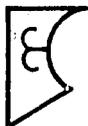


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ISLAMIC REPUBLIC OF MAURITANIA

Honor — Fraternity — Justice

Ministry of Economy and Finance

**Directorate of Studies and
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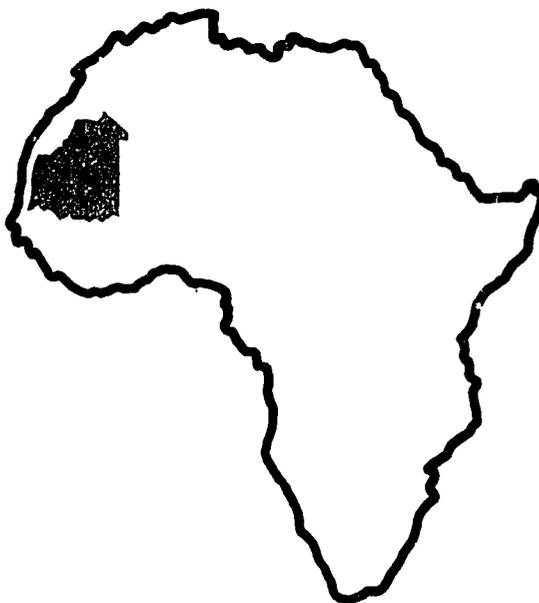
RAMS PROJECT

Rural Assessment and Manpower Surveys

Synthesis

S-1

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FOREWORD

In 1978 the Government of the Islamic Republic of Mauritania and the United States Agency for International Development embarked on a very substantial undertaking to provide the Mauritanian central planning group with a head start on the drafting of the Fourth Plan of Social and Economic Development (1981-1985). An expatriate team of specialists was to assist in the identification of a development strategy and alternate paths of achieving it. In view of the almost total lack of adequate data and analytical basis for the task, the project called for a series of underlying studies to produce information on manpower and employment, the resources and production systems of the rural sector, and its diverse ethnic groups -- how they function socially and economically. The combined effort is titled Rural Assessment and Manpower Survey, known widely by its acronym RAMS.

Starting in May 1979, the project engaged the efforts of 44 specialists for various periods over a span of 28 months. The results of their work are embodied in 44 formal reports and papers, and numerous special investigations and analyses requested by the planning authorities.

The purpose of this report is to give an overview of the RAMS project and how it fits into the Mauritanian scene. The reader will find few specific answers to questions or solutions to problems in these pages; for complete data, analysis, problem definition, and alternatives the reader will have to turn to the full reports and option papers.

This report describes and synthesizes the published output of the project, and relates the efforts of RAMS to the Mauritanian setting through the medium of a brief history of the evolution of selected aspects of the Mauritanian economy and how it was influenced by the government's planning efforts. Additional light is shed by a discussion of present system of Mauritanian central planning and its problems, and how the RAMS project sought to initiate a set of continuing activities aimed at the improvement of the planning process. The broad conclusions drawn from the work of the project are presented along with a discussion of the issues the government must confront as it pursues its stated development goals. Some observations are given on the advisability and nature of follow-on efforts after the completion of the project.

The reader who is familiar with the history and evolution of Mauritania may wish to bypass Part II which is a description of the Mauritanian setting. For the reader who is a stranger to Mauritania and wishes to absorb some of the background at first, it is advisable to start with Part II before proceeding to Part I.

Part III is an annotated bibliography including a guide to identifying reports relevant to main lines of interest; it is provided for those who want to identify specific reports of the RAMS series.

All of the information in this report was obtained from the RAMS documents with the exception of certain parts of the description of economic developments during the first two decades following Mauritanian independence in 1960. The latter were drawn from a variety of documents and reports resulting from economic surveys conducted during the period. Because the preponderance of information contained herein emanates from the RAMS project and with a view to promoting readability, footnotes have been limited to the bare minimum needed for explanation. There are no citations or quotations from either the RAMS reports or outside works.

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PART I

MANPOWER, EMPLOYMENT, AND RURAL
DEVELOPMENT -- OPTIONS FOR THE FUTURE

Synthesis Conclusions
Policy Issues and Options
Development Planning
RAMS - Challenge and Response
The Aftermath

I. Synthesis Conclusions

While professing a commitment to rural development since 1967, government activities toward that end have been modest, highly selective, and generally ineffective in producing widespread improvement in the conditions of rural life. From the time of independence in 1960, the emphasis of development investment has been on the buildup of the modern sector with the attendant concentration of resources on expansion of industry, government, urban facilities, transport and infrastructure. These investments have been largely non-productive, including many of the industrial projects, resulting in an enormous drain on Mauritania's slim resource base and a mountainous level of external debt.

To these woes were added the effects of a severe prolonged period of drought. Rural production dropped from a 1967 rural GDP of 1.07 billion UM to a 1973 low of 0.8 billion UM, an overall loss of 25%. However, the overall figures mask serious consequences. Cereal output, the mainstay of the diet, dropped precipitously 77% from the 1969 high of 1.09 billion UM to the 1978 low of 0.25 billion UM, while livestock output, the rural product most prominent in commercial trade and an important element of diet, dropped 26% -- and this does not reflect loss of capital from the death of about 30% of the herd. The government was compelled to import large amounts of cereals, as much as 120,000 metric tons in some years, to feed the people. A minority of these imports were obtained as grants.

Reeling from losses unknown in most of their lives and unable to support themselves, nomads and marginal cultivators participated in a simultaneous sedentarization and rural-urban drift of very great magnitude, swelling urban areas in search of work and disaster relief. This riveted the government's attention on solving the monumental problems of government finance, balance of payments, disaster relief, and keeping urban discontent and ethnic conflict below the boiling point. With an extremely limited force of experienced and capable executives, administrators, and technicians and the great demands on the government budget, the preoccupation with keeping the nation afloat did not leave much investment or talent available for rural development.

In the light of its other difficulties, the government seems to have given rural development second priority, and activity in the rural sector has been characterized by ad hoc programming dependent on external assistance for about 90% of its financing.

The two main thrusts in rural investment have been in assistance to nomads and livestock on the one hand, and the development of irrigated agriculture on the other. Both are understandable. Mauritania is pre-eminent in livestock raising and trade in animals. Livestock is the means by which tens of millions of hectares of uncultivable land with vegetation unfit for human consumption are miraculously converted to milk, meat, leather and money. It is not strange that the government should give what little priority it can spare to rebuilding the badly decimated livestock sector.

Those who do not live in arid areas can never quite understand the true meaning of "water is life", and the deepseated drive of desert dwellers to conserve and manage it. This has found expression in Mauritania's predilection for irrigation. The largest example is its partnership with Mali and Senegal in a large undertaking to tame the Senegal River, a program that will on completion greatly expand Mauritania's opportunities for irrigated agriculture. The appeal of being able to cultivate year after year oblivious of the vagaries of meager and highly variable rainfall is a formidable competitor for the rationality of a balanced approach to agricultural development that depends for its success on a statistically probable 4 out of 5 years of average or better rainfall over the very long term. Faith in rainfed agriculture is especially hard to maintain when the nation has for 9 out of 10 years during the decade of the 1970's experienced rainfall a hefty 26% below the annual average of the past 56 years.

The fact remains that the government's efforts in the realm of livestock and irrigation have been modest, and less than that has been done for all the rest of rural production. In fact, its price control policies for cereals require farmers to subsidize urban consumption to the extent that farmers cannot get a fair return on investment or labor, and there is little incentive to produce a surplus over their own needs. The farmers behave accordingly.

The entire process of development in Mauritania has been carried out without benefit of comprehensive long-range planning. It is a fact that the government has not had and does not now have the indigenous personnel or the organization to carry out such planning. The three modest national plans of the past two decades have been little more than statements of objectives, rationales, and inventories of project ideas -- some in progress and other awaiting consideration by potential donors. The lack of Mauritanian professional personnel has in part been made up by expatriates, only in part because they can not in their brief time in Mauritania completely substitute for a competent Mauritanian who understands his country and its people, has links with officialdom that only

a rare foreigner ever develops, has a stake in Mauritania's future, and remains in his country where his experience and expertise become part of the national resources. Given the fact that the government stated a recognition of this deficiency as early as 1963 in its First Plan and it has had the 18 intervening years to build a staff, it is difficult to infer that there is a substantial regard for the necessity of planning.

The Fourth Plan for Economic and Social Development, now in preparation offers an opportunity to make the character of the planning function more substantial than in the past. Though woefully understaffed and saddled with an organizational setting that exacerbates the difficulties of planning, coordination, and monitoring, the leaders of the planning group show a determination to try to turn the process around by taking a rational approach to the next five years within a twenty-year horizon. It is intended to devote the first five years to completion of projects underway and to create the conditions for a change in the emphasis in national development.

The potential new direction in planning comes at a time of great need. The financial excesses of the past two decades, the consequences of the drought, and neglect of the rural sector have reduced Mauritania to the status of an international dependent, its former robust survivability now replaced by international largess.

Mauritania has shown an uncanny ability to attract external assistance. Estimates place the total at about \$1.46 billion during the period 1973-1979, or roughly \$155 per capita per year over just this seven-year period which amounts to more than half the estimated present per capital national income. A portion of this amount is committed but unexpended, and it has been made available on mostly grant and concessionary terms, a significant share coordinated through the Club de Sahel.

But international financing has become increasingly difficult to obtain on easy terms. Long-time donors and lenders some years ago became resistant and demanded stiffer terms. Mauritania was able to soften the mix by obtaining financing from Arab sources. The roles have since reversed somewhat with western sources becoming more lenient and some Arab source hardening. How long the leniency will endure is anybody's guess, but it would be imprudent to count on it as more than a respite during which the government has a chance to improve its financial and economic management. The macro-economic norms by which international financial sources assess a government's performance and loan-worthiness are, in Mauritania's case, considerably out of alignment. Its present debt service ratio, for example, is in the neighborhood of 38%, while it is considered prudent not to exceed a long-term average in the range of 16-18%.

RAMS' analyses indicate that the potential exists for a substantial continuing flow of external funds to make up Mauritania's resource gap and that there is opportunity to do a great deal in rural development to redress rural production and improve the quality of rural life. If the government does not take advantage of these opportunities, then the outlook is very bleak indeed. Although rural output, even in its present state of development, is projected to increase about 54-62%, depending on rainfall, by the turn of the century, this increase will be swamped by an estimated 64% population growth during the same period. The implication is that food imports will continue to the end of the century and beyond at least at present levels.

On that note, unless something is done to rationalize the use of pastoral rangelands, progressive degradation will imperil Mauritania's ability to maintain its present level of livestock production. Coupled with population growth, the impending reduced level of output may well see Mauritania join the ranks of milk and meat importers with higher food costs for its already poor population, or face the prospects of drastic dietary deterioration.

Lack of rural opportunity will drive even more working age men to urban areas swelling the present 70,000 unemployed to 400,000 by the end of the century. This amount of unemployment will result in staggering social problems. But again, this need not be. There is opportunity to decrease unemployment substantially if the government adopts policies that favor labor intensive urban and rural production. This is an especially urgent problem because even the rosier projections of employment in agriculture, livestock and traditional fisheries -- those resulting from assumptions of maximum production -- indicate an insufficient number of jobs to absorb present and future labor supply.

Development opportunity and means are and seemingly will be available to soften substantially the severe projections of present trends. However, the scale and complexity of the problems of strategy, balanced allocation, appraisal, coordination, and implementation are beyond what can be accomplished by intuition and hunch. And the slim margin of error available in the financing of the effort makes anything short of the discipline of a seriously planned program certain to jeopardize prospects for future financing. RAMS has made a contribution to the potential effectiveness of that planning task.

Put quite simply, Mauritania needs to grow more food and create more jobs. The technical opportunities, plans, available financing will count for little in the absence of major institutional reforms.

The main constraint to development is the pervading lack of adequate manpower at all levels of skills and in all areas of activity from government services through the modern public and private sectors, on down to the level of that part of the urban and rural labor force which needs basic literacy and numeracy. The Mauritanian educational and vocational training system is ill matched to the kind and amount of demand placed on it by the government's development objectives. If there is serious intent to achieve these objectives, that intent has to manifest itself first and foremost in the reform of the educational system. The rate of progress of that reform will directly affect the pace at which development plans and programs can be formulated and carried out.

The same can be said of the health system. The development objectives of equitably distributed well-being for all the people requires a reorientation of health care from overwhelming concentration on Nouakchott curative services for the few to a more equitably distributed system that retains its curative aspect but places greater emphasis on widespread preventative public health and nutritional services for the many. Here again, manpower is a powerful constraint. Since the health system performs its own education and training function, the reorientation will have to be reflected in the kind and numbers of health professionals trained as well as in structural reform of the health delivery system.

Every other government service responsible for development activity will have a greatly expanded role over the traditional functions of control, reporting, and maintaining a presence in the hinterlands. They must become agents of change, and more and better trained and motivated people will be required to do the job. A hopeful sign in this respect is the government's decentralizing of the planning exercise to get more regional officials and citizen participation in formulating the plan. RAMS' participation in a series of six regional development planning seminars yielded an experience in active and intelligent local involvement and a conviction that this effort should be continued and reinforced if the government supports a comprehensive planning effort.

These are only a few of the wide range of policy options and issues facing the government. They are given fuller discussion in the following section of this report. If Mauritania's leaders can resolve these issues in a manner that diminishes their restraining influence on the achievement of the stated development goals, then planning has a future. The result cannot help but be a more robust society with a higher standard of living.

II. Policy Options and Issues

The alternative strategies examined in the RAMS option papers span the entire spectrum of possibilities lying between a continuation of past and current practices and the full achievement of the government's stated goals to the planning horizon of the year 2000 as they apply to rural development and manpower and employment. To maintain the current way of doing things -- the same development policies, same human and financial means applied in habitual ways -- will result in a progressive deterioration of production, income, employment and, thus, the standard of living that can be assumed, when the facts are known, to be unacceptable on political, if not humanitarian, grounds.

Indeed, with a 2.5% annual population growth, it will take a substantial change in past practices and much greater government effort and effectiveness in raising the level of production, income and employment merely to maintain the status quo -- not in terms of the macro-economic "per capita GDP" but at the human level in terms of the same proportions of the population actively employed producing or earning enough to be able to consume the same package of goods and services. It is hard to conceive that maintaining the status quo would be chosen as a development objective.

Any strategy that entails greater achievement than the maintenance of the current low level of popular well-being runs into a series of constraints and raises issues that must be confronted before any progress can be reasonably expected. These constraints concern the availability of financial resources, investment opportunities, manpower, and social and institutional impediments to progress.

Availability of Financial Resources

The RAMS approach to analysis of the availability of financial resources for development is a macro-economic simulation model that is used to determine the amount of resources needed to achieve the growth implied by Mauritania's development objectives. This amount less the amount of domestic savings results in a resource gap that represents the need for external financing.

The analysis indicates that following a period of adjustment and assessment, if prudent measures are taken, there will be adequate resources for both the urban and rural sectors. If balance of payments and budgetary constraints are observed, while a reasonable debt service ratio is set as the key guide to financial restraint, then anticipated export earnings plus foreign grant and concessional monies should suffice to fill the resource gap.

But, as the government proceeds along its development path, careful decisions will have to be made regarding the allocation of these resources. The assumptions require that existing resources be consistently and effectively managed. Unproductive expenditures, particularly if made on a grand scale, could undo Mauritania's potential for obtaining financing.

The government recognizes that it must go through a transition period to shift and adjust present development policies. There is a need for a more stringent and, in some cases, austere approach to achieve accelerated growth with equity to revitalize the rural sector. Specific programs of rehabilitation have previously been outlined, IMF assistance granted, and steps taken to stay within financial constraints. Negotiation and actions are well along in an effort to ensure the continued availability of foreign exchange earnings from the mining sector. The government can also in the immediate future question itself to ensure that already committed programs in all sectors are directed in the short run toward identified priorities with clearly long range development objectives.

Investment Opportunities

On the assumption that the government will husband its resources for development, the more difficult tasks will be in finding the appropriate investment opportunities and undertaking them well. Before deciding on specific investment decisions, the decisions on the sectoral allocation will have to be made. This will require balancing the use of funds between productive enterprises and providing the services that make it possible for such enterprise to function and following that, deciding specifically on the kinds of enterprises that warrant investment, and how much and for what.

The RAMS approach to identification of investment opportunities is via the study of activities to be undertaken in order to achieve the government's rural development objectives. These studies are embodied in the various option papers concerning alternative development strategies. The productive investment opportunities are an outgrowth of the rural production options, and the sum of investments required of each strategy represents the level of productive investment opportunity. The levels suggested by the option paper are substantially lower than the level of investment that would be possible according to the macro-economic model used to determine the availability of financing. While there are factors that could explain a good part of this difference, the strong implication remains that there is a potential for investment for which no ready set of programs seem to be in mind.

Manpower

Lack of manpower is not a problem, at least in terms of numbers. To the contrary there is a problem of finding enough new jobs to employ those entering the labor market. If current practices are followed, the present estimated 70,000 unemployed, largely in urban areas, could grow to 400,000 by the end of the century. This would represent an alarming percentage of the work force. The figures cited do not include rural under-employment which is believed to be widespread. As discussed below, there is a manpower constraint to be overcome, but it is one of the shortages of trained manpower from the entrepreneur to the literate unskilled laborer.

The constraints to development, therefore, are not primarily monetary but, rather, social and organizational, coupled with a lack of trained as opposed to general manpower.

Social Issues Affecting Rural Development

The ethnic diversity complicates a number of social issues bearing on rural development. Varying attitudes about health, nutrition, education, individual versus cooperative endeavor, agricultural labor, risk aversion, individual versus hierarchical control of the land and its production, and land ownership are issues that can frustrate attempts to establish universally applicable laws, regulations, and practices in areas inhabited by two or more different ethnic groups. Development programs that do not take these differences into account and try to accommodate them risk alienating the disaffected group or groups and jeopardizing their participation.

There are undoubtedly many such constraints but a few of the more obvious ones readily come to mind. There is a problem with respect to land tenancy -- how this issue affects who should work the land, and for what rate of return, and who should or will make the necessary investments if the land is going to produce effectively. As noted earlier if these kinds of issues are not resolved, then government investments in irrigation infrastructure and other aspects of agriculture will not produce the growth potential the economic models indicate is possible.

The entire area of price policy, particularly for agriculture, complicates the formulation of an appropriate program for agriculture investment and production. Decisions regarding the prices of farm products affect farmer income, hence the decision to invest and produce. If prices are kept artificially low, or foreign aid agricultural commodities are dumped into the market, there are disincentives to produce. On the other hand, there are pressures by consumers, particularly those in the urban areas closer to the seat

of political leadership who may carry more political weight, to keep prices to consumers artificially depressed.

Work Attitudes

There is the entire question of attitude toward work and education. Are existing attitudes a hindrance to development and, if so, at what pace and how should they be changed? What should be the role of public education in this process? Is the role of the functionary to be helpful to the people they serve or is public office an escape from being involved in these kinds of problems?

All these issues are a reflection of a complex traditional society whose exposure to modernization is only recent. The complexity in Mauritania is compounded by the fact that there are a number of societies living side by side with varying degrees of overlap and conflict and in the process of trying to share political power, if not leadership. These factors impinge on the political decisions relating to development as well as complicating the task of carrying out those decisions once taken.

Urban-Rural Competition for Resources

Independence brought forth the emergence of an urban sector which hardly existed in the colonial period, except to provide minimal services for the rural areas, and a small separate economy based on mineral production that dealt with the outside world. The emergence of government functions created urban areas, particularly Nouakchott, which were viewed as outlets for the under-employed and those with low and uncertain income in the seemingly more disadvantaged rural areas. A movement of people to Nouakchott started and built momentum reinforced by the effects of periodic drought. Initial settlers in urban areas called forth their rural dependents to join them. Services for the swelling urban areas, though inadequate, constantly attract people from the stagnant rural areas. The availability in urban areas of a wide variety of appealing modern gadgets plus subsidized food added to the attraction. Today, there is little obvious evidence of malnutrition even in the squatter areas on the edges of Nouakchott. As urban population grows, more pressure is placed on government to shift the balance of power and allocation of resources to urban areas. (Compare the situation regarding the agricultural price policies noted above.) Another example is the emphasis in public health expenditures which are very largely made for visible, curative facilities in Nouakchott, even though the Third Five-Year Development Plan indicated that regional facilities were to be created.

The escape from this vicious circle is only in part to take the difficult and perhaps politically unpopular decision to reverse the balance in the allocation of resources to the rural areas. This, by itself, may be exceedingly difficult, if not impossible, to accomplish. The countervailing pressures may be too strong. An expanding level of overall resources, however, makes it possible to satisfy in large part the various contending pressures. The macro-economic simulation model postulates investments in manufacturing and industry, as well as the rural area. If the figures used have some element of reality, funds would be available for economy-wide development and thereby result in achieving progress in both areas. If rural production is not maintained, then the non-rural area will have to buy (or receive as grant assistance) more food from abroad while sustaining an even greater rural-urban migration. On the other hand, if there is more productive enterprise in the urban sector, this will provide expanding markets and opportunities for the rural areas, thereby lessening the pressure on rural-urban migration.

