	Employment 1980 est.	1985			1990			1995			2000		
		High	Med.	Low	High	Med.	Low	High	Med.	Low	High	Med.	Low
<u>Agriculture</u>	<u>134.9</u>	<u>156.8</u>	<u>140.9</u>	<u>134.9</u>	<u>188.0</u>	<u>152.3</u>	<u>134.9</u>	<u>216.1</u>	<u>156.9</u>	<u>134.9</u>	<u>258.3</u>	<u>166.9</u>	<u>134.9</u>
of which Irrigated	4.3	14.3	10.3	9.3	32.4	21.7	19.1	44.3	26.3	20.3	68.8	36.3	26.3
Other	130.6	142.5	130.6	125.6	155.6	130.6	115.8	171.8	130.6	114.6	189.5	130.6	108.6
<u>Livestock</u>	<u>145.2</u>	<u>145.2</u>	<u>134.0</u>	<u>131.9</u>	<u>145.2</u>	<u>124.0</u>	<u>118.6</u>	<u>145.2</u>	<u>115.0</u>	<u>106.6</u>	<u>145.2</u>	<u>106.9</u>	<u>95.8</u>
of which: Sedentary	36.2	36.2	36.2	34.0	36.2	36.2	30.8	36.2	36.2	27.8	36.2	36.2	25.1
Nomads	109.0	109.0	97.8	97.8	109.0	87.8	87.8	109.0	78.8	78.8	109.0	70.7	70.7
<u>Fishing</u>	<u>3.5</u>	<u>5.5</u>	<u>5.3</u>	<u>4.0</u>	<u>8.0</u>	<u>7.1</u>	<u>4.5</u>	<u>10.4</u>	<u>7.4</u>	<u>4.8</u>	<u>12.2</u>	<u>7.5</u>	<u>5.0</u>
<u>Forestry</u>	<u>0.7</u>	<u>1.0</u>	<u>0.8</u>	<u>0.7</u>	<u>1.3</u>	<u>1.0</u>	<u>0.7</u>	<u>1.7</u>	<u>1.2</u>	<u>0.7</u>	<u>2.5</u>	<u>1.4</u>	<u>0.7</u>
<u>Total Primary Sector</u>	<u>284.3</u>	<u>308.5</u>	<u>281.0</u>	<u>271.5</u>	<u>342.5</u>	<u>284.4</u>	<u>258.7</u>	<u>373.4</u>	<u>280.5</u>	<u>247.0</u>	<u>418.2</u>	<u>282.7</u>	<u>236.4</u>
% rate of growth per year from previous year listed	-	1.6	-0.2	-0.7	2.1	0.2	-1.0	1.7	-0.3	-0.9	2.3	0.2	-0.9

Table 4.5b

Projections of Labor Requirements: Secondary and Tertiary Sectors  
(figures in thousands of full-time workers)

Subsector	Employment 1980 est.	1985			1990			1995			2000		
		High	Med.	Low	High	Med.	Low	High	Med.	Low	High	Med.	Low
<u>Mining</u>	5.7	7.2	7.3	5.7	7.6	7.3	5.7	8.0	7.3	5.7	8.5	7.3	5.7
<u>Manufacturing</u>	1.5	2.0	2.0	1.7	2.4	2.4	1.9	3.1	3.0	2.0	3.7	3.4	2.2
<u>Artisan Production</u>	16.9	23.3	23.3	19.9	31.1	31.4	23.0	43.0	40.4	27.0	53.8	48.6	30.3
<u>Construction and Public Works</u>	9.6	9.6	9.6	9.6	13.0	11.2	9.6	15.2	12.1	10.1	16.9	12.8	10.5
<u>Transport, Commerce and Services</u>	65.9	80.6	75.4	72.9	97.5	85.7	80.3	128.7	103.3	92.5	152.6	116.3	101.1
<u>Government and Financial Institutions</u>	28.9	32.6	31.0	29.6	37.3	33.5	30.3	43.3	36.3	31.0	51.0	39.7	31.8
<u>Total Secondary and Tertiary</u>	127.5	155.3	148.6	139.4	189.0	171.2	150.8	241.3	202.4	168.3	287.5	228.1	181.6
% rate of growth per year from previous year listed	-	4.0	3.1	1.8	4.0	2.9	1.6	5.0	3.4	2.2	3.6	2.4	1.5
<u>Total Mauritania (Incl. Primary Sector)</u>	412.8	463.8	429.6	410.9	531.5	455.6	409.5	614.7	482.9	415.3	705.9	510.8	410.0
% rate of growth per year from previous year listed	-	2.4	0.8	-0.1	2.8	1.2	-0.1	3.0	1.2	0.3	2.8	1.1	0.1

The results of the projections of labor requirements are bleak in any light. Under a set of currently reasonable assumptions, the very best the economy can do is to maintain its current, already unsatisfactory level of labor utilization. This is clearly seen in Table 4.6, which compares the projections of labor availability (from Chapter 3) with labor requirements from Table 4.5. The increase of 330,000 members of the labor force is approximately balanced by an increase in demand for labor services under the "high" variant, but there is a shortfall of 302,000 under the "medium" and 395,000 under the "low" variant. Either of the latter two scenarios are unthinkable; such a number of unutilized workers would present a social problem with which no country can easily cope. And since the amount of production from which these two variants was derived is that deemed by RAMS the most likely amount to occur (see, for example, Rural Production), the unthinkable may also be the probable.

