

Mauritania Livelihood Profiles

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**USAID
FEWS NET
PROJECT**

Food Economy Zones

- 1 Pastoral nomads
- 2 Oases and pastoralism with wadi cultivation
- 3 Traditional coastal fishing
- 4 Transhumant pastoralism
- 5 Agro-pastoral
- 6 Rainfed cultivation
- 7 Senegal River valley

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Introduction

The livelihood profiles that follow document how populations throughout Mauritania live. *A livelihood* is the sum of ways in which households make ends meet from year to year, and how they survive (or fail to survive) through difficult times.

There is increasing interest in using livelihoods analysis as the ‘lens’ through which to view a number of problems. These problems range from emergency response to disaster mitigation to longer term development. This interest rests upon two basic observations:

- 1) Information about a given area or community can only be properly interpreted if it is put into the context of how people live.
- 2) Interventions can only be designed in ways appropriate to local circumstances if the planner knows about local livelihoods and whether or not a proposed intervention will build upon or undermine existing strategies.

Two main products are offered here:

National Livelihood Zone Map

The map shows the division of the country into homogeneous zones defined according to a livelihoods framework.

Livelihood Zone Profiles

The profiles describe the major characteristics of each zone, including a brief differentiation of the food security status of different wealth groups. There is some emphasis on hazards and the relative capacity of different types of households in different places to withstand them.

In compiling the profiles, a balance has been struck between accessibility and level of detail. The aim has been to present sufficient information to allow a rounded and balanced view of livelihoods nationally. The profiles provide a rapid introduction to livelihoods in the country; they do not offer localized detail.

The preparation of these profiles was a joint activity between the USAID FEWS NET project, the Government of Mauritania, and the Permanent Interstate Committee for Drought Control in the Sahel (CILSS). The main focus of FEWS NET’s work is early warning, food security monitoring and emergency assessment. The livelihood profiles have been structured primarily with these types of activity in mind. However, it is hoped that they will also prove useful to the wider development community.

This document is divided into 3 main sections.

1. **Introduction**—This has 6 sub-sections
 - **The Uses of the Profiles**--which describe 3 main ways the profiles can be used.
 - **Key Concepts**--which defines the key concepts used in livelihoods based analysis.
 - **The National Livelihood Zone Map**—which introduces the concept of livelihood zones.
 - **What is in a Livelihood Profile**—which describes the layout and content of each profile
 - **Methodology**—which describes the methods used to develop the map and profiles.
2. **National Overview**— The national livelihood zone map, together with a national overview of livelihoods in Mauritania.
3. **The Livelihood Zone Profiles**—The profiles for each zone.

The Uses of the Profiles

The livelihood zoning and profiles presented here offer an analysis of urban and rural food security on a geographical basis. The country is divided into homogeneous zones defined according to a livelihoods framework. A brief description of each zone is provided, including an analysis of the position of different wealth groups within the zone. It is envisaged that this product will be useful on three levels, as follows.

1. An Introductory Guide to Food Security in the Country

The profiles pack considerable information and analysis into a few pages of presentation. They should therefore form a useful briefing for a newcomer who needs to get a quick grasp of food security conditions around the country. The geographical divisions are relatively small--as far as this is consistent with ground realities--so that the reader can take in the general pattern and the basic differences between areas and populations without being overwhelmed by too much detail.

Development planners can also benefit from using the livelihood profiles. One objective of development is to reduce people's vulnerability to hazard and to increase their capacity to cope. An important first step is to understand who is vulnerable, to which hazards, and why. Likewise, efforts to reduce poverty require an understanding of how the poorest households survive in different areas of the country and the reasons for their poverty.

2. Early Warning and Response Planning

Local food security is often equated with agricultural production outcomes. Hence, a chronic or temporary production deficit against local food requirement is immediately translated into chronic or temporary food insecurity. Consequently most early warning and food security monitoring systems draw heavily from two information sources: (i) crop and/or livestock production data; and (ii) market price information.

This is almost never the whole story. A full account of the 'food economy' addresses both food availability - that is, what food people produce—and food access—what cash people earn to purchase food. Data on casual employment or wild foods, or charity from relatives or the sale of handicrafts may be equally important to the livelihood story as data on crop and livestock production, and knowledge of the relative importance of these can guide the design of more appropriate monitoring systems and better rapid emergency assessments.

Using a livelihoods framework, we can inquire into household capacity to cope with stress, especially failed crop or livestock production; and we can appreciate household activities at different periods in the yearly cycle. All of which feeds directly into our analysis of need, helping to answer key questions such as; which areas and what types of household are likely to cope should a hazard strike and which will need assistance? What types of intervention will be most appropriate, and when and for how long should they be implemented?

Thus for instance one could point to the position of poor households in a given geographical area who are highly dependent on urban employment. If urban employment declines, their labor will be less in demand: can they find alternative income elsewhere – and will they be competing with people from other zones in these activities?

National officers working within their national early warning system have an immense knowledge of their countries. The livelihoods approach helps to provide a framework for the full use of that knowledge, as well as adding a new level of information to it.

3. Policy Development

Disaster management has been the main impetus to the spread of early warning systems. The rationale in early warning is to improve the efficiency in the scale and timing of emergency food aid. However, increasingly planners are looking at alternatives to food aid in early emergency intervention—and this often requires changes in policy and practice. A case in point is the stabilization of market prices for basic foods. Livelihoods analysis can expose the likely effects of such interventions on different households' capacity to survive a crisis. The analysis can also recommend the optimum timing for intervention.

Livelihood analysis can also be applied to other policy changes. For example, if government taxes on kerosene were reduced, or charges made for government veterinary drugs, what would be the impact on households? More generally, the household viewpoint offers a more secure footing for looking at the increasingly voluminous discussion of poverty alleviation. It allows one to look at the story which lies behind national statistics.

Key Concepts

The terms **risk**, **hazard**, **vulnerability** and **need** are frequently used in ways that can be confusing in the context of food security. Their established meaning for the purposes of disaster management - and the sense in which they are used here - is perhaps best explained with an example (see below).

Defining Risk, Hazard, Vulnerability and Need

- Drought is a major **hazard** affecting crop and livestock production in many African countries.
 - Poor households are more **vulnerable** to (i.e. less able to cope with) drought than better-off households; they have fewer reserves of food or cash to fall back on, and fewer options for generating additional income.
 - Poor households living in drought-prone areas of the country are more **at risk** of a food shortage than other households because they are both exposed to and vulnerable to the drought hazard.
 - Once a drought strikes, the poor are the most **in need** of assistance.
-

To be at risk of food insecurity you must both be exposed to a hazard, as well as be vulnerable to that hazard, as in the case of poor households in the drought-prone areas of the country in the above example. Because vulnerability is so closely linked to hazard, it follows that there is no general state of vulnerability; people can only be vulnerable *to something*. For example, farmers cultivating along a river margin may be vulnerable to flood (which is likely to wash away their crops), but may not be vulnerable to drought (since they can irrigate their crops using water from the river). Likewise, pastoralists may not be very vulnerable to drought provided they can move freely in search of water and grazing. They may, on the other hand, be highly vulnerable to conflict if that inhibits their movement to key water points and grazing areas.

Once a hazard has struck, it no longer makes sense to talk about vulnerable groups. Put simply, people are **vulnerable before the event**, (since this refers to their ability to cope should a hazard strike). They are **in need after the event** (i.e. once they have been affected by and have been unable to cope with a hazard). Going back to the drought example, the poor are vulnerable to drought before the rains fail, but once they have lost their crops or livestock they are in need of assistance.

One of the most widely used livelihoods-based approaches for analyzing food security is the **food or household economy approach**, first developed by Save the Children UK in the 1990s¹. The basic principle underlying the approach states that:

an analysis of local livelihoods is essential for a proper understanding of the impact— at household level - of hazards such as drought or conflict or market dislocation.

Total crop failure may, for example, leave one group of households destitute because the failed crop is their only source of staple food. Another group, by contrast, may be able to cope because they have alternative food and income sources. These alternative sources - such as livestock to sell or relatives elsewhere who can assist - can make up the production shortfall. Thus, effective hazard impact assessments must be based upon a livelihood analysis. The food economy analytical framework sets out the type of analysis required to understand the impact of a hazard on food security and local livelihoods, and has been used to help define the key information to be included in the profiles.

The objective of a food economy analysis is to investigate the effects of a hazard on *future* access to food and income, so that decisions can be taken about the most appropriate types of intervention to implement. The rationale behind the approach is that a good understanding of how people have survived in the past provides a sound basis for projecting into the future. Three types of information are combined; (i) information on baseline access to food/cash income, (ii) information on hazard (i.e. events affecting access to food/cash income, such as drought or conflict or market dislocation) and (iii) information on household-level response strategies (i.e. the sources of food and income that people turn to when exposed to a hazard). The approach can be summarized as follows:

Outcome = Baseline + Hazard + Response

Baseline: The baseline analysis has three components:

The Livelihood Zone Map: Patterns of livelihood clearly vary from one area to another, which is why the preparation of a **livelihood zone map** can be a useful first step for many types of livelihoods-based analysis. Local factors such as climate, soil, access to markets etc. all influence livelihood patterns. For example, people living in a fertile highland area generally have very different options from those living in a semi-arid lowland area. In highland areas people can generally pursue an agricultural pattern of livelihood, while in the lowlands they can grow few crops and will be either pastoralists or agro-pastoralists. Those living in a coastal or lakeside zone may follow a livelihood based upon fishing or combining fishing with other activities, and so on.

Agro-ecology is only one aspect of geography which determines patterns of livelihoods, however. Another is market access, since this affects the ability of people to sell their production (crops or livestock or other items) and the price obtained for it. Since patterns of livelihood depend so much upon geography, it makes sense to divide a country or a region into a number of **livelihood zones**. These we can define as areas within which people share broadly the same pattern of livelihood (i.e. broadly the same production system - agriculture or pastoralism for example - as well as broadly the same patterns of trade/exchange).

Livelihood zone boundaries do not always follow administrative boundaries. It is, for example, quite common to find different patterns of livelihood within a single administrative unit (e.g. pastoralists living alongside agriculturalists, or agro-pastoralists alongside fishing communities). However, because resource allocation and service provision decisions are made on the basis of administrative areas, not livelihood zones, it is important that livelihood zone boundaries should wherever possible follow lower level administrative boundaries. In Djibouti, however, this has not been possible because only

¹ See 'The Household Economy Approach', Seaman J., Clarke P., Boudreau T., Holt J., Save the Children UK 2000.

administrative level two (district) boundaries are clearly delineated, and patterns of livelihood in Djibouti do not neatly follow district boundaries.

The Wealth Breakdown: Geography is clearly not the only thing that determines the pattern of livelihood. Geography tends to define the different livelihood *options*, but the extent to which people exploit these options depends upon a number of factors, of which *wealth* is generally the most important. It is obvious, for example, that better-off households owning larger farms will in general produce more crops and be more food secure than their poorer neighbors. Land is just one aspect of wealth, however, and wealth groups are typically defined in terms of their land holdings, livestock holdings, capital, education, skills, labor availability and/or social capital. Defining the different wealth groups in each zone is the second step in a food economy analysis, the output from which is a **wealth breakdown**.

The Food Economy Baseline²: Having grouped households according to where they live and their wealth, the next step is to generate **food economy baseline** information for typical households in each group for a defined reference or baseline year. This involves investigating the different sources of food and cash income and their relative contribution to the household budget over the year as a whole. It also involves developing a **seasonal calendar** of activities to see how access to food and cash income varies within the year. These types of information are critical in terms of understanding how households living at different levels of wealth and in different zones will be affected by a particular hazard. It follows, for example, that households that depend heavily upon local livestock production will be affected quite differently by drought compared to those that have relatives living and working in the capital city from whom they receive regular assistance or remittances.

Hazard: Food economy baseline data provide a starting point for investigating the effect that a hazard will have on livelihoods and household food security. Hazards may either be natural (e.g. drought or flood) or man-made (e.g. conflict or market dislocation). The consequences of a hazard will vary according to the hazard itself and according to the local pattern of livelihood. A drought may result in a loss of crop or livestock production, loss of crop and livestock sales income, loss of farm-based employment, etc., posing a threat to households that are heavily dependent upon crop or livestock production or upon local agricultural labor. Insecurity, on the other hand, may be associated with the theft of crops or livestock, reduced access to certain areas (markets, wells, grazing areas or fields) and disruptions to trade and transportation, all of which will pose a threat to groups living in, moving through or trading with the insecure area.

Response: When exposed to a hazard most households will do their utmost to try and deal with its effects. If the hazard tends to reduce their access to certain sources of food and/or cash income they may try and expand other sources, or they may turn to new or little used sources. Common response strategies³ in certain settings might include an increase in the collection of wild foods, an increase in the sale of livestock or temporary out-migration in search of employment. Where these strategies are

² Note that the information provided in the profiles does not constitute a full food economy baseline. A full baseline provides quantitative information on the *amounts* of food accessed and the *amounts* of cash income generated from different sources for at least three main wealth groups within a livelihood zone. The livelihood profiles, in contrast, include information on the *proportional contribution* of different sources of food and cash income to the whole. Put simply, the units of measurement for a food economy baseline are kilocalories (i.e. food energy) and cash, whereas the unit of measurement for a livelihood profile is percentage of total. The national livelihood zone map and livelihood profiles are designed as a stand-alone product (see section on Uses of the Profiles), but they are also intended as an intermediate step towards the development of a full food economy baseline.

³ The term response strategy is preferred to coping strategy for two reasons. Firstly, the term coping strategy is often used to refer to regular components of everyday livelihood (e.g. firewood sale), which strictly speaking are only coping strategies when intensified in response to a hazard. Secondly, 'coping' can be taken to imply that the strategy in question is cost-free, which is not always the case.

effective, they can significantly reduce vulnerability to a range of hazards. It has to be borne in mind, however, that response strategies may have long-term as well as short-term effects, some of which may ultimately undermine local livelihoods, e.g. the sale of productive assets, the unsustainable sale of livestock, an increase in the sale of firewood where this has negative environmental effects, and so on.

What is in a Livelihood Profile

The profiles are divided into a number of sections:

Main Conclusions and Implications summarizes the main findings from the zone. This section also provides insights that will inform the planning of various types of intervention, including emergency response, disaster mitigation and development programming.

Zone description offers a general description of local livelihood patterns (crop production, livestock rearing, off-farm income generation etc.).

Markets contains basic information on the marketing of local production and on any importation of staple food into the zone.

Seasonal Calendar sets out the timing of key activities during the year. This is useful in a variety of ways, e.g. to judge the likely impact of a hazard according to its timing during the year, or to assess whether a particular activity is being undertaken at the normal time in the current year.

This is followed by four sections that provide the **core information on the ‘food economy’** of the zone (see preceding section):

The **Wealth Breakdown** section describes three main wealth groups (‘poor’, ‘middle’ and ‘better-off’), explaining the differences between these groups and how this affects potential access to food and cash income⁴.

The **Sources of Food** and **Sources of Cash** sections examine patterns of food and cash income at each level of wealth, relating these to the characteristics of each group.

The sections on **Hazards** provide information on the different types of hazard that affect the zone, differentiated by wealth group where this is appropriate.

Response Strategies describes the various strategies available to different types of household in the zone, together with a judgment of the likely effectiveness of these.

Early warning involves identifying and interpreting key events that indicate that a severe food shortage or famine may be developing. The final section, **Indicators of Imminent Crisis**, draws upon the classification of early warning indicators proposed by Fred Cuny⁵. This section provides information on the key indicators and their likely timing by zone, based upon an understanding of local livelihoods and local patterns of response to food shortage⁶.

⁴ It is important to bear in mind for this analysis that we are thinking of wealth in relative (and local) terms. Statistical data may indicate that 80% or even 90% of the population in a particular area lives below the national poverty line, but this is measuring poverty on a national, absolute scale. In a livelihoods analysis we are interested in understanding some of the differences between different groups within the community and the reasons for these – in which case it is not particularly useful to lump 80% or 90% of the population together into one group.

⁵ ‘Famine, Conflict and Response: A Basic Guide’, Cuny F. C. and Hill R. B. Kumarian Press, 1999, pp 33-42.

⁶ Fred Cuny identified two types of early warning indicator, those that provide advance warning of a famine (indicators of imminent crisis) and those that confirm the existence of famine (indicators of famine). The latter group includes indicators such as distress sales of productive assets (e.g. plough oxen), consumption of seeds, increased malnutrition and increased mortality. Indicators of famine are not generally context specific (i.e. a single list could be prepared that would apply to all livelihood zones). They are also of little use in predicting or preventing severe food shortage or famine. For these reasons they have not been included in the livelihood profiles.

Methodology

The livelihood zone map and profiles presented here have been compiled through a combination of interviews and workshops with national and Wilaya (Regional) and Moughataa (District) level key informants and also with reference to existing secondary data sources. At a national workshop in November 2003 a preliminary national livelihood zone map and a brief description of each zone were prepared by participating key informants. In February/March 2004 three field teams were formed to visit administrative centers within each livelihood zone (or in the case of Zone 1, Pastoral Nomads, in Nema and Chinguetti, since there are none within the zone). Here meetings and interviews were organized to refine the preliminary map and collect further information on each of the zones in order to construct the typical livelihood profiles. Rapid village visits were conducted to cross-check the information provided by the key informants.

Mauritania Livelihood Profiles

National Overview

Introduction

The majority of the rural population of Mauritania is concentrated in the south in two zones: a rainfed agriculture zone and a zone along the north bank of the Senegal river characterised by irrigated rice and an annual flood-plain on which sorghum is cultivated as the river retreats. However, both zones together compromise only a small part of the whole territory, the rest of which extends north though agropastoralism and pastoralism to a greater or lesser degree associated with oases; finally there are large areas of uninhabited desert.

For consumption within the country, Mauritania's main rural products are livestock and livestock products and the staple cereals sorghum and millet. These are followed by what might be called 'niche' items: irrigated rice, dates produced in oasis areas, and fish from shallow fishing along the extensive coast. In terms of exports, livestock is mainly informally sold in Mali and Senegal when taken over the frontier for seasonal grazing; staple cereal production is never enough for national consumption, and rice could not compete with the more efficient production on the Senegal side of the river; and dates are not produced in sufficient quantity or quality to be a significant export item. However, three other products are of high export value: iron from the northern Zouerat/F'Derick complex; deep sea fish from an industry much developed in the last few years; and, possibly eventually eclipsing both of these, off-shore petroleum coming on-stream in 2004. There are several other valuable products around Mauritania, but on a small scale, e.g. gemstones and gum Arabic.

In comparison with most other Sahel countries, Mauritania could be considered relatively urbanised, with upwards of 30% of the population residing in towns. But the vast majority of urban dwellers are in the capital, Nouakchott – with more than 500,000 people, i.e. some 25% of the national population and growing apace, and Nouadhibou, on the coastal frontier with Western Sahara, with about 100,000 residents – a port city for iron exports as well as major national imports, and a centre of the commercial fishing industry.