Stemming Rural-Urban Migration

An area of compromise which is worth considering is to attempt to diffuse the rural-urban movement by offering more opportunities in towns. It would agglomerate people in smaller groupings but still in sufficient numbers to provide economies of scale in public services. Secondly, the rural-urban movement would occur over relatively shorter distances and a portion of the people could remain a rural setting while still working in the urban sector. Different family members could, therefore, work in different sectors while still living together. It would be less disruptive of the social structure.

The issue is to determine the projects that could be located in provincial centers and be undertaken by the people themselves as entrepreneurs (public, semi-public, or private), managers, skilled workmen and literate unskilled workmen.

Government policy has to encourage labor-intensive industry and, with few exceptions, on a case-by-case basis, discourage capital-intensive projects. To do so, however, efforts would have to be made to identify new industries at the individual project level. The identification process needs to include specific location and provide emphasis on spreading small-scale manufacturing and processing plants throughout the country. To the extent these activities can utilize materials from the rural sector (e.g. food processing) or find its market in the rural sector (e.g. agricultural implements), then the process would be made easier and have greater opportunity of success.

Education and Training

If both agriculture and small-scale-intensive industry are to be made more efficient and expanded, there must be a drastic overhaul of the educational system. Possibly, this may have to be at the expense of certain cultural values and the government's leadership will have to face this fundamental decision. If, however, output and income are to be expanded and unemployment reduced to acceptable levels, a better trained labor supply is a sine qua non. At the start, provision must be made available in the education budget to increase literacy and numeracy for both men and women so that a level of at least 70% literacy for those in work force can be achieved by the year 2000. (RAMS report on Education as a Development Tool provides specific proposals for educational reform, including a mass literacy effort.) This could largely be accomplished by shifting funds from higher education, though at the primary level there would have to be qualitative changes. The primary level of study for the foreseeable future for by far the largest segment of the population for both men and women, would be terminal. Primary education would, of course, also remain as the base for proceeding on to higher levels on a functional basis. In this manner primary education would serve both the mass of the population that go no further and the much smaller number that continues.

Another facet of the employment/manpower and, hence, education issue is the more selective one of increasing the supply of trained manpower from the skilled worker and agriculturist categories to the managerial and entrepreneurial levels, both for the public and private sectors. Hence, hand in hand, while searching for and designing labor-intensive employment opportunities, there would be a need to ascertain trained manpower needs and to design a nationwide policy and program to require, or encourage, the public sectors to provide the necessary facilities.

Grass-roots Planning Input

The process of assessing specific needs to meet development goals may have its origin in global terms at the national level but can and should also be carried to the regional level. RAMS, in fact, has participated in the beginnings of such a process through its role in the regional seminar program carried out over the past year. This initial effort indicated that regional governments can be organized to inventory their resources, postulate additional or expanded productive activities, both rural and urban, catalogue the shortfall in services, manpower, markets, infrastructure, and other factors which inhibit the application of existing resources to new opportunities and from this derive practical local develop-

ment plans. Both the public authorities and the community private leadership can be mobilized in this effort. Building on such local initiative, a program could be worked out with national authorities to provide the missing ingredients. The national authorities would have the task of coordinating such plans from all the different areas and adjusting them to the availability of resources. This very process would upgrade the planning skills of regional authorities and involve community leaders in the process. Initial judgments would then be made by the persons closer to the scene but reviewed by those with a national outlook. Such an effort would require trained national leadership and selective training for regional staff.

The issues raised above represent alternative strategies for development in the sense of indicating that present practices and programs do not appear to be leading toward the government's development goals. Key issues must be confronted and, in large part, resolved, if a growth in output with equity is to be achieved. Once basic decisions are taken, the alternatives become more a matter of degree and tactics. For example, as noted there is a fundamental decision to be taken with regard to land tenancy. Are the present practices and systems really to be altered in order to provide the incentives to increased output, despite all of the social resistance that this may meet? If the answer is positive, then there are varying tactics to be followed and different rates of time over which different activities will take place, but these would not be truly alternative paths of development.

The same kinds of decisions will have to be answered explicitly or de facto as regards the provision of education and public health and other social services. Are basic changes envisaged that will lead toward development in the modern sense, or is it considered socially more prudent, if not desirable, to preserve and quite possibly expand the existing traditional systems, even if there are only limited resources to do so? RAMS studies support the latter.

The foregoing discussion deals with the economy in total and makes the point that the problems of the rural area are not independent of the rest of the economy. The RAMS charter was, however, centered on a "Rural Assessment", and RAMS studies, both in Phase I and II, dealt specifically with this major component of the Mauritanian economy.

One set of alternatives before the GIRM is between continuing the present course of action which, particularly for agriculture

and fisheries involves an under-utilization of available resources and, on the other hand, technologically upgrading the present system. A more drastic shift would be to move from technological improvement for the existing pattern of production to a concentration on new systems, i.e., irrigated paddy lands as the main element in agriculture, plus the development of industrialized maritime fishing. As noted above, the basic issue is not entirely an "either-or" situation but rather one of emphasis. In the several options cited, cultivation practices are to be improved for rainfed and recessional agriculture while irrigated perimeters are to be expanded as well.

In summary, among the many decisions to be taken and issues to be confronted by the GIRM in pursuing its development objectives, the RAMS studies and Option Papers have highlighted the following that must be considered no matter which of the rural production options are selected:

- a. Is the government prepared to observe the budgetary, balance of payments and debt service restraints necessary to generate the funds for investment in both rural and urban areas? Recent agreements with the IMF indicate that it is.
- b. Will realistic analyses be undertaken to ascertain the social constraints to increased investment in agriculture and effective programs be designed to ameliorate them? A major issue here is land tenancy.
- c. Will a critical look be taken at GIRM technical services to agriculture, livestock and fisheries to make them more effective, to reach a larger audience and to have more acceptability? Will the necessary complementary facilities such as credit be made available so that more modern techniques can be introduced?
- d. Will agricultural economic policies, such as decisions on the price and importation of cereals be made to encourage agricultural production?
- e. Will efforts be made to establish specific policy guidelines integrating basic human needs with growth objectives and stressing that services, such as public health and education are extended nation-wide and, in particular, to the rural areas?
- f. Will the education system be restructured in order to move toward universal literacy and begin to provide the trained manpower required for development?

- g. Can development authority be shared at the regional level, and can regional staffs be augmented and better trained to accept this responsibility?
- h. Will efforts be mounted to identify and elaborate labor-intensive agricultural-related small industries that can be located in the smaller urban centers?
- i. Lastly, will consideration of these issues be given in the context of an overall planning process which requires not only training of personnel and adequate budget but also endorsement and continued support at the highest level of government?

III. Development Planning

Centralized planning in Mauritania has never been a tight, neat, all encompassing, logical exercise that one normally associates with that concept. It has had a particularly torturous and rocky road to travel for a number of reasons which in retrospect may well induce a critical observer to wonder at how much rather than how little has been accomplished. In the twenty years preceding its present organizational home in the Ministry of Economy and Finance, the central planning function has twelve times been shifted, grafted and comingled to and with other, sometimes bewilderingly inappropriate, government organizations and activities in the seemingly endless search for the right place at the right time. Among these apparently odd combinations have been government ministries and departments concerned with lands, urbanization and tourism; civil service; foreign affairs; rural development; crafts and tourism; mines; and fisheries.

In between these strange attachments the planning function had on three occasions been affiliated with organizations that would be thought more or less ideal in terms of providing it with a position in government hierarchy enabling it to relate effectively with the sectoral ministries. The first of these was the Commissariat Generale du Plan in the Bureau of the Presidency in 1963, roughly coincident with the start of operations of the First Plan. However, this arrangement suffered from the lack of a formal planning focus on the part of those in charge of the Bureau and their preoccupation with the higher priority affairs of the Presidency. The commissariat was dissolved in 1965 and planning was incorporated into the Ministry of Finance along with civil service.

The second occasion arose in 1968 when, following upon the recommendations of a World Bank mission, the focus of development strategy was shifted toward rural development. The planning function was incorporated into a new Ministry of Plan and Rural Development for the purpose of producing the Second Plan. Coordination was to be achieved by an Interministerial Programming Committee of representatives of concerned ministries to study planning and programming problems, screen proposed projects -- especially private enterprise projects requesting fiscal incentives, coordinate the design and implementation of programs, and study the national investment and operating budgets for conformity with plan objectives. The committee failed to deliver on these grandly conceived responsibilities because it was not given either staff or authority to make decisions. It degenerated into a group that met primarily to approve business requests for fiscal incentives. To fill the void

the Budgetary Coordination Committee was formed in 1969, chaired by the President himself with the ministers of finance and rural development as permanent members. Other ministers participated as appropriate to the matters under discussion. The functions of the new committee were to reduce conflicts arising out of budgetary allocations and to assure that development objectives were not submerged in the process. For reasons that are not entirely clear, this new committee failed to live up to expectations.

The third occasion of seemingly effective location of the planning function in the administrative hierarchy was the creation of the Ministry of Plan under the umbrella of a super Ministry of State for National Economy. The principle here was that the Ministry of State would group all the economic ministries under its wing and exercise a coordination and arbitration function among them. This arrangement terminated in 1977 when the planning function was joined by crafts and tourism in a new ministry.

The logic behind these numerous moves seems to have been the desire of government to place the planning function in close proximity with those activities of particular concern at the time or under the direction of a particularly desirable ministerial management. Whatever the logic, the shuffling of the planning group among so many organizations can not but have had an unsettling effect on it and impeded its evolution as an effective instrument of government development efforts.

The Present Planning System

The present formal set-up of the planning function includes three permanent working units -- a high level ad hoc body to provide sectoral coordination and synthesis, a group of twelve ad hoc regional consultative commissions to provide country-wide inputs, and five ad hoc national consultative commissions to deal with sectoral problems. This system is a reconstitution of the organization of the preparation of the Third Plan (1977-1980) which was disbanded after that plan had been formally adopted.

The three permanent working units of the system are the Directorate of Studies and Programming, RAMS' counterpart office; the Directorate of Projects; and the Directorate of Statistics and National Accounts -- all in the Ministry of Economy and Finance.

Although the Directorate of Studies and Programming is involved in many aspects of government activities, its principal task is to coordinate the formulation of the plan document and to initiate socio-economic studies needed for the national planning effort. Its theoretical role in screening projects in terms of impact on macro-level targets and plan objectives is constrained by an

incommensurate position in the hierarchy, weak linkages with centers of policy-making and decision, and staff limitations. The Directorate of Projects, created to provide financial liaison with donor agencies, is principally responsible for control of project implementation and disbursement of funds. However, the boundaries of responsibility between these two directorates are blurred in practice, and, in absence of observance of rigid procedures, donor agencies at various times may negotiate projects with either one or the other, and project identification and design may be carried out directly with a technical department of the government without the participation of either directorate. Although joint programming exercises by the donor with the planning organizations and the operational units are sometimes conducted, there is no systematic annual programming procedure involving the donors and the government with the result that each ministry often operates in its own interest without regard to global policy, strategy, sectoral and financial consideration.

The Directorate of Statistics and National Accounts has the task of collecting, organizing, storing, analyzing and publishing the statistical information on the economic, social and cultural state of the country. Its central role as a vital planning resource is compromised by lack of means and personnel and by the absence of well developed procedures and linkages for obtaining data from the departments of government concerned with the rural sectors. To that must be added the low capacity of these departments themselves to undertake surveys and collect statistics on the rural sector.

In a new approach adopted for the Fourth Plan exercise, the regional and sectoral commissions are provided, by the Directorate of Studies and Programming, with explicit instructions and guidance including a resource inventory to indicate potentials, a definition of constraints, and a planning horizon extending at present to the end of the century. Within this framework, the commissions established their suggestions for respective goals, priorities and proposals.

The Synthesis Commission is chaired by the Minister of Economy and Finance, first among equals of the chairmen of the five sectoral commissions -- rural development, human resources, industrial development, territorial development and infrastructure, and economic relations and finance -- all of whom are ministers of concerned units of government. It has the task of establishing the relationships among the objectives formulated by the sectoral groups, arbitrating any conflicting recommendations, and formulating development strategy and objectives. The Commission's final report is submitted to the government policy-making body, the Military Committee for National Salvation for approval upon which it becomes the guiding document for elaboration of the Plan.

The proposals of the regional commissions and the sectoral commissions for specific projects are screened by the Directorate of Studies and Programming according to their impact on the macro targets and plan objectives developed by the Synthesis Commission. The surviving proposals become candidates for inclusion in the Plan, in principle on the basis of their rank order of efficiency. Once the plan has been shaped by the estimated availability of likely domestic and external financing, the final document is presented to the Prime Minister and thence to the Military Committee for National Salvation for final approval. It then becomes the official development plan.

In common with most other government activities at all levels, the planning group has from the time of its inception suffered from the lack of adequate staff. From the very beginning, at the time of independence, it has been almost totally dependent on expatriate intellect and experience to accomplish its work. As useful and necessary as this help has been, it was a twenty-one year stop gap measure that failed to satisfy the Mauritanian need for a permanent indigenous planning staff that grows professionally on the job with a stake in Mauritania's future, and whose experience and expertise -- an important part of the national resources -- remain in Mauritania. This dearth of manpower is more critical in the planning area than in any other aspect of government operations. It has stunted the growth of what otherwise may have been expected to develop into the government's central nervous system -- providing the guiding concepts and comprehensive coordinated plans of operation in the development field to the operating ministries, evaluating projects, monitoring their progress, and applying their feed-back to tune future operations and plans. Without such a coordinating mechanism and the organizational muscle to ensure plan discipline, Mauritania's ministries take little note of the plan document, preferring to follow their own interpretations of Mauritania's needs in their respective fields of activity. As a result of this absence of a full scale plan and the "go-it-alone" mode of operation of the ministries, Mauritanian development has the character of a random response to the perceived opportunities of the times, both in terms of what to do and how to pay for it.

The bilateral and multilateral donor agencies which finance about 90 percent of the development effort play a substantial part in this process. Lacking the guidance that a proper plan would provide as a statement of the government's development policies and intentions yet recognizing the need that something be done, they have dealt directly with the individual ministries in negotiating projects and financing. Granted there are no shortages of useful things to do in Mauritania, solving the problem of choosing among them for the most effective and mutually supportive undertakings has never been faced up to by

either the Mauritians or the donor agencies. The consequences in terms of bad project design, waste, mismatch, irrelevance, and the attendant squandering of resources have been substantial.

Perhaps the most critical constraint to effective planning has been the almost complete lack of reliable basic data on the nature and extent of Mauritanian rural resources and on the people and their socio-economic behavior. Until the 1977 census, the only relevant population data were the results of a 1965 sample demographic study which had been rendered obsolete by the wrenching changes caused by the long drought. Other basic work was accomplished in the form of program of geological aerial surveys and geological mapping, and various hydrological studies to determine the country's water resources. A variety of other studies on resources and the people of Mauritania existed in various places within and outside of the country, but there was no comprehensive national inventory of the available work pulled together in a form that would constitute a useful resource for planning. Since the lack of such data made it impossible to produce plans and projects with any precision and dimension, it was a gap that would have made the best staffed and organized planning effort powerless to work effectively.

The problem had been recognized at the very outset of Mauritania's independence and became an important element in the work scheduled in the First Plan -- and in each of the two subsequent plans. But these studies were largely unaccomplished as the end of the 1970's approached, and this dimmed the prospects of an effective Fourth Plan scheduled for the early 1980's. The following chapter recounts the challenge posed by the problem of overcoming the government's lack of a working rural and manpower data base and planning methodology and the response in the form of the Rural Assessment and Manpower Survey.

IV. RAMS - Challenge and Response

The government embarked on the Third Plan (1977-1980) with the fundamental guidelines being the well-being of its citizens and a striving for economic independence. It was recognized that the depressed rural sector had an important potential contribution to make to the achievement of the realization of those broad goals, and it was assigned priority in terms of food self-sufficiency, protection of the environment, and increased income equitably distributed.

Within those still broad objectives, the government was faced with making imminent decisions on the choice of strategies and development paths that would have long term consequences and require the commitment of very substantial resources. But, because of inadequate information and an almost total absence of an analytical base with which to accomplish the task, it found itself helpless to define the alternatives with precision and to do the necessary critical examination. The problem has existed since the time of independence when central government planning had its beginning. At that time the need for a solution did not appear acute because, given the comparatively good condition of the rural sector, the main lines of a development policy had been adopted and no alternatives were to be considered. 1) Population growth and the hellish events of the late 1960's and the 1970's converted what had been a nagging need for information and data into a critical necessity.

A second problem, no less important, was the lack of precise information and data on the state of the country's human resources. It was obvious that Mauritania had a staggering need for appropriate manpower if it were to achieve an expanded level of activity in all sectors of the economy. At the same time, the urban areas and the countryside had vast pools of unemployed and underemployed due to the deterioration of the traditional livestock and agricultural ways of life under the influence of prolonged drought. Skilled manpower had always been in short supply, and the rural sector had long had an excess of labor which Mauritania exported to its neighbors and

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- 1) The major natural resources -- mineral deposits and coastal fishing grounds --- were to be exploited, exterior trade was to be diverted from Dakar and from crossing the southern borders, livestock raising was to be furthered by pastoral wells and firebreaks, and the shift from nomadism to transhumance was to be encouraged by the building of dams to expand recessional agriculture.

to France. But the dimensions of the scarcity of skills and the oversupply of labor had become enormous under the combined effects of modernization, the mass sedentarization of nomads, and the urban migrations of all classes of rural peoples.

The twin goals of popular well-being and economic independence clearly could not be met without addressing the manpower and employment problems. The government placed a high priority on filling skilled manpower gaps in the public and private sectors of the economy and on generating employment for the unskilled in urban and rural areas. These objectives carried over to the Fourth Plan, and to achieve them it was necessary to develop a data and analytical base for designing cost-effective programs.

To meet these needs it was essential to have external assistance as the government had neither the professional manpower nor the means to finance an effort of the required magnitude. Support for the undertaking was found from the U.S. Agency for International Development and resulted in an agreement to conduct two studies -- a Rural Sector Assessment and a National Manpower and Employment Study -- under the collective identification Rural Assessment and Manpower Survey (RAMS).

The Project Objectives

An American contractor working under the guidance of the government was to prepare, analyze, and review:

- . Two alternative development paths, including associated strategies for integrated rural development and the amelioration of manpower and employment problems. With respect to rural development it was required to consider organizational alternatives for the implementation of major interventions, various public/private sector mixes, various implementation modalities reflecting the peculiar sociological milieu, and new projects associated with the development paths and strategies;
- . Evaluations of a number of existing projects in the light of the global view presented by the development paths and associated strategies.

Additionally, an examination was to be made of the possibility of regenerating the environment of the southern third of Mauritania.

Project Accomplishments

The work of the project was accomplished in two phases, the first of which was concerned with the investigation of Mauritanian physical and human resources in terms of their economic and social attributes and the manner in which they function, and the second of which was concerned with the integration and synthesis of that information and data to produce a series of options for a development strategy.

PHASE I: DATA GATHERING, DESCRIPTION, AND ANALYSIS

The amount and usefulness of published work for the purpose of accomplishing the objectives of the project and for satisfying the government's need for data and analysis directly applicable to planning was very scant indeed. Accordingly, it became necessary to do a substantial amount of field survey work to attempt to fill the gaps in available information. In most of the areas of inquiry covered by the project, this amounted to a landmark effort to break new ground in the history of data gathering in Mauritania, and involved direct access to the rural population rather than mining pockets of data collected locally but not reported in any systematic manner. Survey work on this scale had not been envisioned in the design of the project and the resources available to carry out the work were slim. Economies had to be realized in survey design, since the number of surveys was fixed by the need for broad coverage of subject matter. Consequently, the results must be considered impressionistic rather than models of statistical precision and reliability. Nevertheless, they are in most cases the only available data on the subject and will serve as baselines against which the results of future developments may be measured.

The 30 formal studies of the first phase may be viewed in six broad categories - agro-ecological (2), demographic (1), rural household (2), sociological (7), rural sub-sectoral (8), and functional (9) -- supplemented by an annotated statistical compendium that provides a ready reference for those interested in rapid access to bibliographies, sources, and to selected data appearing in the individual reports. A brief summary of the first phase reports provides an appreciation of the magnitude of the undertaking. A full description of each report appears in the annotated bibliography in Part III of this report.