The rapid growth of population is one of the underlying factors; the attention to employment as a primary development goal is another. In Chapter 5 the means by which one can influence the economy's ability to absorb labor is discussed. This Chapter merely identifies the problem and interprets its implications. In Table 4.7 which shows the projected changes in labor supply and labor demand, the scale of the problem is much clearer and awesome in scale. On average, the "medium" variant generates labor requirements that fall about 10,000 annually short of supply; if the "medium" variant is believed to be the most likely one, ways of creating 10,000 additional jobs per year must be uncovered.



Table 4.6

Labor Force, Labor Requirements and Unemployment  
1980-2000

(figures in thousands, except for (4) )

Year	(1) Labor		(2) Labor Requirements	(3) Unemployment	(4) Unemployment Rate ( (3) - (1) )
1980	482		413	69	14.3%
1985	550	High	464	86	15.6
		Medium	430	120	21.8
		Low	411	139	25.3
1990	627	High	532	95	15.2
		Medium	456	171	27.3
		Low	410	217	34.6
1995	714	High	615	99	13.9
		Medium	483	231	32.4
		Low	415	299	41.9
2000	813	High	706	107	13.2
		Medium	511	302	37.1
		Low	418	595	48.6

Table 4.7

Annual Change in Labor Available for Employment  
and of Labor Requirements, 1980-2000

(Thousands of persons)

	Additional Labor Available	Additional Labor Requirements <sup>+</sup>
1980-85	13.6	10.2 High 3.4 Med. -0.4 Low
1985-90	15.4	13.5 High 5.2 Med. -0.3 Low
1990-95	17.4	16.6 High 5.4 Med. 1.2 Low
1995-2000	20.0	18.2 High 5.6 Med. 0.5 Low
<hr style="border-top: 1px dashed black;"/>		
Average 1980-2000	16.5	14.6 High 4.9 Med. 0.3 Low

<sup>+</sup> Same assumption as Table 4.6

## Distribution of Labor Requirements

### 1. Rural vs. Urban

The primary versus secondary and tertiary division of the economy and labor force does not completely correspond with a rural-urban division. There is a small amount of agriculture (such as vegetable gardening) in urban areas, and a considerable amount of manufacturing (by artisans especially) and commerce in rural areas. Still, for the purpose of the present discussion, the primary sector will be treated as virtually identical to the rural sector, and the other two to the urban sector. Annex Table 1 shows that, to a very large extent, this simplification is acceptable. Three-fourths of the rural sedentary employed are agricultural, as in an even greater proportion of the nomadic population. Furthermore, for occupations such as artisans for which the separation is not as valid, there is another justification for assuming that it is: the extent of economic activity in rural areas, and hence the demand for artisans' or traders' services, is largely a function of agricultural activity. Thus, if agriculture booms, rural secondary and tertiary sectors boom: if it stagnates, so do they. The above conclusions on the likelihood of severe surplus of labor in the agricultural sector hold for the rural non-agricultural economy as well.

There is, therefore, no attempt to forecast or to project rural and urban unemployment rates on the basis of projected population distribution and assumptions of the location of economic activity.

### 2. By Occupation, Skill, and Training

As was noted in the report on the Employment Situation, the occupational categories defined in the demographic census are not useful ones in the sense of signaling the skill or educational content of the jobs concerned. The ninety-odd occupations listed in the census include some that are relatively "pure", such as agronomists, and some that are a mix of sector and occupation (metal workers, for example).<sup>1)</sup>

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1) See Annex Tables 2-7 for the occupations classified by sector.

Using Tables 4.5a and b, 42% of the growth of labor requirements under "high" variant, and 32.7% under the "medium variant", are in agriculture, 12.5% and 32.3% in the informal production sector, and 29.9% and 51.4%<sup>1)</sup> in commerce, transport, and services. With the exception of a few service occupations, virtually all of these new jobs require neither the equivalent of a college degree nor a technical aptitude but only literacy (which is more than most in these occupations have now) and training which may be specific to the jobs themselves. To identify the requirements for formal education and other general training without identifying the eventual uses to which the education will be put, in other words without a long-range manpower plan based on a long-range economic development plan, is to virtually guarantee an over-emphasis on general secondary and higher education, because the educational system cannot be tailored to a future economic system which has been well thought out.

To avoid false precision, therefore, labor requirements have not been projected in categories any finer than that of the economic sector. Any further refinement must await a refinement of the production options of the Fourth through the Seventh National Development Plans.