These two urban centres are of great importance to much of the rural population. They form a big market for meat on the hoof, and for such grain as is put on the market, especially local rice which is of superior quality to most of the imported rice which forms the bulk of rice eaten in Mauritania. But equally importantly, they offer employment at various levels, from unskilled portage and other labor through semi-skilled work in the burgeoning construction industry to salaried employment for the educated. The savings accrued by these workers form a part of the annual budget of very many distant rural households, whether brought home by seasonal work migrants or remitted by family members in longer-term city residence. This employment is all the more keenly sought in years of poor rainfall, high pest infestation or other rural setbacks; finally in drought years there is a significant movement of



whole households to the city, often permanently, often joining relatives already established in the large shanty-town areas of Nouakchott. In the drought catastrophe of the early 1970s the population of Nouakchott doubled and the mid-1980s drought further increased the number of permanent drought refugees.

These dramatic moments of food insecurity are, of course, exceptional. The far more frequent, localized problems from year to year – a poor flood on the Senegal river’s annual flood-plain affecting the flood-retreat sorghum crop, poor northern rains affecting grazing – are to a major extent what rural life is adapted to, including through the diversification of income from work migration. But as the rural population grows, the pressure on finite resources, particularly grazing and arable land in moist depressions or seasonal water-courses (wadis), means that smaller natural events have larger consequences. The most typical aspect of poverty all over rural Mauritania is the household without sufficient land and/or labor to provide a substantial harvest, or a pastoral household which no longer has a viable herd or flock. These households essentially live by working for others, as laborers or contract herders and shepherds, receiving payment in cash as well as kind (grain, milk).

The greater the ratio of poor households to those which can offer employment, the greater the risk that employment dwindles acutely in the face of a poor year. At present it is estimated that it is in the agro-pastoral livelihood zone that the problems of population pressure, natural resource constraint and natural shocks come together most strongly to produce food insecurity. But other zones are far from immune to the same problems.

Geography and Climate

Population Table

Zone	Total Population ⁷
Zone 1: Agro Pastoral	74 560
Zone 2: Oases and pastoralism with wadi cultivation	310 006
Zone 3: Traditional coastal fishing	6600 (traditional fishing population); 637 284 (in the 2 main cities Nouakchott and Nouadhibou)
Zone 4: Transhumant pastoralism	105 372
Zone 5: Agro pastoral	685 503
Zone 6: Rain fed cultivation	389 961
Zone 7: Senegal river valley	305 474

⁷ These population figures are indicative estimates based on the 2000 census. With the exception of Zone 3, the figures include urban populations which contribute in particular to the size of Zone 5 population.

Rural Livelihood Zones

Livelihood Zones of Mauritania

Food Economy Zones

- 1 Pastoral nomads
- 2 Oases and pastoralism with wadi cultivation
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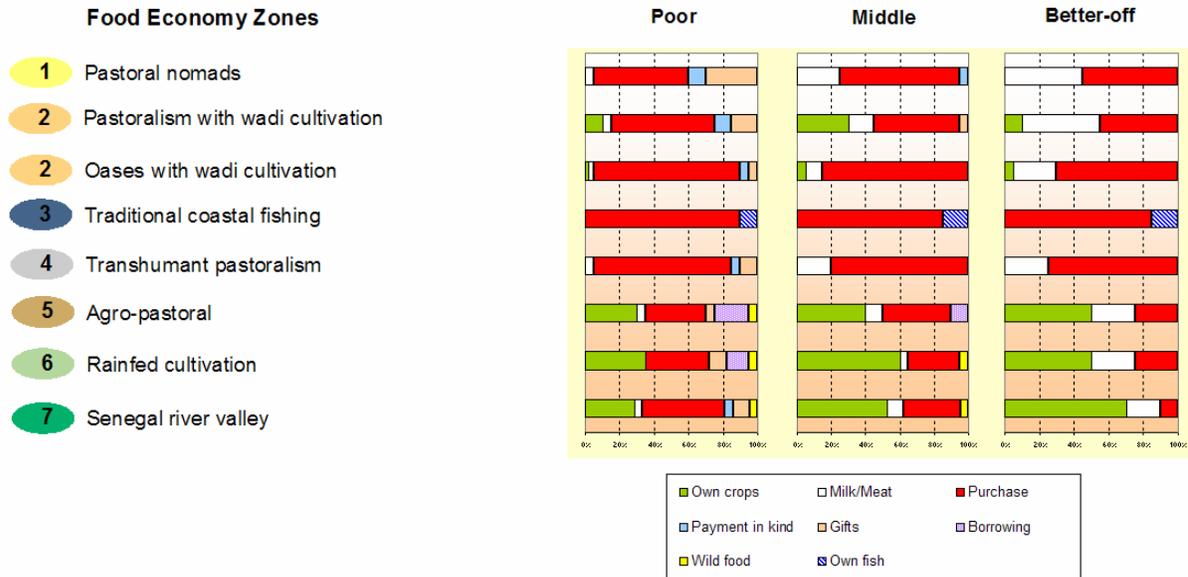


Sources of Food and Cash: Main Findings and Implications



Sources of Food:

The overall pattern which presents itself is of a majority of the rural population depending more heavily on food purchase than on food production. This is most acute in pastoral areas, where even rich people live more by purchased grain than by milk and meat; but it is also the case even in the southern cultivating zones, since the poor represent somewhat over half of the population. The structural deficit in staple cereals is thus not just a reflection of the relatively large urban population; it exists in the rural part as well. The corollary is that rural Mauritania has increasingly become a cash economy; and the poorer you are, the more you are likely to depend on cash rather than on your own production.



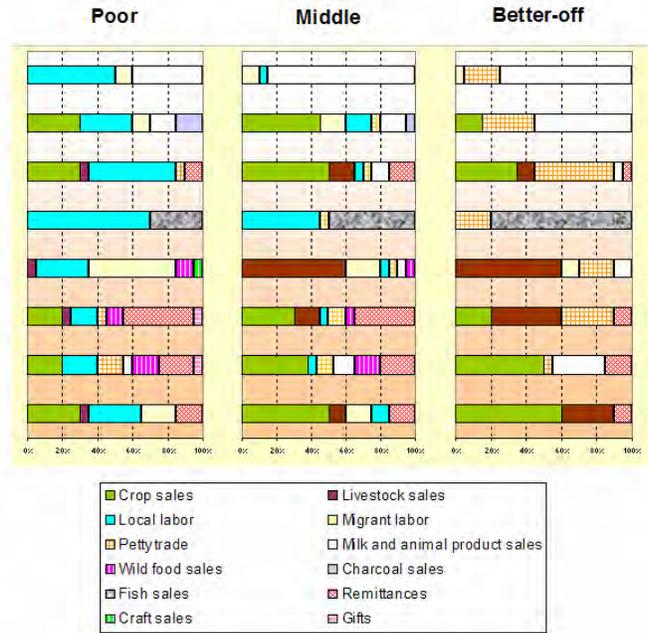
Sources of Cash:

It is notable how important work migration and remittances are amongst pastoral households, including middle-group households. Livestock are such a valuable product that virtually any rural household in the country, pastoral or agricultural, aspires to maintain at least a few goats. But for pastoralists there is no agricultural option (or only a very small one). Here the balance is between livestock production (whose ‘profit’ is more in sales of animals to the market than in the consumption of milk) and working for cash often at great distances from the home area, mostly in the cities, and often for the greater part of the year. Insofar as households can make a significant income in the pastoral environment they will manage this split. Otherwise the whole household will leave for the city.

At the other environmental extreme, in the Senegal River Valley, what prompts work migration of residents is partly the competition for jobs locally from incoming migrant workers from other zones: it can be more profitable to seek city work or use family links to work across the river in the far greater economy of Senegal. Nevertheless here and in the rainfed agriculture zone, i.e. in the most populated part of the country, as well as amongst the small population of the oases to the north, local employment features more strongly for the poor. This reflects the higher labor requirement of agriculture over pastoralism and also the greater – although far from complete – self-sufficiency of these zones.

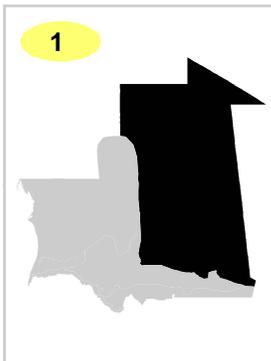
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Zone 1 : Pastoral nomads

Rural Livelihood Zone Summaries



This vast zone is modernization by scrubland, semi-desert and desert environments. It is chiefly differentiated from western areas in the same broad latitude band by the acute lack of water sources, whether springs, wells, oases or wadis. As a result, this is the most sparsely populated area of the country, and even the administrative and market centers serving this zone's localities lie outside the zone to the south and west. Those who do make a living here are exclusively herders, some with a lucrative side-line in the caravan trade. To use the available pastures and water points requires frequent movement, and the mobility of the whole household with the

herds defines the population as 'nomadic'. Seasonal movement is extensive, commonly beyond the zone's frontiers to the south in the dry season.

Much milk is drunk, especially when pastures are renewed by the rains, but the basis of the diet is cereals. Since there is no cultivation, all grain or cereal products must be purchased, and livestock are sold to pay for this, as well as for the other essentials of life. Sales of dairy products as well as remittances from distant kin may contribute cash in a lesser way. However, today some half of households own too little livestock for a viable living, and they depend on earnings in cash and kind (notably milk-share) through working as herders and shepherds for better-off families. There are very few other possibilities for employment. In times of stress, the support offered by one half of the population to the other becomes the key to their survival and to the continuance of the pastoral groups. The sign that drought has overwhelmed the system is the permanent outmigration of families, mainly to the coastal cities.

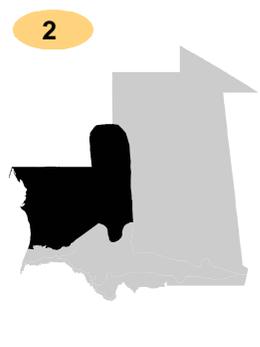
Camels, Donkey, Cattle, Sheep, Goats

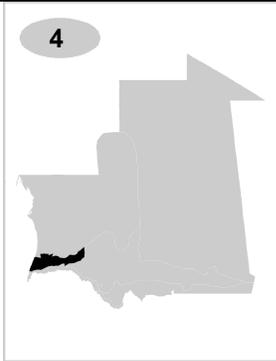
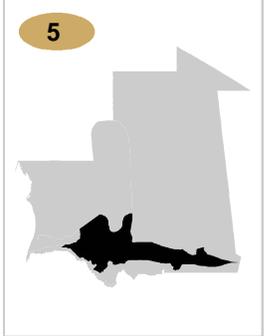
Main Income Sources

Dairy sales
Herding

Main Food Sources

Milk
Cereals

Zone 2: Mixed pastoralists with wadi cultivation and oases								
	<p>Livestock are the most important product of this large, semi-arid-to-arid area, but two particular factors help to shape the economy: the presence of groundwater in the form of oases and some wadis which are moist for a good part of the year; and the two coastal cities of Nouakchott and Noudhibou which are adjacent to the zone but to which, in a sense, all roads lead. The number of wells in certain areas is large enough to encourage herders to fix their households and use local pastures, sending only certain livestock on seasonal far grazing with one or two male family members (i.e. transhumant pastoralism). Wadi cultivation for cereals as well as vegetables is a limited and risky option since it is partly rainfed, but it is exploited as far as possible, mainly by herding families. The chains of oases allow the cultivation of dates and vegetables, and are also the sites of towns.</p> <p>The coastal cities as well as the northern iron-mining complex towns of F'Derick and Zouerat afford a ready market for both livestock and plant products, but equally importantly a source of seasonal work and remittances. Indeed, the population of this zone is more dependent economically on the urban sector than that of any other zone except the coastal fisher folk. By the same token, the strong links with the urban economy provide a buffer for the zone's population in times of stress, but also suck in what investment might be possible in the zonal economy – including the modernization of date production. Tourism is a growing, if still minor, local cash-earner, with desert safaris and the ancient cultural centres of Atar and Chinguetti as main attractions.</p>	<table border="1"> <tr> <th>Livestock</th> </tr> <tr> <td>Camels, Donkey, Cattle, Sheep, Goats</td> </tr> <tr> <th>Main Income Sources</th> </tr> <tr> <td>Seasonal mining work Tourism</td> </tr> <tr> <th>Main Food Sources</th> </tr> <tr> <td>Cereals Vegetables</td> </tr> </table>	Livestock	Camels, Donkey, Cattle, Sheep, Goats	Main Income Sources	Seasonal mining work Tourism	Main Food Sources	Cereals Vegetables
Livestock								
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Main Income Sources								
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Main Food Sources								
Cereals Vegetables								
Zone 3: Traditional Coastal fishing								
	<p>Although its population is less than 10,000, this 800km-long strip of beach has a distinctive economy based on fishing in shallow coastal waters from small vessels, today often with outboard motors. This contrasts with the modern and newly international deep-sea commercial fishing operations out of Noadhibou and Nouakchott. The zone is otherwise a desert, without available ground water, or useful pasture, let alone sufficient rainfall for any cultivation. Today this means that virtually all traditional fishing families - boat-owners as well as their workers – depend on direct links to the cities for tanked-in water as well as for both selling fish and obtaining all food other than fish. These provisions are often assured by fish traders with whom boat-owners make sales contracts. The profitability and reasonable dependability of the seasonal fish catches are what keep local fisherfolk in this harsh environment and attract perhaps equal numbers in fishing ‘camps’ manned by migrant fishermen especially from Senegal.</p>	<table border="1"> <tr> <th>Livestock</th> </tr> <tr> <td>Camel, Goats</td> </tr> <tr> <th>Main Income Sources</th> </tr> <tr> <td>Selling fish Boat trading</td> </tr> <tr> <th>Main Food Sources</th> </tr> <tr> <td>Fish</td> </tr> </table>	Livestock	Camel, Goats	Main Income Sources	Selling fish Boat trading	Main Food Sources	Fish
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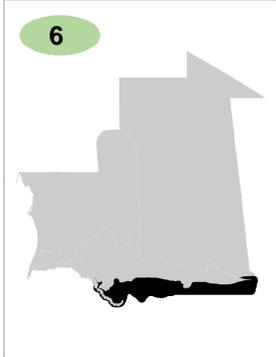
Zone 4: Transhumant Pastoralists																		
	<p>This south-western chunk of territory features insufficient rainfall or groundwater for substantial cultivation, but relatively good pastures compared to zones further north. The density of wells, due largely to modern government investment, allows a population – still very sparse by agricultural standards – to make their living chiefly by transhumant pastoralism, i.e. with fixed residence and using localized pastures, but with some proportion of animals taken south to seasonal far grazing by a single family member or contracted herder. The area is also an important staging-post, so to speak, for northern pastoralists passing through to southern dry-season grazing.</p>	<table border="1"> <tr> <th colspan="2">Livestock</th> </tr> <tr> <td>Camels,</td> <td>Donkey,</td> </tr> <tr> <td>Cattle,</td> <td>Sheep,</td> </tr> <tr> <td>Goats</td> <td></td> </tr> <tr> <th colspan="2">Main Income Sources</th> </tr> <tr> <td>Petty trading</td> <td></td> </tr> <tr> <td>Vegetable market gardening</td> <td></td> </tr> </table>	Livestock		Camels,	Donkey,	Cattle,	Sheep,	Goats		Main Income Sources		Petty trading		Vegetable market gardening			
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Vegetable market gardening																		
<p>Proximity to the north-south road axis between Nouakchott and the frontier town of Rosso in the riverine irrigated cultivation zone (7) allows a number of herding families to profit from a developing fresh-milk commercial network. The growth of a handful of small local towns has encouraged a particular settlement around them of pastoral households attracted by developed wells and services, notably schools. At the same time, perhaps one-fifth of the zone’s population consists of households whom drought or other misfortune has robbed of all livestock: these people tend to congregate around the towns, surviving through casual labor (including on local irrigated vegetable gardens) and petty trading, with one household member commonly away attempting to find work in the city or seasonally in the irrigated cultivation zone. These opportunities are more widely sought by the zone’s population during times of stress.</p>																		
Zone 5: Agro Pastoral																		
	<p>This is an extensive zone from west to east, and forms part of that critical meeting-ground between pastoralism and agriculture which stretches across the entire sahelian ribbon of land from Mauritania to northern Sudan. As an ecology, what this zone in Mauritania offers ought to be economical advantageous: with rainfall around 200-250mm per annum, there should be favorable pastures as well as localized agriculture in moist depressions or wadis rendered successful by the complementarity of groundwater and rain. But modern population pressure has pushed people to cultivate more widely on former pasturelands at these northern limits of viable rainfall for cereals (sorghum and millet). On the one hand, this affects livestock potential (and promotes environmental</p>	<table border="1"> <tr> <th colspan="2">Livestock</th> </tr> <tr> <td>Chicken,</td> <td>Donkey,</td> </tr> <tr> <td>Cattle,</td> <td>Sheep,</td> </tr> <tr> <td>Goats</td> <td></td> </tr> <tr> <th colspan="2">Main Income Sources</th> </tr> <tr> <td></td> <td></td> </tr> <tr> <th colspan="2">Main Food Sources</th> </tr> <tr> <td></td> <td></td> </tr> </table>	Livestock		Chicken,	Donkey,	Cattle,	Sheep,	Goats		Main Income Sources				Main Food Sources			
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Main Food Sources																		

damage from overgrazing); on the other hand, even with some modern development of local small dams, the vagaries of rainfall timing and volume in these latitudes lead to frequent losses of harvest.

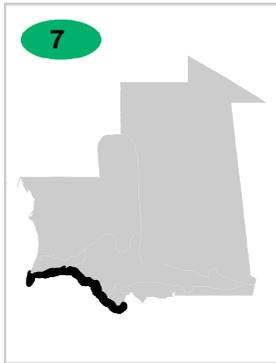
Most households practice both herding and agriculture in some degree, but there are those who are more pastoral and those who are more ‘agro’. As a general rule, the more a household can depend on livestock; the better off it tends to be. But this masks a quite acute division on the ‘agro’ side between the minority who are successful cultivators of substantial areas when rainfall is at all sufficient, and the majority who own few livestock and cultivate relatively modest areas on their own account, the poorest making up the substance of their income by laboring for their better-off neighbors as field-hands or shepherds, and by seeking work further away (migrant labor).

The better-off minority maximize both livestock ownership and farming together. But for the majority the potential best of both worlds - agricultural and pastoral – is not realized, whilst periodic severe drought has led to acute impoverishment from which many herders in particular could not recover. People from this zone have figured largely in the waves of migrants to Nouakchott seeking refuge from rural disaster and forming the base population for the burgeoning shanty towns. The zone in general, and especially the Aftout area which it contains, is regarded as the poorest, and most food insecure, in the country.