Agro-Ecological Studies

The two agro-ecological studies are concerned with the physical description of Mauritania with special emphasis on the areas suitable for rural production. The analysis of physical characteristics and appropriate land use allows the classification of about a third of the national land area into agro-ecological zones typified by the kinds of rural production for which each is predominantly suitable. Since these zones have for millenia been under the threat of desertization from natural forces favoring the spread of the Sahara and more recently subject to desertification and other phenomena resulting from man's abuse of the environment, the studies are concerned with environmental constraints, the state of degradation of the environment, and the prospects for regeneration as critical inputs into the consideration of programs for protection of the environment and expansion of rural production.

Demographic Study

During the past two decades Mauritania's demography has been through the most wrenching change in the long history of the area. Modernization, sedentarization of nomads, and the shrinkage of cultivable land due to prolonged drought have induced massive population shifts toward urban areas and towns and have resulted in the death of old communities and the creation of new ones. The attendant pressures on urban services, changes in the rural population and work force, and ethnic and social disruption are on-going phenomena. The first national census (1976/77), together with observed trends and anticipated economic events, presage a continuing demographic instability that will substantially affect development efforts over the next twenty years. This study analyzes those developments and attempts to give them direction and dimension as a basic input to all RAMS studies and government planning efforts.

Rural Household Studies

Prior to these studies there was no comprehensive data on the nature and amount of rural income and expenditure of the various ethnic groups, regions, and nomads of Mauritania. The RAMS Household Survey that provided the data for the studies was conducted under stringent limitations on budget and availability of field personnel and greatly complicated by linguistic variations among the polyglot ethnic groups. The survey itself must be considered an experiment in extensive simultaneous field research directly accessing the Mauritanian people in their rural milieu. Statistical purists may find grounds for criticism of sample design and survey methodology, and by implication the inferences drawn from them; however, the

results were checked for reasonableness and concurrence with known norms of similar populations and the product of the research is presented with all due humility. When all is said and done, this is the only available data of its kind, and it has enabled critical analysis of the nutritional aspects of rural health and estimates of the nature and amount of future food and non-food consumption that bear importantly on planning for rural production over the next twenty years and anticipating the burden on external trade and the balance of payments.

Sociological Studies

The problems of rural development, in fact every aspect of national and local affairs, are enormously complicated by the great cultural diversity of the six main ethnic groups and many subgroups resident in Mauritania. A national identity and the community and public spirit that grown out of it are still in the most elementary stage of development. In the absence of these homogenizing influences, ethnic identity and cohesion are powerful and pervasive. Differences in the way the various groups are hierarchically organized, manage their economic affairs, regard work, accumulate and hold wealth, and are motivated or turned off make a common approach to gaining their cooperation and participation unworkable. These studies, of particular usefulness to development program planners, present description and analysis of some of the salient factors to be considered in trying to understand what makes Mauritians tick and how to take their attitudes and behavior into account in planning for rural and manpower development.

Rural Sub-sectoral Studies

There are six distinctly different types of rural production in Mauritania, exclusive of handicrafts, and subtypes within these. Agriculture accounts for three, differentiated by their access to water as irrigated, dryland, and oasis agriculture. Livestock is another, and the most important from the point of view of value of production, liquidity, marketable surplus, internal and external trade, and productive as well as destructive use of the environment. The remaining two are in the domain of fisheries -- maritime and inland.

Where formerly rural production accounted for the largest part of national output and sufficed to feed the population and provide a marketable surplus, the effects of drought have reduced all but livestock, maritime fishing, and oasis agriculture to meager levels of output making it necessary for the government to import over 100,000 ton of cereals in some years, reducing nutrition to

unsatisfactory levels, and changing the patterns and increasing the cost of food consumption. Livestock and oases agriculture were also seriously affected but still produce marketable surpluses, albeit at lower levels. However, they are imperiled by environmental degradation, and their future is seriously clouded unless remedial action is taken.

Drawing heavily on the RAMS agro-ecological, demographic and social studies supplemented by extensive field work, these studies describe the current status and potentials of each sub-sector in substantial detail including the existing environmental, social and institutional constraints to improvement. They constitute the raw material for the Phase II option papers on development strategies for rural production and government organization for rural development, the methodological paper on rural GDP and sectoral allocation of investment, and interact with the studies on nutrition and rural health as inputs to the rural health and nutrition optional development strategies, as well as the option paper on manpower and employment development.

Functional Studies

A major area of concern in dealing with manpower and rural development is the definition of requirements for the two most fundamental elements of basic human need -- adequate nutrition and health -- and for education, training, and employment that will enable the Mauritanian people to engage in expanded economic activity and enjoy an improved state of well-being. A companion concern is the capacity and willingness of public and private institutions involved with those needs to do the necessary things, the planning, implementation, and delivery of services, the exercise of initiative and entrepreneurship, without which the process of development in a stagnating society can not be initiated and sustained.

The nine functional studies evaluate the current state of nutrition, rural health, formal and non-formal education and training, manpower and employment and how they measure up to what will be required to realize the government's development goals. Two RAMS surveys on skill qualifications and employment provided indispensable data for the manpower and employment studies. The public and private institutions responsible for these various areas of activity, or that could play an expanded role, are examined from the point of view of how they function and how their performance could be enhanced. The results of the analyses bear decisively on the consideration of development strategy options.

PHASE II: OPTIONS, PROJECT IDENTIFICATION, AND REGIONAL PLANNING

The activities of Phase II of the RAMS project were concerned with forging useful planning tools and demonstrating their application by elaborating alternative development strategies, identifying and formulating projects for consideration within those development strategies, and carrying the planning process down to the regional level of government -- all of which are based on the work accomplished in Phase I. The descriptions that follow are grouped under the three broad categories of Options, Project Identification, and Regional Planning.

Option Papers

The eight studies in this category are made up of three planning frameworks which are complementary methodologies for imposing boundaries, order, and selectivity on consideration of optional strategies; four studies of options for alternative development strategies for rural production, government organization for rural development, public health and nutrition, and manpower employment; and finally a paper that consolidates and presents the major issues emanating from the other seven.

Methodological Studies

It is intellectually conceivable that a universal econometric model can be devised that would start with highly disaggregated data and work through successive stages of aggregation to produce intermediate results and relationships until finally, at the highest order of aggregation, the model would deal with macro-economic variables. Such a model would be wildly impractical in Mauritania's present state of affairs. Neither the data nor the computer and econometric staff are available to make such a device work. Rather than resort to razor-sharp techniques that are inapplicable, RAMS has provided three simplified methodologies that can be related but which address three distinctly different pieces of the analytical task. The methodologies use different aggregations of data which are not available from the same source, thus often inconsistent and of doubtful reliability. In addition, use of various data aggregations implies assumptions that are not always explicit and can differ among methodologies.

The use of the methodologies in the option papers is intended to demonstrate how they can be applied to Mauritania's planning task and at the same time provide some useful answers. The results produced by the methodologies are different even though they may be seeking a value for the same variable. A very large part of the

reason for the difference can be accounted for by the differences in the data and assumptions. The rest can be explained by the unavoidable fact that the same phenomenon presents a different aspect when examined from a different viewpoint. As data improves and assumptions are better coordinated, the methodologies will yield results that are more in agreement.

1. Macro Economic Simulation Model

The first of the three methodological papers is the design and presentation of a macro economic simulation model which emphasizes the major financial constraints to growth and development and the kinds of action that are necessary if the government is to have funds available for investment through the year 2000 and beyond. The model is used to project the resource gap and future growth based on past performance determined by analysis of the financial and national accounts data. It assumes that existing external debt can be rescheduled, new external debt can be obtained on concessionary terms, government will exercise financial restraint and make rational sectoral allocation of investments for projects that merit investment, and adopt favorable policies concerning nonquantifiable growth-constraining factors.

A major limitation of the use of the results of the demonstration of the model is the questionable reliability of the statistics of past performance of the Mauritanian economy. The model is valid, but it cannot yield reliable results on the basis of unreliable inputs. For this reason the growth projections must be considered illustrative. Despite this caveat, the indications of financial constraints are unimpaired and give reason for guarded optimism.

Using a debt service ratio of 18%, i.e., principal and interest payments on foreign debt equal to no more than 18% of export earnings over the long run, as the independent variable and assuming the historical data are not grossly in error, the model indicates that it is not unreasonable to expect Mauritania to be able to attract external financing sufficient to achieve satisfactory growth for the foreseeable future. The 18% debt service limitation is thought to be the maximum long-term level that would not discourage external sources of financing. As a measure of the improvement deemed necessary, one has only to compare the 18% limit with the estimated present (1981) debt service ratio of about 38%.

The macro economic paper also derives incremental capital output ratios (ICOR) for each sector, again based on historical data, and suggests how these are used in decisions about broad sectoral allocation of investments. Although the derived ICOR's show reasonable inter-relationship, their individual values may be in error because of the aforementioned reservations about data reliability.

2. Rural GDP and Input/Output Model

Because the macro economic simulation model deals with broad parameters and variables, it does not provide for detailed examination of components of aggregates or appraisal of subsectoral investment allocations. Hence, a complementary manner of estimating rural gross domestic product was developed. This second of the methodological studies combines 34 rural output series compiled from existing data sources into an estimate of rural GDP for the period 1967-1980. Given the critical importance of rainfall for many kinds of rural production and its great variability in Mauritania, the series were analyzed in relation to three equally probable 20 consecutive year historical rainfall patterns, and the effect of rainfall was calculated for each of the series. Using these relationships, three rainfall scenarios were developed for projecting the output series into the future assuming rural production remains in its present state of development.

The equally probable rainfall patterns represent periods of average, above average, and below average precipitation. The projections of the series under all three rainfall scenarios show increased rural sector output over the next 20 years ranging from 54% to 62% higher at constant factor cost than 1980 output. However, the improvement will be swamped by population growth of 64% with the result that requirements for food importation will be at the same or higher levels than at present. This represents the baseline condition; the projection of present trends without benefit of development activities to increase yields or bring into production new lands and pastures never before used.

Considering the equally probably average, above average, and poor rainfall scenarios, it follows that, over the next twenty years, Mauritanian rural production at its present state of development has an equal chance of achieving unit output equal to, above or below the average unit output achieved over the long term past. From this, it seems that the odds of achieving average or better unit output are two to one in those lines of production that are sensitive to the amount of rainfall. This would augur well for a rural development policy that strikes a balance in the allocation of investments over a broad range of production activities.

As an aid to better viewing the process of allocation of investments by individual lines of endeavor, a simple input/output model was designed. It demonstrates how data can be developed and organized to show the effects of investments on inter subsectoral and sectoral relationships. Inter subsectoral coefficients generated by the model show the proportion of inputs needed from other subsectors of the economy to support a unit of output in the subsector under examination.

This information is useful in estimating budgets in the study of new projects.

The results of the input/output analysis can be stated in the form of ICOR's and this has been done for 13 sectors of the economy. As explained in the discussion on the macro economic simulation model, the ICOR is informative when considering sector investment allocations. Those derived from the input/output model are more detailed because they were based on lesser aggregations of data, and they are probably more reliable estimates because of the great care that went into the data collection for this methodological study. Nevertheless, ICOR analysis is less dynamic than adopting a method of adding new project data to the input/output model and observing the new output results. This method requires project planning teams to estimate costs and sales according to the input/output classifications, which are provided in this study in the form of a handy checklist.

3. Basic Human Needs

The third complementary approach to the Mauritanian development problem is a methodological paper on the issue of Basic Human Needs (BHN). Given the declared planning objective of improving the well-being of the population in an equitable fashion, it remains to translate that objective into a detailed planning specification concerning each component of well-being that can be affected by public policy and investment. Although the BHN approach can be used with a variety of goals concerning well-being, the aim of this paper is to demonstrate the policy, activity, and cost implications of achieving equity by putting a floor under the level of poverty of the poorest 20% of the population. The limited data available do not permit a reliable estimation of the number of Mauritians who fall below the level of BHN poverty prescribed by the paper. The number may be more or less than the 20% adopted as a reasonable basis for demonstration of the concept.

Defining the illustrative minimum level of BHN in terms of nutrition, public health services, literacy, and energy (wood and charcoal) consumption, and estimating the marginal amounts that would have to be spent to bring the lowest 20% of a growing population up to that level of consumption by the year 2000, the analysis postulates an additional \$11 equivalent annually per affected person during the 1981-1985 period to start the program. This amount would rise to about \$70 equivalent at constant prices per affected person per year during the 1996-2000 period during which the target is being attained. These amounts are in addition to the current expenditures on BHN components that the government is already spending and that

the affected people are spending on their own behalf. A part of these additional expenditures could be covered by a reallocation of resources from present spending patterns.

The macro economic simulation illustration assumes a global GDP that will satisfy minimum BHN for the entire society and derives growth rates required to attain that GDP by the target year. Alternatively, growth rates can be assumed and used to determine the year in which the target GDP can be attained. The illustrative results, based on an implicit assumption of modern sector costs for education and medical services, indicates a 1981 per capita income of about \$910 would be needed for the society as a whole to enjoy the minimum BHN. This is approximately triple the present estimated per capita income and, if true, would indicate that a considerably higher proportion of the population is below the poverty level postulated by the minimum BHN. In contrast, the estimate of the BHN paper shows only an annual \$14 per capita marginal cost during the last five years of the century to make up the BHN deficiency for 20% of the population.

Before placing much confidence in the macro model BHN implications, much better data will be needed for the performance of the economy and for a per capita income equivalent of the society-wide minimum level of BHN. The option paper on health and nutrition, major components of BHN, lends credence to the estimate of the BHN paper, although it is not possible to say that it is thereby confirmed. The health and nutrition option paper projects for its maximum strategy objective (basic public health services and nutrition for all) only an 11% increase over current levels of health expenditures by the year 2000. It is important to point out the important difference in the basis of this projection and the implicit assumption of the macro model. The former views a drastic shift in health services delivery and quality by the countrywide establishment of village based and volunteer staffed rudimentary preventative public health stations that seek to avoid disease and improve nutrition so that the need for expensive curative medicine is greatly reduced. A similar difference exists between assumptions regarding education between the macro simulation example and the BHN calculations. The nature and cost of the education component in BHN is based on the suggestion in all of the RAMS education studies and those that impinge on the question of education that the system should shift toward emphasis on primary education, basic literacy, and numeracy with a wide expansion of school enrollment without commensurate increase in the total cost of education but much reduced per pupil cost.

A wide ranging discussion of the issues involved in the BHN concept appears in the BHN paper and the Consolidated Statement on Overall Development Strategies.

Alternative Development Strategies

There are four option papers -- Rural Production, Agricultural Institutional Framework, Employment Implications, and Public Health and Nutrition -- each describing three broad strategies. The most ambitious strategy would lead to the full attainment of the maximum goals such as cereal self-sufficiency coupled with sizeable export surpluses for livestock and fisheries, full employment, and adequate health facilities for the entire population. At the other end of the continuum of choices is the strategy of mere continuation of the present trends, policies, and programs. Between these boundary strategies is the full range of intermediate possibilities, one of which -- ambitious but realistic and attainable -- is analyzed.

1. Rural Production Options

The option paper on rural production is designed to indicate the kinds of production and value added projections that can be made by assuming different levels of investment in various sub-sectors of agriculture, livestock, and fisheries. To a large extent, the level of investment corresponds to differences in levels of technology, although this is not true to the same degree for all subsectors. Livestock output, for example, is less responsive to technology/investment in the near and medium term than it is to good, normal, or low levels of rainfall although investments in animal health such as for vaccinations can be very effective in preventing large losses. Social obstacles to improvement are assumed to be overcome by appropriate and effective government action. The question of the kind and cost of improved technology and how it is introduced is covered in the option paper on Agricultural Institutional Framework. In addition to the output projections, an estimate of manpower requirements is projected for each of the major subsectors as an input to analysis of manpower and employment perspectives.

a. Agriculture Options

The option paper distinguishes between three levels of agricultural technology - present traditional, improved, and modern. Improved technology refers to use of better seed, fertilizer, pesticides, inter-cropping, animal traction, and credit. Present and improved technology would be applicable to rainfed and recessional agriculture. The modern technology adds to the cost of improved technology the additional direct cost to the farmer of those investments in and operation of fully irrigated lands. The three technology options are calculated specifically for each of the subdivisions of agriculture: rainfed (including recessional), irrigated, and oasis. Lacking data that would permit calculations of investment/rainfall relationships to output, the important rainfall variable has been

held constant in the projections at a "normal" of 4 out of 5 years of average precipitation. This assumption has statistical validity in the area of major agricultural production, although it does not apply to the marginal rainfed agricultural areas.

The modern technology to be used on irrigated lands has three major variations depending on the rate at which additional land is brought under irrigation, and within these major variations are two levels of yield which are also due to technological variations. Finally, each of the yield variations is subdivided to account for two options concerning the rate of introduction of double-cropping. Thus, there are twelve alternatives, of which the six related to double-cropping prove to be less significant in affecting output than the others because of the rate of introduction deemed feasible. It will begin to have substantial effect only toward the later years of the planning horizon.

Oasis agriculture, which currently accounts for only 5% of rural GDP, has the highest potential increase in output per unit of investment although the land available for this type of production is extremely limited. The three options are based on (1) continuation of present practices which are considered to eventually lead to substantial loss of output and serious degradation of the oasis ecosystems, (2) on improved technology and cultural practices including safeguards against further degradation and tapping deep-water resources; and lastly (3) on bringing 500 hectares of additional area into cultivation in addition to improved technology and cultural practices.

Thus, there are 54 discrete combinations of agricultural options, which reduce to 20 combinations if those involving any element of continuation of present practices are eliminated from consideration. Of course, the opportunity for variations would number many more; however, it is impractical to illustrate more than a few of those 54 combinations. Charts I and II show projections of production for rainfed and recessional crops and for irrigated agriculture, respectively, to the year 2000 under the principal categories of technological/investment options.

With respect to rainfed and recessional crops, Chart I indicates the estimated difference in production resulting from the relatively small increase in costs between the traditional technology and the improved technology in the agricultural option is substantial. It rises from 54,000 tons of cereal in 1980, accounting for 10% of total demand, to 96,000 tons in the year 2000 accounting for 30% of the demand of a larger population.

Chart I.