### 3. By Region

RAMS report on Demographic Projections provides the baseline data for many exercises in regional forecasting. For the reason mentioned above, i.e., false precision of numbers based on so many intangible factors, and because regional employment will depend on regional development, no projections are attempted herein. It is clear, nonetheless, that serious problems or regional imbalances may occur over the next twenty years. Regrettably, current budgetary expenditure patterns, heavily favoring the cities of Nouakchott and Nouadhibou, are draining the human and financial resources of Mauritania to an extent that precludes balanced regional development without creating enough jobs to absorb the in-migrants. Government policy will have to be reversed if there is to be any hope of redressing the balance.

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1) For the "medium" variant three sectors account for more than 100% because of large declines in other sectors.

## Chapter 5 Policy Options to Encourage the Generation of Employment

### Introduction

This chapter identifies a set of policy options for employment generation and manpower utilization. The options are somewhat different in focus from the sectoral production options discussed in Chapter 4 and approach employment from a totally different angle: Option A -- Full utilization of Mauritania's manpower potential as a primary goal of planning; Option C (consistent with current tendencies) -- for the private sector, employment is generated only if it satisfies rigorous financial criteria; for the public sector, employment is to be generated without considering the output associated with the jobs; Option B -- a blending of the social goal of a full employment with the economic goal of the minimization of wasteful labor use.

The Options are presented below together with a set of measures which would contribute to a rationalization of employment and manpower policy. The measures discussed in some detail are (1) the means to analyze, and then to achieve, appropriate factor prices for the modern and transitional sectors; a companion measure is a suggested Entrepreneurial Code to replace the current Investment Code; (2) regionalization of the employment- and- output generating process, including the identification and stimulation of market towns; (3) a rationale for resources to be devoted to generalized literacy training for the entire population; (4) the re-evaluation of the skill and educational requirements for the available jobs, in the public sector first, and then in the private sector.

### Presentation of the Options

It is a reasonably straight-forward process to design a set of options for functional sectors of the economy, such as health care and nutritional status. The goals are quantitative (tons of grain and meat, village with

primary health care, etc.), and the means to reach the goals are financial (millions of ouguiya) and human (number of technicians or medical personnel). It is not quite as straightforward to design options for employment generation first, because the production options must be taken into account and, second, because there is frequently a conflict between the social goal of the greatest possible use of labor and the economic goal of cost minimization in production.

The purpose of economic development planning is to coordinate, and thereby render more rapid and less chaotic the economic growth and social transformation of a nation. Economic growth is usually defined as sustained growth in the volume of goods and services that an economy is capable of producing the emphasis is, therefore, on the goods themselves. Yet the reason for the goods are produced is that they are in demand. Demand differs from "needs" or "wants" because it connotes the desire for goods combined with the wherewithal (money or labor power) to purchase them. An important reason for many societies failing to provide for basic human needs of their peoples is that they fail to recognize that the people are capable of meeting their own basic needs if their labor were used productively enough to generate or purchase the goods and services required.

Most Mauritanians are poor, in need of goods and services which they have insufficient income to acquire. In the absence of continued internal dependence of the kind mentioned above and of external dependence on foreign gifts or loans of goods and services, Mauritanians must produce more. There are two approaches to raising total product: raising the productive capacity of each worker, or raising the number of workers. Alternatively, two can be combined, increasing productivity somewhat, and employment somewhat, to achieve the same target level of output.

The following three alternatives are formalized as options, defined and given policy content:

Option A      Full utilization of the available labor force by the year 2000. Employment, rather than the output generated, is the primary goal. Thus, employment is raised to full-employment levels before any increase in labor productivity is permitted.

Option C      Current Output, not employment, is the goal. Activities are judged by financial efficiency criteria: employment is created only if the activity passes stringent cost-benefit tests.

Employment is likely to be minimized, because capital is easier for managers to deal with than labor. Thus, bias towards capital-intensity, raising labor productivity. (This option is consistent with current tendencies.)

Option B

Sensitivity to the employment problem and to efficiency criteria are assumed. A blending of social and demand-side awareness with the supply-side criteria of economic profitability of development initiatives also are assumed. Increase in both output per worker and number of workers would follow.

While as previously noted, the employment options are not the same types as the production options. Options is nonetheless, consistent with any one of the production options except in the rare case of fixed proportions of capital and land labor. In the rural sector, where the words "employment" and "productivity" can not be defined in the normal sense (see Introduction in Chapter 4), output can be increased per hectare or per hundred head of cattle, to take two examples, either by applying more labor (better weeding, stricter grazing control and management) or more non-human (tractors, fertilizers, weed-killers, corrals and deep wells). In manufacturing, the employment-productivity trade-off is clearer.