Zone 6: Rain fed Agriculture

	<p>This zone is defined by a rainfall regime with between roughly 300mm and 400mm per annum on average but no possibility of extensive irrigation from groundwater sources. This is the rainfed cereal (sorghum and millet) producing zone of the country par excellence; but it also supports substantial numbers of livestock, with the advantage of proximity to seasonal grazing areas further south in Mali and Senegal which have saved many livestock in times of local rain failure. Since it stretches from the national southern reaches of the Senegal river to the far east of the country, it is the livelihood zone with the highest absolute population.</p>	<p>Livestock Chicken, Donkey, Cattle, Sheep, Goats</p>
<p>The density of this settled, agricultural population is less than that of the irrigated riverine strip of Zone 7, but it is sufficient to push cereals agriculture increasingly onto former pasture lands whose loss cannot reliably be made up for by crop residues. This increasingly limits livestock potential, whilst livestock numbers have been periodically savaged by drought. Yet livestock remain the chief form of capital, eminently saleable along the national market network as well as in the neighboring countries. At the same time, manure from local and migrating livestock is for most farmers the only fertiliser, since chemical fertilisers are (increasingly) expensive and anyway a risky investment given the not-infrequent years of poor rain. On the plus side, cash crops such as cowpeas, groundnuts and water-melon seeds find a ready market in the country, so that even the poorest farmer will try to intercrop these with his cereals. In sum, this zone is only threatened by serious food insecurity in very bad years, but the population/land/water equation spells narrow limits to wealth increase for the great majority, despite market demand for their produce.</p>		<p>Main Income Sources Market gardening (cowpeas, melons, groundnuts)</p> <p>Main Food Sources Cereals (millet, sorghum)</p>

Zone 7: The Senegal River Valley



The river offers two special kinds of production which characterized this zone and makes it the most densely-populated livelihood zone. The niche product is rice paddy to which nearly all irrigated land – on government schemes as well as private – is devoted, apart from one internationally-funded vegetable gardening enterprise of large proportions. But the annual flood-plain of the river (the *walo*) offers wider areas of land beyond the river banks where sorghum in particular is cultivated in quantity following the flood-retreat but dependent also on rainfall. Most of the rice, and at least a substantial part of the sorghum in a good year, are marketed beyond the zone: a reliable market since this zone and the rainfed agriculture zone (6) together never fulfill national grain requirements. The better-off minorities, like their fellows in other zones, invest in livestock, but there is simply not the room inside the zone to graze substantial numbers, and much of the stock is kept by contract herders elsewhere, coming in to feed on crop residues after harvest.

A number of factors temper this picture of zonal wealth. First, successful rice production is inherently expensive in terms of costs of water pumping, fertilizers and pesticide, and labor requirements. Secondly, rice production is relatively new, and efficiency and profitability have not caught up with those on the Senegalese side; and cheaper, lower quality imported rice still dominates the urban Mauritanian market. As regards the flood-retreat sorghum, this has been so frequently ravaged in recent years by rain-failure and pests, notably stem-borer, that growing numbers of small-holders have opted to throw their effort and meager means into rice cultivation, despite the risk of a low or nil profit margin and consequent chronic indebtedness. Finally, the seasonal labor requirements of the area invite in numbers of migrant workers from other zones, so that local employment is divided amongst many takers, and possibly more local households are sending a member away on 'exode' - migrant employment. The net result is an overall majority of people who are poor and even insecure in income but not food insecure.

Livestock	
Camels,	Donkey,
Cattle,	Sheep,
Goats	

Main	Income
Sources	
Rice	
Sorghum	

Main	Food
Sources	

Mauritania Livelihood Profiles

Zone 1: Pastoral Nomads

Main Conclusions and Implications

If you reside in this zone, you live by herding: there is nothing else except a limited caravan trade and occasional remittances from distant relatives. This fact is not altered by the increasing tendency in recent generations for pastoralists to consume more calories from purchased grain/grain products than from milk, via sales of animals. Thus even the poor majority must make their living from animals; yet they own little more livestock than the poor groups in other zones. This paradox, quite general in the Sahel, is explained by three factors. One is the tendency towards the accumulation of ownership of herds in a minority of hands which has been greatly strengthened by episodes of severe drought during the last 35 years: a good number of the poor were knocked out of the pastoral system altogether and fled to the urban centres, whilst the rest became permanently dependent on their better-off local kin. The second factor is that a household owning hundreds of stock cannot alone either drink or use all of the milk produced (e.g. by processing and selling butter). The third factor is that whilst herding is far less labor-intensive than cultivating, owners of large herds do need extra labor, and pay for it in allowing consumption of milk as well as directly in salaries with cash obtained via sale of animals.

Taken together, these factors make for the marked ‘solidarity’ and sharing observed in pastoral communities. Support of poorer kin is a social obligation and a measure of status; but it also makes some economic sense, because better-off people need workers. By the same token, these factors reduce the food insecurity otherwise inherent in a harsh environment where conditions can deteriorate particularly acutely from one year to the next, but where there is very little diversity of production or income. That is to say, in a bad year there are just two options without external assistance: either the vulnerable households will be maintained by their patrons, at considerable extra cost in purchased grain etc., or they must leave altogether.

The fact that the pastoral system has survived testifies to some success of the former option except in catastrophic drought conditions. On the other hand, even in less than extreme conditions everyone suffers from severely reduced milk production and low livestock selling prices due to their poor condition and increased supply chasing unenthusiastic demand. If better-off households are essentially maintaining several poorer households apiece, there will be a proportion who are lowest in the pecking order and who will suffer real hunger. These are by any definition food insecure and may be deemed to require outside help if they are identifiable and accessible.



Zone Description

The zone comprises all of Oualata and Tichit districts (Hodh-ech-Chargui and Tagent Regions respectively) together with northern parts of communes immediately to the south, including therefore

part of Hodh-el-Gharbi Region); and the eastern half of Adrar Region and all of Tiris Zemmour Region except the south-western fifth which is in Zone 2 (oases etc).

This vast area contains scrubland, semi-desert and desert environments, with natural surface water limited to a handful of oases or springs, and with wells also very spread out. There are no substantial towns. The administrative and commercial centres lie to the west and south of the zone (Zouerat, Atar, Boutilimit, Kiffa, 'Ayoun, Nema). This is by far the most sparsely-populated zone of the country, and until the late 1970s most of this zone was considered as an 'empty quarter'. But during the conflict with Western Sahara Polisario, numbers of nomadic pastoralists fled here and subsequently made it their home area.

The southernmost stretch of land receives on average above 150mm and below 200mm rainfall per annum; the rest of the zone lies below the 30-year norm of 150mm isohyets, ranging through 100mm and 50mm to around 25mm in the far north. The north of this zone is subject to winter rains which are very erratic but which in some years are sufficient to regenerate highly nutritious pastures to a useful extent. Rainfed agriculture is effectively impossible, as is any economic form of irrigation. Summer temperatures are very high, and winter temperatures comparatively low, with strong *harmattan* winds.

The economic activity is essentially nomadic pastoralism with camels and smallstock. Nomads operating at the southern limits also have cattle. A few large herds are also owned by wealthy businessmen and by officials living in distant towns and the cities, but this is a more common phenomenon in Zone 2. Some local herders make their living from contracts to maintain these herds as well as those of the locally resident 'better-off'. The far south-eastern part of the zone is also seasonally host to herds migrating up from areas further south for pasturing and for the salt cure in the Tichitt-Oualata chain. Given the lack of hard-surface roads in the east of the country, the caravan trade, which crosses the national boundaries, is important for some of the better-off able to invest both capital and camels.

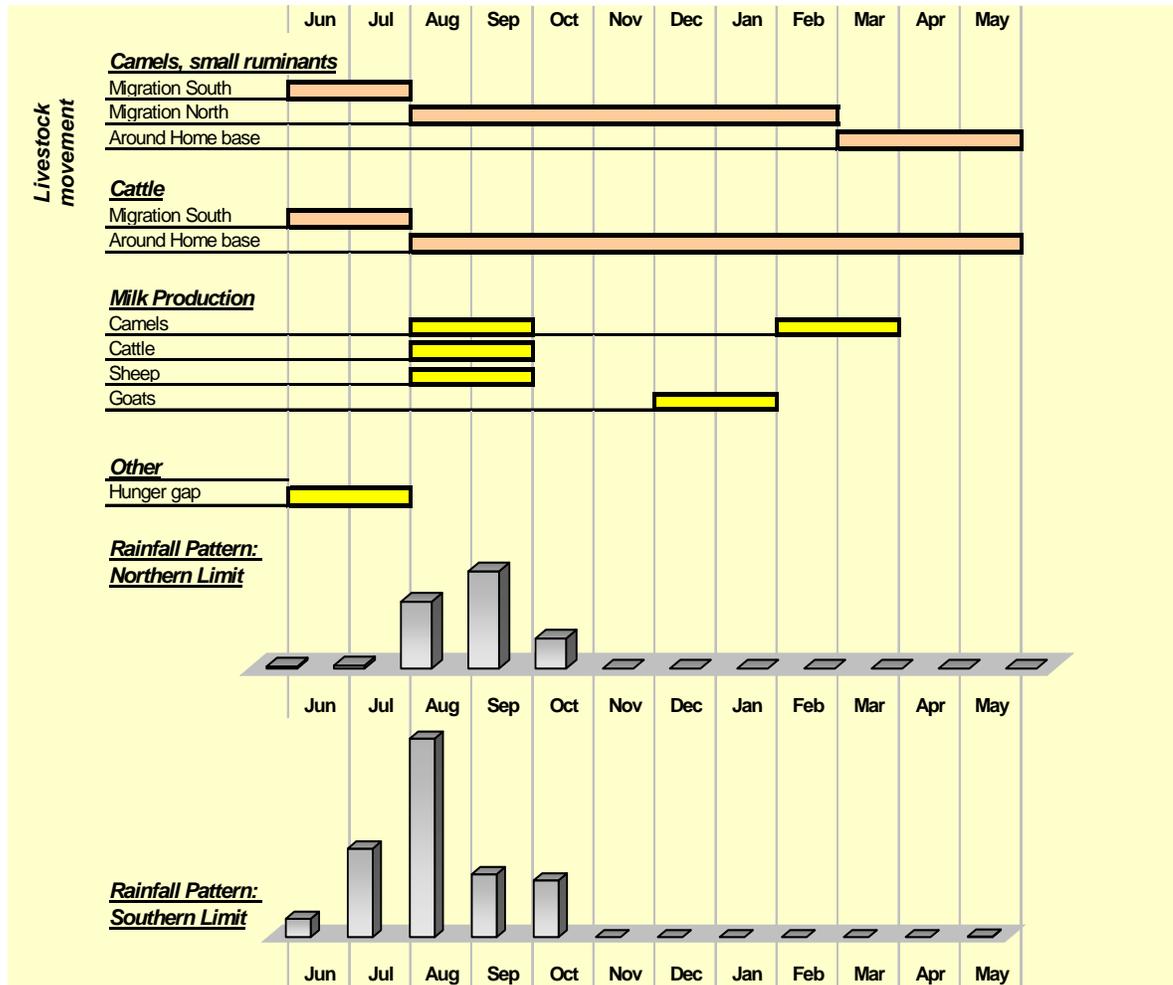
Beyond the frequent movement among pastures within the home area, seasonal migration for far grazing is mainly on a north-south axis, and may entail yearly movement over more than two thousand kilometers. In the rainy season the herds are kept in the home area until the pastures give out, potentially up to December if the rains have been advantageous. This is the time also of maximum milk from the animals. If the short winter rains in the north have been sufficient to regenerate pastures, there is a northward migration during December and January, including into cross-frontier areas of Western Sahara and Algeria. From February, if not before, there is then a long southward migration to the pastures of zones beyond Zone 1 (and in a bad year far into Mali and Senegal) where the herds spend the hot, dry season up to June. During June and July, or at the first report of rain in the home area, the herds begin to return north to the home areas, completing the yearly cycle.

Sales of smallstock (apart from much localized occasional sales) tend to be made in the population centers passed through during migration. Camels as well as smallstock are sold at Oualata and Nema towns and at the salt-cure gathering areas: the south-east of the zone is an area where stock composition is particularly influenced by the premise of market offtake. In the far north, for instance at Bir Moghreïn, there is a net importation of camels trekked in from the Saharan region across the frontiers.

Staple cereals are purchased at - and traded into the zone from - Nema and Oualata markets in the south, and Atar, Zouerat and Tindouf in the west and north (where there is an accent on imported rice, wheat and pasta).

Seasonal Calendar

This calendar represents the majority of nomadic pastoralists who are located in the south of the zone, and who take animals for seasonal grazing both south and north, but principally north during the main rains and subsequent months. If there are favorable winter showers which regenerate grasses, the nomads will extend their migration further north and into January and even February. Pastoralists based in the north of the zone tend to limit themselves to northern migration unless their local pasture are severely affected by rain failure, in which case they migrate south to pastures beyond the zone's boundaries, where they may stay until the rains of the next year.



Wealth Breakdown

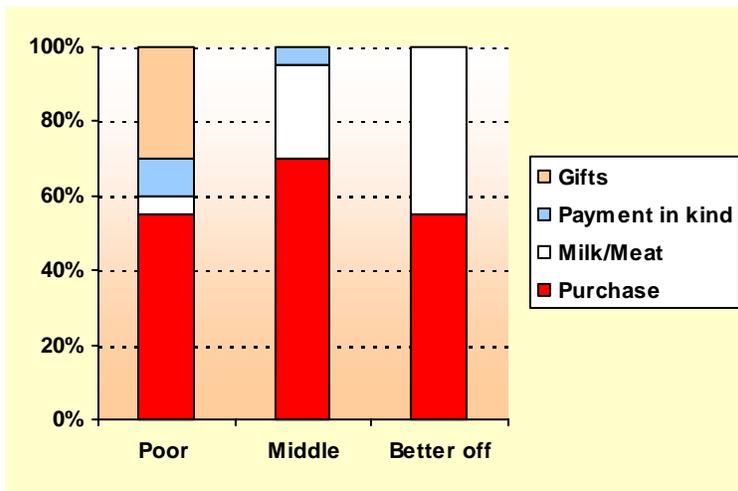
The poor represent about half of the households, and this is probably the limit of the proportion they can represent given that they must essentially be maintained by the other households through employment or gifts – principally by the better-off fifth or fewer. Households who become poor but do not have such strong patronage must leave the pastoral system altogether. Nomads tend to have smaller households on average than cultivators (whether through lower fertility or a tendency to have purely nuclear-family units). Except for the labor-hiring rich, they also have apparently lower dependency ratios, i.e. a higher proportion of economically 'active' members. But this is in part due to the fact that relatively young children give major help in looking after the smallstock, thus playing a stronger

Wealth Group Information			
		HH size	Livestock: pastoral HH *
Poor		7 members, of whom 4-5 active	3 camels/cattle; 25 sheep/goats; 2 donkey
Middle		5 members, of whom 3 active	20 camels/cattle; 100 sheep/goats; 1 donkey
Better-off		4 members, of whom 1 active	100-1000 camels/cattle; 250+ sheep/ goats; 0 donkeys
0% 20% 40% 60% % of population			

* NB. Cattle only in the south

economic role than amongst cultivators where they may only look after a handful of goats and perhaps help to scare birds off crops near harvest time.

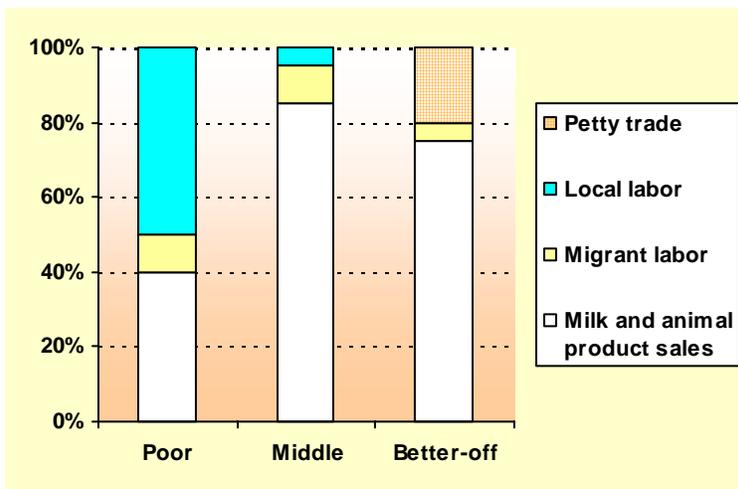
Sources of Food



The poor obtain some 40% of their basic food from food gifts, which are in both milk and grain, and 'milk share' – meaning the free use of the milk of animals owned by others which they herd under contract. Even managing to purchase grain with their own money may well require a poor family to be helped by a better-off patron who is able to mount periodic caravans to often distant grain traders or markets. In the case of the better-off, 'animal products' means mainly milk, but also a more than minimal amount of

meat: a household will slaughter at least one goat or sheep per week, and more if there are important guests.

Sources of Cash



The roughly 40% proportion of cash income earned by the poor from livestock may seem exaggerated given their meager holdings. But so much of their overall household income is in kind, whether through gifts or milk shares, that selling off a handful of smallstock accounts for a major proportion of a small overall cash budget. This is the zone where there is perhaps the least dependence on remittances from kin settled in cities or household members working elsewhere; and

even the better-off have a limited involvement in commerce because apart from some caravan trade their lifestyle does not permit much in the way of business activities.