Projected Agricultural Production for Rainfed and Recessional Crops Based on Alternative Assumptions Regarding the Level of Technology Employed

(000's of tons)

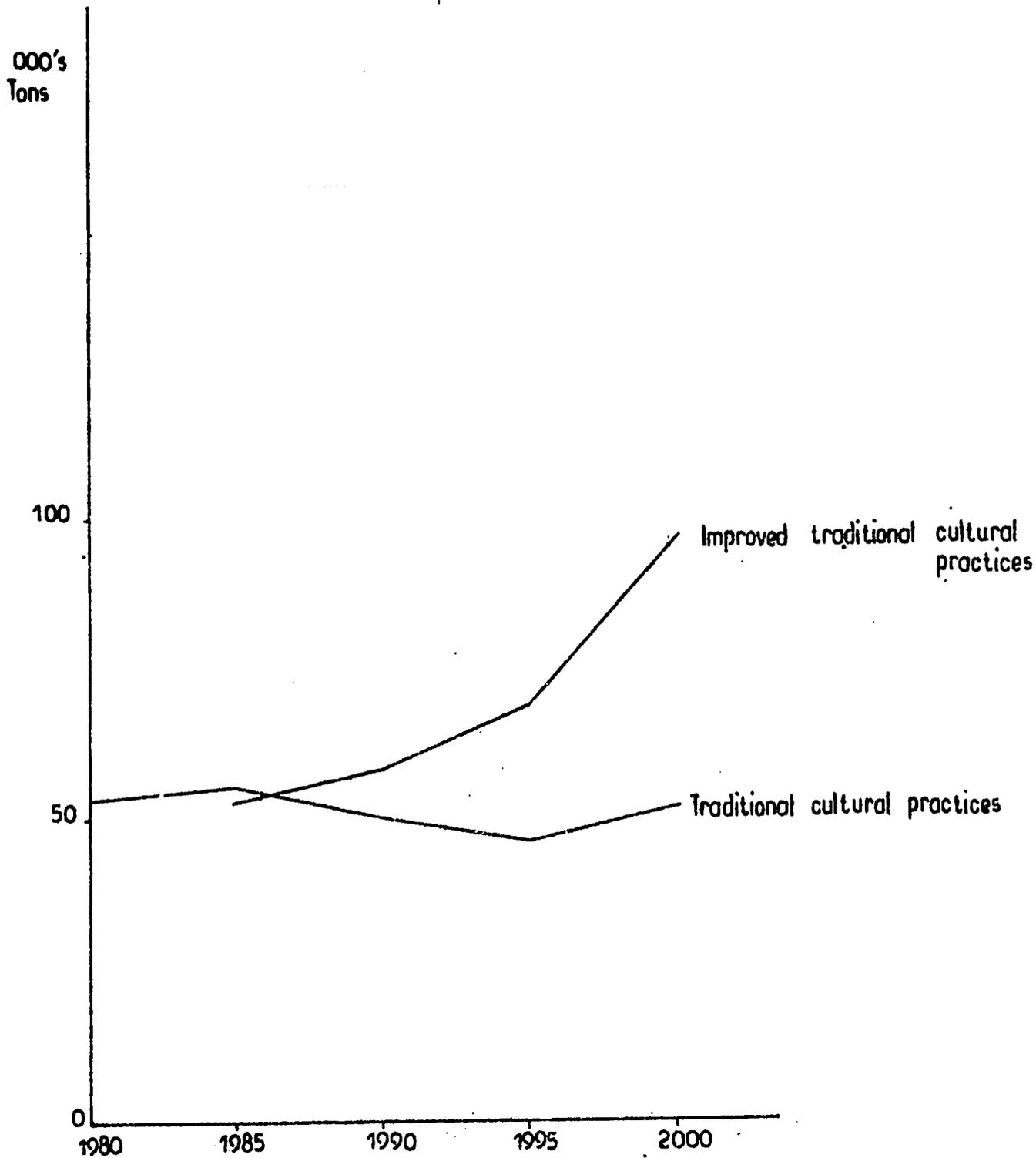


Chart II

Projected Agricultural Production on Irrigated Lands
Based on Alternative Assumptions Regarding the Rate
New Lands are Brought under Irrigation and the Yields
Obtained

(000's of tons)

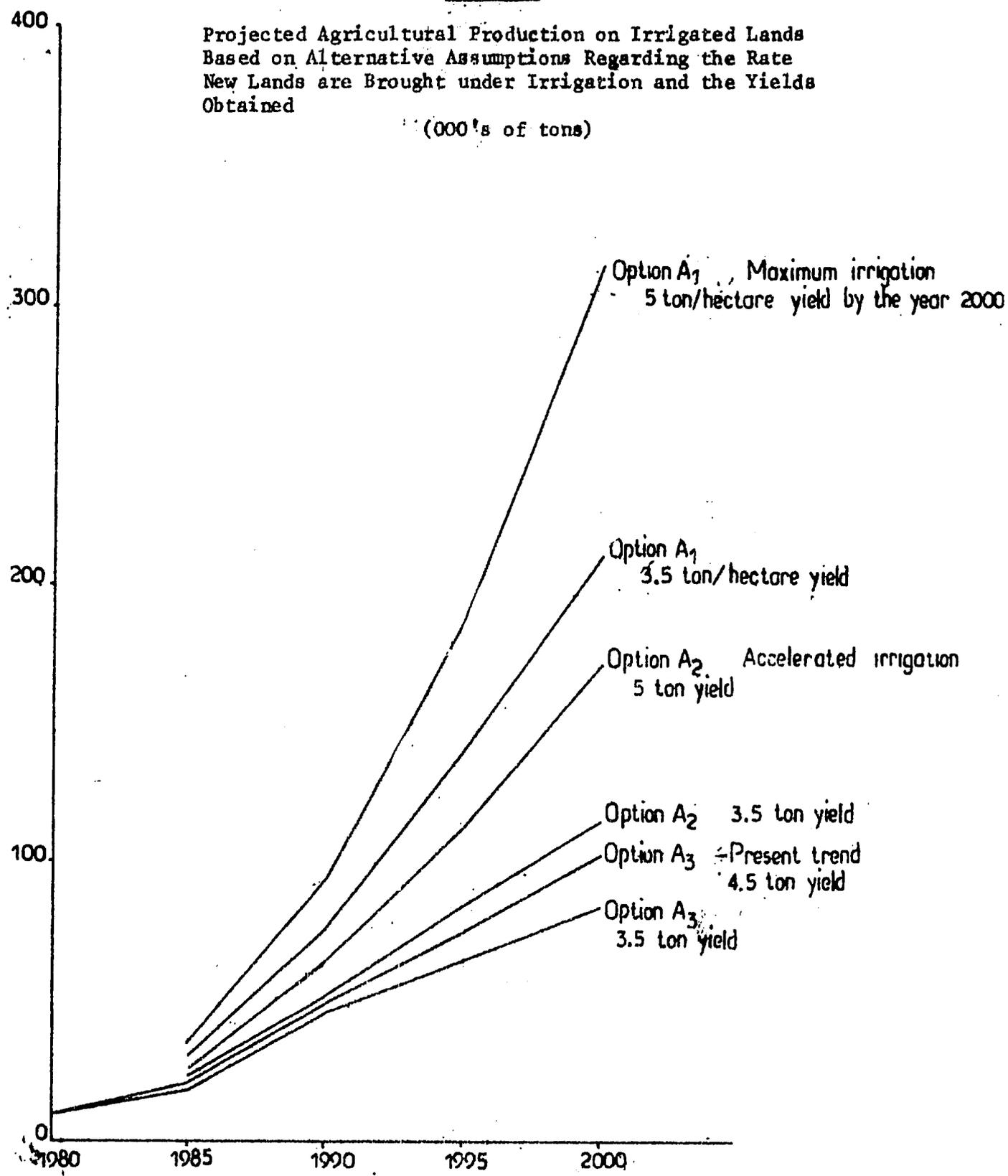


Chart II indicates the very great range of increase in production that can be obtained in irrigated agriculture depending on the assumptions -- and the realization -- of varying rates of bringing new lands under irrigation and the yields obtained. From the estimated 1980 irrigated production of about 9,000 tons, a continuation of present trends in extension of irrigated lands with no increase in yields leads to a projected output of 83,000 tons by the end of the century. At the other end of the spectrum, extension of lands at a currently estimated maximum conceivable rate and an improvement in yields from the present 3.5 tons/ha to 5 tons/ha leads to a projection of about 313,000 tons per year by the year 2000. In between, at a rate of extension considered more achievable, the end of century production is projected to be between 114,000 and 170,000 tons per year for yields between 3.5 and 5 tons/ha satisfying from 36 to 53% of the cereal demand of the nation.

Oasis production has not been included in the projections of tonnage in order to focus on the critical concern of cereal production; however, it has been included in the value added and investment projections which appear later in the discussion. Total cereal production projections for the year 2000, including rainfed, recessional, and irrigated agriculture, arrived at by summing the projections of the individual options, range from a low of 135,000 tons covering 42% of consumption for continuation of present trends to a high of 410,000 tons equal to a surplus of 28% over domestic consumption requirements. The more likely projection under improved technology and accelerated rates of achievement is for an illustrative production of 267,000 tons satisfying about 83% of cereal demand.

b. Livestock Options

Livestock offers less possibility for expansion in the short and medium term than any other of the rural sectors. Intensive animal raising depending on the use of cultivated fodder is not considered a viable alternative except in cases where there is excess agricultural food production. It is an inefficient use of scarce land resources. This does not apply to the modest amount of livestock raising that can be supported on agricultural waste. For this reason, the options considered by RANS concern extensive livestock raising in the form traditionally practiced in Mauritania.

The current level of livestock raising and the animal breeds are considered to be reasonably well balanced with the environment, which is not to say that the size of the national herd should be considered fixed at or near present levels. Rainfall, animal health, availability of watering points, and range management are the main variables determining the appropriate levels of livestock that can be supported on a given area of rangeland. Range

management is a long term investment that would yield its principal benefit -- more nutritive pastureland with greater carrying capacity -- on a substantial scale only beyond the year 2000 planning horizon used in the RAMS frame of reference. Investments in animal health and increasing and maintaining watering points are already part of the government's present practices and are assumed to continue, albeit at varying levels, under any of the options examined. Rainfall is the principal production variable and the limiting factor in the effectiveness of investments in services to the livestock sector.

Past experience indicates that Mauritanian livestock raisers will expand their herds up to the limit of the carrying capacity of the range and, indeed, beyond. This has been the cause of such abuse that large areas are degraded to the extent that some experts have doubts about the natural ability of the range to regenerate, and desertification has become a matter of great concern. This has occurred on pasture representing about 64% of Mauritania's potential carrying capacity. The other 36% is presently unusable because it lacks the wells to provide animal drinking water. Because of this, it is potentially the richest present source of animal nutrition, but would by now have been degraded if it were possible to do so. To open these grazing areas by establishment of watering points without a program of range management to rationalize their use would be planned degradation of the land rather than development.

Range management of the area would have to begin now in measured stages with watering points established in tandem and not exceeding the area that could be effectively controlled. This would provide for the relief of part of the presently used range to give it a chance to regenerate, also under range management. There would be no substantial rational increase in production for about twenty years or so. This action, coupled with improved government services to livestock, constitutes the maximum option for investment. Because of the time frame and the absence of substantial increase in production during that time frame, this option was not projected. It does, however, merit the most serious consideration by the government and further study, because without such a plan, Mauritania's milk and meat supply, even for domestic consumption, will be seriously jeopardized by the end of the century. The RAMS livestock subsector study supplement - Range Management and Development discusses the subject.

The middle option for livestock covers improved government services to livestock without the opening of new rangeland, and the low option, as with other rural sectors, is the continuation of present trends and levels of government activity. Because of the great

variability of rainfall and its unpredictability, it is academic to postulate a set of government investments for application for one or another scenario. Range management is the long-term key to survival, and in the short term, fire breaks, animal health and emergency feed supplies can reduce losses in times of local or widespread disaster. For this reason, only a continuation of present trends are projected to act as a baseline under three rainfall conditions.

The carrying capacity of existing usable rangeland is projected for the three rainfall scenarios developed in the GDP and input/output methodological paper, and since Mauritanian livestock numbers grow to fit the available nutrition, production is a direct variable of carrying capacity, although there may be a year or so time lag.

Chart III shows these projections in terms of Unités de Bétail Tropical (UBT), the standard measure of carrying capacity used in the Sahel as elsewhere. It refers to the amount of vegetational nutrient needed to support various animals, e.g. a camel's requirement is 1 UBT/year and if an area of rangeland is rated at 0.1 UBT/ha then it will require 10 of those hectares to support one camel. Mature cattle are rated 0.75 UBT; one mature sheep or goat 0.15 UBT. The pattern of the projections is due to the variations in year-to-year amounts of rainfall within each historical pattern and the response of vegetation to those variations. A discussion of the relationship appears in the rural GDP methodological paper.

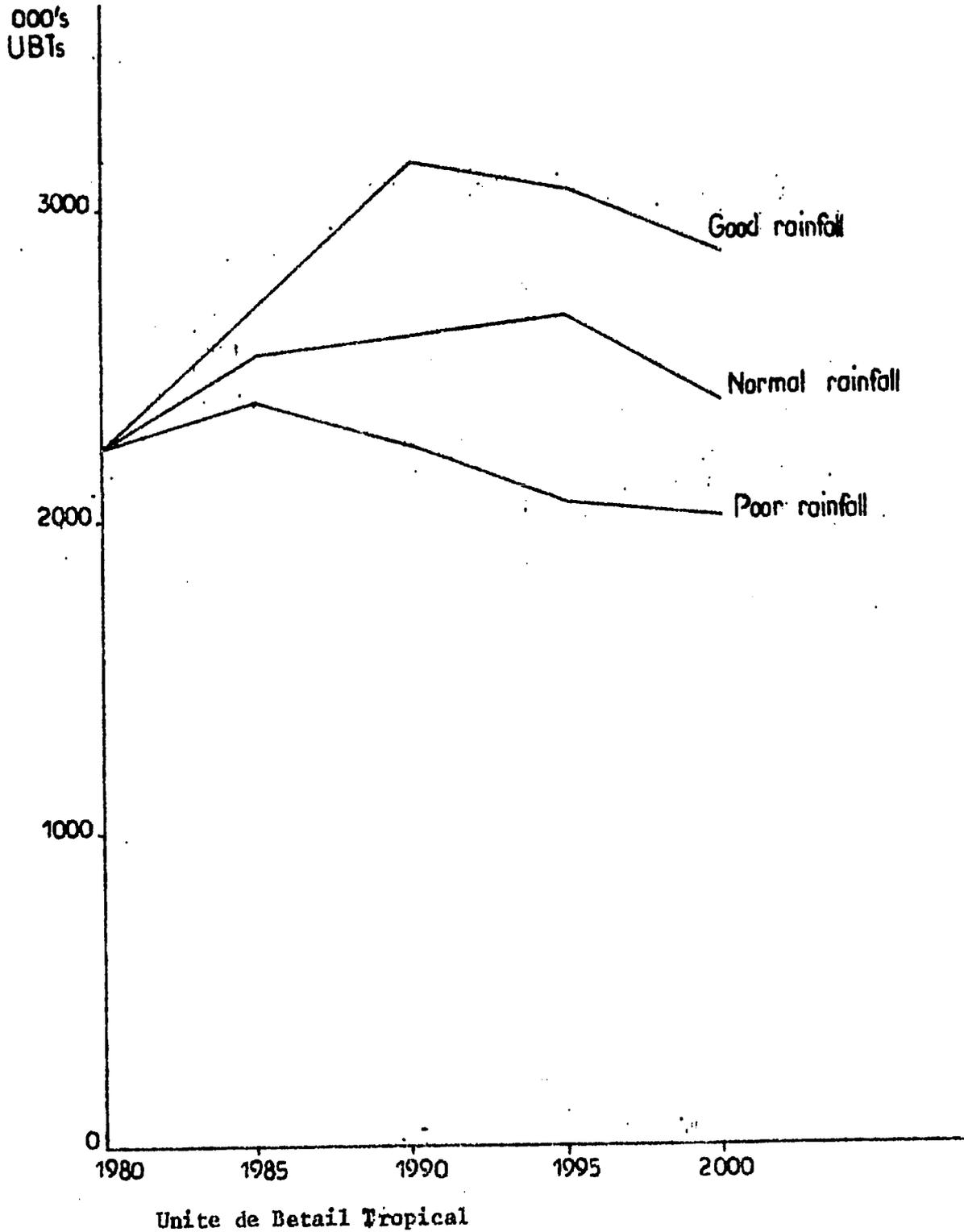
The normal and good rainfall scenarios yield projections of production from approximately 8% to 28% higher than current production. But with an expected 64% increase in population by year 2000, it would seem that the present export surplus would be increasingly needed for domestic consumption in the coming years, and may even prove insufficient to cover the need, if rainfall is below normal for an extended period.

c. Fisheries Options

The fisheries sector has considerable potential for development through the practice of aquaculture associated with irrigated agriculture, by upgrading artisanal coastal fishing to a semi-industrial status, and eventually the establishment of a national maritime fishing fleet. As with other rural production, the low option is the continuation of present practices.

The middle option involves improvement of inland fisheries and the establishment of aquaculture along with development of coastal fishing by the use of larger, more modern vessels that would permit longer and further voyages but fall short of the full floating factory ships typical of today's most developed industrial fishing operations.

Chart III
Projections of Total Livestock Production
Based on Alternative Rainfall Patterns
(Thousands of UBT's*)



The high option assumes the accomplishment of all the foregoing combined with the attainment of industrial fishing operations. These are extremely complex and of varying character depending on the markets they are intended to serve. At its simplest, industrial fishing is concerned with catching fish and preserving the catch for delivery to shore-based processing facilities. At its most complex, the catch is processed and packaged onboard for delivery ready-to-use in distant markets. Even the simple industrial option is a quantum jump from artisanal fishing and requires a degree of technique that far exceeds the simple skills of pirogue fishermen. Obtaining the necessary training for Mauritanian fishermen will be a long and tricky process. It will require the cooperation of a foreign fishing company willing to put itself out of the Mauritanian business.

Chart IV projects the value of output of fisheries in terms of 1980 prices for the three options with the high option subdivided into assumptions of low, normal, and high catches. Analysis of nutritional requirements in the RAMS paper on the subject and the production projections of the fisheries studies indicate that Mauritania's present demand for animal protein could be met from fish resources, and even the increased demand from population growth could be met from an expansion of fishing activities included in the middle option. It is assumed that 90,000 tons will be the middle option catch in the year 2000. The high option would produce an exportable surplus.

d. Combined Rural Production Options - Investment and Value Added

By summing the output (value added) and investment costs of the various options for the rural subsectors in any desired combination, one arrives at the total rural sector output and direct investment cost for the program, exclusive of the investment in and operating budget for the associated government service activities. For purposes of illustration, all high, middle, and low options have been grouped and exhibited in Chart V. Investment is the independent variable, and the annual amount for each option is shown as a curve covering the period 1985-2000, along with its corresponding value added. The very high rate of investment in the early years of the high option (A) results from the forced draft expansion of irrigated area at the present very high unit cost per hectare with costs lowering as time goes on due to improved efficiency. Comparison of the investment costs and value added of the various options must be done with care. The true comparison of the middle option (B) with the low option (C) must be done in terms of their alternative costs. The alternative cost of (B) is the cost of (C) plus the cost of importing the additional food represented by the difference in the value added of the two

Chart IV

Projected Fisheries Output on
Variation in Investment and Catch

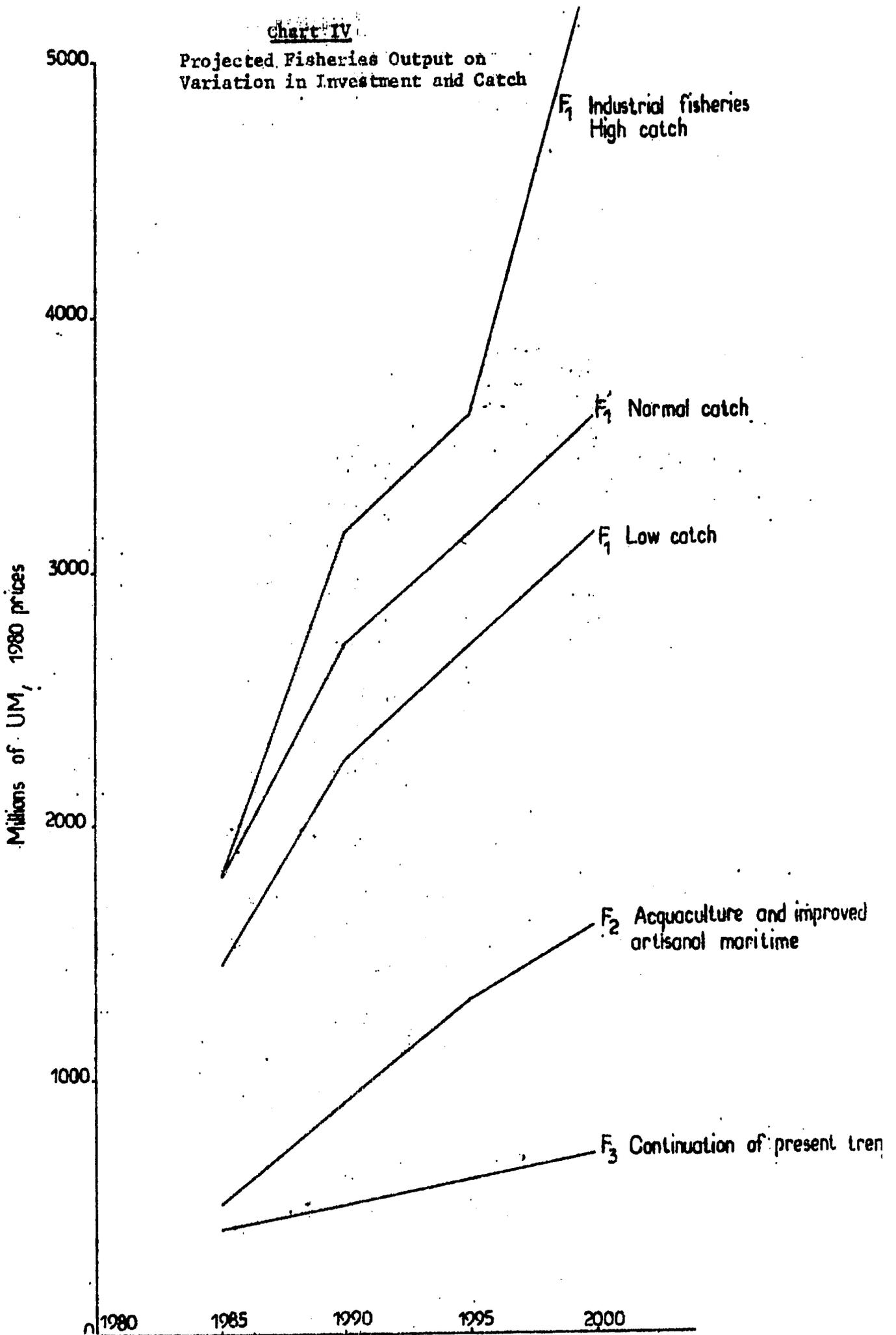
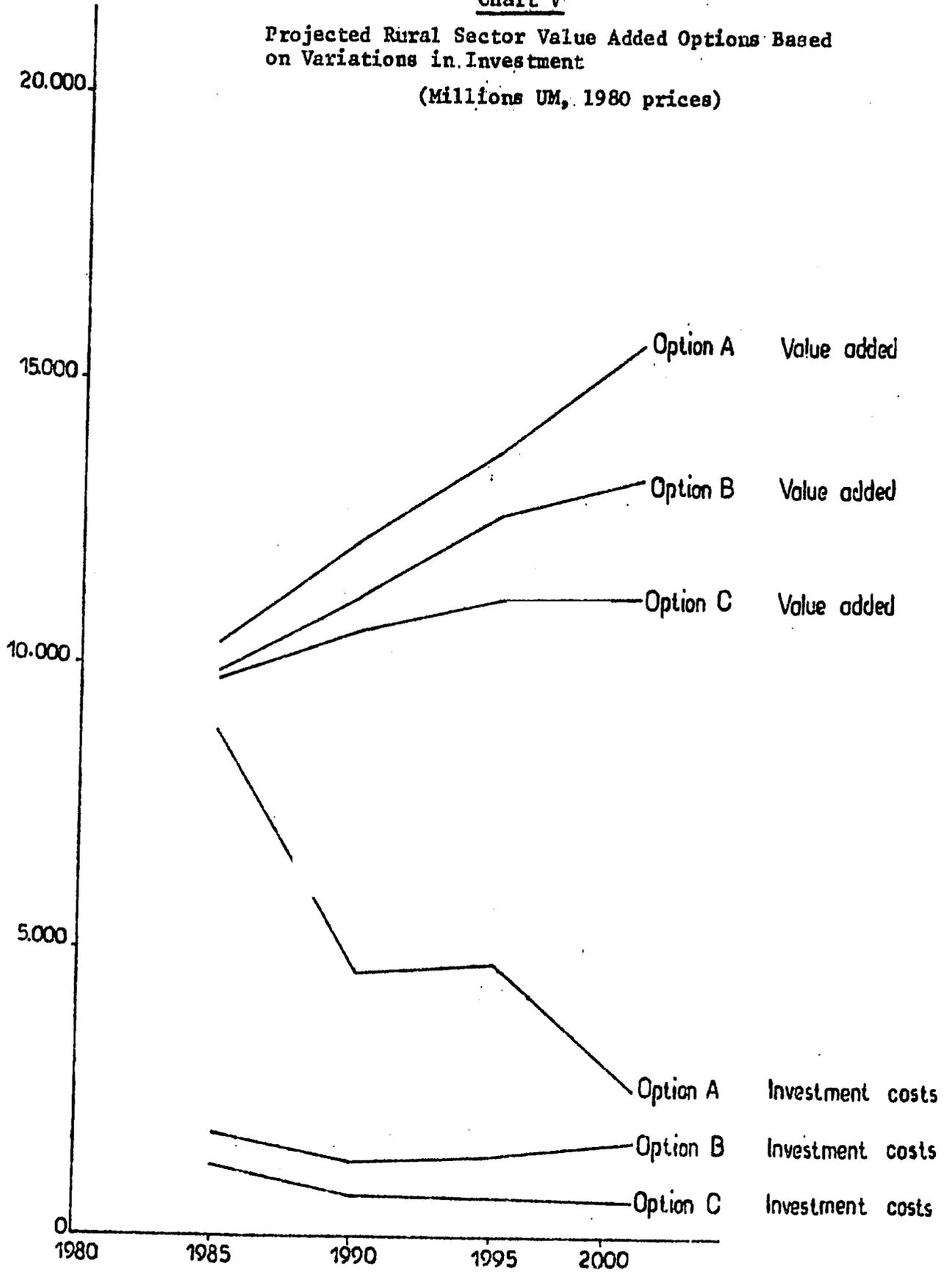