Options A and B are both departures from current practice, and depend on a fundamental change in the policies that influence employment decisions of all kinds. Option A is categorial: employment first, and productivity second. Option B is more moderate and, therefore, more difficult to implement. Yet, both introduce the goal of labor utilization which in Mauritania has been used only in the wrong context. The policies to be reviewed involve: factor pricing and other elements of the structure of incentives; regional policy (management du territoire) aimed at localization of agro-processing and other modern activities; education and training policy aimed at producing a literate, well-adapted labor force; and manpower policy at discouraging over-education and mis-education of job-market entrants. These four elements of an employment strategy are discussed in turn; the appropriate blending of these Options A and B are left to the GIRM policy-makers.

### Appropriate Factor Proportions and Factor Prices<sup>1)</sup>

There are obvious social costs for any society that does not provide work opportunities to all those who seek them. One such cost is that the output they could have produced will simply not exist, i.e., Gross Domestic Product will be less than its potential. The second such cost is that the jobless will be a burden on the rest of society. This is as true in Mauritania where support systems are generally familial as it is in industrial economies where society as a whole, through government and charitable organizations, has assumed responsibility for the unemployed.

A country as close to the margin of subsistence as Mauritania should make every effort to create economic conditions in which any person willing to work is able to support himself. To create such condition requires a set of policies that consider employment as a primary goal of society rather than as is often the case, as a mere adjunct to the production of goods. If people are not fully involved in the production process, the State must purchase the output and distribute it to the inactive, who become a greater and greater proportion of the population as more and more capital-intensive modes of production are used.

The policies needed to stimulate employment are manifold, and may frequently be called into question by long-standing tenets of economic rectitude. If, however, the international environment and, therefore, technological information available to Mauritania, is as biased as economies in favor of large-scale, capital-using and energy-intensive methods of production and distribution, then strong and frequently costly actions may have to be taken to ensure that any employment at all is created.

#### 1. The Pricing of Capital

Among the most important policy measures to be taken is to ensure that the prices of labor and capital are close as possible to their opportunity cost. In general, and Mauritania is no exception, capital is priced too low in West Africa. The primary mechanisms through which this occurs are preferential import duty rates on capital equipment

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1) While this section is not based on its analysis, the World Bank Staff Working Paper, "The Employment Impact of Industrial Investment: a Preliminary Report," no. 255, June 1977, is worth consulting.



and artificially-low interest rates on bank borrowing.<sup>1)</sup> The result is that labor is perceived as relatively more expensive to use in production than it would be if capital were correctly priced, and therefore less of it is used than should be. The problem is that if the price of capital is raised, and the price of labor and other inputs remain unchanged, fewer activities will be economically profitable than before. As regards the private sector, therefore, it may be necessary to subsidize wage rates (by, for example, according tax rebates to enterprises in proportion to the amount and the cost of the labor they employ), a policy whose budgetary implications must be analyzed carefully. (See "Entrepreneurial Code" below).

## 2. Research on Labor-Using Techniques

In the last decade, the International Labor Organization, the U.N. Industrial Development Organization, and smaller groups such as the Institute for Development Studies at the University of Sussex in Great Britain, have prepared extensive inventories of technologies, existing and proven in operations in the Third World, and possess a nearly complete array of industrial and semi-industrial activities. These inventories usually demonstrate that labor-intensive technologies and small-scale establishments frequently are able to produce at costs equal to those at the frontiers of modern technology which, of course, tend to be large and automated.

In the process of reviewing project dossiers for proposed new activities, the GIRM through the Centre d'Etude et de Promotion Industrielle in the Ministry of Industry, Mines and Commerce, and The Investment Commission, must insist that the experts responsible for the proposals justify the capital/labor ratios they recommend in terms of the national employment goal, as well as in terms of production costs. In other words, recommendations for new industries in Mauritania, whether they are to be financed by foreign aid grants, private foreign or domestic investment, or by the State budget must take employment, and not merely economic rates of return into account. Low unit costs of production and high ratios of labor to capital will go hand in hand more frequently than is generally thought.

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1) Low interest borrowing rates have a second perverse effect, if it is accompanied by low interest rates on deposits: local savings is discouraged as well, thereby reinforcing the scarcity of capital.

### 3. The Choice of Activities

Some projects simply can not be undertaken with labor-intensive technologies, because no practicable ones exist. The most obvious of such activities is petroleum refining, among the most capital-intensive of industries. To choose to finance a capital-intensive project is to have chosen not to finance a greater amount of employment creation in less capital-intensive activities; to cite an unfortunate example, the Nouadhibou oil refinery, completed at a cost of nearly four billion UM, represents enough capital to create four thousand industrial jobs.<sup>1)</sup> Four thousand industrial jobs is nearly three times as many as existed in Mauritania in 1977, the year of completion of the petroleum refinery.

If employment generation is adopted as a primary goal, some projects which are desirable on standard grounds (either for increase of the rate of return or national prestige) may have to be rejected because their capital requirements are too high. If capital is scarce, it should be rationed; there is no absolute truth in rationing it according to its rate of return if the society has formulated other objectives.