Hazards

Chronic/frequent hazards:

- Rainfall shortages and poor distribution of showers spatially or temporally, resulting in poor pasture growth
- Lack of any useful winter rains in the north
- Non-epidemic livestock diseases especially amongst migrating herds

Periodic hazards:

- Drought about one year in seven

Response Strategies

Expansion of existing strategies:	Distress strategies:
<p><u>Livestock sales</u>: a limited option for the poor since holdings are low</p> <p><u>Livestock feeding</u>: Increased purchase of concentrates (most imported from Senegal) for remaining livestock</p> <p><u>Unusual work migration (<i>exode</i>)</u>: e.g. of members of households which are not used to sending out workers</p> <p><u>Remittances</u>: increased dependence on transfers in cash or kind from kin in the cities or abroad</p> <p><u>Dependence on better-off households</u>: receipt of food and cash support well beyond the usual level</p> <p><u>Reduction of festive consumption</u>: during religious holidays</p>	<p><u>Livestock sales</u>: sale of milking camels/cows/goats, i.e. the last animals</p> <p><u>Unusual migration</u>: unusual movement of herds southwards beyond zone for pasture and watering (and distress sales); even movement into Senegal or Mali</p> <p><u>Reducing meals</u>: in frequency and substance</p> <p><u>Collection of famine foods</u>: (limited to <u>certain areas of denser vegetation</u>) use of types not normally gathered, e.g. seeds of <i>boscia senegalensis</i>, other seeds and leaves</p> <p><u>Extended work migration</u>: e.g. worker not returning for a year or more</p> <p><u>Permanent migration</u>: a last option – the whole household moving to city shanty town areas</p>

Indicators of imminent crisis

- Very late start to the summer rains (from July), effectively extending the end of the dry season and therefore weakening/killing livestock
- Rains too meager and/or too scattered in geography or time to allow substantial pasture regeneration
- Unusually low levels or drying up of certain wells;
- Very early southward migration or unusual southward migration of northerners

- Price collapse in southern livestock markets (in zones 5 and 6) where nomads are trying to unload stock whilst still in saleable condition
- Crowding of nomad encampments around centers where animal feed concentrates are available (especially if subsidized by the government, as in 2002-3)
- Migration to coastal cities of whole families (mid-crisis sign – not early warning)

Mauritania Livelihood Profiles

Zone 2: Mixed: Oases and Pastoralism with Wadi Cultivation

Main Conclusions and Implications

A sparse population here makes the best of what nature has to offer in terms of grazing, oases and wadis (seasonal water-courses retaining moisture beyond the rains). In addition, since desert, culture and relative security together offer an attraction for tourists from Europe and elsewhere, a still small but growing tourist industry provides some extra wealth especially in Adrar Region. Per capita of population it is undoubtedly livestock which provide the most wealth, and pastoralists are in the majority. But they are more aptly described as agro-pastoralists in the sense that they attempt wherever possible to use the moisture retained in wadi soils to cultivate cereals, cowpeas and watermelons. And livestock ownership is highly skewed, so that a poor majority are in fact only nominally pastoralists and better described as pastoral-based people who may cultivate some wadi land, but mainly work for others, whether permanently as herders (including for some urban owners) or seasonally as wadi-cultivators and in and around a handful of towns.



The rest of the rural population is centered on the oases, to which town settlements are usually linked, so that 'rural' is more defined by livelihood than by residence. By national standards, the largely under-capitalized (especially under-watered) date industry is not a money-spinner in the league of the iron mining operation at F'Derik/Zouerat which the zone surrounds, or the coastal fishing industry (and the off-shore petroleum industry taking off in 2005). Nevertheless it provides regular work for many, a modest income for a middle minority, and great wealth for a few. This pattern is not unlike that of the agro-pastoral population, but the date (plus vegetables) based economy is somewhat more secure from the vagaries of rainfall: date production suffers from drought like that of 2002/03, but is not as sensitive to lesser rain failure as the mainly transhumant pastoralism, let alone the wadi cultivation. On the whole, therefore, it is the population dependent on livestock and wadis who are the most food insecure if they do not have any firm alternative options.

Here we come to the question of the cities: the population of this zone is probably more dependent on its contact with the cities than that of any other zone except the coastal fishermen of Zone 3. This is partly a matter of geography: Nouakchott and Nouadhibou lie on the edge of the zone. But it is also a function of the narrow limits of the zone's productive resources. There is critically little room for an expansion of the rural population: the cities are likely to absorb most of the natural increase as well as the unfortunate who lose their foothold in the zone's economy. Remittances are an important but not overwhelming source of household income for the rural people; it is likely that the only reason they are not more important is that at a certain stage it makes more sense for households to move to the cities than to stay in the countryside. In sum, the cities are an important economic buffer for this zone; but by the same token, it is the city economies which will get the growth, not the economy of this zone.

Zone Description

This is a zone where two types of livelihood can be distinguished: one is based on the production of dates and vegetables at oases, and the other is based on pastoralism with cereals cultivation in wadi areas. The reason for putting both in a single zone is partly that both are present in the same, distinctive geographical area. But it is also the case that a good number of the same people partake in both kinds of livelihood, most particularly poorer people who find seasonal employment in both. Nevertheless below are given two sets of figures on food sources and cash income typifying the two kinds of livelihood.

The zone includes the whole of Inchiri Region, the western half of Adrar, the south-western fifth of Tiris Zemmour, the western half of Tagant, and the northern part of Trarza. As a geographical area it is second only to the Nomadic Pastoralism Zone (Zone 1) in size, but also in sparseness of population. Transhumant pastoralism is found wherever grazing and watering are in sufficient proximity, and it at least partly occupies the greater part of the rural population. Cattle in any numbers are only kept in the far south of the zone; elsewhere, apart from a few milking cattle kept at homesteads, the livestock are camels and smallstock with more goats than sheep.

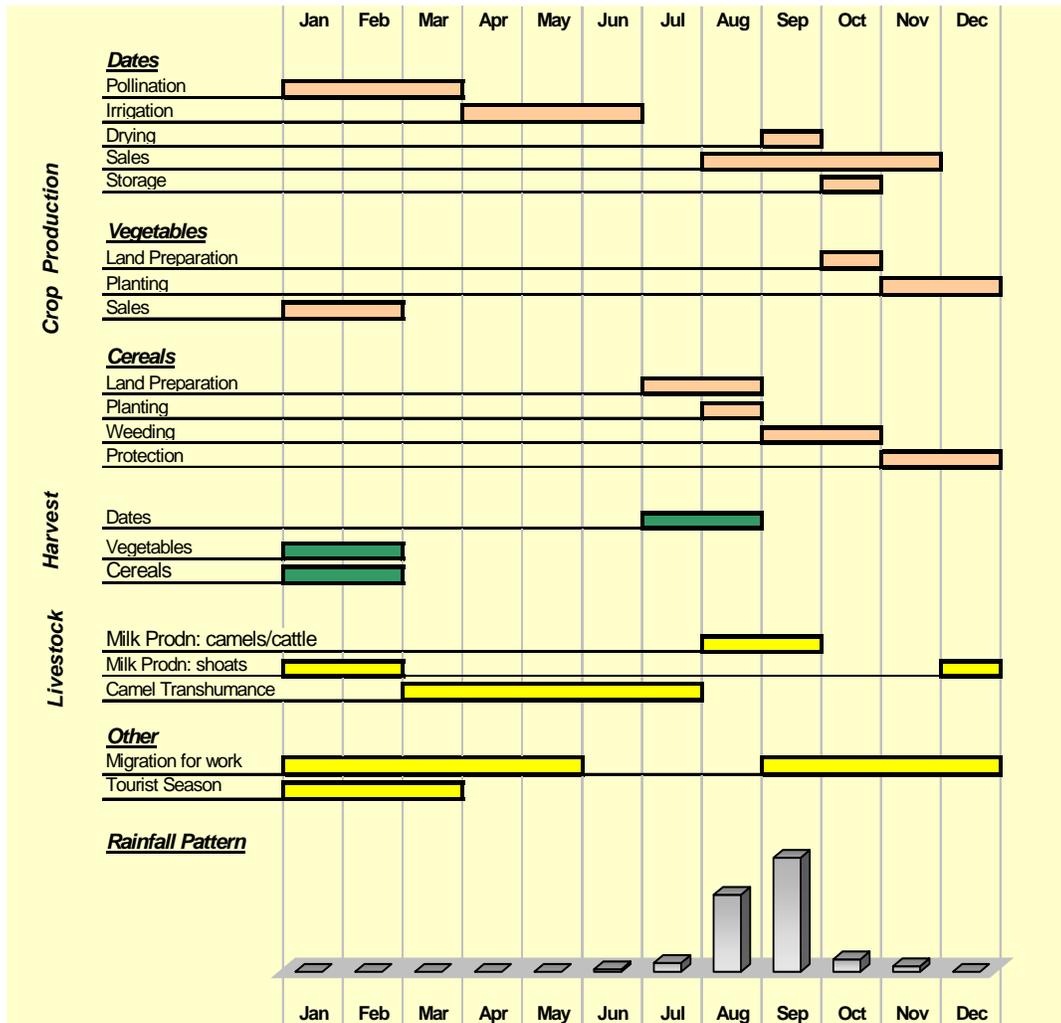
Oases and productive wadis form a small part of the zone's area but occupy (again at least partly) a large minority of the rural population; in the case of oases economy it is difficult to distinguish rural from urban people, and not particularly necessary, since for most that is a matter of residence rather than main activity. Apart from a handful of bigger towns such as Atar and Boutilimit, most of the centres can be described as 'rural towns' rather than urban areas. But the minority of rich date-palm owners are nearly always urban and engaged also in trade or other occupations; a number of the wealthiest reside in Nouakchott.

Mean annual rainfall at not more than 150mm generally, and below 100mm to the north, cannot support cultivation without considerable help from ground water (oases) or the special ground formations producing wadis which concentrate run-off or spring water in retentive clay-rich soils. Cereals on wadis are progressively sown as surface water from the rains recedes. Cowpeas are commonly intercropped and are as much a cash crop as a direct food source. Gum Arabic, of which Mauritania was historically a prime source for Europe, is still a potentially valuable product but threatened by deteriorating environmental conditions.

At the oases, both immature date-palms and vegetables are watered from wells, mainly via motor pumps. Mature date palms do not usually need watering to survive, but watering increases date yields significantly. The date development program 'Project Oasis' estimates that the cost of watering (equipment, fuel, labor), and competition for water from profitable vegetable gardens alongside the trees, means that on average palms are watered at only about one-half of the optimal level, and this, together with a tendency to plant trees too densely, makes for sub-optimal yields of some 25kg per tree on average, but with a very wide range from less than 10kg to more than 50kg. Dates are a relatively high-value crop: a producer can usually sell one kilo of dates and buy five or six kilos of rice. But by international standards the date industry is still old-fashioned and relatively unproductive, even without the kind of drought which severely reduced the harvest in 2003.

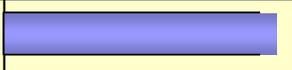
The far north of the zone surrounds the F'Derik-Zouerat iron mining complex which is an important employer of labor. However the workforce is permanent rather than seasonal, and although numbers of people from rural households in this zone are involved, they are probably greatly outnumbered by people from elsewhere, including the cities. Akjoujt, the single town in Inchiri, has lost its economic heart since the closure of the copper mining works.

Seasonal Calendar



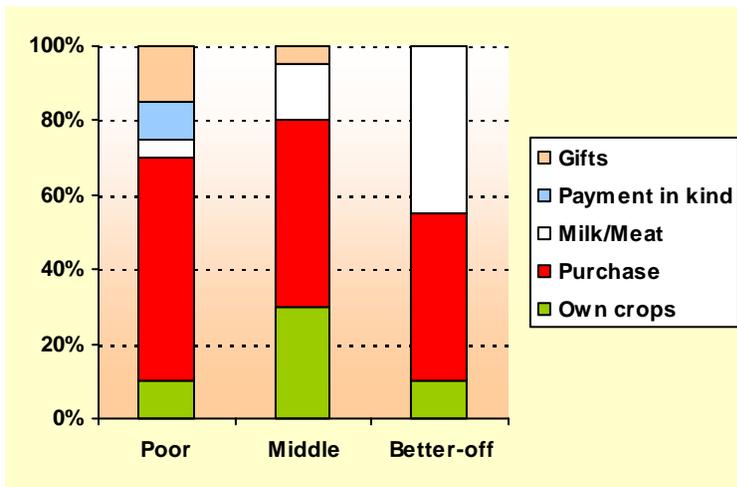
Wealth Breakdown

In both types of livelihood –pastoralism with some wadi cultivation, and oasis - ownership of resources, whether herds or date-palms, is considerably skewed towards the small minority of better-off. What is represented in the table below is the locally resident rich, whether in camps or in towns; however, a number of wealthy individuals residing in Nouakchott own date-palms in the thousands and/or livestock in at least many hundreds. In both cases these are maintained by local kin or contracted workers, thus providing some local employment.

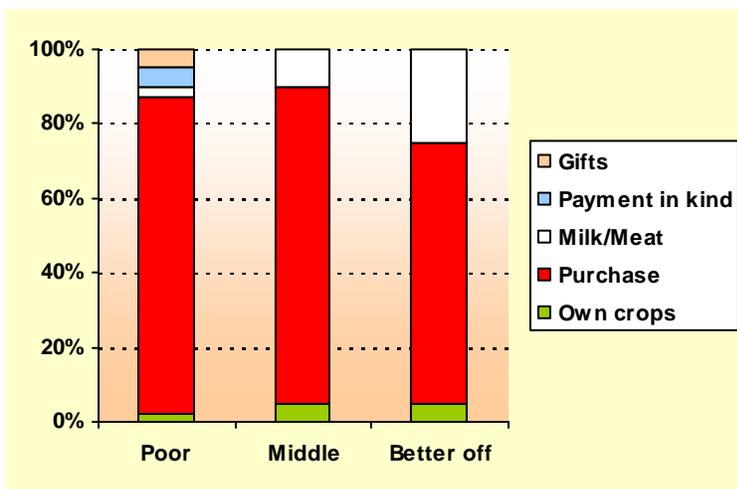
		Wealth Group Information		
		HH size	Date palms: oasis HH	Livestock: pastoral HH *
Poor		10 members, of whom 5 active	10-20 trees / 10-15 kg per tree	0 camels/cattle; 10 sheep/goats; 2 donkey
Middle		8 members, of whom 4 active	30-50 trees / 25-30 kg per tree	20 camels/cattle; 50 sheep/goats; 1 donkey
Better-off		6 members, of whom 2 active	100-1000 trees / 50+ kg per tree	50-100 camels/cattle; 200 sheep/ goats; 0 donkeys
0% 20% 40% 60% % of population				

* NB. Cattle herds only in the south

Sources of Food



Pastoral households: For the poor, payment in kind can mean access to the milk of livestock herded under contract (common) or payment in grain for agricultural labor (less common here). There is a tendency for remittances from relatives in the coastal cities to be sent in kind, e.g. bags of imported rice, especially when local prices in the zone are comparatively high, as in 2003.

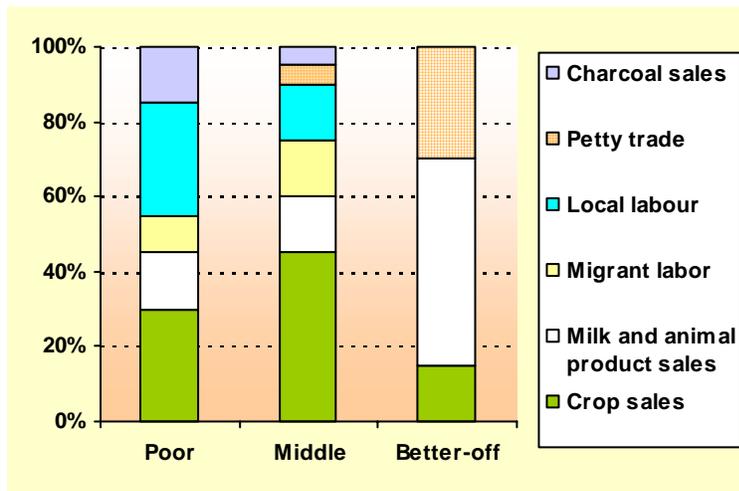


Oasis households:

Surprisingly little of the date harvest is consumed by the household. This is because much of what is not sold is consumed by relatives who descend on the household to enjoy the date harvest: this is one of the social events of the year.

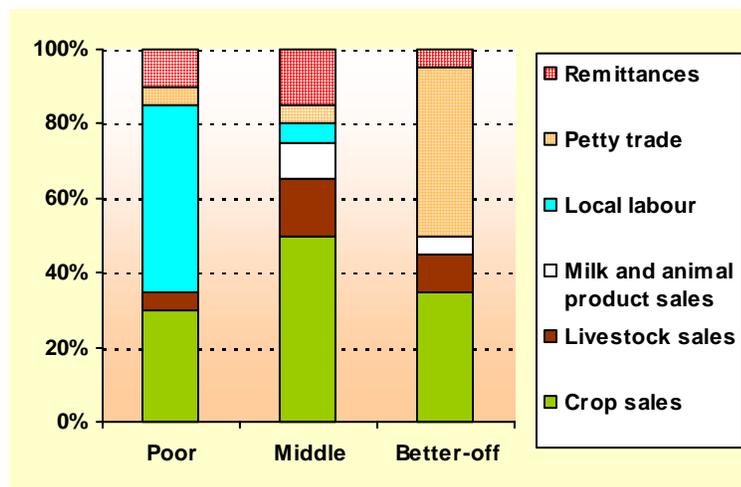
Sources of Cash

Pastoral households:



Ownership of livestock is skewed in favor of the better-off, who are also more interested in investing in commerce (including camel caravan trade) than in the risky crop production on the wadis (although in the north some own date-palm plantations). 'Local labor' includes both contract herding and employment on wadi cultivation.

Oasis households:



The date sales by the poor may include dates received in payment for labor: it is usual for one splay of fruit per tree to be given to the worker – encouraging care for the tree. Livestock sales by rich families may be more in absolute value than livestock sales by the middle group – but will form a smaller proportion of a far higher income which comes largely from date sales and trade.

Hazards

Chronic/frequent hazards:

- Rainfall shortages and poor distribution of showers spatially or temporally
- Crop pests – especially crickets and birds
- Non-epidemic livestock diseases especially amongst transhumant herds
- Stem-borer (*saisamie*) seems to have spread recently from the south as far as wadis in Inchiri, but it is not yet clear how widespread this is and whether it will become chronic

Periodic hazards:

- Drought about one year in seven
- Damaging flooding of wadi and date-palm plantations (rare)

Response Strategies

Expansion of existing strategies:	Distress strategies:
<p><u>Livestock sales</u> limited option for the poor since holdings is low.</p> <p><u>Livestock feeding</u>: Increased purchase of concentrates most imported from Senegal) for remaining livestock</p> <p><u>Gathered foods</u>: stretching out purchased grain with more than usual amounts of normally collected foods e.g. lotus rhizomes.</p> <p><u>Early work migration (exode)</u>: i.e. leaving two or more months before harvest time (dates, wadi cereals) because it has evidently failed</p> <p><u>Remittances</u>: increased dependence on transfers in cash or kind from kin in the cities or abroad</p> <p><u>Indebtedness</u>: borrowing from kin or taking sacks of rice/grain on credit from traders</p> <p><u>Reduction of festive consumption</u>: during religious holidays</p>	<p><u>Livestock sales</u>: sale of milking camels/cows/goats, i.e. last animals</p> <p><u>Distant transhumance</u>: unusual movement of herds southwards beyond zone for pasture and watering (and distress sales); even movement into Senegal or Mali</p> <p><u>Reducing meals</u>: in frequency and substance</p> <p><u>Wild foods</u>: use of types not normally gathered, e.g. seeds of <i>boscia senegalensis</i> (<i>Pulaar: guiguile</i>), other seeds and leaves.</p> <p><u>Extended work migration</u>: e.g. worker not returning for a year or more;</p> <p><u>Permanent migration</u>: a last option – the whole household moving to city shanty town areas</p>

Indicators of imminent crisis

Season	Month	Indicator
Rains	Jul	Poor/very late start to rains
	Aug	Wadis: severe reduction in surface moisture
	Sep	Much reduced area finally sown with cereals
	Oct	
Cool dry Season	Nov	Poor grain formation after flowering; severe cricket or bird attacks on maturing grain
	Dec	Harvest failure already certain
	Jan	Local grazing failure: early/unusual transhumance of herds; early demand for feed concentrates
	Feb	
Hot dry season	Mar	
	Apr	
	May	Lack of water in wells for date-palm irrigation
Rains	Jun	
	Jul	Failure of dates at 'yellow' or 'red' stage; no return of migrant workers for harvest
	Aug	Failed date harvest

Mauritania Livelihood Profiles

Zone 3: Traditional Coastal Fishing

Main Conclusions and Implications

The coastal strip contains a population of traditional and ‘artisanal’ migrant fishing communities of probably less than 10,000 in total, a surprisingly low figure given the approximately 800km of coast and the high value of fish production. It may be that expanding urban demand for fresh fish, and effective rural demand for dried fish, will bring in more people to learn to make a living here. But the single most constraining factor is not yet fish stocks (despite very large modern offtake by commercial fisheries out of Nouadhibou and Nouakchott) but the perennial problem of an extremely harsh environment: no wood, no grazing, and in particular no water, even from deep wells. Traditionally water was brought in from wells 30 km inshore with a constant cycle of donkey-loads. Today the water comes from the cities by tanker, and is kept in rubber ground-tanks. This is symbolic of the change from what might be called ‘subsistence fishing’ to ‘artisanal market fishing’ – a development entirely based on the cities. Traditional subsistence always meant exchanging fish for grain, but now fishermen enter into contracts with fish traders who bring food items in from the cities and may also subsidize water provision.