Chart V

Projected Rural Sector Value Added Options Based
on Variations in Investment

(Millions UM, 1980 prices)



alternatives. To this consideration must be added the foreign exchange effects of (B) and (C), the latter being a continual drain, and the investment in government services to make it all happen.

2. Agricultural Institutional Framework

Given the present weak state of the rural economy and its lack of strong nongovernmental professional organization, i.e., large, well financed private agribusiness, cooperatives and a cooperative hierarchy, and the lack of widespread rural financial institutions, no major development will occur in the rural sector unless government provides the initiative, technical back-up, infrastructure, and financing. The present governmental structure is unequal to the tasks implied by the middle and high options presented in the rural production strategies. Consequently, this companion option paper examines in detail the organization, facilities, manpower, and costs associated with the development of the required government services to the rural sector under several assumptions as to approach and coverage. The cost of providing credit facilities, the largest item in the suggested budgets, is included; however, costs associated with effective land reform, price supports, risk guarantees, and physical infrastructure have not been assessed.

There are two alternative high options differing in assumptions about the amounts of dryland cultivation area and the use of mechanization or animal traction in irrigated farming in the quest for cereal self-sufficiency by the end of the century. However, both recognize that the means to achieve the high option rural production goal will require intense drive and a very strong centralized vertically integrated organization. It postulates direct organizational lines from the sectoral ministries through regional offices of the ministries down to extensive field works without formal coordination of activities below the ministerial level.

The middle option visualizes a more moderate level of activity with a decentralized organization based on the creation of regional development centers that will coordinate and carry out all rural development activities in the administrative regions. Ministries will funnel all their activities through the regional centers, which will have staffs that vary in composition according to the character of regional production. For example, regions with sea-coast would have maritime fishing personnel while other regions would not.

The continuation of present tendencies and practices is represented by the low option. It projects the growth of the present organ-

ization of regional representation of various ministries by semi-autonomous regional officers under the general administrative leadership of the regional governor and the personnel of the projects sponsored by foreign donors and carried out in the field.

The projections of the low option show a need for about 150 top level personnel, 770 middle level personnel and 3,700 field level personnel by the year 2000. The middle option calls for 225 top level, 340 middle level and 675 field level personnel. The two high level options are estimated to require, respectively about 270/275 top level, 600/620 middle level, and 2,800/2,945 field level personnel. The high levels of personnel required by the low and high options result from the centralized vertically integrated organizations in which there is relatively inefficient use of staff because of lack of coordination and duplication of personnel. The middle option seeks to reduce the cost and demand on scarce manpower resources by achieving a high degree of coordination at the regional operating level. Projections of financial resources required for the various options over the 20-year period show the following totals in billions of ouguiyas at 1980 prices: high options 11.45/11.56, middle option 5.68, and low option 6.96. The cost of providing producer credits are included in the high and middle options, while the low option makes no such provision since such credit is negligible under present practice.

Relating the annual cost of support measures from the preceding paragraph to the annual value of rural production yields percentages rising from 2.1% in 1980 to 13.5% in the year 2000 for the low option. For the high option the final proportion is 8%, and for the middle option 4.2%.

3. Employment Implications

Analysis of population, manpower, and employment data indicates a present need for 70,000 new jobs to absorb the unemployed 14% of the labor force, not taking into account prevalent underemployment in the rural areas. Demographic projections to the end of the century and likely increases in employment arising out of expansion of modern sector activity and rural development at the highest levels projected in the rural production option papers lead to the conclusion that there will be a shortage of 100,000 jobs by the end of the century. A projection of current trend indicates that the shortage of jobs by the year 2000 will swell to 400,000 or 52% of the labor force. This level of unemployment equates with human misery, social unrest, and burdens on government of enormous magnitude.

Part of the problem is seen as a consequence of capital intensive production systems that minimize the use of labor. A second contributing factor is the modern sector practice of specifying job qualifications in terms of required degrees, diplomas and certificates without regard to, and often ill matched with, the skill content of the job. This excludes from consideration large numbers of the labor force who are capable of performing the work, but who lack the academic attainments. On the other end of the spectrum is the large illiterate mass of the labor force barred from participation in any activity that requires reading and simple arithmetic skill.

If the government is to avoid the consequences of the mounting unemployment problem it must soon do a determined about-face and proceed in the direction of greater labor intensive production, more realistic job specifications, and adjustment of the education system to produce basic literacy, numeracy, and the moderate manual and business skills that will maximize the active participation of the majority of work force in productive employment.

The paper presents a high option aiming at full utilization of manpower by ensuring that the entire labor force is utilized before any scarce resources are used to increase productivity and incomes of those already employed. The middle option aims to generate large amounts of productive employment by a combination of social concern for maximizing labor employment and economic concern for efficiency in production. As usual, the low option assumes that the present practices in modern and rural sector activity will continue. The measures proposed to achieve improvements in employment are all remedial in nature. No government investments are proposed to create employment by public works or new production ventures.

The first measure is designed to correct what is seen as a bias in favor of the use of capital rather than labor. It proposes that the cost of capital be adjusted in the direction of its opportunity cost by the raising of artificially low interest rates on commercial and government loans. As a corollary, it is advisable to examine the Labor Code for elements that may unnecessarily raise the cost of using labor and, thereby make the use of capital more attractive. The protection, possible overprotection, of labor must be weighed against the social cost of unemployment. It may be that, after this is done, labor will remain high in cost relative to the use of capital. If so, it would be advisable to consider a labor subsidy in the form of tax relief for employers who create and maintain a rate of increase in the use of labor.

A companion measure, proposes an Entrepreneurial Code to offset if not replace the existing Investment Code, which is thought to be unnecessary in Mauritania's present situation. As opposed to the Investment Code, the Entrepreneurial Code would remove incentives in favor of the use of capital equipment, most imported raw materials, and regional dispersion of non-agricultural production. On the positive side, it would reward ventures in proportion to the amount of employment created; amount of local raw materials processed plus imported raw materials for necessary, rather than luxury, import substitution; and amount of profit per unit of sales rather than per unit of capital employed.

The second measure concerns providing greater employment opportunity outside of Nouackhott and Nouadhibou. Urban unemployment is seen as a rural problem. The utter hopelessness of finding work in the depressed stagnant rural sector sends thousands flocking to towns and urban centers in the hope of finding odd jobs or living on the generosity of relatives and friends. To stem the growth of deplorable urban social conditions in the major cities it will be necessary not only to opt for labor intensive production but also to encourage the rational dispersion of that production throughout the country in close proximity to rural areas. The Third Plan for Economic and Social Development discusses the classification of the national territory into socio-economic zones among which are urban poles of development in which it is foreseen that numerous industries will be established including those that are complementary to the production of the surrounding rural areas. The paper on Employment Implications of the Alternative Development Strategies identifies sources of project dossiers in Mauritania where information about various labor intensive manufacturing and processing industries can be found. Many of these are appropriate for locating in the towns and dispersed urban areas envisioned by the Plan as poles of development. The RAMS report Economic Activities of the Rural Private Sector (1980) contains a series of interesting case studies of existing individual and cooperative enterprises in small towns and regional capitals.

A third measure 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 can not 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 measure 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.

4. Public Health and Nutrition

The present health system in Mauritania is overwhelmingly concentrated in Nouakchott and characterized by high cost capital intensive curative services. Hospitals exist in some of the regional capitals, but by far the largest amounts of budgeted investments are devoted to Nouakchott facilities and actual investments for Nouakchott exceed those for the other areas of the country by an even greater proportion. Given the government's objective of improved well-being for all Mauritians, the prevalence of debilitating and eventually fatal diseases due to lack of sanitation and public health measures in rural areas, widespread malnutrition in the rural areas, and the close inter-relationship of health and nutrition and the performance of the rural economy, the options for change presented in this paper are concerned with expanding the coverage of health and nutrition services to greater numbers of the population throughout the country.

The low option is the continuation of present tendencies giving priority to investment and operating expenses for reinforcing the health network of the urban areas, and starting a program of community medicine.

Two middle options are presented. The low-middle option envisions the planning, programming and operation of health and nutrition services by optimizing the performance of existing units and creating new multipurpose units in 570 villages covering 15-20% of the present population where there is no health or nutrition service. The high-middle option concerns revamping the present system to provide coverage for 80% of the population by the end of the century based on village multipurpose health and nutrition units. The high option is to achieve full national coverage providing health and nutritional services to every Mauritanian close to home. A fifth option recognizes the logic of a stepwise progression, as resources and capabilities become available, from the present situation to broad national coverage. It would achieve 90% coverage of the population by year 2000 by shifting each five-year period to the next higher option.

The philosophy of all proposed change is the shift from emphasis on curative medical services to preventative medicine stressing public health measures to control or eliminate endemic diseases by improved control of water, sanitation, personal hygiene, and nutritional practices. Organization of the services would be manned at the village center by volunteer local residents trained to offer basic counsel and simple paramedical services. Mobile teams would provide immunizations and technical assistance in the matter of sanitary engineering and maintenance. For curative services beyond the capability of local volunteers, a person would go to the regional medical center and, possibly, on to a major city hospital.

The costs of all options are projected in constant 1980 prices for five-year periods to the year 2000. Compared to the total cost of the low option, including investment and operating costs, during the 20-year period, the cost of the high option represents an increase of about 14%. The increase in operating cost is approximately 12%, and the increase in investment is about 18%. In view of the past preference for city-based curative facilities which have been largely financed with external assistance, the government would have to determine if financial assistance would be available for the greatly reoriented programs. If not, then these programs would put a great strain on the anticipated budget for public investments. Under any of the options for change, there is a substantial drop in the cost per person treated. The reduction is 18% for the low middle option ranging to 46% lower unit cost for the high option.

The very modest increases in investment and operating costs for so dramatic an increase in public health and nutrition coverage is attributable to the voluntary participation of the population at the grass roots level. They will do all of the construction work and staffing of the village units, with only supervision and small amounts of materials provided by the government. A village that wants to have a health and nutrition center will have to work for it, and they will pay something, whatever they can, for what they receive.

5. Consolidated Statement on Overall Development Strategies

The consolidated statement discusses in substantial detail the material presented in this section of the report under the heading Phase II: Options, Project Identification, and Regional Planning. It is the major synthesis of the option papers and methodologies. Its conclusions are the essence of what is to be derived from the four optional development strategies with regard to the outlook for Mauritanian rural development and nationwide employment and the policy issues that confront the government. These conclusions appear verbatim in this report as part of the section on Policy Issues and Options.

Project Identification

In fulfilling its task of identifying specific project suggestions emanating from the development options and strategies, RAMS has produced twelve descriptions of proposed projects in the form of a Project Dossier.

Two of these concern small industry employment generation in six regional centers by the development of metal working and wood-working skills and the supply of materials for the production of tools, utensils, implements and construction parts. Four are involved with the protection and upgrading of the environment, specifically the accelerated training of specialists, a public information campaign, coordination of implementation, and demonstration of environmental and anti-desertization works. Three of the projects aim for improved range management and animal husbandry. An agricultural production project proposes inter-cropping millet, groundnuts, sorghum and cow peas, combined with the use of animal traction in two pilot areas. Fisheries and coastal area development are combined in a feasibility study of integrated development of the coastal area inhabited by the Imraguen tribesmen north of Nouakchott. And, rural education is addressed in a two-phase project -- first to establish a Kaédi based rural radio information program for farmers and herders, and second to extend radio activities into the production of rural non-formal education audio visual materials.

To facilitate possible discussions with donor agencies and to demonstrate a standard of project identification conforming with the requirements of donors, RAMS has identified the projects in the standard format used by the Comité Inter-Etat de Lutte Contre la Sécheresse au Sahel (CILSS) which is also accepted by most of the donor agencies operating in the Sahel.

The twelve projects identified are illustrative, and although some are presented in considerable detail and costed, not all of them are intended to represent a proposal to undertake the subject activity in a specific place at a specific time. Neither are they intended to convey a comprehensive ordering of priority activities or an indication of how funds should be allocated. They are candidates for consideration among a very broad range of activities that need to be evaluated in the light of the specific development strategy selected and assigned priority and allocation of funds in accordance with appropriate programming and project selection criteria.

Apart from the twelve specific activities contained in the project dossier, a second product of RAMS work in the area of project identification is a report on Education as a Development Tool. Stemming from the conclusions drawn from the exhaustive evaluation of formal education, this report concerns the need to reorient the system toward meeting the nation's need for widespread primary education and vocational training and stressing the importance of basic literacy, numeracy, and simple skills in the quest for rural development and improvement in the quality of the labor stock. The report contains many specific and detailed proposals for change that can be accomplished within Mauritania's present resource constraints. It represents a ready inventory of projects in the field of education that are indispensable to the exercise of any of the strategy options that look beyond the continuation of current policies and practices.

In the course of the RAMS Phase I and Phase II work it was evident that a great many more project and program possibilities could be drawn from the various studies and option papers than the imperatives of higher priority work would allow to be formally identified. It is worthwhile to mention some of these in the event that it becomes possible to pursue their full identification in the CILSS format.

The methodological paper on the computation of rural GDP involves the construction of an illustrative input-output table which can be further elaborated and refined as a tool to identify and evaluate specific areas of investment opportunity in the rural sector. The Basic Human Needs paper pinpoints areas where government action is required to raise minimum living standards above the poverty level. The Public Health and Nutrition and the Agricultural Institutional Framework option papers by their nature are composed of alternative project proposals. The Manpower and Employment option paper suggests the development of an entrepreneurial code in lieu of an investment code and an effort to identify, on the basis of extensive research already performed and documented, kinds of manufacturing activity that can be economically accomplished by labor intensive methods as an alternative to capital intensive production. And to these may be added numerous project proposals that could be derived from the rural production option paper.

Regional Planning

In pursuit of the desire of the government's planning authority to increase the involvement of the regional administrations in the planning process, RAMS participated a series of seminars in six of the twelve regions (another was held in Nouakchott but not concerned with rural development) involving administrative and

technical personnel and representatives of citizens committees. Discussions with the rural regional groups concerned the objectives, constraints, specific development opportunities, and budgets of each region, and were supported by the factual information and data applicable to each region derived from the work of RAMS Phase I. Two published products resulted from this aspect of project activity:

Seminar Evaluation

RAMS specialists participated in seven regional seminars sponsored by the Directorate of Studies and Programming for the purpose of bringing an awareness of development problems to middle level regional technical and administrative officers. Discussions aimed at drawing out the ideas of the regional personnel on development needs and goals and how to approach them in an orderly way with a planning perspective. The seminars treated various themes but not all regions visited received the same program. One seminar concerned socio-economic survey methods; two were on integrated rural development; and three dealt with perspectives of agricultural development and regional planning. The seminars were as much a learning device for the central government representatives and RAMS as they were for the regional people. Interest was high and discussion was lively with give and take from both groups. The general impression was that this is useful device that can be used to upgrade the capabilities of regional staffs to contribute meaningfully to the central planning task and to make regional views known in a way that can have some impact on government thinking.

Regional Profiles

The goal of the seminar program is for the regions to start to prepare basic regional plans as candidates for inclusion in the national plan. To further this aim, RAMS compiled and distributed ten regional profiles presenting basic data on the environment, population, rural production, infrastructure, health and educational services of each region. The two remaining regions are industrialized zones outside the RAMS focus on rural development. In addition to being sources of planning data, the profiles are useful instructional material and provide a format for the regions to update their data base.

V. The Aftermath

The RAMS project was a partial first step toward satisfying what is a continuing need for additional understanding of the nature of the country and its people and the way they function; for a stream of special studies and fresh data to provide time series that will indicate trends and facilitate projections and predictions. Without these indispensable means there can be no analytical basis for policy research, and it will continue to be made in a factual vacuum on the basis of unassisted intuition and guesswork. It will neither be possible to design programs and projects with precision nor to evaluate them with confidence.

The present effort has provided selected snapshots of the Mauritanian situation over a brief span of time which taken together provide a freeze frame mosaic of a changing scene, much as the instantaneous arrangement of elements in a kaleidoscope. To the extent the effort is continued, the information and data generated by the project will provide an element in a time series that will afford a view of how things have changed and will provide a baseline against which those changes can be measured. To the extent that the effort is abandoned, that information and data will become increasingly less useful for planning purposes and will eventually retain only a quaint historical significance.

The project lacked the degree of focus that a highly developed structure of objectives and strategy would have provided. Indeed, one of the functions of the project was to assist in the narrowing of planning generalities to permit a sharper focus. Consequently, the data and informational output of the project should not be considered a model for ongoing efforts, but should be viewed as a framework within which some elements merit continuing effort and gaps are to be sought, and to which additions may be required. The precise definition of these research and data collection elements are determined by the specific kinds of information needed to elaborate programs that emanate from the strategy options. Few organizations can afford the luxury of information and data collection for its own sake. Thus, economy in the use of information resources is essential to get the most of what is available.

It is not feasible within the scope of the RAMS project to address the question of the design of routine information gathering and management systems. That requires the services of experts in that special science, while the speciality of the project team was more in the nature of ad hoc information gathering and the interpretation of that information. Nevertheless, every member of the team was frustrated by the lack of available routinely published basic data in almost every field of inquiry, and this suggests a point of departure for further discussion.

The technical potential for improvement in the quality of planning efforts at all levels -- regional, ministerial, and central -- would take a quantum jump if the government would revamp its data gathering, reporting, and distribution system. This could be done with the help of specialists, possibly from the UNDP, in the fields of agricultural (including livestock and fishing), public health, educational, labor, transportation, and commercial statistics -- to name the more immediately useful series -- with the proviso that the systems be designed with full appreciation for Mauritanian budgetary and manpower limitations. Such a system would not be the ultimate ideal, but it should produce far superior results than those presently available.