### 4. Toward an Entrepreneurial Code

The 1979 Investment Code of Mauritania established a set of rewards for which new firms that meet certain conditions can qualify. The conditions are:

- sectoral priority (although the list is very long)
- contribution to the national economy
- employment creation
- size of value-added
- rate of financial return

The rewards are:

for enterprises investing UM 10 million - 200 million

- import duty exemptions
- income tax holidays
- export tax holidays
- land tax holidays
- guarantees of profit repatriation
- reassurances about nationalization

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1) Calculated at the average capital-to-labor ratio of one million UM (\$25,000) per worker. This amount is modest, but hardly represents "soft" technology. It is consistent with such activities as iron foundries, cookie factories, and rice mills. See UNIDO, Inventaire Industriel de la Republique Islamique de Mauritanie: Rapport Final sur les Petites et Moyennes Industries. J. Damico 1975.

for larger enterprises

all of the above, plus  
guaranteed stabilised tax regime for 20 years

for smaller enterprises (Mauritanian only)

less liberal import duty exemptions  
similar export tax exemption  
some exemption from other taxes and fees

The Code provides favors to private firms as a function of the amount of capital invested, and one of the favors given is that machinery can be imported duty-free. Given the discussion above on appropriate factor proportions, it is clear that rewarding firms by reducing the cost of capital is highly inappropriate.

The problem arises precisely because this is an Investment Code, designed to attract foreign and domestic capital, not enterprise. The difference is more than semantic, because capital and entrepreneurship do not necessarily go hand in hand, and, in fact, may be substitutes to some extent. A modern, turnkey manufacturing plant may require little imagination, little élan to run, and is, by definition, unable to adapt very well to changing demand patterns, or raw material supply conditions. On the other hand, a small operation requires more constant attention of the manager and, because it has a smaller fixed capital, it can either change as the market changes or go out of business without severe economic dislocation.

Mauritania does not need an Investment Code, as much as it needs an Entrepreneurial Code. The spirit of enterprise, now confined to the commercial sector, must be encouraged for all productive sectors of the economy. Furthermore, entrepreneurs have to be induced to use labor as much as possible, and capital as little as possible, in producing whatever goods and services appear potentially profitable. The means to induce such behavior is to tailor the rewards to accomplishment of the goal, in this case employment generation. It would be in the interest of the GIRM, whether either Option A or B is adopted, or whether Option C continues to be followed, that a study be undertaken to design an Entrepreneurial Code. Such a Code will doubtless include many of the following:

priority to be accorded to sectors and activities known to be labor-intensive and capital-saving

priority also to be accorded to the processing of local raw materials plus replacement of necessary imports (not of luxury imports) plus perhaps to the production of goods deemed necessary to satisfy basic human needs.

rewards tailored to the number of workers hired and reduced gradually, unless employment rises from year to year

rewards not to discriminate in favor of foreign enterprise, against national entrepreneurs; perhaps, in fact, the opposite

rewards to avoid reliance on import duty reductions on either machinery (see above) or raw materials

rewards not to be less liberal for small enterprise than for large

rewards (as in the Investment Code) not to be greater for non-Nouakchott/Nouadhibou enterprises

rewards to include access to credit (not at subsidized rates) for small firms

rewards to be designed to improve profits per unit of sales, not profits per unit of capital

eligibility not to be limited to "modern-sector" enterprises but also to firms in the "informal sector". If it is impossible to confine both types within one Code, a Code de'Artisan should added.

#### Regionalization of Employment Generation

RAMS<sup>n</sup> Employment Survey, conducted in seven major cities (Nouakchott, Nouadhibou, Atar, Rosso, Kaedi, Akjoujt, and Zouerate), found an average rate of open unemployment of 44 % in late 1979-early 1980 as high as 82% for boys aged 15-19, and 6% for those aged 20-24.<sup>1)</sup> Rapid urbanization and a slower growth of urban employment opportunities are the immediate causes, but the underlying causes -- the ones that should be attacked -- are rural and institutional. In short, urban unemployment is a rural problem.

It is inevitable that rural-urban migration will continue over the next two decades. Even without the "bright lights of the city" phenomenon, labor requirements in agriculture and livestock will probably be insufficient to absorb the numbers of new entrants to the labor force. It is not, however, inevitable that the migration be to Nouakchott and Nouadhibou. Appropriate action, begun during the Fourth Development Plan and extended in its successors, may divert the migratory flows to Regional and Departmental capitals, and other promising towns, by providing employment opportunities which are not currently there.

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1) See RAMS, report Supplement to the Employment Situation, 1980.

The towns chosen should exhibit obvious potential for agro-processing of locally-produced crops and animal products. They should have reasonably good communication with surrounding areas as well as with the modern transport network of the country (especially the Nouakchott-Nema and Rosso-Kaedi roads). They should, of course, possess supplies of water and building materials sufficient to handle a possibly rapid expansion of population. In addition, they should, if possible, have a literate labor supply.