Unless there is a dramatic down-turn in fish stocks, nothing else seems to threaten the livelihoods of the fishing folk, whether climatically or otherwise. There will be regular work for the majority of poor and middle workers without their own boats, and regular profits for those owning boats. This is a zone where it is even possible to be optimistic about the future of mono-production, since there is no reason to suppose that the value of the product will fall. However, optimism must be tempered by the limitations. It is very difficult for the majority of households to substantially improve their lot because they can never find the capital to buy boats (and engines). Secondly, the isolation and harshness of the environment is likely to encourage a drain of young people, especially since only limited primary schooling is likely to remain locally available. Nevertheless, this is undoubtedly the most economically secure – and therefore food secure – rural zonal population in the country.



Zone Description

This zone follows the entire coastal strip for some 800 km from the southern frontier up to Nouadhibou. For the most part, neither the rainfall (largely below 150mm per annum) nor the soil and environment of the coastal strip permit agriculture or livestock production. Ground water is unobtainable from wells, limiting human occupation to those who can assure water supplies from afar.

The only direct production possible along the coast is fishing, whether industrial (i.e. deep-water commercial operations) or traditional ‘artisanal’. (Tourism associated with the Banc d’Arguin National Park presents the only other on-shore economic activity of the littoral; off-shore there is drilling for petroleum, and oil will begin to flow commercially in 2005). In recent years, industrial fishing operating from Nouakchott and Nouadhibou ports has been subject to investment and expansion, with technical aid especially from China; it now forms a major plank of the country’s export earnings. A

labor force of boat captains and variously skilled contract or casual workers, whether from town or villages, is employed for the different stages of the fishing process.

But the present zone refers exclusively to the small-scale, traditional fishing which is principally carried out from fishing villages or camps dotted along the coast, and the two ports. The traditional village population numbers around 3000, largely of the Hassaniya-speaking Imaghren group. The essential capital equipment required is nets and boats with motors, and possession of these differentiates those who are principal owners of the catch from those who receive a catch-share or cash payment as workers. A particular limitation for traditional fishing is the lack of deep water craft and fishing equipment. There has in recent years been a movement, supported by development funding, towards fishing cooperatives at the village level; villagers have become more attuned to the growing market for fish and tend now to work with specific visiting traders. In addition, a project partly funded by the African Development Bank has since 2000 concentrated on training some hundreds of men largely from outside the traditional fishing community in the skills of artisanal fishing and seamanship, and some women in fish processing, notably improved drying techniques.

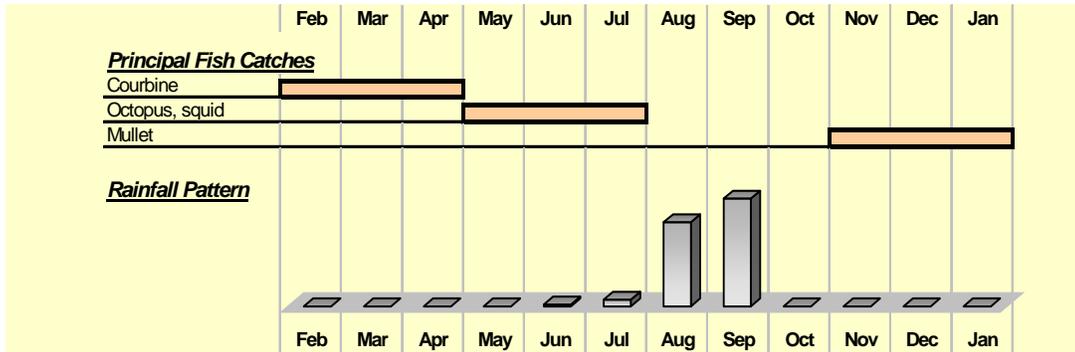
However, in seeking to profit from the training, the men face difficulties in getting together the cash for their own equipment, and without that they face stiff competition on jobs and wage-rates with established skilled workers. These mostly work for contractors operating from the cities and remain uncounted, but are reported to outnumber the traditional fishing families. They operate from fishing campments and work under contract to businessmen in Nouakchott or Nouadhibou who equip them and pay a wage, and also assure the transport of food supplies and water. They used to come seasonally from outside – many from Senegal as skilled migrant workers, and originally only for the octopus and squid season (May to July), but as these became over fished many began staying on through the year for the seasons of different fish.

Traditional fishing households are able to depend to an almost exclusive degree on fishing as a livelihood, and few people go away for seasonal work in the port towns or to agricultural areas in the south. Some better-off households engage in trading in essential items for the villagers, and a number of these also possess livestock which they consign permanently to contract herders in the south and visit during the rainy season, when peak milk availability coincides with the season of minimal-value fish catches at home.

Fish is eaten by fishing households far more regularly and in greater quantities than meat is eaten by herding households; nevertheless it is not fish but rice, or wheat in the form of couscous or pasta, which is the main staple food. Thus the greater part of villagers' food must be purchased, along with all the other household essentials. The cash comes largely from fresh fish sales, whilst dried fish brings in only a relatively small proportion of income despite that product being found on markets a thousand kilometers inland. The ascendancy of fresh fish sales is a testament to the modern economic circumstance, with burgeoning city markets for fresh fish within a couple of hours of the villages and camps by small trucks on fast roads. The potential 'value-added' of smoked fish is negated by the absolute local absence of collectible wood; indeed, butane gas in cylinders for cooking is one inescapable household expenditure (as it is in pastoral and oasis areas inland).

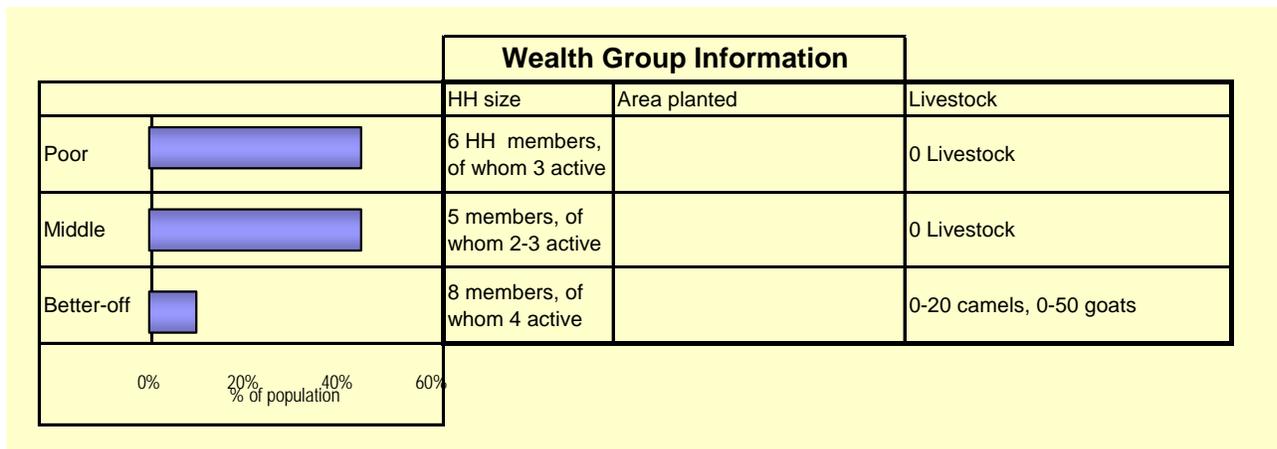
Seasonal Calendar

Traditional fishing is permitted all year round, whilst commercial operations at Nouadhibou are banned for the months of September and October to protect the natural regeneration of stocks. However these months are also relatively 'dead' in terms of high-value catches, since important species tend to go out to sea to find cooler waters. Most fish caught at this time are for home consumption.

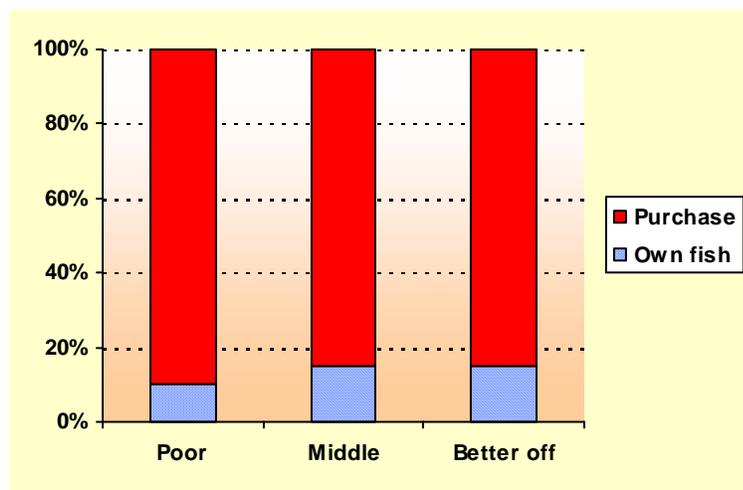


Wealth Breakdown

The poor essentially work for others. The middle may have part-ownership of a boat and large nets through an association, and/or may have close kin relationship with better-off which gives them advantages in work opportunities and catch-shares. Both middle and better-off may engage in trade, e.g. village boutiques. The surest sign of household wealth is full ownership of a boat with engine. Female heads-of-household (i.e. with primary responsibility for family income) make a living from fish processing – essentially drying; this is a limited part of the trade and therefore only small numbers of female-headed households can survive here.

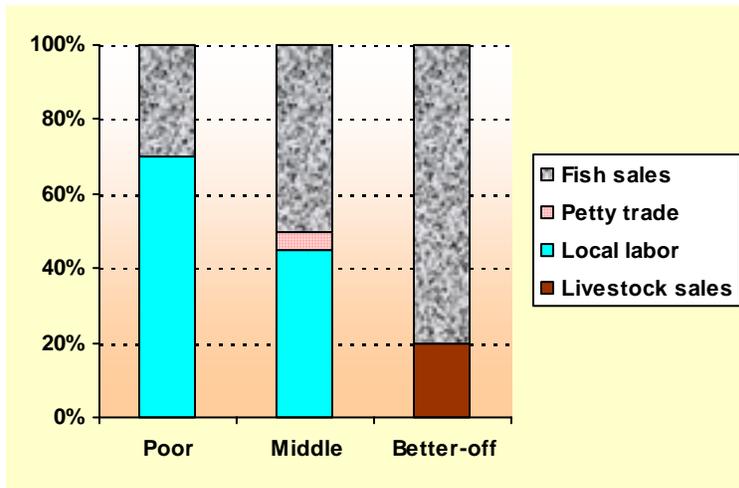


Sources of Food



The fish proportion may seem minimal for a fishing population, but 15% in fact represents about 1.8 kg of fresh fish daily for a family of 6, or alternatively about 600 g of dried fish. Typical purchased food per month for middle families consists of about 40 kg rice and wheat flour/pasta (giving about 35% of total calories consumed by the family), 30 kg of sugar (about 20% of calories after tea for guests is taken into account), about 7.5 liters of oil (about 18% of calories) and 10 kg of dried whole milk powder (about 12% of calories).

Sources of Cash



Poor people earn cash directly from daily labor as boat hands or from selling part of their catch-share if that is how they are remunerated. The middle group figure for fish sales represents the composite of two types of fish-catch shares: from working directly for a boat-owner and from membership of an association which owns a boat. Where a single boat owner with a boat captain and group of workers is concerned, the catch-share is typically as follows:

A proportion of the fish is set aside to compensate for diesel bought by the owner (but repairs are on his own account). Then out of 100 kg of remaining fish catch, 50% is given to the owner, 25% to the captain and 25% is shared between boat-hands (typically 4 men).

Hazards

Chronic/frequent hazards:

- Fishing years vary without a pattern or cause discernible to traditional fishermen. The year 2003, for instance, was poor for octopus/squid but excellent for mullet.
- Over-fishing by deep water commercial operations has resulted in an apparent threat to some fish-types, but this is not much felt by traditional fishermen.
- The main problem identified is isolation, making for a high cost of living: except for fish, everything including water must be brought in from Nouakchott, and this means city prices with added transport costs. However, transport conditions improving with the creation of the Nouakchott-Nouadhibou highway.

Periodic hazards:

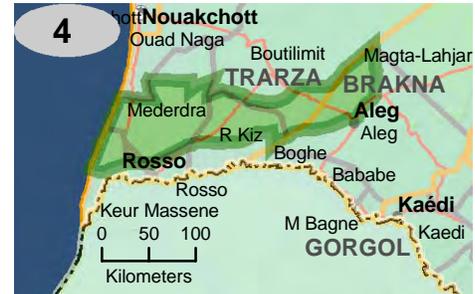
- No effects of climate or other emergencies were indicated.

Mauritania Livelihood Profiles

Zone 4: Transhumant Pastoralism

Main Conclusions and Implications

This is a zone where the disadvantages of the lack of opportunity for crop cultivation are to some extent matched by certain advantages, including: relatively good grazing in this southerly latitude; enough water points to require only quite limited movements for grazing (transhumance); and proximity by road to the livestock markets and labor demand of the capital city as well as the Valley (Zone 7) area. The increasing pattern of settlement around the small town centres for much of the year has intensified environmental degradation, but loss of pastures was first felt in the 1970s as a result of drought followed by a perceived overall decline in annual precipitation. On the other hand, for those who can afford to supplement grazing with purchased concentrates for cattle, there is a growing demand from Nouakchott as well as the regional capital Rosso for milk traded along the main highway. This 'value-added' for livestock owners cannot however be expected to support an ever-growing rural population where there is very little agriculture. One may expect a continued flow of people to reside in and around the cities: mostly a modest number, but capable of rising acutely if there is a serious drought in the future.



Zone Description

This zone is largely contained in Trarza Region in the south-west of the country, sandwiched between the river valley Zone 7 at Rosso and the oasis/pastoral Zone 2 of Boutilimit and Ouad Naga districts. Inland from the coastal strip of Zone 3, Zone 4 comprises virtually all of Mederdra district, much of Keur Macina district, those parts of Rkiz district beyond the river valley and the cultivated lake area, a slice of the southern limit of Boutilimit district, and just the easternmost commune of Brakna Region.

Zone 4 is an overwhelmingly pastoral zone. Rainfall below 200mm per annum combined with a lack of wadis, *bas fonds* (moist depressions) or oases forbids significant agriculture. There is some gardening around a handful of towns with water from deep wells, and there are a few scattered fields where local conditions promote a yearly gamble on sorghum with intercropped *niebe* beans and watermelons.

Pastoralism in this zone has two distinctive features: it is based on quite localized movement around the home-base, or at most around the watering-points within a district; and the livestock consists of cattle as well as camels and smallstock. This indicates that local pastures can support numbers of livestock throughout the year; and the creation of new chains of wells by government in recent decades has intensified this pattern of limited transhumance. But it is also true that in recent times the purchase of animal food concentrates has increased substantially, especially in the months before the new rains when pastures are most depleted. This has also underpinned the growth of an organized milk sales network based on the Nouakchott-Rosso axis, which has encouraged increasing numbers of households to station themselves permanently along or near the main road.

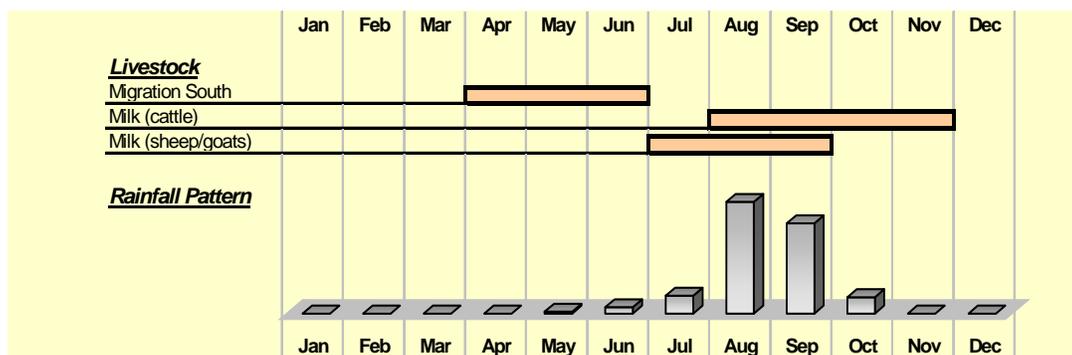
A small minority of people with large camel herds do go on seasonal grazing migration out of the zone in the dry season months from February to May/June, in a south and south-easterly direction to Gorgol and Guidimaka Regions, and across into Senegal. But this zone also regularly plays host in the early dry season to nomadic pastoralists who come in for grazing and watering from the north-east, often on their way further south as the season progresses.

Ownership of livestock is far from uniform, and the size of your herds and flocks will determine whether you are essentially able to support yourself through livestock and milk sales as well as petty trade, or whether you must make the greater part of your living by working for others: as a contract herder, as a cattle-driver to markets, as a firewood and grass collector, and/or as a migrant worker looking for seasonal employment in the towns or in the main southern agricultural areas.

About one-fifth of the population (one-third of the poor group – see Wealth Breakdown section below) have no livestock, usually having lost or sold their herds during drought or other misfortune. In this zone it is difficult to separate ‘urban’ from ‘rural’, since a majority congregate in and around the district or commune centres for several months of the dry season having used more distant pastures up to that point. In addition, the strong desire to put children through school has meant that increasing numbers of households are taking up permanent residence around centres whilst one or two of the men move seasonally in the district with the herds.