Another missing element in the information picture concerns the lack of discipline and feedback that would be available from regular evaluation of ongoing projects in terms of their progress, problems solutions, and accomplishments. The lack of this information had been a feature of Mauritanian planning from its beginnings, and robs it of any hope of adjusting programs in the light of timely experience save that which is voluntarily reported by project management, admittedly a haphazard and non-objective source of objective information. To promote the effectiveness of such evaluations it is essential that the program or project objectives be stated in terms that can be used as measures of effectiveness, e.g., if the economic justification for a 30 km road is to reduce transportation charges by 10 percent for a breakeven traffic of an average of 100 tons per day, then that is the measure of effectiveness rather than the completion of the road on time and within budget. The former is the effectiveness of the road and the latter is the effectiveness of the road builder.

Of a particular interest in this respect would be post mortem evaluation of the many irrigation projects that have failed to live up to expectations, among others the "Opération Petits Périmètres Irrigués" and the efforts associated with the Gorgol development. Since the government has placed its confidence in very expensive hydro-agriculture as the key to restoring crop production, the need for periodic current evaluations of project performance takes on great importance. If very expensive mistakes are to be avoided, problems must be identified and dealt with during the time that the scale of potential loss is small -- that means as early as possible, preferably in the design stage before major resources are irrevocably committed.

The advisability of a number of special studies became apparent in the course of the work of the project. Some of these arose out of the impossibility of achieving sufficiently comprehensive coverage during the project field work because of time, seasonal, manpower

or budgetary restraints. Others came to the surface because gaps in information and understanding became evident and additional studies could not be accommodated within the project scope of work or available time and budget.

In the first category are surveys of rural consumption and income, rural manpower and employment; and a definitive study of sedentarization that will give needed dimension to this major social phenomenon and allow more confident and precise assessment of its future and what may be done about it. In the second category are surveys of land ownership and use, rural production, and highly focused ad hoc social studies of all the ethnic groups that are to be involved in any particular program of rural development well in advance of the program design. Each ethnic group has distinct attitudes, practices, and values concerning land ownership and control, agricultural labor, capital accumulation, risk taking, and community action -- all or any one of which may play a deciding role in the success or failure of a program. To ignore these differences on the bland assumption that all people march to same drum beat or to rely on coercion or a "take-it-or-leave-it" attitude, is to play development roulette where the losers far outnumber the winners. The key problem is to know in advance of project design the nature of the participation required of the people in the area, the motivation required to gain that participation, the factors that will jeopardize participation, and the decision makers or opinion moulders within the group and what it takes to get their support for the project. Forearmed with this understanding, skillful project designers can build in factors and methods of implementation that maximize the probability of a successful outcome. This consideration is so elemental that it appears trite. The justification for emphasizing it here is that it is particularly urgent in situations where, as in Mauritania; the society is heterogeneous, and because it is more honored in the breach than in practice -- in Mauritania as elsewhere.

The functions of collecting, processing, publishing, and distributing routine statistical data and performing periodic special socio-economic surveys are assigned to the Directorate of Statistics and National Accounts in the Ministry of Economy and Finance. As with other units of the planning group, this directorate is charged with a great deal more than it can do with its limited budget and manpower. It would have to have additional resources to conduct special socio-economic surveys, which should be done with the same frequency as and just preceding each planning exercise, in Mauritania's case approximately every five years. For improvement in the collection of routine statistical data, the assistance of experts would be needed as previously suggested. In preparation for such an effort, it would be advisable for the directorate to investigate every possibility for obtaining data by piggy-backing on the normal activities of prefectural

offices, regional offices, ministerial offices, and special government programs. Every routine contact of officials with the public provides an opportunity for obtaining data. The issuing of licenses, permits, food vouchers; the collection of fees and taxes; the vaccination of animals are examples of contacts that may be used to ask an appropriate question and get an answer without the cost of special personnel and surveys.

The program of regional planning seminars instituted by the RAMS project proved to be active and thoughtful exchanges of ideas, problems, and constraints regarding rural development. They were well structured two-way exchanges of information and understanding that enrich the planning process at both levels. They merit continuation on at least an annual basis to upgrade the capabilities of regional staffs to shoulder a greater share of the planning load. As a start, regional personnel could be instructed on the elements of project design. If a region suggests a project it should be able to specify the dimensions, methods, required inputs, constraints and solutions, and expected results in quantitative terms. With this as a start, the appropriate ministry would then have an inventory of project requests from the people on the ground to fit into the larger scheme of national objectives and allocations. It may seem to be a grandiose and wildly impractical suggestion; the RAMS project did not share that view. It will take time to develop quality, but if a start is not made, then it will never happen. The RAMS Regional Profiles are designed to give regional staffs a start by providing a package of geographic, demographic, productive resources, production, and socio-economic data and a format for updating.

One of RAMS methodological papers is based on the design of a simple computerized input/output model for determining rural GDP by 34 lines of rural production. It provides the means for determining inter-relationships among lines of production and the capital output ratios. These are valuable tools for investment allocation, project design, and appraisal. The government planning unit will need instruction in using the computer model and has signalled its intent to send one of its staff to the University of Montreal for four months of general training in the elements of computer operation. On this basis, the planning unit will request the services of the RAMS specialist for a short time to instruct the staff member in the use of the model. Without this assistance, the value of the computer model will be lost for future use.

Another opportunity to institutionalize the RAMS process is manifest in the planning unit's request for the short term services of the RAMS economist responsible for bringing together the rural production options. The implementation of methodology of designing development strategy and the specification of prerequisites that must be

accomplished during the Fourth Plan are demonstrated in the RAMS option papers, but the work of the planning unit in adopting the methodologies will be greatly furthered by having the specialist intimately familiar with them available to guide the work.

Most of the foregoing suggestions are in fact elements in the solution of a larger problem --- the lack of a functioning economic studies group to do the critical economic research on which policy should be founded. These studies have been made piece-meal from time to time by expatriate groups such as RAMS and the University of Montreal team, but this does not answer the need for a Mauritanian team to perform the work continuously. It is RAMS view that an investment in training personnel for such a group would be one of the most effective that could be made in the furtherance of sound policy making and planning in Mauritania.

PART II

The Mauritanian Setting
The First Twenty Years of Independence

VI. The Mauritanian Setting

Mauritania is a vastness of 1,030,000 square kilometers astride the Sahara and the Sahel on the West African coast. Its 1,478,000 (2) culturally diverse people live a meager existence in some of the least benevolent territory to be found anywhere in the world between the two arctic zones. The northern two-thirds of the land -- part of the Sahara -- is endowed with less than 100 mm of annual rainfall, much of which flashes quickly into the hot dry air. It is home to about 8% of the national population exclusively in the western area toward the sea. The eastern part is the bone dry mineral world of the Majabat al Koubra, an awesome untraverseable desert. The economic life of the North revolves around iron mining and shipping, deep-sea fishing and processing, and diverse small industry in the cities of Nouadhibou and F'Derick/Zouerate. The main military base at Atar fuels the economic life of that city. For the rest, roughly half the population of the area are about evenly divided between settled life in villages and nomadic existence, herding camels and transporting goods by caravan.

The southern third of Mauritania is in the Sahelian zone -- the semi-arid transition belt separating the Sahara and the lush tropics. This is Mauritania's food basket and home of 92% of its heterogeneous people. Here, and around scattered oases to the north, rainfall is sufficient under normal conditions to sustain grudging traditional agricultural production on less than two-tenths of one percent of the national land area. Interspersed with agriculture, small herds of cattle, sheep, goats and camels -- estimated in the mid-sixties to have totaled as high as ten million head -- graze and browse on vegetation so sparse that, on the average, ten to twelve hectare will support only one mature cow for part of the year. It is only the extent of rangeland and the willingness of herders to cover large distances in search of water and vegetation that gave the country its eminence in livestock raising. Even so, it has been common practice for as long as anyone can remember for herders to take animals across the southern and eastern borders during the driest months to survive, to sell some of the herd, and to buy goods for trade.

(2) Estimated 1981 population derived from 1977 census population of 1,339,700 growing at 2.5 percent per year.

Nouakchott, the capital city established in 1960 at the start of independence, is situated on the coast approximately where the Sahara and the Sahel blend. As the seat of Mauritanian power, prestige, trade, finance, and patronage, all roads lead to it, and it shines as a beacon for those seeking advancement, employment, and the finest Mauritania has to offer in the way of education, medical care and other social services. How brightly that beacon shines can be gauged by the growth of the city. Originally conceived in 1958 solely as a political capital, its 1970 population had been projected to be 7,000. By 1970, it had actually grown to five times that. From the end of the 1960's, to Nouakchott's earlier attractions were added a new status as the nation's principal rural refugee and relief center. In the ten years since 1970 it has grown five times again to reach an estimated 173,000 by 1980. This phenomenal increase has not been matched by the city's ability to accommodate people. The excess of humanity has occupied any available area and spilled out over the surrounding dunes with a sprawling shanty town of enormous proportions straining public services beyond any hope of providing more than an often distant source of water.

The explosive growth of Nouakchott in the 1970's can not be explained in terms of the "urban pull" rationale that applies to population growth in other cities of the world. With a negligible industrial base and scanty employment opportunities, the unavailability of urban services for most of the recent arrivals, soaring prices and the quiet character of the city after dark, Nouakchott would seem to have little appeal. Nouakchott is far more an overgrown small town than a metropolitan center.

A "rural push" is the underlying cause. Since the late 1960's Mauritania has known year after year of severe drought. Urban centers throughout the country saw at least temporary swelling of their population as nomads whose herds had been decimated fled to where there was some hope of survival. Their numbers were further swollen by a tide of surplus men from agricultural areas rendered unproductive by lack of rainfall. The main highways became the lifelines of the nation as relief supplies and services funnelled out of Nouakchott and a flood, predominantly of working age men, funnelled in.

The situation of Mauritania's urban areas is symptomatic of the deep economic and social woes that beset the nation. To give these greater depth and dimension one has to look back and try, very briefly, to trace the path which brought it to the present. For our purposes it suffices to consider summarily three facets of the evolution of modern-day Mauritania -- the socio-economic and environmental equilibrium prior to European influence, the disturb-

ance of that equilibrium by the operation of the colonial system, and the attempt of independent Mauritania to master its own affairs. This capsule treatment of an extremely complex history will provide an impressionistic feel for the background and texture of the profound difficulties in which the country finds itself today.

Pre-Colonial Equilibrium

The large-scale offensive of the Almoravid movement in the 11th century intensified the centuries-old southward penetration of migrant Berbers from the North and promoted the definitive introduction of Islam in the entire area. A response to the harsh environment of the Mauritanian Sahara was found in the practice of nomadic camel herding and caravan trading, made possible by the ability of the "ship of the desert" to survive for days between watering and to provide most of the necessities of desert life in the form of transportation, milk, meat, leather for saddles, sandals, and cordage, and hair for tent cloth. The severity of this life style was somewhat alleviated by the opportunities for caravan trade wherein salt, surplus animals, and handicraft products were taken to distant markets to exchange for cloth and amenities.

The spread of Moorish hegemony, gained at the expense of black Africans driven southward, petered out at the southern border of present day Mauritania where it confronted settled populations of black Africans who were able to resist, and because these more humid regions harbored disease to which the Moorish nomad's staff of life, the camel, is susceptible. Here, more than ten centuries ago, the forebears of the Peulh, Toucouleur, Soninke, and the Wolof strengthened their respective identities through the creation of competitive and combative political, social and economic systems that led to the definition of their respective lands. These extended throughout the Senegal River area and further north to the limit of extensive farming and raising of cattle, sheep and goats.

Thus, the Mauritanian Sahel became the field of competition among the black African tribes and the Moors, the former determined not to be displaced and the latter lured by the relative ease of livestock raising, agricultural possibilities, and expanded trade. From the 10th to the 18th century, empires and states rose and collapsed, and after the dust settled on constant expansion and losses of territories, the area evolved with all population interspersed and a more or less uneasy balance ensued.

Populations were not as large as they are now and the land, rainfall, and river resources were generally sufficient to support them and to provide surpluses for trading. Political power and avarice

were the main pressures on the land. When drought struck, as it has about every thirty years for centuries (3), famine and disease pared human and animal populations to a level that relieved the burden on the land and water. Equilibrium was maintained one way or another.

The Colonial Trauma

European contacts and influence on West Africa have been known for about 400 years as commercial interest probed the coastal communities in search of trading opportunities. Mauritania was never of much commercial interest to European traders. The market was very small and the land devoid of the gold, ivory, and produce of the areas along the coast to the South. Gum arabic was the one Mauritanian product that figured largely in exchanges with Europeans, and one might question if that would have been sufficient incentive to the Europeans if they had not been already established at St. Louis, at the mouth of the Senegal River to take advantage of the opportunities presented by Senegal and Mali.

Colonization of the other African territories eventually changed the indifference to Mauritania. The French may have been uncomfortable with this political void bordering on Morocco, Algeria, Mali and Senegal. And to that discomfort would be added great irritation over the "razzias" -- the quick raids on neighboring territories by Moorish warrior horsemen in search of plunder, slaves and livestock. In any event, exasperated by the difficulty and unsatisfactory results of negotiation and official bribery to obtain control of the territory, the French opted for a military campaign to subdue Mauritania. It was not an easy task, but it was eventually accomplished after 50 years of effort. French rule of Mauritania was centered in St. Louis, Senegal, and exercised through a sparse network of administrators and a string of Foreign Legion posts scattered throughout the slowly expanding pacified area.

The prime French economic interest in Mauritania were labor and livestock to supplement the Senegalese supply of manpower and food needed to sustain the peanut trade. Since both of these items were in ample supply in Mauritania and, by custom, used to migrating to neighboring areas under their own power, it was only necessary to provide the incentive to enlarge and maintain the flow. This was accomplished by means of a variety of levies, the abolition of slavery, and the availability of imported goods.

(3) Arab writers reported drought as early as 400 years ago, and modern records bear out an approximate 30-year cycle over the past 120 years.

The requirement to pay taxes and the availability of market goods created a need in the general population for money, up to that time a rare store of value not in general circulation. The abolition of slavery, though not very effective at the time, started a weakening of the dependency that kept Haratin -- freed slaves of the Moors -- in psychological bondage. Despite the appearance of legal freedom, which was ignored by most slave masters sometimes abetted by colonial administrators as a matter of political expediency, the slaves and the Haratin were bound in practical terms because they were destitute and without means to support themselves and their families.

These measures were reinforced by recurring years of poor rainfall when pasturage was insufficient to sustain livestock herds and when agricultural output was insufficient for even subsistence consumption. Livestock owners made distress sales in order to reduce herds and, among the nomads, the impaired ability to support the Haratin forced many to encourage the Haratin to go off and fend for themselves. Many Haratin and slaves, needing no encouragement, fled their masters. Among cultivators, Haratin sharecroppers could not bear the burden of share payments to landowners and tithes to their former masters, and simply refused to pay. Evictions were not uncommon. A new sense of independence and justice grew in the Haratin and with it a rising clamor for land rights for those who worked the soil. The black African communities fared little better economically, although their more rigid social structures and community ownership and control of the land enabled them to avoid some of the more drastic challenges to established authority. They too found themselves with an excess of working age males.

Thus, the need for money and employment afflicted all the groups of Mauritanian society. The solution to the problem was available in the demand for paid labor and livestock in Senegal and, eventually because of the outflow of labor from the Senegal River area, the demand for paid labor in the agricultural areas of Mauritania itself. Where prior to this state of affairs there had been a modest migration motivated by missionary zeal and the accumulation of wealth by the Moorish marabouts, now there began a sizable movement of working-age men of all groups.

The bulk of this migration was to Senegal, although substantial numbers found their way to other West African countries. In Senegal alone, a 1970-1971 national demographic study estimated about 23,000 Mauritians of all ethnic groups to be resident in the country, mainly in the Dakar and Senegal River areas. This number had already been increased by migration resulting from the devastation of the prolonged drought of the late 1960's and early 1970's, that is after independence. Nevertheless, the bulk of these

migrants had already arrived by that time. Among these, the Soninke developed a unique response. Large numbers of youths and men went onward to migrate to France in what was the forerunner of the widespread European phenomenon of "guest labor" of the past decade. Although there are no precise numbers available on the size of this migration, it is estimated in the tens of thousands, and the remittances to the Soninke communities in Mauritania were estimated to make up about 40 percent of their income and a non negligible portion of Mauritania's foreign exchange earnings. The practice continues to this day, but its future is uncertain because of a tightening of French immigration restrictions.

Another feature of the colonial experience is important to an understanding of the situation of Mauritania on the eve of its independence; it entered nationhood with an almost complete lack of infrastructural development. The city of Rosso at the mouth of the Senegal River served as the chief colonial business and local administrative center in Mauritania, but since the country was governed from St. Louis, in Senegal, the importance of Rosso lay mainly in its function as a gateway and entrepot area. The main colonial military garrisons were located at Nouadhibou, Bir Mogrein, F'Derick and Atar, and there were outposts at various locations throughout the country where the commandant served as military administrator. Ground communications were accomplished over unpaved roads and tracks, while telecommunications were via radio. For rapid supply and emergency evacuation each outpost was provided with a small airstrip. Since there were no large-scale economic investments in Mauritania and no widespread and substantial administrative installations, there was no colonial need for the more usual infrastructure investments in all the trappings of modern development such as highways, telecommunications, hospitals, schools, water and sewerage systems, and electric power. Colonial Mauritania remained very much an outpost.

So it was that Mauritania arrived at the eve of independence a collection of diverse peoples without a strong national identity, yet, through Islam, brought together religiously, lacking the infrastructure to provide it more than a bare minimum of communications and social services, families weakened by the migration of large numbers of the cream of its work force, thrust into a money economy without the economic base to enable it to participate, and irrevocably divorced from the old equilibrium that provided its various ethnic groups with a measure of social and economic stability.

It was a very inauspicious beginning.

VII. The First Twenty Years of Independence

The preoccupations of the government of newly independent Mauritania were concerned with establishing itself on Mauritanian territory in reasonable style, promoting national independence and unity, and exploiting its iron, copper, and maritime fishing resources. Nouakchott, newly built and far from finished, was literally in the middle of nowhere, about midway between the anticipated mining developments to the north and the area of rural activity to the east and south. There were no paved roads, and virtually all Mauritanian foreign trade was conducted through the port of Dakar.

Accordingly, the government saw as its first tasks the building of roads, a wharf and ports needed to establish links with the regions and to support the development of the mining and fishing industries. In addition, it was deemed essential to accomplish some urban development in the regions and in main centers. Such projects were incorporated in the First National Development Plan 1963-1966, extended to 1967. It was recognized from the beginning that the ultimate goal of the national development effort must be to provide for the general economic and social development of people, and since the vast majority were in the rural areas this perforce required a large effort devoted to rural development. But there was an **almost total** lack of knowledge about the country's demography, consumption and income, commerce, rural production, and surface and subsurface resources. Under these conditions, planning faced an impossible task. To lay the groundwork for rural development planning in the Second Plan exercise, the First Plan included provisions for some fundamental studies which amounted to less than 3% of total public investment.

Rural development received modest attention in the First Plan, about 17% of total public investment, of which about 6% was in the form of provisions for 79 livestock immunization parks and 20 pastoral wells to enable the exploitation of pastureland unusable because of lack of water, a miniscule amount for a pilot animal-drawn plowing project in Néma, and 0.5% for pilot hydro-agricultural works. To these may be added two ancillary rural projects -- a slaughterhouse and freezing plant in Kaédi (about 2.5%) intended to give herders a profitable alternative to marketing their animals in Senegal and Mali, and the National Agricultural Extension and Training School of Kaédi (L'École Nationale de Formation et de Vulgarisation Agricole de Kaédi), which was subsumed under a total allocation for all secondary, general, technical, and vocational training of approximately 3.5%.

By and large, the First Plan was a statement of intent and a collection of ill-defined and poorly prepared projects. Its accomplishments were disappointing. Actual disbursements for agriculture and livestock, for instance, were little more than half of the small Plan allocation. The construction of roads, ports, wharf, urban works, and industries progressed more or less satisfactorily. However, the fish processing facilities and the Kaédi meat processing plant were vastly oversized in relation to port handling facilities and to their marketing possibilities; the establishment of a modern Mauritanian fishing fleet of 14 vessels in 1965 to increase the supply of fish to the port facilities ended in failure and ceased activities in early 1969. The animal-drawn plowing experiment in Néma was a disaster -- it succeeded in raising cereal yields to produce a large marketable surplus in an area so isolated that it could not economically be brought to cereal deficit areas. Local cereal prices collapsed and the reduced revenues to farmers were insufficient to recoup the capital and credit applied to the project. The all-important studies that were to have laid the ground for manpower training and for rural development planning were never started, with the exception of a sample demographic survey in 1965.