RAMS' report on the Economic Activities of the Rural Private Sector (1980) contains a series of interesting case studies of existing individuals and cooperative enterprises in small and regional capitals. They, along with the project dossiers submitted to the BMDC under the World Bank financing program and those under study by the CEPI in the Ministry of Industry, may give clues to specific activities to be encouraged in the towns. It may be necessary at first to go beyond simply establishing offices to support the initiatives of entrepreneurs who apply for help (credit, etc.). For instance one could envision an effort to publicize to local residents the attractiveness of certain productive activities, the generous support available, and the social status to be gained from participating. Here, as in the design of the Entrepreneurial Code, it is advisable to take special care to convert the current commercial spirit into a production one.

#### A Rationale for Giving Priority to Literacy Training

Initiatives within the Mauritanian government are likely to lead, by the end of the Fourth Development Plan, to a reorientation of the formal educational system towards providing basic literacy and arithmetical skills to a large number, rather than more advanced education to a small number, of Mauritanians. Nearly every productive activity can benefit from a literate work-force; very few require advanced degrees.<sup>1)</sup> RAMS' research has indicated that approximately 95% of the jobs created between 1977 and 1990 would require no formal education beyond simple literacy and arithmetic. Only 5% of the new jobs could justify having elementary, secondary, or higher-education diplomas as a prerequisites.

An amount of general formal education beyond the absolute minimum is not necessarily a bad thing for a worker to have. Still, it is hard

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1) The RAMS report, Evaluation of the Formal Education System in Relation to Development Objectives faults the current system. The RAMS report on Education as Development Tool includes specific recommendations on redressing Mauritania's formal education system.

to justify large volumes of public resources for such education while illiteracy constraints the ability of a large number of people to perform activities required by the economy. The choice between mass education to a maximum (classified as a basic human need) and elite education to the end of university is a choice which all countries have had to make. Limited public resources inhibit doing both.

### Intermediate Skill Requirements

The RAMS study of the formal education system is highly critical of the structure and objectives of the existing set of Mauritanian educational institutions. Formal education currently is found to be too theoretical, not adapted to the country's manpower needs, biased towards higher education, and inefficient. It is evident that this situation is the result of inadequate reform of educational structures inherited from the colonial period which by and large are still in place, and by and large still staffed by expatriates. There is another explanation, without which the inertia of the educational system cannot be understood: the standard diplomas -- with standard curriculum behind them -- are prerequisites for employment, not only in the public sector, but even in the modern private sector.

Those who establish the "hierarchies" within the civil service (Fonction Publique) and within commercial and industrial enterprises know what to expect if they make, for example, the baccalaureat a necessary credential for a given job. They have the diploma, so they know what another holder of the same diploma is capable of doing. True educational reform is resisted, because it would create uncertainty as to the value and content of given credentials.

If this analysis is correct, a large part of the problem is in the definition of requirements for jobs and not in the content of education. Redefinition of skill requirements is, therefore, an urgent task. In the civil service, a study of the true skills required for each position, should be undertaken at the same time as the next review of civil service regulations. Obviously, the private sector can not be forced to follow whatever is decided in the public sector, but without the large component of demand for traditional credentials that comes from the government, the educational system will lose much of its current support. Enterprises may well learn to adapt to a new type of job-seeker, one whose skills are appropriate to the job he seeks.

Labor Requirements Per Rural Production Option Paper

Irrigated Agriculture

The amount of labor required for the projected growth of irrigated agriculture is determined by the number of hectares to be placed under cultivation and by the land-labor ratio (hectares per actif). Three principal options are presented for the pace of development of irrigated agriculture in the Senegal River Valley:

Option A<sub>1</sub> (to reach a level of foodgrain self-sufficiency by the year 2000)

1980-1990	2,000 hectares/year brought into cultivation
1990-1995	4,000 hectares/year
1995-2000	4,500 hectares/year

Option A<sub>2</sub> (a moderately ambitious but feasible rate of development)

1980-1990	1,200 hectares/year
1990-2000	2,000 hectares/year

Option A<sub>3</sub> (continuation of current rates of development)

1980-1990	1,000 hectares/year
1990-200	1,200 hectares/year

The labor requirements for these scenarios, based on three different assumptions about land/labor ratios, are shown in Table 4.8 (Variations on these Options are not discussed in the interest of brevity). The apparent magnitudes are striking: 275,200 actifs are required for Option A<sub>1</sub> with 0.25 ha/actif; even for Option A<sub>3</sub>, 105,200 are required if each is allocated 0.25 hectares. As Table 4.9 shows, SONADER forecasts that no more than 93,000 actifs will be available in the Senegal Valley for agricultural work in the year 2000, this might appear to predict a possible labor shortage.<sup>1)</sup>

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1) This conclusion has a long history. See ILO, "Esquisse sur la Situation de l'Emploi en Mauritanie: Situation Presente et Perspective." G. Féral 1977.