Seasonal Calendar

The ‘milk’ lines indicate the periods of maximum output from the animals, reflecting essentially the availability of fresh pastures in the rainy season. However, where cattle owners are able to join in the long-distance milk trade (i.e. when they are based near a road) or serve clientele in the few towns, then they try to keep up substantial milk production throughout the year by using animal feed concentrates.

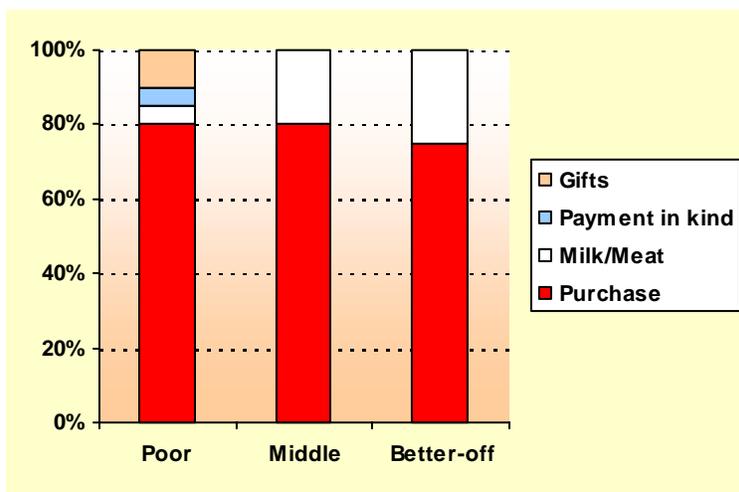


Wealth Breakdown

For the poor, the livestock figures refer to those who possess any livestock at all: about one-third of the poor have no livestock; the rich tend to move large herds out of the zone in the dry season for far grazing. (See Zone Description section above)

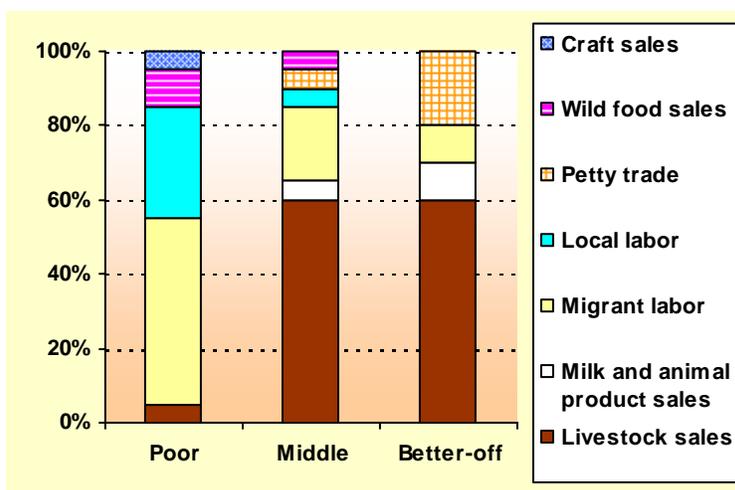
Wealth Group Information			
	HH size	Area planted	Livestock
Poor	8 members, of whom 3 active		2-3 cattle; 2 camels; 20 sheep/goats; 1 donkey
Middle	6 members, of whom 2 active		15 cattle, 15 cattle; 12 camels; 70 sheep/goats; 2 donkeys
Better-off	4 members, of whom 1 active		50+ cattle; 50+ camels; 250+ sheep/ goats; 2 donkeys

Sources of Food



The purchased food consists, for the basic diet, of rice and sorghum to make into couscous, and to a lesser extent of processed wheat products (pasta, couscous). Sugar is a major item even for poor households, who may consume as much as 15% of calories in this way. For the other groups sugar is still more important, although purchases by the rich of for instance 50kg per month are in good part destined for consumption by guests in the form of tea or sugared milk.

Sources of Cash



Seasonal work migration means different things to different groups. For the poor it tends to be manual labor in cities and agricultural labor in the south, sometimes on the Senegal side of the border; for others, especially the rich, it tends to be city-bound and based on commercial or other jobs offered by relatives, mainly in Nouakchott or Nouadhibou. Here there may be an element of remittance from the city kin as well. Local employment for the poor is both local-town based and as contract herders for the better-off.

Hazards

Chronic/frequent hazards:

- Desertification, and especially dune formation since the generally dryer climate heralded by the drought climaxing in 1973, threatens pastures as well as gardening areas
- Dune fixing plants such as *prosopis* have been successfully established but found to take up too much water from gardening and well areas
- Deteriorating pasture resources due to grazing pressure in proximity to water points
- Insufficient or poorly distributed rains over the season resulting in unsatisfactory pasture regeneration Livestock disease

Periodic hazards:

- Drought, i.e. acute rain failure – people refer to 2002/2003 as a drought year, but to the 1980s for the last drought catastrophe
- Plagues of grass-eating crickets/locust (rare)
- Epidemic livestock disease (very rare)
- Bush fires (very rare)

Response Strategies

- Unusual and early migration of herds south beyond the zone to find grazing
- Increased purchase of animal concentrates
- More people on work migration and for longer periods
- Increased livestock sales
- Increased indebtedness
- Increased consumption of gathered foods, including less preferred types like *boscia senegalensis* seeds

Indicators of Imminent Crisis

- August – September: Early work migration
- February-March: unusual migration for grazing
- April-May: unusual livestock sales

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Zone 5: Agro-pastoral

Main Conclusions and Implications

In this zone households depend upon a balance of livestock and crop production, but livestock ownership is the key to wealth and also provides a vital safety net when crop production fails. To this extent, the purchase of new animals is the main form of investment whenever a household has cash to spare. The low annual rainfall is compensated for by the relative abundance of dam-fed fields which enable households to maximize use of the limited rain available. For a minority of successful households, this is as favorable an area for economic activity as any in the country.



The economic history of poor households in this zone usually follows one of two paths. On the one hand there are the households that formerly owned very large herds and that had to turn to some reliance on agriculture following the loss of livestock in the droughts of the 1970s and the ensuing reduction in pastureland; this continued through environmental degradation and frequent periods of insufficient rainfall. On the other hand, there are households that formerly relied primarily on agricultural production together with some income earned from laboring. The pattern of reduced rainfall has highlighted the need for economic diversification away from cultivation, so that animals have become more important to these households whenever they can afford them.

Across the Sahelian zone of West Africa generally there has been over recent generations an increase in agriculture in areas formerly devoted only to herding, a trend linked to an ever-increasing rural population. In the case of the agro-pastoral zone of Mauritania this has been aided in recent times by the use of small dams to preserve rainfall water; better-off people tend to be those who have *both* maintained a substantial livestock holding *and* made the best of the new agricultural opportunities, often hiring labor in the process. But during three decades the relatively high incidence of poor rainfall years, together with demographic pressure, has resulted in a population that has succeeded in neither the 'agro' nor the 'pastoral' sphere, and they have been considered as the most economically insecure in the country – and therefore the most food insecure. In this respect the part of the zone usually pointed to is the Aftout, but the phenomenon is zone-wide.

Zone Description

This is a broad band of northern sahelian environment, stretching east-west across Hodh ech Chargui, Hodh el Gharbi Assaba, Brakna and Trarza Regions (thus covering all or most of Nema, Timbedra, Ayoun, Tamchekett, Kiffa, Guerou, Barkewol and Aleg districts) and bordering on the east and west parts of Zone 4 (Transumant Pastoralism). The zone falls mainly between the 200mm and 250mm long-term isohyets. This favors extensive pastures but also allows millet and sorghum cultivation, made more

or less risky by wide inter-annual fluctuations of annual precipitation and by the local presence or absence of moist depressions (*bas fonds*). Temperatures are relatively high in the summer, cooling down considerably in the winter, although not to the level of the northern zones.

‘Agro-pastoralism’ is a term used to cover a range of relative dependence on livestock or agriculture within the general livelihood mode pursued by the great majority of the resident population. In part, the balance is environmentally determined, since this zone is somewhat ecologically varied not only from north to south (lower to higher precipitation) but from one locality to another in terms of ground water, soils or other features. Thus some areas are more conducive to an accent on cultivation than others. Equally certain localities are found (e.g. in Male district) in which there is a particularly heavy investment in livestock, specifically cattle, with some of the capital coming from traders or town and city dwellers using contract herders. Over the whole zone the most numerous livestock are smallstock, with an accent on sheep rather than goats, then cattle, then camels.

Livestock spend most of the year around the house, but by June pasture is usually so limited that the animals are taken southwards to far grazing, often for several months, leaving behind some smallstock and cows in milk. Typically an adolescent boy or man takes the herd, and can look after up to one hundred animals at a time. Households with small herds might put their animals together to be looked after by one person, thereby freeing up labor capacity for other activities. Milk production is highest during August and September, tailing off in October. During the other months of the year, households will often drink imported powdered milk unless they have a milk cow that they keep close to the home and feed regularly throughout the year, often with imported feed concentrates bought on the market.

The main crops grown are sorghum and cow peas (*niébé*), usually intercropped. Often watermelons are cultivated in the same fields, grown mainly for their seeds which are dried and pounded to add to the sauce. Given the dry soil and relatively low rainfall, agriculture is mainly practiced in dam-fed fields; but there is in addition a limited amount of purely rain-fed agriculture, which starts a few months earlier in the year. In the moist depressions (where dams are usually located) seeds are sown progressively in stages, as the water recedes, and this explains why the harvest period covers a number of months. Many villages also have communal gardens, where people grow eggplants, turnips and tomatoes. The main period for the collection of gum Arabic begins in October; apart from its export value it is used locally as a thickener in sauces or as a starch in clothes. Collecting Arabic Gum is arduous, and therefore only the poorer households tend to engage in this activity. Once the harvest has started, the active men of the household tend to look for casual work, often at the urban centres.

One can distinguish two patterns of local agro-pastoralism. The first is based upon agricultural success: it involves households who have been able to profit sufficiently from cultivation to invest significantly in livestock, especially cattle, sometimes to the extent of contracting specialist herders to look after their stock (often with that of a couple of similarly-placed households), taking them away from cultivated fields, and to far grazing in the dry season. The second pattern is based on pastoral failure: households who have lost such a proportion of their stock, through drought or other misfortune, that they are no longer viable as pure pastoralists. Some join the tens of thousands living in the shanty-town areas of Nouakchott. For those who stay rurally-based, if they cannot find a living attached to their more successful pastoral kin or neighbors, nor have a substantial urban connection to live from migrant work or remittances from an urban-based family member, their only choice becomes settlement into an agriculturally-based life. Starting with little or no capital, and often surviving at least as much by working for others as by their own harvest, they tend nevertheless to retain the rarely fulfilled ambition of regaining a pastoral base by building up a flock of smallstock, and then exchanging some on the market for cattle, and eventually selling some of those to buy camels.

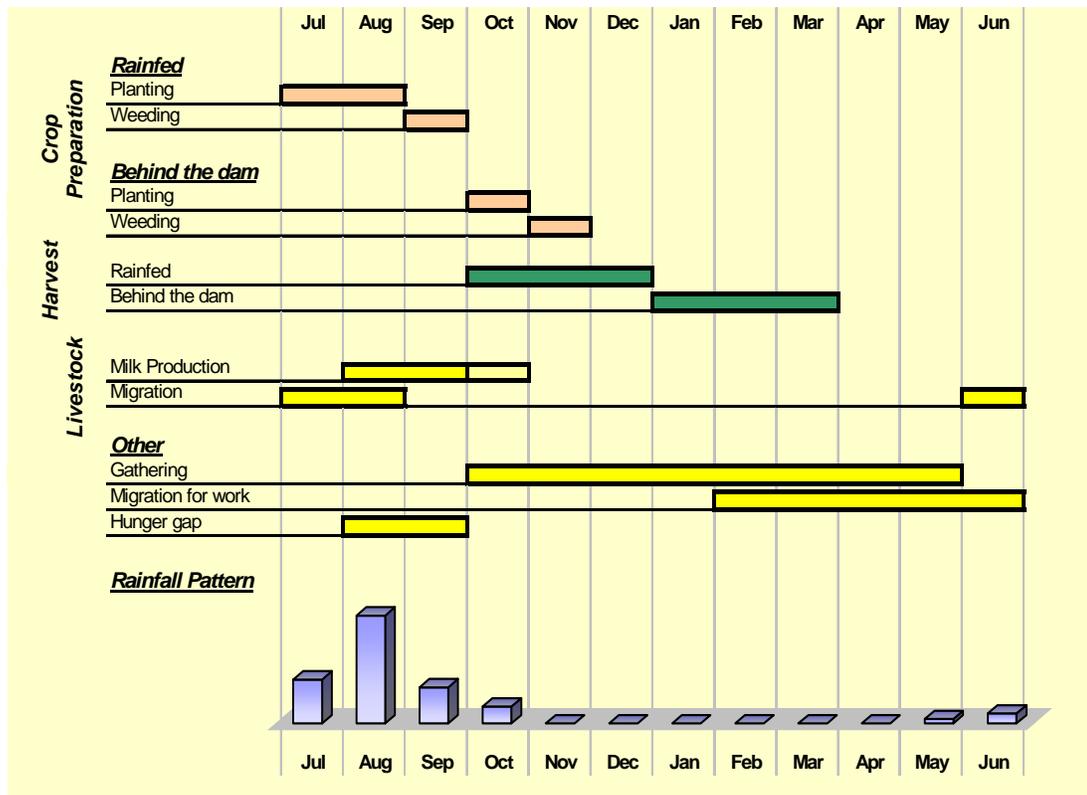
It follows that in an agro-pastoral zone; nearly every household, however poor or well-off, practices agriculture, but many households have only at best a handful of smallstock. A small minority of

households are pure pastoralists, taking animals seasonally for far grazing from a home area within the zone. Amongst the agro-pastoral majority, poorer households (as well as some middle-wealth households) need to gain income in cash or kind every year by work away from their own farms.. This work may be relatively nearby if there is a large moist-depression (*bas-fond*) area where intensive cultivation provides seasonal employment; or it may be further away, in the riverine agricultural area to the south (in which case the whole household may accompany the working member(s) and encamp for the season near the work sites); or else, one or two household members will look for work in the cities, or sometimes across the frontier into Senegal.

Typical local jobs include assistance to traders, contract herding for urban households or acting as middlemen for cattle traders. Other village level activities during this period include collecting firewood or making mats. If the year is particularly difficult, a young girl might be sent to the household of an urban family that is trusted and well known, as a domestic worker receiving food, clothing and possibly some money in return. Normally, the most difficult months of the year are August and September, although if the previous harvest was poor, the difficult months could start as early as May or June. In times of acute shortage, collection of less-preferred wild foods becomes a means of having “something at least to put in the stomach”.

As a handful of main towns such as Nema and Timbedra continue to grow in size, numbers of the poorest who fall out of the agro-pastoral system are attracted to peri-urban residence from which they can act as daily laborers. But better-off households are also attracted there, given inter alia the advantages of nearby schooling and health care.

Seasonal Calendar

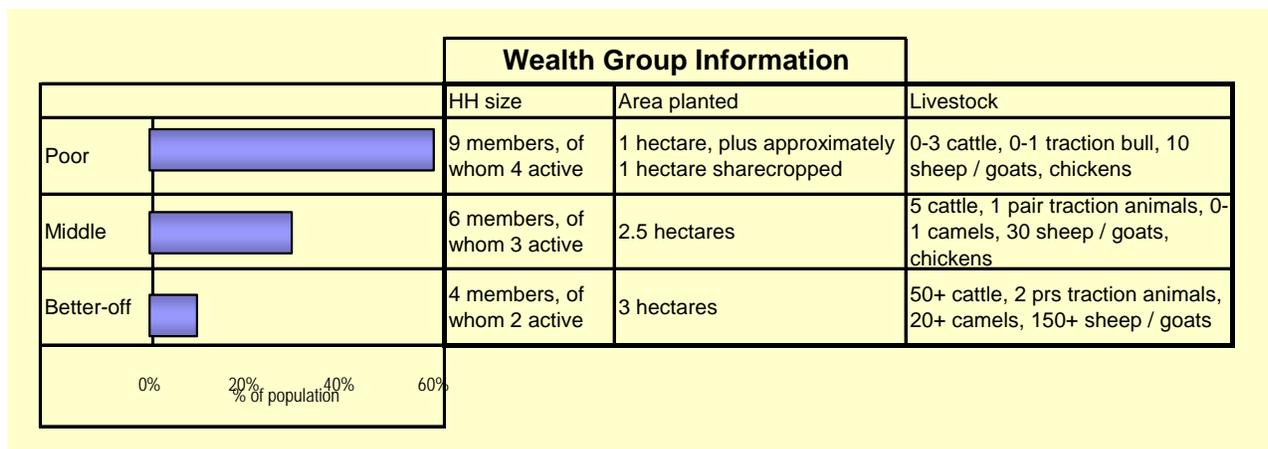


The main commodities sold by households at the local weekly markets are sorghum, cowpeas and livestock, all mainly destined for large urban centres such as Nouakchott, Aioun, Nema, Kiffa and Timbedra. Some animals are also sold southwards towards Senegal. Apart from the staples sorghum

and millet, the main foods purchased by households are sugar (consumed with green tea as well), rice and wheat. These products are imported into Mauritania via the port at Nouakchott. During the rainy period, some roads can become impassable for a few weeks at a time, during which period local cereal prices generally increase.

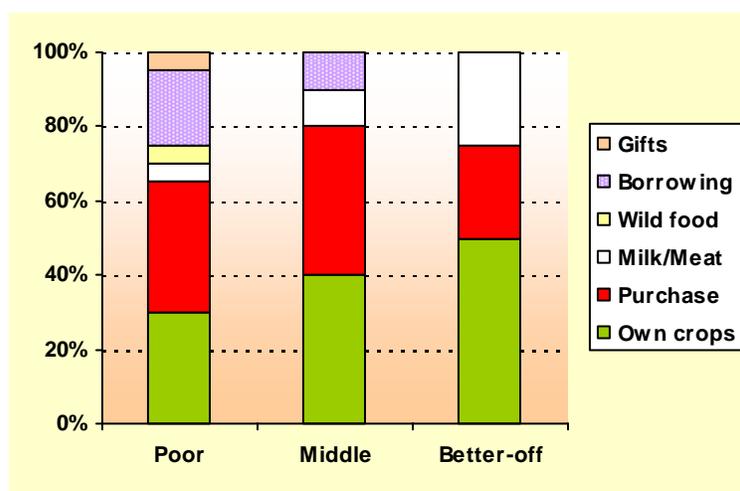
Wealth Breakdown

Wealth is principally dependent on the size of animal herds. Better off households also tend to cultivate larger fields than poorer households. About half of the land cultivated by the 'poor' is usually under a sharecropping agreement with better off households whereby they cultivate the fields in return for a



share of the final harvest. Fields are usually tilled by hand with hoes, while the better off households might use traction animals, whilst households with only one traction animal borrow a second. The poorer households survive through a combination of working for others, remittances from relatives working in the cities or abroad, and in the lean season through loans of food which have to be reimbursed at harvest time.