In fact, the Plan was abandoned before its last year of scheduled operation in order to provide for a period of reassessment in preparation for the Second Development Plan exercise. Recognizing its need for help, the government asked for and received World Bank assistance in the form of a 1967 mission to develop guidelines for a development strategy. The mission was critical of the planning effort from the point of view of its lack of a macro-economic framework, sectoral planning and integration, project formulation and evaluation, and most importantly for industry, the heavy reliance on capital intensive investment in industry, mining, transport, communications, and urban development in the vain expectation of a "trickle down" effect whereby the 90% of Mauritians, those in the rural areas, were supposed to benefit. The government accepted the mission's views and recommendations and after a three-year transition period embarked on the Second Plan exercise with World Bank technical assistance and with a new focus on rural development.

The years up to 1968 had been uneventful in the rural sector. Demands for labor in the construction works of the First Plan lured large numbers of rural men to seek jobs in port, road, and rail construction and in the iron mining complex. Nouakchott also attracted more migrants than had been envisioned in search of employment in government and the budding modern commercial sector and of educational and medical facilities. For those who were left behind, life went on as usual, largely undisturbed by government

development efforts and under the niggardly benevolence of "normal" rainfall. For all, it was a fairly good time.

Then the drought struck, and for the next four years the rural population went through the most wrenching changes and privations within living memory. The last drought of comparable severity has been fifty years before. Without fresh supplies of water from the annual rains, subsurface water levels sank low and many wells dried up. Unable to graze their livestock in vast areas where there was fair pasturage but no water, herders congregated in those relatively few areas with adequate water supply. But here there was not enough pasturage to support the extraordinary numbers of animals, and large numbers died of starvation. It is estimated that about 30% of the livestock perished, and a substantial proportion were sold to reduce further losses. FAO statistics indicate that the 10.6 million head national herd at the end of 1967 declined to about six million head at the end of 1973. Those that survived the drought were in weakened condition resulting in increased prevalence of disease. The reduced herd and the increased morbidity resulted in a precipitous drop in milk production. Since milk is the most important element of the nomad diet, starvation and malnutrition was rife, especially among the very young and aged.

In agriculture, crop production plummeted an estimated 60% from the 1961-1965 annual average about 115,000 metric tons, making it necessary to swell normal imports of 30,000 tons per year to 120,000 tons to make up the difference. Riverine fishing, an important part of the diet of the Senegal River area, was also badly affected by low water levels with a loss of 50% or more of an estimated normal catch of about 15,000 tons. As with the nomads, starvation and malnutrition among the agricultural population grew to serious proportions.

The congregation of nomads around watering points took many forms. Not only did large numbers seek to save their herds by assembling near wells in pasture areas, many who had lost most or all of their holdings through livestock death and sale took the few remaining beasts kept for immediate family needs and pitched their tents along the new "Road of Hope", the Nouakchott-Kiffa tranche of road, where water was available from construction bore holes or in the existing communities on the route. Here, there was some hope of relief in the form of disaster aid from the government. Many of these settlements became permanent as the dry years stretched seemingly endlessly through the 1970's, broken only by a few years of relatively good rainfall. And many nomads, after a millenia-old tradition of endless wandering for a meager survival and now bereft of their livestock wealth, simply opted for the relative security,

ease, and comfort of sedentary life confident that a benevolent government would tide them over the difficult times. The wealthy nomads invested in the cities rather than in their traditional livestock.

Cultivators fared somewhat better than the nomads, having been able to retain their customary way of life and their traditional communities intact. But great hardship afflicted them as well. The drastic shrinkage of land area cultivable under conditions of drought not only reduced their food supply to starvation levels but also brought their social systems under severe pressure. In all the river valley ethnic communities, those in control of land use, work assignments, and food allocation among the members of the community faced rising challenges to authority and the traditional notions of rights and privilege. Only the Soninke, in the area of heaviest rainfall and with the most rigid and centralized authority of all, managed to come through relatively unscathed.

Nomads and cultivators alike had an enormous surplus of working-age males for the highly reduced amount of rural productive opportunity available. Migration of people, predominantly working-age men, toward urban areas in search of employment or family support assumed gigantic proportions. The population shifts are dramatic even in the dry language of statistics.

In the case of the sedentarization of nomads, the 1965 sample demographic study labeled 65% of the population as nomads. By the time of the 1977 census only 36% fell into that category. In terms of inter-regional migration, four of the twelve administrative regions accounted for a larger proportion of the population in 1977 than in 1965; the others were losers. Of the four, all but one are areas of relatively high economic activity -- the overwhelming shifts having been to the two city regions of Nouakchott and Nouadhibou which increased their populations 11 times and 2.3 times, respectively. Though the two main cities were the major poles of attraction, the net results cited above mask a substantial continual exchange of migrants among regions. According to 1976 statistics, the average immigration was about 46% of out-migration for all regions, i.e., about 6 gained for each 13 lost. On the whole, more than 29,000 people, excluding nomads, moved from one region to another in that year alone, an average of 1 in every 46 people, and of these almost 20,000 were men, the bulk of them under 30 years old.

The rural-urban shift left the rural areas almost depleted of manpower. Even today, a traveller in the southern part of Mauritania is struck by the apparent scarcity of working-age males in their prime. Women, children and older men predominate, and it is to

women that the burdens of the missing males have fallen. Women are now doing work previously reserved exclusively for men as well as their former tasks. Without their labor, even the severely reduced areas of rural production would not be productive today. Rural infants have paid heavily. The new female imperatives have become planting and harvesting, which will not wait. Suckling infants are denied their only nutrition until their mothers are finished with field work, and to the general condition of rural malnutrition is added infant malnutrition and its consequent irreversible brain damage and higher infant mortality.

In gross terms, government efforts of the second decade followed the same lines and with similar results that characterized the first decade of independence, although there were improvements in the planning process and in government's appreciation of the limitations therein.

There were two formal National Development Plans in the 1970's -- the Second Plan, 1970-1973, and the Third Plan 1976-1980 -- both of which emphasized rural development to a greater extent than the First Plan.

Between the end of the First Plan in 1966 and the start of the Second Plan, there was a period of reassessment and redirection during which the elements of the strategy and tactics developed by the World Bank mission were applied in annual planning exercises with improved coordination between budgetary spending decisions and development requirements.

The Second Plan came on the scene as a modest document which provided a framework of basic sectoral goals to guide annual investment and budget programs for the four-year period. It explicitly recognized three constraining factors, characteristics of Mauritanian efforts to produce coherent development plans -- the lack of basic data that would permit precise projections, and the impracticability of making firm spending plans for periods longer than one year given the volatility of Mauritanian budgetary resources, and the heavy dependence of the country on external financing over which Mauritania exercises very limited influence. As did the previous Plan, the Second Plan again stated the need for the training of specialized staff able to carry out projects and for the completion of studies to increase the knowledge of the basic economic and social variables affecting development as the basis for more and better projects.

Continuing the previous preoccupation, the government devoted the greater part of public investment to the development of industry, mining, and infrastructure. Rural Mauritania was allocated 13.9% of the total Plan investment which included investment from external

sources. In terms of public investment the rural sector accounted for about 41% of the total. Of this amount, only 38% was expended, a third of which was devoted to irrigation studies. Perhaps one of the key reasons for the poor Plan performance is the low level of government effort expended on the rural sector. The government's operating budget for these activities followed a downward trend from the initial 1960 independence budget proportion of 6.9% to a 1973 proportion of 3.4%, in constant money terms a drop of 13%.

Livestock raising was the major beneficiary of rural activity under the Plan in the form of two projects including well construction, animal health, and well and firebreak rehabilitation. One of the projects included a pasture improvement component. In the agricultural area, the main effort seems to have been the continuation of a project to establish small village-based irrigated perimeters started in 1966 at the end of the First Plan. In all, 14 of these pilot introductory irrigation schemes brought a total of only 100 hectares under cultivation by 1975.

In the forestry sector, a rise in the international price of gum arabic encouraged a rise in tapping of the extensive forest of gum trees increasing production from 2,000 tons in 1960 to 5,000 tons per year in the early 1970's. Lack of knowledge of the sector and insufficient staff and budget allocation to the forestry services limited the government response to the resulting deterioration of the gum tree stock. The government did, however, assign the monopoly of trade in gum arabic to a state agency, SONIMEX, which established a processing plant in N uadhibou in 1972 to end the former practice of processing and exporting through Senegal. To the gum tree deterioration must be added the deterioration of all other forest resources due to over-exploitation for wood and charcoal, the demand for which increased greatly not only by virtue of normal population growth but also by the abnormal growth of sedentarization of nomads and of urbanization. Forests, already a fragile and scarce resource in the Sahel, were fast becoming a disappearing resource.

The period between the end of the Second Plan in 1973 and the start of the Third Plan in 1977 rivalled the recently passed drought period in the severity of upheaval it caused on the Mauritanian scene. The principal difference was that the new period of trial and tribulation had more drastic effects on the modern sector of the economy and on government finances than had been previously known. A recovery from the effects of the drought had set in around 1974, and economic activity was slowly returning to normal when the nation was hit by a succession of setbacks that by 1977 brought it to its knees financially.

The first of these events occurred in 1974 with the doubling of the prices for petroleum products and its effects on the world economy. Not only was the country directly affected by the increased cost of petroleum products and the general rise in import prices that followed, it also suffered a drop in the earnings of its main export as the demand of the world steel market for iron ore declined, particularly in 1975, taking iron ore prices with it. The economy entered onto an unprecedented inflationary path and the balance of payments was for the first time since independence under severe pressure. Subsequently, in 1976, Spain relinquished control of the Spanish Sahara and Mauritania assumed control of the territory south of the 24th parallel -- a move that was bitterly challenged by the Polisario liberation forces. The additional administrative and defense burden strained Mauritania's already limited financial and human resources severely.

Temporary salvation came from abroad in the form of large amounts of foreign assistance which Mauritania has shown an amazing ability to attract. From 1973 to 1977 the government was favored with US\$ 380 million, mostly from Arab OPEC countries some of which was for budgetary support and balance of payments assistance. Sizable amounts were also obtained from private banks and foreign suppliers on commercial terms. This period of "easy money" brought a relaxation of financial discipline, aggravating rather than contributing to a solution of the country's problems. Continuing an existing trend, the government went on a public investment spree directed largely to unproductive projects in infrastructure and industry. The mining sector was nationalized and large projects, notably an oil refinery and a sugar refinery completed in 1977, were ill-conceived and financed on very hard terms. Both refineries remain inoperative to this day, some four years later.

The situation deteriorated sharply during 1977. Drought struck again and the already depressed production of crops fell further. Production of millet and sorghum, the main crops, tumbled from 36,000 tons in 1976 to about 21,000 tons in 1977. The drop in food production added to the already severe food deficit necessitating official imports of more than 100,000 tons, only one-third of which were obtained as grant aid. Additional food imports came through traditional non official channels. World market prices for iron ore remained depressed while export quantities dropped because of interruptions caused by Polisario attacks on the rail link between the mines and the port, resulting in a drop of iron ore export earnings from 1976's US\$ 154 million to US\$ 127 million in 1977. Added to these woes, external budgetary support was cut drastically, and for the first time since independence Central Bank reserves went negative as a result of the need to finance a US\$ 45 million balance of payments deficit.

The government found itself unable to honor most of its external debt obligations in 1977 and a severe budget deficit of US\$ 91 million -- up from US\$ 64 million in 1976 -- caused the diversion of some project aid and large advances from the Central Bank to cover it. This large government demand for credit, coupled with the need to replace foreign credits with domestic credits to finance essential imports, forced the Central Bank to strictly limit credit to the private sector bringing many small local enterprises to the brink of bankruptcy.

In the start of a new era, a bloodless coup d'état in July 1978 brought a new team to power and opened the way for peace initiatives that resulted in a cease-fire which evolved into a permanent settlement in August 1979 and a relinquishing of Mauritanian claims to the former Spanish Saharan territory. It also opened the way for expanding Mauritania's sources of external assistance among some of the Arab states that were not in sympathy with the Saharan involvement, and it allowed the government to once again devote its full energies and resources to national affairs.

Ranking high in importance among these national affairs was the continuation of the execution of the Third Plan, 1977-1980, altered by the novelty of strict financial standards in the choice of its investments and a determination, induced by the imperatives of its Rehabilitation Plan, to drop projects that could not be financially and economically justified. The essence of the new approach was a sharply reduced government role in organizing and directing investments in mining and basic industry and a policy of liberalism and openness towards foreign private investments, leaving to the investors the full initiative and responsibility for project implementation and financing without the previously ruinous government loan guarantees. There was a clear departure from the past policy of emphasis on industry and transport development, with the exception of the Nouakchott port and the Kiffa-Néma road, both of which had already started, and the Guelbs iron ore project (4) which was and still is the main hope for redressing the economy and the cornerstone of the Rehabilitation Plan.

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- (4) A project to exploit low grade iron deposits that will substantially increase reserves and permit continued operations beyond the time in the late 1980's when present proven reserves are expected to be exhausted.

Rural development received greater emphasis in the Third Plan than ever before -- 18.6% of total investment -- almost all of which would be dependent on external financing. But in view of the reliance on irrigation works as the mainstay of agricultural improvement and their high cost and long gestation period, coupled with the strained condition of government finances, Plan operations in the rural sector were modest in number and extent and had little immediate impact on the quality of rural life and improvement of the national economy. Slightly more than 1.9 billion ouguiyas (about US\$ 42.4 million) had been allocated about one-third to agriculture (5) and two-thirds to livestock. The expenditures for agriculture were 39% and for livestock 34% of the allocated amounts, only in part because financing could not be obtained. Almost 45% of the allocated amount for livestock represented projects that were stopped, abandoned after starting or that failed for one reason or another.

A bright spot in this dismal picture was an integrated project for rural development in southeast Mauritania. It called for a 240-million ouguiya expenditure on livestock, agriculture, creation of reserve stocks, erosion protection, installation of water points, trail improvements, producers' and consumers' credit, and basic literacy. It is remarkable not only for its integrated approach, but because it was a major project that recognized the lower investment and more rapid results that could be achieved without irrigation. The entire allocated amount was expended, but it is not known how much of its targeted 7,400 additional hectares and 15,000 ton improvement in cereal yields were achieved.

Perhaps the most poignant commentary on the Third Plan, and by extension on the entire subject of Mauritanian rural development effort, is embodied in the observations of the government technical level group working on the preliminaries of the Fourth Plan. Paraphrasing those observations:

The Third Plan defined the major lines of medium- and long-term strategy for rural development with the objective of eliminating the major constraints to rural sector development and creating the conditions for a rural sector take-off. Far from being overcome, these constraints are in some cases aggravated. The Third Plan, as were the First and

(5) Exclusive of the operations of SONADER, the parastatal organization responsible for rural development, which are in practice concentrated on creating irrigation works.

Second Plans, is characterized by sporadic action and insufficient coordination and articulation, as much within projects as between one project and another; by the administrative and financial sluggishness of public institutions; and by the paucity of professionals at high and middle levels of government and, at times, their professional weakness.

Regardless of the above, the Third Plan results were less than hoped for because of the combination of a number of factors:

- the lack of an integrated global program of rural development,
- the imbalance between objectives and means,
- the difficulty of obtaining resources solicited for some subsectors,
- the nonparticipation of the great majority of rural producers,
- the absence of agricultural credit institutions,
- the difficulties of implementation and management encountered with all the irrigation perimeters because of persistent problems stemming from land tenure and the training and organization of cultivators,
- the insufficiency of government personnel, and
- the difficulty of the government in meeting its agreements with respect to counterpart contributions.

There must be a political will to assign priority, in precise and concrete terms, to the rural sector. This will should be actively and practically confirmed in the conception and the execution of the Fourth Plan.

How well this technical level viewpoint and conclusion will survive scrutiny at the political level of the planning exercise is a moot point.

In retrospect, the government of Mauritania seems to have early adopted a policy that was arrived at exclusive of any formal planning activity. That policy was apparently motivated by a desire to obtain a substantial and prolonged flow of earnings to finance trade and modern sector development and to place Mauritanian trade in the hands of Mauritians. Seen in this light, the concentration of public investment and effort in mining and fishing industries and transport and infrastructure take on a logic that one can dispute

only on the basis of disagreement with objectives. At the time this policy was adopted, the problems of the rural sector were not especially critical -- they were in the normal state that had endured for a century or more and the means of doing anything about them were lacking in terms of planning resources, manpower and money. The wealthy nomads, meantime, restructured their investments and continued to trade.

The development of the iron and copper deposits and associated infrastructure were rather easily accomplished by foreign initiative and a majority of foreign capital. The development of the fishing industry seems a natural extension of the same idea of resource exploitation with the added appeal of the multiple use of port facilities. The miscalculations and operating and economic factors that combined with unfortunate consequences for the profitability some of these ventures may have been expected to be foreseen if there had been competent planning, but the policy to develop along those lines was not at fault.

The investment in the road to Rosso and the Nouakchott wharf are direct expressions of the need to improve Mauritania's trade facilities since the one was the existing external trade corridor and the other the intended future corridor for the diversion of that trade. Later, when the alignment of the Road of Hope brought it through the heartland of the livestock grazing area rather than through the agricultural areas to the south, there was considerable consternation on the part of those who thought the off-touted southern route would be the most cost effective and would contribute more to rural development. Here again, the motive may be seen in terms of trade potentials. Production in the south had descended far below subsistence requirements and for the foreseeable future, given the government's bias toward irrigation works, was likely to remain so. On the other hand, the "livestock" alignment served that segment of the population most severely affected by the drought and provided the possibility of exchanging transhumance for the nomadic way of life and a corridor for two-way trade with livestock flowing by truck toward Nouakchott and commodities flowing to the hinterlands. It may also have been a measure to attract livestock into national markets that traditionally travelled south over the border.

Other than the concentration on irrigation projects, the government's principal rural development efforts from the outset have been in the nature of support for the livestock sector. From the First Plan onward there has been a succession of projects to install, repair and rehabilitate pastoral wells and firebreaks and to maintain and enlarge the system of dams for recessional agriculture, the latter a means of encouraging sedentarization with livestock raising.

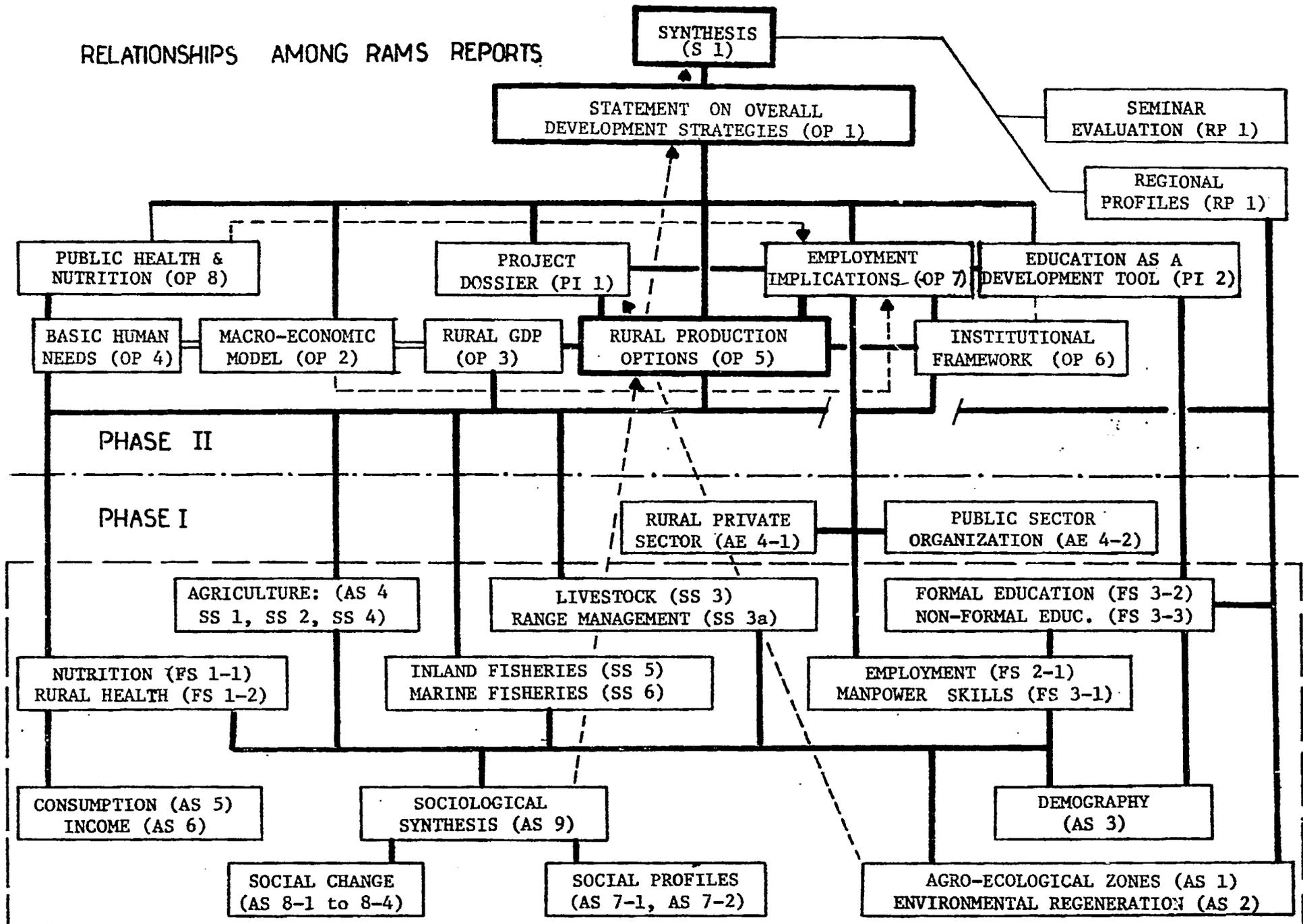
If mistakes have been made, they have been in the area of planning, or lack of it, and in project formulation and evaluation. The government's need for effective planning has intensified over time, as the years of easy availability of grant aid have given way to financing on harder terms and as the amount of external debt has risen to levels that forbid capricious public investments.