Table 4.8

Labor Requirement for Irrigated Agriculture, given  
Rural Production Options

(Thousands of hectares and actifs)

	1980	1985	1990	1995	2000
A <sub>1</sub> : Grain self-sufficiency by year 2000.					
Area irrigated Actifs if:	4.3	14.3	24.3	44.3	68.8
0.25 ha/actif	17.2	57.2	97.2	177.2	275.2
0.5 ha/actif	8.6	28.6	48.6	88.6	137.6
1.5 ha/actif	2.9	9.5	16.2	29.5	45.9
A <sub>2</sub> : Moderate rate of development of irrigation.					
Area Actifs if:	Same	10.3	16.3	26.3	36.3
0.25 ha/actif	as	41.2	65.2	105.2	145.2
0.5 ha/actif	A <sub>1</sub>	20.6	32.6	52.6	72.6
1.5 ha/actif		6.9	10.9	17.5	24.2
A <sub>3</sub> : Continuation of present trend.					
Area Actifs if:	Same	9.3	14.3	20.3	26.3
0.25 ha/actif	as	37.2	57.2	81.2	105.2
0.5 ha/actif	A <sub>1</sub>	18.6	28.6	40.6	52.6
1.5 ha/actif		6.2	9.5	13.5	17.5



Table 4.9

Rural Households and Working Adults (Actifs)  
In the Senegal River Valley, 1977-2000

<u>Year</u>	<u>Region</u>	<u>Households</u>	<u>Actifs</u>
1977	Gorgol	13,500	27,000
	Brakna	11,850	23,700
	Trarza	3,650	7,300
	Guidimakha	4,000	8,000
	Total	33,000	66,000
1980		34,500	69,000
1985		37,150	74,300
1990		40,050	80,100
1995		43,150	86,300
2000		46,500	93,000

Logically, however, it is inconceivable that a labor shortage in the River Valley will be a major constraint, or any constraint at all, to even the most rapid development of irrigated rice production. The figure of 0.25 ha/actif is based on the current SONADER allocation policy, which is recognized to be temporary and a means of exposing as many farmers to irrigation as possible, as rapidly as possible. Since a typical irrigated hectare produces about 16,000 UM per year in net income<sup>1)</sup>, each actif is able to earn only 4,000 UM per year from his plot, an amount clearly insufficient to support himself, much less the actif's household. Also, the entire hectare is estimated to require 150 labor days per crop, so that the one-fourth hectare parcel only requires 37 1/2 days. It is clear that this does not represent full-time activity.

Given this observation, the solution adopted here is to postulate a "full-time-equivalent" actif, defined as the labor input for one hectare. Thus, in 1980, when the average actif held 1/4 hectare of irrigated land, is assumed to be working 1/4 time on the irrigated land (and presumably 3/4 time elsewhere -- in dieri, oualo, or non-agricultural pursuits). It is further assumed that over the next twenty years the average allocation per actif will rise in a pattern given in Table 4.10. By 1995, when the average allocation of land is one hectare, the discrepancy between number of actifs involved and "full-time-equivalents" disappears. As the table indicates, this scenario forecasts a maximum demand for labor of 68,800 actifs by year 2000. This number is well within the number presumed by SONADER to be available in the Valley,<sup>2)</sup> even without in-migration from the dry-land agricultural areas.

### Fisheries

Unlike irrigated and dryland agriculture, the amount of employment for this sector does not vary directly with the ambitiousness of the three options. The option in Fishing consistent with the most rapid expansion of fish production (Option P<sub>1</sub>) is, in fact, the one which appears to require the smallest amount of labor, because it is the Option which foresees the industrialization of the Mauritanian fishing industry. Option P<sub>2</sub>, which calls for intensification of both river and ocean fishing and the gradual introduction of pisciculture in pools and ponds, creates the most employment even if it does not create the most output. Option P<sub>3</sub> projects a reasonably substantial increase in ocean

- 1) Figure from RAMS report on Agricultural Production: Analysis of Selected Aspects of Mauritanian Agriculture, 1981.
- 2) Of course, full-time employment of such a large number of people would probably reduce substantially the amount of dieri land that would be farmed plus, of course, the disappearance of the oualo.

Table 4.10

Labor Requirement for Irrigated Agriculture, given Gradual  
Rise in Land-Labor Ratio

		(Thousands of actifs)				
		1980 (0.25 ha/ actif)	1985 (0.5 ha/ actif)	1990 (0.75 ha/ actif)	1995 (1.0 ha/ actif)	2000 (1.0 ha/ actif)
Option A <sub>1</sub>	<u>Actifs involved</u>	17.2	28.6	32.4	44.3	68.8
	<u>Full-time equivalent actifs</u>	4.3	14.3	24.3	44.3	68.8
Option A <sub>2</sub>	<u>Actifs involved</u>	17.2	20.6	21.8	26.3	36.3
	<u>FTE Actifs</u>	4.3	10.3	16.3	26.3	36.3
Option A <sub>3</sub>	<u>Actifs involved</u>	17.2	18.6	19.0	20.3	26.3
	<u>FTE Actifs</u>	4.3	9.3	14.3	20.3	26.3

Source: Table 4.8 and RAMS calculations.

fishing but a decrease in river fishing (with no pisciculture) after the Diama and Manantali dams regulate the river's flow and, most likely, change the river's capacity to produce fish. The "low" variant summarized in Table 4.2 is a rough extrapolation of the last decade, implicitly assumes the disappearance of river fishing at a rate similar to the "medium" variant and few resources devoted to the intensification or extension of marine fishing.