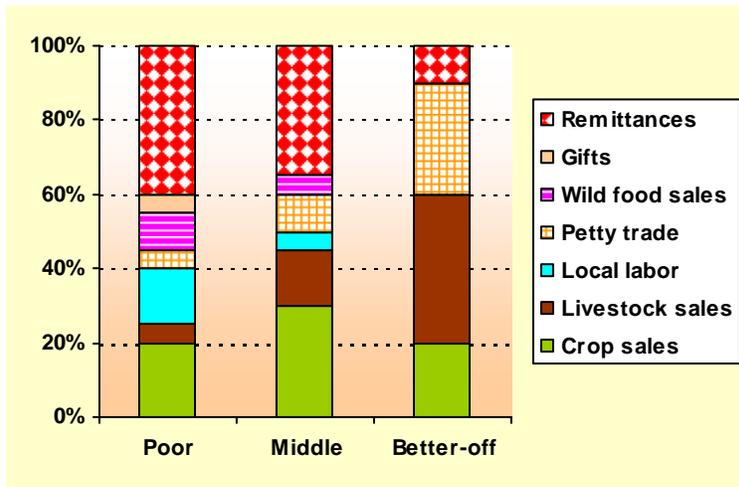
Sources of Food



Borrowing in kind is in effect purchase of food in advance, at unfavorable rates. Just before the harvest, when resources are limited, majority of households obtain food from traders on the understanding that it will be paid for following the harvest, usually in kind. While this is a standard way of managing household resources and is not limited to the poorest households, the negative consequences are that cereals are obtained and reimbursed at the current financial rate: i.e. the cereals are taken from the trader

before the harvest when prices are high and are reimbursed following the harvest when prices are low. Therefore the quantity to be reimbursed is often considerably greater than the quantity borrowed in the first place.

Sources of Cash



Although most households sell crops, the poor are never selling from a surplus, but rather sacrificing part of a far insufficient food stock from their harvest. In the main, they sell cereals to repay food borrowed during the hunger gap, but also for other essential expenditure. Better off households can generally afford to wait until some months after the harvest when the price has increased before selling.

Hazards

Chronic/frequent hazards:

- Every year, the harvest is threatened to some by pests, in particular stem borer and crickets.
- Animal diseases such as contagious septicaemia and bovine pneumonia affect the herds annually.
- After the rains, the dry grasses are prone to bush fires, usually started as a means of clearing land, but which spread and can have a devastating effect on the remaining pasture for the cattle.
- During the rains, in August, the prevalence of malaria increases, which restricts people's ability to work.

Periodic hazards:

- About two to three years in ten, insufficient rain falls, either in the total quantity or in terms of how it is spread throughout the season.
- About one year in ten this is severe enough that it is considered to be a drought.

Response Strategies

- When the harvest is reduced and there is not much locally available pasture, the initial response is for active household members (usually the adolescent boys and the men) to go to urban centres to look for work.
- Other responses include reducing the number of meals consumed per day, and spending more time gathering wild produce in particular Arabic gum for sale, but also wild foods.
- A poor harvest is followed by a major reduction in the sale of cereals post harvest as people try to hold on to their cereals for their own consumption and as a buffer against the forthcoming price increases, although poorer households may have no choice but to repay their debts in kind.
- Beyond the harvest, during a difficult year people start borrowing earlier and the level of debt increases. If the situation gets very bad, people resort to selling off their animals in greater numbers than normal, so that a poor family may sell their entire flock of half a dozen goats.

Ultimately in a crisis people begin to selling productive assets such as carts and donkeys or traction animals, as well as household goods and even clothing.

Indicators of Imminent Crisis

- Very late start of the rains, or long dry period after the start of rains killing germinated crops;
- The price of cereals increases substantially early after the harvest period, e.g. by February.
- Livestock prices decrease sharply and/or unseasonably, early in the dry season as poor pastures are used up.
- Active household members (usually the adolescent boys and men) leave for town earlier than usual (i.e. before the harvest in September / October)
- Animals (cattle in particular) are taken south to far grazing earlier than usual (by April) and farther than usual.

Mauritania Livelihood Profiles

Zone 6: Rain-fed Agriculture

Main Conclusions and Implications

This is a zone which benefits from sufficient rainfall to allow for a greater level of crop cultivation than is possible further north. This zone is densely populated compared with other parts of Mauritania although land for rain-fed cultivation is not



expected to be a limiting factor in the near future assuming current population growth. However, per capita land holdings are highly skewed towards the better off, and the poor who have working hands underemployed on their own land tend to work for better off people as sharecroppers. In addition, nearly all households at any level of wealth have a family member who works for all or part of the year in one of the urban centres, either in the main towns of the Wilaya or in the north of Mali. The remittances from these family members enables poorer households to make ends meet through the year and enables wealthier households inter alia to build up herds.

Investment in livestock is the major way of using profits or savings, a 'bank' account which offers high interest in good years in the form of natural increase of herds and flocks, but which does not secure the savings in bad years when grazing and fodder are diminished and the market value of livestock plummets. The expanding use of land for cultivation constrains grazing land, although this is partly made up by crop residues. Only the less poor half of the population possess cattle, and only the better-off minority are able to maintain substantial herds by sending them off with contract herders for seasonal far grazing. For the rest, the focus is on goats and sheep.

The majority of the country's millet and sorghum is grown in this zone, and it is the source of the largest part of the marketed grain. Yet it cannot be considered as a 'grain basket' for the country, since Mauritania is far from self-sufficient in any year, and most of the grain produced in the zone is consumed there. Given the overall absolute number of people compared with the other zones, this is the zone with the largest absolute number of poor people (although the agro-pastoral zone, Zone 5, runs it close). Both poorer and many middle group households are vulnerable to rain failure, which is frequent if not generally as dramatic as further north. Neither group possesses substantial numbers of livestock (the middle group are more distinguished by their larger land holdings). In a really bad year they stand to lose most or all of their stock, either to an unfavorable market or directly to death. With their earnings from livestock and from work away from home and remittances, the middle group is likely to manage to obtain sufficient food (unless there is a catastrophic drought, a rare occurrence). Poor households, however, may not be able to put together enough cash even to feed themselves adequately. Thus the middle group stands to lose a substantial proportion of their savings and assets; but many of the poor are frankly food insecure.

Zone Description

This is the zone of the country with the greatest absolute population. It stretches across the south-centre and south-east of the country from the level of roughly 15° of latitude, with its northern limit between the 250mm and 350 mm isohyets and with annual precipitation reaching up to 400+mm at the southernmost tips. The zone includes all but the northern quarter of Gorgol Region, all of Guidimaka Region beyond the riverine strip, most of Kankossa district in Assaba Region, and the southern half or third of Tintane, Kobeni, Djigueni, Timbedra and Amourj districts in Hodh el Gharbi and Hodh ech Chargui Regions. Seasonal temperatures – hot and cold – are more moderate than in the rest of the country to the north.

Although the zone is far from immune to rain failure and indeed drought, rainfall is normally less erratic from year to year than further north, although still prone to quite wide variation. The volume of rainfall normally allows extensive cereal – mainly pearl millet - cultivation not dependent on moist depressions or small dams, and this is what marks the zone as fundamentally agricultural and different to the agro-pastoral zone to the north. Nevertheless, in many villages there is also a dam allowing for a limited second season to supplement the main harvest, in which case there is a relatively lengthy harvest period which can stretch from October through to February.

As in almost all corners of the Sahel region of West Africa, livestock husbandry is an important element of the economy and the prime determinant of relative wealth. Indeed it is a paradox that on the whole livestock rearing offers more wealth to families here than in the agro-pastoral zone. This is due to the capacity of more farmers to invest especially in cattle, using crop residues as well as nearby pastures, and sending some livestock south and east on far-grazing in the dry season. However, livestock ownership is highly skewed, so that poorer families possess very few livestock. This zone is also regularly visited seasonally by herds from the north on their annual grazing migration before either passing further south or returning north with the first reports of rain. There are substantial livestock markets which reflect the seasonal presence of migrant herds quite as much as local livestock.

Apart from the Senegal Valley, this is the most densely-populated zone of the country. In a normal year the zone is self-sufficient in cereals, but this does not mean that every household has enough: there are large numbers of poor households who are unable to cultivate enough land well enough to feed them for even half the year; on the other hand there is a minority of well-off households who produce considerable surpluses, hiring labor from the poor as well as from migrant workers. In this way the zone produces a substantial part of the country's marketed sorghum and millet. Niebe beans and watermelons (mainly for the seeds) are intercropped with the cereals, and groundnuts are another crop partly consumed at home, partly grown for sale. Maize is the main crop grown in the small plots behind the dams, chiefly for home consumption.

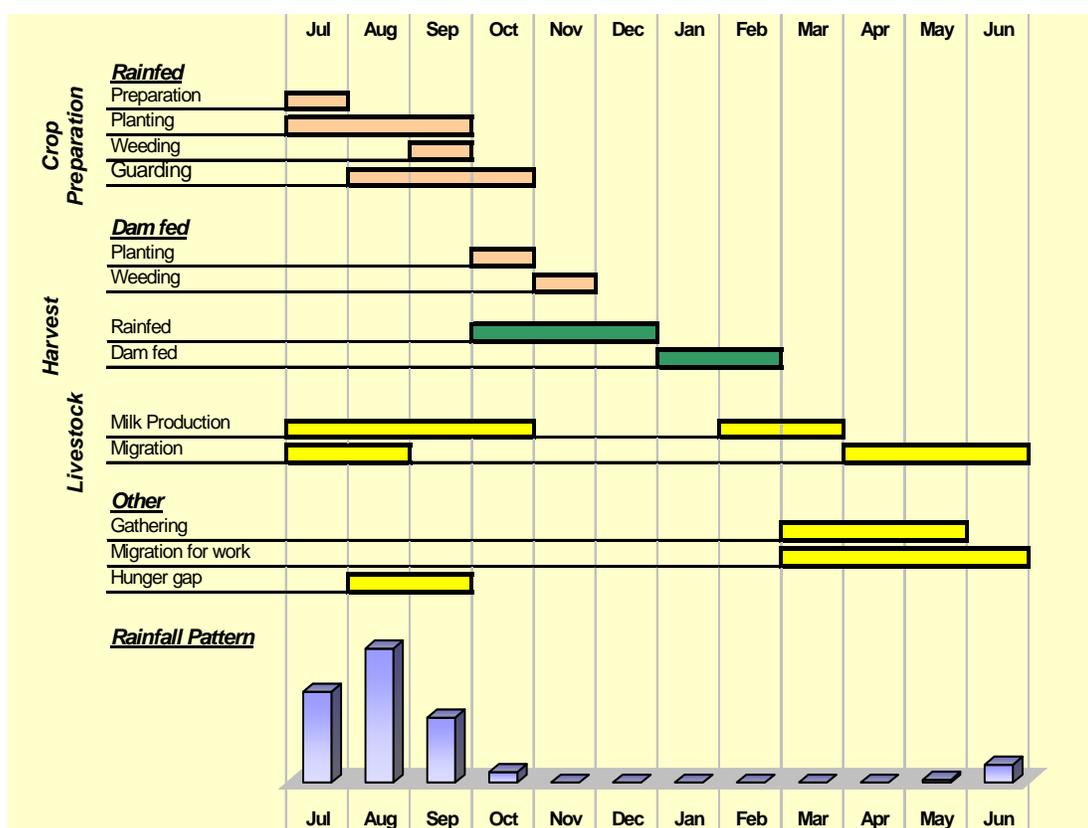
The zone is notable for the numbers of people who migrate elsewhere for work, whether seasonally or for some years. One direction of increasing migration is southwards to the Kayes region of Mali. Guidimaka and Assaba Regions are especially notable for the number of out-migrants, including those who have gone to France (often via a period in Senegal).

Seasonal Calendar

Fields are prepared in early July ready for planting. Once the harvest period is over, the men and adolescent boys head into town and beyond to look for work to supplement the household income, usually returning home in time to prepare the fields for the next agricultural season. Milk production falls by half or more beyond the peak season between July and October. But there is often another short

period of milk production just after the harvest, when the animals are allowed free access to the millet and sorghum stalks remaining in the fields. This is also the time when cattle of migrant herdsman may be allowed onto the fields of people with few or no cattle, since the cattle droppings provide an important fertiliser. Cattle and sheep are often taken further south for grazing in April, returning to the village after the start of the rains brings regenerated local pasture. Between March and May, some people collect gum arabic which is dried and then sold or used as a condiment or as a starch for clothes. The most difficult time of the year is usually August and September, just before the main harvest is ready.

The main commodities sold by households are sorghum, cowpeas and livestock. Grain and pulses go not only to Mauritania's urban market but also into Mali. The main foods purchased are sugar (with green tea), rice and wheat, all of which are imported into Mauritania via the port at Nouakchott or come up from Mali.

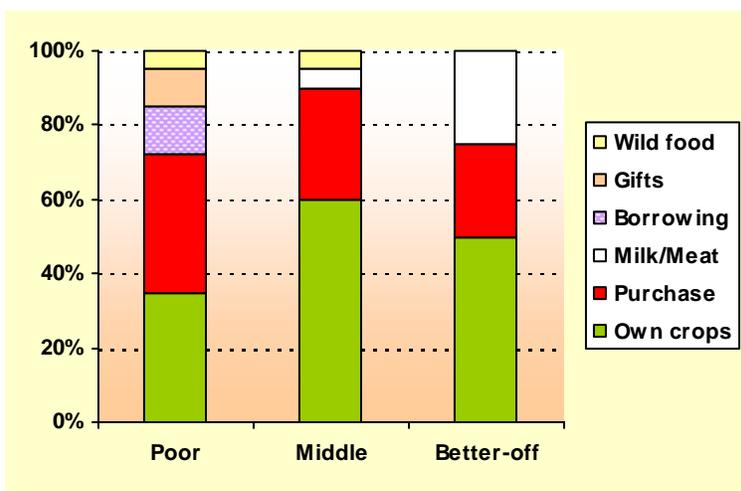


Wealth Breakdown

Although better off households are generally smaller than poorer households, they are able to cultivate larger areas of land by employing people to work for them, usually on a share cropping basis, whereby the poorer households cultivate the land and then receives a share of the harvest in return. Better off households also benefit from higher crop yields because they have traction animals for ploughing. Households in the middle wealth group might borrow one or two of these traction animals, but this is generally beyond the means of the poorer households.

		Wealth Group Information		
		HH size	Area planted	Livestock
Poor		10-12 members, of whom 5-6 active	2 hectares	7 sheep / goats, chickens, 2 donkeys
Middle		7-8 members, of whom 3 active	3 hectares	5 cattle, 20 sheep / goats, chickens, 3 donkeys
Better-off		4-5 members, of whom 2 active	4+ hectares	30 cattle, 1 pr traction animals, 100+ sheep / goats
0% 20% 40% 60%				

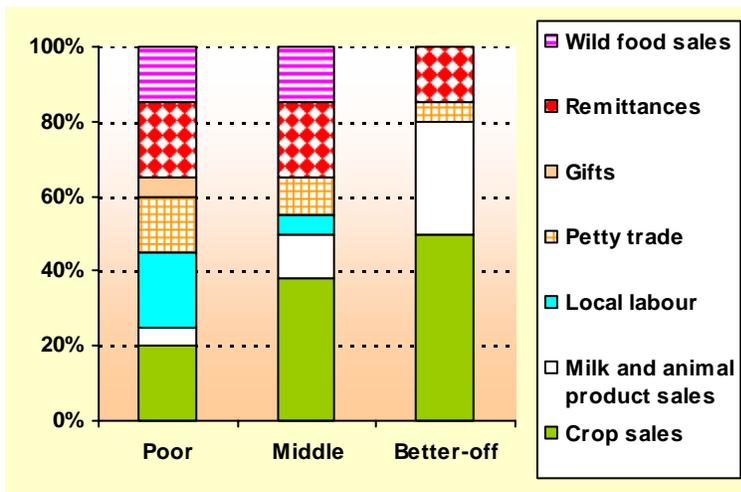
Sources of Food



Own crop production is an important source of food for all households in the zone, at relative proportions reflecting the means available to them. During the lean season, poor households obtain cereals and sugar on credit, on the understanding that they will reimburse the equivalent in monetary value after the harvest. Just before the harvest the price is high, while repayment occurs when the price is low which means that they have to repay a greater quantity than they borrowed. This therefore leaves them with relatively little of

their own harvest for their own consumption. Middle and better off households supplement their diet with milk, ghee and sometimes meat from their own herds. The better off households can afford to speculate on the harvest, selling it when the price is high, preferring to vary their diet with rice.

Sources of Cash



Poor households have diversified their cash income sources, which allow them to spread the risk of any one of them failing. An important source of cash for these households is the money that is earned by family members working in town, either brought back when they return in time for the next agricultural season or sent home if they are based long term in town. Middle and better off households earn most of their money through the sale of cereals, supplemented with some animal sales.

The small amount of cash earned by

poor households through livestock sales reflects the sale of one or two sheep or goats usually during the months of August and September, primarily to help purchase food to cover their needs until the next harvest. 'Local labor' mainly means that the poor earn money by working in the fields of better off households.

Hazards

Chronic/frequent hazards:

- Late rains or extended dry periods in mid-season are frequent limiters of crop performance.
- Every year, crop pests threaten the harvest, as do herds of cattle and small ruminants. These herds might be local or belong to transhumant pastoralists passing through on their way to take their animals to better grazing land further south.
- Illnesses of both animals and humans are also an annual problem, with the prevalence of malaria highest during September and November.

Periodic hazards:

- About once or twice in ten years, there is a drought. But when asked about *catastrophic* drought, people refer to the mid-1980s or even the early 1970s.

Response Strategies

- When the harvest is reduced and there is not much locally available pastureland, households respond in two ways: they expand existing strategies and, when the situation is exceptionally severe, they turn to a limited number of distress strategies.

Indicators of Imminent Crisis

- Rainy season starts later than usual
- Lengthy dry periods during the rainy season, especially threatening germination of cereals, or flowering

+Expansion of existing strategies:

Migration for work:

This is usually the initial response to hardship, and is done by adolescent men and boys of households in all wealth groups. Although this is an annual activity, if the harvest is likely to be poor they leave for town earlier than usual (from February) and may go further afield including to West African coastal areas or even to the Gulf.

Livestock sales:

This is an option for all three wealth groups, but yielding limited returns for the poor since they have relatively small herds. Although it is normal to sell some animals during the year, especially small ruminants, more are sold during difficult times. When times are particularly difficult then households sell their cattle.

Food purchase.

Food purchases can be expanded by using income generated from livestock sales or by reduced expenditure on non-food items. Another strategy is to borrow more food from traders, which is to be repaid at unfavorable rates after the next harvest.