Part I of this report summarizes the RAMS effort to improve the basis for and practice of Mauritanian planning.

PART III

Annotated Bibliography

RELATIONSHIPS AMONG RAMS REPORTS



PHASE I REPORTS

Agro-Ecological Studies

AS 1 Agro-Ecological Zones of Mauritania. (195 pp.)

Describes the geography of the country and its environmental constraints followed by discussion of surface and underground water, soil types, vegetation groups and grazing lands, live-stock zones, and cultivation zones.

The report culminates in the identification, description, and cartography of eight ecological zones comprising the entire territory of the country, of which five are designated agro-ecological zones on the basis of their suitability and usage for rural production.

AS 2 Environmental Regeneration of Southern Third of Mauritania. (370 pp.) Appendix (80 pp.)

Describes the conditions of the environment, the main causes of degradation and the present trends in the condition of the environment around towns and villages, in the pastoral areas and around pastoral wells, in the classified forests, and in date palm groves on the basis of 100 field observations.

The report goes on to discuss the carrying capacity of pastures and concludes with comments on menaced zones, well preserved zones, attitudes of people toward their environment, the process of vegetation regeneration, and the adequacy of available means to fight desertification.

AS 3 Demographic Projections. (138 pp.)

Analyzes the data and preliminary results of the 1977 census as published by the census bureau and derives a natural population growth rate. National population projections are presented for variations on the growth rate, and major aspects of historical population movements are discussed, among which are inter-regional, international, and rural-urban migration; sedentarization of nomads; and the Saharan conflict.

Regional projections are made to the year 2000 for nomadic, sedentary, and total population accompanied by a discussion of regional trends bearing on projected population changes. A statistical profile of Mauritanian social structures is elaborated in terms of family structure, the average household and the distribution of population by a gender and age. The report concludes with observations about natural population increase, urbanization and growth of Nouakchott, and the phenomenon of sedentarization.

Rural Household Studies

AS 5 Rural Sector Consumption Patterns in Mauritania. (130 pp.)

Summarizes the results of the consumption component of the RAMS Household Survey in terms of regional, ethnic group, and nomadic consumption patterns giving auto-consumption and expenditures for food and non-food items in some detail. After examining the question of demand elasticity for both food and non-food consumption, the report concludes with projections of the rural sector food and non-food demand to the year 2000 based on low, medium and high demand hypotheses related to assumptions about net increases in per capita annual income and the RAMS demographic projections. The results are presented for rural sedentary, nomadic, and total rural sector populations.

AS 6 Rural Income in Mauritania. (95 pp.)

Summarizes the results of the revenue component of the RAMS Household Survey. The report examines the sources of cash income and its structure and distribution among the rural sedentary and nomadic budgetary units by region, economic sector, and ethnic group; and aggregates the results for the entire rural population. Lorenz curves and Gini concentration indices are provided for the sedentary and nomadic components of the rural population.

Sociological Studies

AS 7-1 Sociological Profiles: Black Africans in Mauritania.
(70 pp.)

Describes the major Black African ethnic groups resident in Mauritania based on published information. A historical section briefly gives the background up to the 19th century and during the period of colonization, and discusses the economic impact of colonization and the coming of independence.

The Toucouleur are discussed in terms of their similarities and differences with respect to other ethnic groups, and are described according to their family and political organization and their occupational orders and castes. The Peulh are described by their pastoral life style, social structure and concept of spaces, with special emphasis given to the effects of the drought. The social organization of the Soninke in their village and economic life is described along with the

unique character of their migration and its effect on the home group. The Wolof and the Bambara backgrounds and economic activities are reviewed and their political and social organizations are described.

AS 7-2 Sociological Profiles: The Moors. (90 pp.)

Presents a short historical overview recapitulating in broad outline the establishment of Moorish society, and analyzes the past and present structures of the society from the aspects of material resources and social organization. In the process, the report evaluates the factors of continuity and change; clarifies the tensions, dislocations, blockages, and imbalances resulting from their evolution; and measures their impact on Mauritania's current development problems. Specifically, the report examines the functioning of the Moorish economy in terms of its modes of production, consumption patterns, and distribution; and the Moorish social organization with special reference to kinship, power and social stratification.

AS 8-1 Social Change: The Future of Pastoralism. (75 pp.)

Presents the results of three RAMS case studies illustrating different adaptations to changes within the pastoral way of life due to the two-decade movement toward sedentarization of nomads who once made up 65 percent of Mauritania's population. The report examines the multifaceted reasons for the movement, the apparent irreversibility of trend, and what may be done to stabilize a way of life that accounts for a major part of rural production and wealth.

AS 8-2 Social Change: Social Organization of Agricultural Production. (90 pp.)

Explores the traditional concepts of land ownership among the Moors, Toucouleur, and Soninke and their subsequent change through agricultural projects; traces the traditional agricultural labor force which fits so strictly in the various hierarchical social systems and its mutations; and explains the various impacts which agricultural development -- principally irrigation -- have had on the general picture of social change..

AS 8-3 Social Change: Population Movements and Migrations in Mauritania. (235 pp.)

Clarifies the historical and cultural aspects of migration and the current economic and social changes related to it. In the process, it examines the prevailing conditions, factors and reasons favoring migration, the spatial and social organization of migration, and the settlement of migrants in the urban areas. The report brings into sharp focus the essentially different character of the migrations of the past two decades, which represent an abandonment of a way of life, and those that preceded it representing the pursuit of a way of life; and documents the social disruption that ensued.

AS 8-4 Social Change: The Evolution of Modes of Accumulation and Social Change in Mauritania.

Traces the changes in the manner and form of accumulation of wealth in Mauritania, essentially by the Moorish majority, from the historical and traditional pastoral and agricultural systems where the source of wealth was linked with productive enterprises, to the modern evolution of the market economy from its precolonial beginnings, where wealth emanates from trade and transportation. The report examines the economic and social differentiation resulting from the new market relationships and the role these new merchant groups play in Mauritanian society today.

AS-9 Overall Synthesis of Sociological Studies.

Explains the basic premises guiding the sociological research in terms of the need to identify the specific forms of the historical evolution of the country and its people, and the need to understand the mechanisms of changes particular to each of the ethnic groups as a consequence of the historical and developmental processes that have taken place. A brief summary of each of the sociological studies is included as well as some observations on the methodology used.

Sub-sectoral Studies

SS 1 Irrigated Agriculture. (90 pp.)

Analyzes the existing situation and constraints with regard to irrigated cultivation along the Senegal River, with particular emphasis on agricultural credit, communications, infrastructures, marketing, storage facilities and processing of agricultural products. Land tenure problems and training are briefly discussed. The report goes on to explore the possibilities for irrigated agriculture in other parts of the country using both underground and surface water. Suggestions are made as to the content of a coherent policy for the promotion of irrigated agriculture in the quest for food self-sufficiency. Data are given on population and employment, irrigated areas, and production and farm budgets for various crops.

SS 2 Dryland Agriculture. (160 pp.)

Analyzes in some detail the status of dryland agriculture (recessional, rainfed, and walo) in terms of production systems (present and future by surface area and geographic distribution); crops and yields for cereals, legumes, vegetables and condiments; production methods and problems; production means (land, labor, capital and budgets); land tenure and its effects on production; and the relationship with other rural production. Past and current improvement projects are cited with a short commentary. Also discussed are the production quantities of cereals and associated crops by cultivation zone and hypotheses of good and poor climatic conditions, and the destination of the production in terms of subsistence use, storage and marketing. Training and research are treated briefly, and the report ends on a consideration of the environmental questions of degradation and conservation.

SS 3 Livestock Sub-sector Study. (117 pp.)

Reviews the current status of livestock resources, production, and marketing in Mauritania; assays the natural and man-made constraints on that production, and evaluates production potentials for cattle, sheep, goats and camels. The carrying capacity of the pastoral land is the critical restraints and since this is dependent on rainfall, the production potentials are projected to the year 2000 based on high, low, and medium rainfall hypotheses using the RAMS rainfall model which is a surrogate for carrying capacity. The analysis assumes a

continuation of livestock raising based on extensive grazing on open range. Poultry is added to economic analysis because of its contribution to GDP despite its irrelevance to demand on grazing resources.

SS 3a Supplement to Livestock Study: Range Management. (42 pp.)

Discusses the present situation of Mauritanian pastureland problems and estimates future potentials based on assumptions of various remedial measures including long-term range management. The report details specific measures including various methods of providing additional animal water supply to dry pasturelands, methods of reducing and controlling range fires, and approaches to and degrees of range management with the advantages of each. It outlines a range management approach appropriate for Mauritania starting on a small scale based on essential local participation eventually building in scope to the national level, and concludes with a discussion of the elements of a good range management plan.

SS 4 Oasis Agriculture. (170 pp.)

Presents a wide-ranging detailed analysis of the current status of cultivation of date palms and other crops in the oasis environment, its problems and potentials. It covers production methods, output, social organization, labor, capital, land tenure, marketing, research and extension services and environmental impact. Current on-going projects are discussed and views are expressed concerning their appropriateness to the problems of development of the subsector with justification and suggestions for increased government intervention to save oasis agriculture from eventual extinction due to both natural and man-made threats.

SS 5 Inland Fisheries. (78 pp.)

Describes the human, natural, and institutional resources for fishing in the Senegal River valley, and analyzes present production and human and fishing potentials taking into account catches, equipment, processing and storage, marketing, and the costs of production. The constraints of infrastructure, supervision, training, financing, management, and the environment are identified and analyzed, and the development possibilities are discussed on the regional, national and international levels.

SS 6 Maritime Fisheries. (112 pp.)

Describes the traditional coastal fishing subsector in the same framework as applied to the report on inland fisheries, above, with the addition of a discussion of the existing pre-cooperatives, especially those of the Imraguen, and the development of the subsector in the direction of industrial fishing.

AS 4 Agricultural Production: Analysis of Selected Aspects of Mauritanian Agriculture. (75 pp.)

Summarizes the rural subsector studies and presents in summary form the findings of the RAMS Production Survey conducted in 1979/1980. Comparative budgets for crop and livestock enterprises are presented, and some of the issues in the livestock and crop subsector are discussed including questions of pricing and marketing of cereals.

Functional Studies

FS 1-1 Food and Nutritional Situation in Mauritania. (94 pp.)

Analyzes the available data existing at the time of the start of RAMS project and presents summaries of the past nutritional studies; the cereal situation; food and dietary habits; and nutritional programs in Mauritania. In view of the age of the previous studies (latest in 1958) RAMS conducted a brief food consumption survey in 1980, the results of which are presented in this report, with special sections on dietary habits and the diet of young children.

FS 1-2 Rural Health: Outline of the Mauritanian Health Sector. (84 pp.)

Outlines the national health system with regard to administrative structure, facilities, population coverage, and budget, and diagnoses the health situation in terms of morbidity, mortality, fertility, population growth, and nutrition. The objective and means of health sector of the Fourth Plan (1981-1985) are analyzed and the internal and external constraints affecting the system are discussed. Recommendations are presented concerning the priority actions needed to reorient the health system toward preventive health care and to place the Ministry of Health in a better position to plan, administer, and execute its program.

FS 2-1 Employment Situation. (98 pp.)

Analyzes population and manpower characteristics derived from the 1977 census with distribution by age, gender, and geographic location presented separately for urban/rural areas and sedentary/nomad groups. The existing labor force is described in terms of the components sedentary, nomad, government, modern business, and traditional urban based on data obtained from the RAMS Employment Survey. A perspective is given for future employment and under-employment based on projections of population, labor, and assumed participation rates.

FS 2-2 Supplement to the Employment Situation. (66 pp.)

Summarizes and analyzes data and information on employment and unemployment obtained from the RAMS Employment Survey (1979/1980) with broad coverage but concentration in major population centers.

FS 3-1 Manpower Skills.

Documents the literacy level of the population and labor force and describes the educational level of the population as a whole with additional detail on the sedentary and nomad portions and the entire labor force by occupation and economic sector. The civil service is described from the manpower and employment perspective. A detailed description is given of the RAIS survey enumerating over 110 non-structured business activities. Current school population figures are briefly summarized and projected to the year 2000 demonstrating the major effect of the graduates on the structure of the work force. The basis for a Human Resources Planning System is described along with actions to make a start in that direction.

FS 3-2 Evaluation of the Formal Education System in Relation to Development Objectives. (215 pp.) Appendix (30 pp.)

Evaluates the educational components of the three past national plans for economic and social development and finds formal education out of tune with overall goals and objectives. Viewing the role of the system as the provider of an appropriately prepared labor force, the report provides an exhaustive in-depth analysis of the structure and performance of the Mauritanian formal education system and its adequacy for fulfilling that role. Includes primary, secondary, technical, and vocational education.

FS 3-3 Non-Formal Education. (240 pp.)

Describes and analyzes the institutions and programs in non-formal education and discusses their relation to production and development with regard to traditional and modern agriculture, herding, fishing, management, crafts, health, literacy, and culture. Also summarizes and analyzes the results of the RAMS Skill Qualification Survey of farmers, herders, fishermen, artisans, shopkeepers, and women.

AE 4-1 Economic Activity of the Rural Private Sector. (81 pp.)

Analyzes and discusses the role and activities of private and parastatal business organizations operating in the rural sector with emphasis on cooperatives. The constraints and potentials of these forms of ownership and operation are examined and illustrated by several case studies and hypothetical examples. Operating budgets of typical small scale family enterprises are presented for shopkeepers, bread making, butchering and restaurants. Road transport patterns, operations and costs are discussed in some detail.

AE 4-2 The Public Sector: Organization and Operation of Rural Development Activities. (139 pp.)

Analyzes selected government departments and public sector institutions concerned with rural development. Examines the historical evolution of the government's organizational composition and how it functions with regard to policy formulation, planning, budgeting, and implementation activities. Project case studies are presented illustrating two different approaches to rural development -- irrigation works and an integrated development project.

AE 4-3 Annotated Statistical Compendium.

Distills data from RAMS studies, presenting them in annotated form. Also includes information obtained from census, and information available on geology and climatology.

PHASE II REPORTS

(a) Option Papers

OP 1 Consolidated Statement on Overall Development Strategies

Draws on the analysis of the other seven Phase II RAMS papers and describes within the Mauritanian setting the methodology followed in reviewing rural development and manpower options and the major development alternatives that emerge for the GIRM's consideration. A listing of general issues for decision and action is provided if the development options presented are to be pursued.

OP 2 Macro-Economic Simulation Model for Assessing Development Priorities.

Describes and demonstrates a macro-economic simulation model which establishes the relationship between the financial constraints to development, particularly the debt service ratio, the government budget and the balance of payments, and investment and output. The Mauritanian experience since independence is analyzed in these terms and Gross Domestic Product by major sector is projected on the basis of three sets of output/investment assumptions through the year 2000.

OP 3 Framework for Calculating Rural GDP from Basic Production Data.

Gross Domestic Product for the rural sector for the period 1967 through 1980 is derived by aggregating the available crop and animal production series. These data are compared with annual rainfall figures and three 20-year rainfall production patterns are selected. These patterns are then used to project three rural production possibilities through the year 2000. In addition, the disaggregate production series are used to compile and demonstrate a modified input-output table for the Mauritanian rural sector. This innovation should prove useful in helping to identify and analyze specific investment decisions in the rural sector.

OP 4 Basic Human Needs.

Discusses the need and desirability of incorporating the BHN concept into Mauritanian development planning, while at the same time emphasizing the growth required to finance BHN. The major individual needs, including health and nutrition, education, shelter and energy, are analyzed in light of the

Mauritanian scene. In addition, estimates are given of the costs that would be required to provide the lower 20% of the population with the basic minimum BHN.

OP 5 Rural Production Options.

Presents the rural setting in Mauritania and examines production/investment possibilities for the various subsectors of the rural sector: rainfall, recessional, irrigated and oasis agricultural, livestock, inland (river and pond), and maritime (artisanal/and semi industrial) fishing. Options are presented for maximizing output, tracing current trends, and finding intermediate possibilities to achieve food self-sufficiency. Rainfall is explicitly examined as a constraint, as is manpower. From these components three options are compiled for the entire sector showing investment, production, value-added and manpower for each. This paper is the keystone to the other rural sector Option Papers.

OP 6 Agricultural Institutional Framework.

Describes the need for State-supported service institutions to help remove the constraints and bottle-necks to increased agricultural production and income. It examines both the physical and human constraints. On the basis of this analysis, costs are derived and manpower and organizational requirements are compiled. The options range from a nationwide coverage of a full integrated system, to a series of regional centers of influence, to a continuation and growth of the present set of services now in existence.

OP 7 Employment Implications of Alternative Development Strategies.

Analyses both the supply and demand for labor, reaching the conclusion that 70,000 new jobs are needed to reach full employment without solving the problem of under-employment particularly prevalent in the rural areas. Employment opportunities are limited due to the small internal market and the lack of skills including literacy among the labor force. Projections to the year 2000 are made, indicating that if present policies do not change there could be 400,000 unemployed. The several options set forth are those which give different emphasis to the promotion of labor-intensive activities, particularly in regional centers, and to the design of an entrepreneurial code to replace the present investment code which favors capital-intensive activities. The need to organize a program to promote general educational levels and teach specific skills is emphasized.

OP 8 Public Health and Nutrition.

Part I of this paper (Health System in Mauritania: Analysis of Problems and Alternative Solutions) presents and discusses a three-stage program of providing public health care to Mauritians. It consists of reorienting the present largely curative Nouakchott-based system to future needs while meeting present commitments. Subsequently phases involved improving program management, reorientation towards preventative medicine, expanding services to rural areas and eventually making health part of an integrated rural development program. Part II (Food Requirements and Nutrition Strategy - Estimates for year 2000) examines in detail the present state of nutrition in Mauritania and sets objectives and standards which are incorporated in the public health option paper.

(b) Project Identification and Formulation

PI 1 Project Dossier.

Contains over 10 descriptions of proposed projects in environmental, including rangeland management, and employment-generation activities. These are presented as illustrative projects, some described more fully than others, using the CILSS project format. Costing is provided for most of the proposals. These projects flow from discussions in the Option Papers.

PI 2 Education as a Development Tool.

An outgrowth of the Phase I RAMS report on Evaluation of the Formal Education System in Relation to Development Activities. This special report recommends a thorough reform and decentralization of Mauritania's education system. Specific proposals range from elementary through professional and technical training. Its central theme is the need to readapt teaching to be more responsive to the development needs of the country.

(c) Other

RP 1 Seminar Evaluation.

A special report, this evaluation puts into perspective the meaning and outcome of the seven seminars organized by RAMS under the sponsorship of the GIRM's planning authority. Each seminar is reviewed in relation to the objectives established by the government, with copies of each final report being enclosed. Recommendations for the continuation of the seminar program are made.

RP 2 Regional Profiles.

In connection with the GIRM's effort to decentralize the planning process, RAMS has proposed a series of 10 regional profiles, each providing basic economic and social data collected in the course of RAMS' research. (Two of the country's 12 regions are not covered because they are considered more a part of the modern rather than rural sector.) The profiles were drafted with the intention of giving each of the 10 regions basic data to use, and to up-date periodically, as they elaborate their ideas for the Fourth Economic and Social Development Plan.

S 1 Synthesis.

As the term implies this report is intended to encapsulate RAMS' two and one-half year experience, put it into perspective and glean the results. The operation is cast in an historical perspective to provide an appreciation of the context in which the project operated. The project phases are discussed separately and integrally. The theme which emerges demonstrates that RAMS has been a part of a continuing planning process of the Mauritanian Government which will continue indefinitely. The data, findings and observations of RAMS will hopefully have provided a sounder and firmer basis of national planning for the future.

Final Report.

Provides a record of the project from the standpoint of its origins, its operation and its ending, covering essentially the manpower, and budgetary and organizational aspects. Comments are also made on project designs. A special section covers the project's institutionalization and the measures taken to continue the type of planning effort undertaken by RAMS.