#### Livestock

Labor requirements are not projected inasmuch as the options assume either labor at existing levels or in decline.

#### Forestry

Since, at best, labor requirements are projected to remain at constant levels, no trend lines are projected.

Annex Table 1

Summary of Sedentary Occupational Groups

Distributed by Economic Sector -- 1977

Occupational Groups	Total	Urban	Rural
Government Workers, NEC	20634	11054	9580
Commerce, transport workers	35108	21422	13686
Artisans and small industry	18227	10503	7724
Agriculture	139706	6460	133246
Fishing	3690	1876	1814
Mining	150	143	7
Office Workers	4928	4471	457
Housing and Construction	13768	11253	2515
Other Professions	23022	13035	9987
Total	259233	80217	179016

Source: Demographic Census Unpublished Data.

Annex Table 2

Professions in Agriculture

Code	Profession	Total	Urban	Ru
1	Farmers	63283	3403	59
2	Others in Agriculture	51045	970	50
5	Herders	11666	909	10
6	Shepherds	11237	370	10
32	Agricultural workers in large projects	845	355	
35	Charcoal producers and lumber jacks	711	159	
36	Gardeners	700	211	
73	Basket makers	111	28	
80	Biologists, agronomist	49	43	
81	Tanners	46	11	
88	Hunters	13	1	
	Total	139706	6460	133

Source: Demographic Census, unpublished data.

Annex Table 3

Artisans and Small Industry

Code	Profession	Total	Urban	Rural
13	Leather workers	3016	756	2260
14	Jewelers	2821	975	1846
20	Tailors	1867	1546	321
21	Slaughterers, bakers	1668	1104	564
22	Non-specified industrial workers	1699	1458	241
24	Weavers	1271	346	925
26	Carpenters	1159	1056	103
27	Other artisans	1090	187	903
37	Metal workers	695	630	65
42	Other industrial workers	563	427	136
51	Other apprentices	407	340	67
53	Contractors, foremen	394	369	25
62	Pottery workers	236	65	171
63	Industrial foremen	231	206	25
66	High-Level technicians	182	178	4
67	Printers	173	155	18
72	Armed forces technicians	112	110	2
75	Tool operators	98	95	3
79	Artisans of household articles	66	46	20
85	Other professional and technical workers	25	25	-
89	Food Processors	12	6	6
50	Printers, glassmakers, plasterers	442	423	19
<b>Total</b>		<b>18227</b>	<b>10503</b>	<b>7724</b>

Annex Table 4

Professions in Housing and Construction

Code	Profession	Total	Urban	Rural
64	Plumbers	214	182	32
9	Manual labor in construction	6810	5551	1259
12	Masons	3240	2488	752
31	Other construction and public workers	850	665	185
34	Electricians	730	696	34
40	Construction apprentices, bulldozer operators	606	466	140
41	Heavy machinery operators	590	502	88
50	Painters, glassmakers, plasterers	442	423	19
57	Architects, technical engineers	286	280	6
	Total	13768	11253	2515



Annex Table 5

Professions in Commerce, Transport and Communication

Code	Profession	Total	Urban	Rural
3	Retail merchants	21276	11158	10118
11	Salesmen	3614	1871	1743
25	Wholesale merchants transporters	1211	780	431
43	Peddlers	562	317	245
54	Radio and Telephone operators	392	343	49
55	Owners and directors in Commerce and transportation	363	202	161
56	Others in commerce and transportation	330	253	77
59	Agents, sales chiefs	276	270	6
71	Warehousemen	119	115	4
8	Drivers, mechanics	7084	6228	856
	Total	35108	21422	13686

Annex Table 6

Professions Primarily in the Public Sector

Code	Profession	Total	Urban
7	Soldiers, policemen	9888	4547
10	Guard, militia	4069	1613
16	Primary School Teachers	2224	1323
33	Nurses, aides and other health workers	753	591
38	Prison workers, detectives	638	528
44	Secondary school teachers	546	481
46	Others in government administration	472	413
47	Others in administration and communication	471	389
60	Economists, accountants	258	254
61	Nurserymen	249	22
65	Armed Forces officers	195	157
68	Armed forces staff	167	156
70	Firemen, environmental protection officers	128	103
74	Judges, lawyers	99	78
58	Other school personnel	285	217
76	Doctors	88	84
82	Sociologists, anthropologists	43	40
83	Chemists, geologists	42	41
87	Insurance, real estate agents	14	13
91	Others in armed forces	5	4
Total		20634	11054