Gathering wild produce.

Gum arabic is collected every year, especially by the poorer households. However collection is intensified in difficult years, and practiced by more people.

Retain harvest:

All households sell some of their harvest during the year. Following a poor harvest, the 'middle' and 'better off' try to hold on to more of their harvest, to ensure food stocks and as a buffer against future food price increases. The 'poor' are obliged to sell however, to repay their food debts from the previous year.

Indebtedness:

Although debt is a normal mechanism used for managing the household economy in all wealth groups, during a difficult year the poor and some middle start borrowing earlier and the level of debt increases.

Distress strategies:

Reduction in food consumption:

In general, households consume two main meals a day in addition to drinking milk and sweet tea. However, at times of severe food shortage poor and some 'middle' households limit themselves to one main meal per day; and milk is scarce.

Asset sales:

This is an option for all three wealth groups, and can include the sale of productive assets such as traction animals and carts or household goods including clothing. This has more severe implications for future recovery for poor households given their limited asset holdings.

- Overall, substantially lower than average total rainfall (calculated in October at the end of the rainy period)
- Acutely less, or lesser quality, pasture is available than in normal seasons.
- Active household members leave to look for work in urban centres in greater numbers and earlier than usual (January / February).
- Increased collection and availability of gum arabic on local markets.
- Increased and / or unseasonable sales of animals, usually resulting in lower than normal prices
- Cereal prices do not decrease at harvest time
- Fewer food commodities available at the local market
- Animal prices decrease acutely (early crisis sign – not early warning)

Mauritania Livelihood Profiles

Zone 7: Senegal River Valley

Main Conclusions and Implications

This zone forms the area of Mauritania's most concentrated arable wealth by virtue of the rice-irrigation potential along the Senegal River valley and also the associated flood-plain where large quantities of sorghum are produced. It lies mostly in the country's higher rainfall band. Nowhere in the country is safe from rainfall irregularities or the rarer droughts, but both are less marked here than further north. At the same time, irrigated production provides a buffer against local rain failure. Food insecurity linked to production failures is therefore at a lesser level than elsewhere in the country.



On the other hand, it is a paradox that an apparently relatively wealthy zone still has a high percentage of poor people – poor, that is, by the same standards as in other zones: owning/using small amounts of land, possessing few livestock or savings, and depending heavily on working for others near or far. In one sense the zone is the victim of its success: it has always had a denser population than elsewhere in the country, and to this is increasingly added the seasonal migrant laborers who come in from other zones to benefit from the very high labor demand made by rice production. In other words, the zone's economic engine runs on more than local labor, and wealth is therefore redistributed amongst more than a local population. For local poor households who attempt their own rice production, with its high fertilizer etc. requirements, the margin between profit and loss is slim and precarious: a bad year for crop pest will tip them over the threshold. Nor, given the rainfall variation from year to year, can they get guaranteed satisfaction from rain-fed crops or flood-retreat cultivation which also depends partly on local rainfall. Nevertheless, on the whole one can characterize poor people here as being income-insecure rather than food insecure.

Zone Description

This zone is defined by the irrigable strip of land along virtually the entirety of the north bank of the Senegal River which forms the national frontier in the south-east of Mauritania. The zone therefore runs along the southern limit of Trarza, Brakna, Gorgol and Guidimaka regions. However, not only the irrigable land is used: the zone is further defined by the land away from the river which households can effectively use who are involved in irrigated cultivation and who must therefore live near the river. This must be seen in terms both of walking distance and available moisture. Reasonable access on foot limits the zone generally to some five kilometers, and maximum around ten, beyond the river. Moisture beyond the irrigated strip comes crucially from the annual incursion of the river on its flood-plain – the *walo* - allowing flood-retreat cultivation especially of sorghum. But additional moisture from the local rains is also important for *walo* cultivation. Beyond the *walo*, i.e. beyond two to three kilometers, land may be used for rain-fed cultivation or for extensive grazing. However, the zone runs from the east

(Trarza and some of Brakna) along a latitude where rainfall is around 200mm per annum: here there is relatively little *walo* cultivation and virtually no rain-fed cultivation unless in moisture-holding depressions – *bas fonds*. Only as the zone descends into the 250-300mm per annum rainfall area in Brakna, and then further south-east to 350mm and somewhat over 400mm rainfall per annum, do both the *walo* and rain-fed cultivation become important.

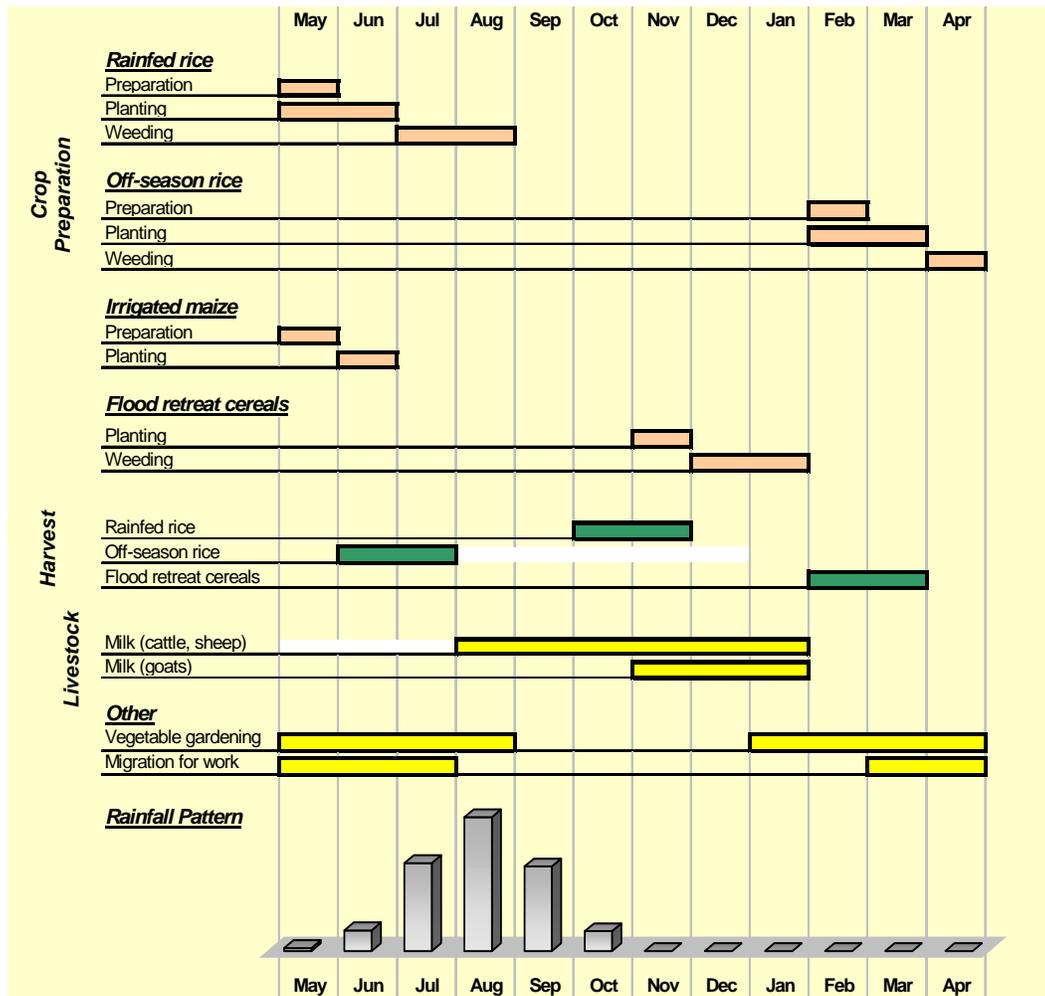
This is the most densely-populated zone of the country, and the zone where land is most at a premium. It is true that land is also at a premium around the oases of Zone 2 and the *bas fonds* or dams of Zone 5 (agro-pastoral), but there livestock forms a major balance of livelihoods. Also in the extensive Zones 5 and 6 (rain-fed cultivation) arable land is still relatively plentiful in relation to population density, and economic success depends rather upon the capacity to exploit land in terms of labor and inputs. In Zone 7 these elements are important too, but the main key is access to land. This comes both from traditional land-holding rights and from purchase, the latter becoming important mainly since commercial rice cultivation began in earnest some 30 years ago. It is only on government-run irrigation schemes that there is a nominal equality in irrigated-land access as between better-off and poorer people. But even when pumping costs and fertilizer and other inputs are subsidized, there is still not equality in the success of rice production. One element is the capacity to fund sufficient inputs even with (now disappearing) subsidy; and only the better-off are in a position to buy and maintain motor-pumps for irrigation. But rice also demands relatively high labor inputs, and this makes a crucial difference between those who can provide substantial family labor and/or hired labor and those with family household labor and no extra funds for hiring. The only way for many poor to people to increase the land available to them is through share-cropping on better-off people's land where inputs are guaranteed by the owner.

Over the years, a number of wealthy people have invested heavily in operations on several tens, even hundreds, of hectares. In general these have not been the major economic success hoped for, apparently because local skills and experience have been lacking by comparison with equivalent operations on the Senegal side of the valley. But at the more modest level of households cultivating one hectare or less, or at most two, rice cultivation has increased over the years, showing that the relation between risk and profit has been felt more favorable here than in other local production options, especially rain-fed cultivation and livestock rearing. The main culprit here has been drought or lesser but still serious rain failures, such that in general people have lost too many livestock and have tended to abandon extensive rain-fed cultivation for intensive irrigated cultivation which depends far less on local rainfall conditions. Mauritania still imports the bulk of the rice consumed, so that local rice, mainly of a higher quality, retains at least import parity value.

In between the irrigated and rain-fed cultivation the *walo* provides production conditions which virtually all households try to exploit every year. Indeed with the exceptionally voluminous rains of 2003 many rice paddies were overtaken by damaging floods whilst the *walo* offered record areas for flood-retreat cultivation – a promise broken however in large areas by the high depredations of stem-borers and crickets on the sorghum. Normally much of the sorghum is used for domestic consumption, but Mauritania is far from self-sufficient in cereals, and sorghum finds a market not only in the cities but amongst herders and others as far as the far north of the country. In short, Zone 7 shows the highest productivity in the country in terms of cereals (although Zone 6, Rainfed Agriculture produces the greatest absolute amount of cereals); but Zone 7 is limited in livestock holdings given the difficulty of finding local pasture for animals beyond the cultivated fields once the crop residues have been consumed after harvest. The few people with substantial numbers of animals tend to contract herders to take animals for far grazing during a good part of the year.

Seasonal Calendar

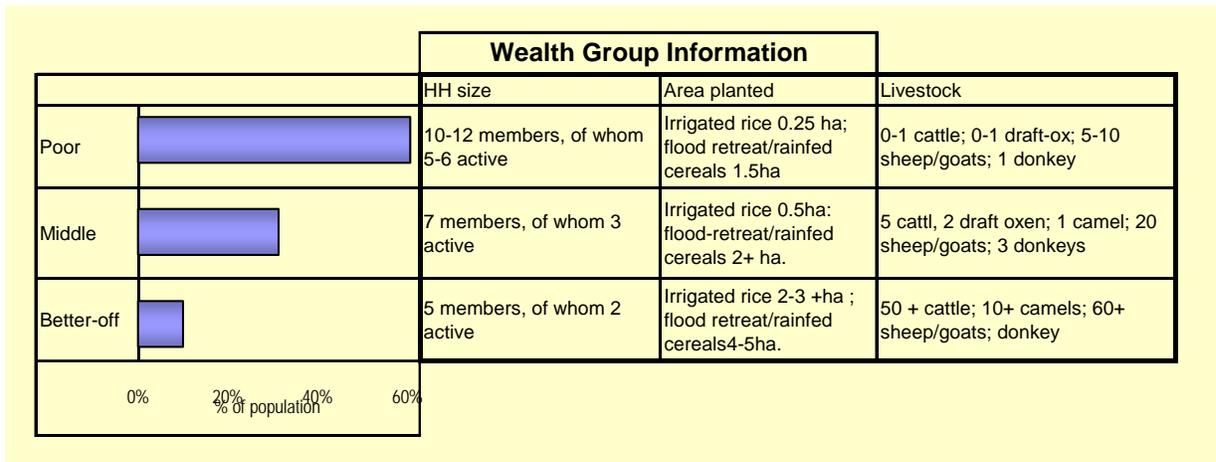
The combination of irrigated, flood-retreat and rain-fed cultivation means that there is no agricultural 'down season', but rather activity at virtually any point in the year. This is why the area is a magnet for migrant workers coming in from other zones; nevertheless for the local poorer households, sending a member away on migrant work, including into Senegal, often brings more earnings than local work, where there is competition with incomers.



The *walo* harvest is largely of sorghum, with some millet and maize, intercropped cow-peas. The timing of the harvest in the February-March means that prices obtained on the market are relatively high, given that the main rain-fed harvest period is well past, with its low prices, and the market is ready for more grain.

Wealth Breakdown

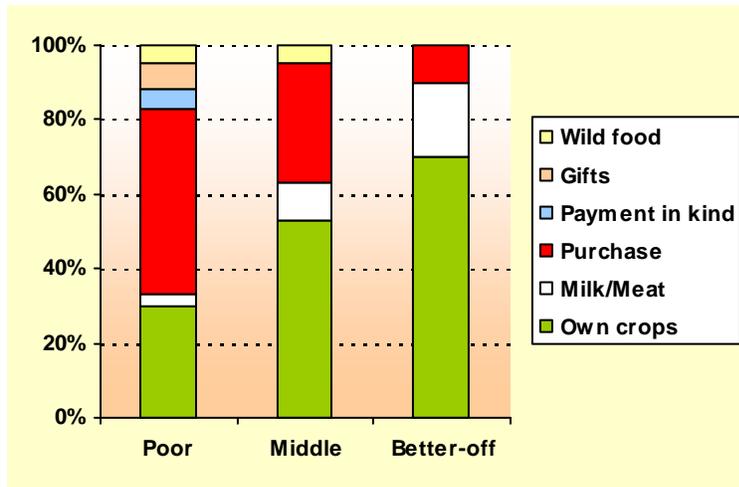
To recoup input and labor costs and also make a profit, rice must yield at least 3 tones of paddy per hectare. Optimal inputs and labor gives around 5 T/ha. The poor with .25 ha at 3T/ha will end up with about 0.5T of polished rice of which half or more must be sold to repay credit on inputs. They are therefore under pressure to exploit the *walo* or rain-fed fields to fill the household granary - but are



faced with difficult calculations on the opportunity cost of labor investment given local rainfall and crop-pest risks.

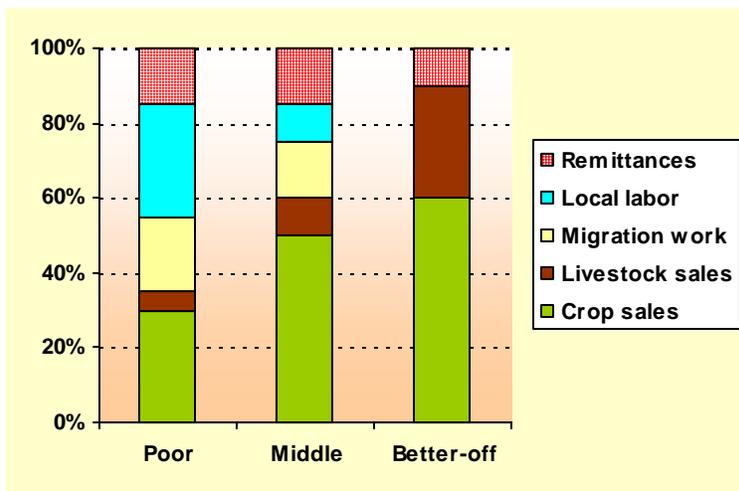
The comparatively low proportion of active labor per household amongst both poor and middle households merits further inquiry. In part it may reflect the tendency to polygamy amongst the riverine ethnic groups and more young families (high dependency ratio). But it may also reflect some confusion in the field concerning the definition of ‘active’ members, i.e. between those working locally and those on work migration (*exode*) on which many families heavily depend.

Sources of Food



The poor and some middle households too, ‘purchase’ grain in two ways: either directly from the market or traders or through credit in kind from traders or others which must be paid for later. For the poor that form of credit usually amounts to two-thirds of their overall ‘purchase’, i.e. they are always in a cycle of debt for food as well as for agricultural inputs paid for on credit. The better-off have no need to purchase basic food but do so out of preference especially for wheat products in the form of pasta, couscous or bread.

Sources of Cash



As noted in the section above, for the poor a good proportion of their cash income commonly goes into debt repayment. Their local employment is mainly agricultural but also entails other service especially if they reside near a town. The better-off gain a not dissimilar proportion of their cash income from crops, mainly rice, compared with the middle group, but this represents a greater absolute amount of cash from a greater volume of grain. Remittances are important in all groups, but are of different

origin. For the poor they may come from kin on long-term work migration (more than one year) or settled permanently in cities in semi-skilled occupations. For the better-off and middle group remittances tend to come from family members who have been through enough education to gain professional salaried employment or who have successfully entered into commerce.

Hazards

Chronic/frequent hazards:

- Poor rainy seasons especially affecting rain-fed and flood-retreat crops
- Crop pests – crickets, birds, and especially on sorghum stem-borer; also crop disease
- Livestock diseases
- A debt spiral for poor households investing inputs in rice production with only marginal, and therefore risky, returns.

Periodic hazards:

- All of these hazards are relatively infrequent, i.e. twice or less per decade:
- Local drought
- Lower flood-level due to rain failure up-stream or manipulation of the Manantali dam in Mali
- Damaging flooding of paddy fields due to excessive local rainfall

Response Strategies

Expansion of existing strategies:	Distress strategies:
<p><u>Livestock sales</u>: Limited options for the poor since holdings are low.</p> <p><u>Early work migration (<i>exode</i>)</u>: e.g. before <i>walo</i> sorghum harvest due to failure</p> <p><u>Remittances</u>: increased dependence on transfers in cash or kind from kin in the cities or abroad</p> <p><u>Indebtedness</u>: borrowing from kin or taking sacks of rice/grain on credit from traders</p> <p><u>Reduction of festive consumption</u>: during religious holidays</p>	<p><u>Livestock sales</u>: sale of milking or draft animals</p> <p><u>Extended work migration</u>: e.g. worker not returning for a year or more;</p> <p><u>Reducing meals</u>: in frequency and substance</p> <p><u>Sale/lease of irrigable land holding</u>: This is a last option; land bought/leased by better-off may be used later by original owner as share-cropper</p>

Indicators of Imminent Crisis

- Low water-levels of river from May;
- Late/very low rainfall in July leading to late/failed planting on rain-fed land;
- Acute reduction of *walo* flood from August;
- Early departure for migrant work – e.g. January instead of March