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WATER,

RESOURCE USE & CONFLICT



The case of the Senegal river



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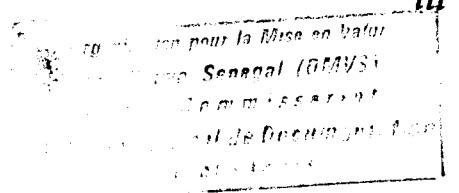
ABSTRACT:

This thesis' focus of study is water, resource use and conflict. Access to and management of the river water and the land resources along the Senegal river is linked to competitive resource use and potential conflicts on a local, national and/or international level. The resources in the river region are of crucial importance not only to the riverine populations, but also as a production and income source for the states involved. The river basin is shared by Mali, Mauritania and Senegal, where the river constitutes the border between the two latter states. Drought and desertification threaten the whole region and have exacerbated the fight to control the fertile land along the river.

The water management cooperation between the states involved has taken place within the framework of the Senegal River Development Organisation (OMVS), and the construction of two major dams has been the central occupation. This implies that both national and international interests and investments have influence on present and future resource management in the region. The local population can no longer operate only with their traditional production systems and methods, but have to relate to changes in tenure legislation and property regimes, and compete with the authorities and external capital forces. The conflict between Senegal and Mauritania which escalated in 1989, has aggravated the situation.

The conflict originated inside Mauritania where severe ecological degradation forced a major part of the nomadic population to give up their life style and migrate to urban or more fertile areas. Many Moors have come to settle in the southern river region which has been inhabited by Negro-Africans for centuries. Ethnic hostilities between these two groups, Moors and Negro-Africans, have become more intensified as the Beydans (white Moors) control political power and thereby can implement policies to favour their own ethnic group. Negro-Africans on the two river banks often belong to the same families. Hence many Senegalese have had lands in Mauritania and vice versa. This interaction implied that the riverine populations did not recognize any border separating the two river banks. When the Mauritanian government started the implementation of the new land tenure policies in 1983-84, gradually many Senegalese were affected and the situation developed into an interstate conflict.

PREFACE AND ACKNOWLEDGEMENTS



After taking the decision that the Senegal River Valley was to be the framework of this thesis, I started the patience demanding and time consuming work of collecting the necessary literature.

I have been following the Senegal-Mauritanian conflict since 1989 and have also been engaged in solidarity work for Mauritania for some years. Therefore I had already come across quite a few articles in international periodicals and newspapers which dealt with the conflict. Management of the water and land resources was however not the central issue in these references. Hence the preparatory work started with literature search at the Scandinavian Institute for African Studies (NAI) in Uppsala, Sweden in November 1991. Several visits to the International Peace Research Institute of Oslo (PRIO) and my supervisor Karin Dokken provided me with other references. Living in Denmark during spring 1992 gave me the opportunity to visit Copenhagen and Centre for Development Research, Mellemfolkeligt Samvirke and The Royal Library. Roskilde University Centre was also one of the more useful libraries.

While collecting materials and working out the preparatory research proposal, the key questions which this thesis was to highlight became clearer.

It was evident from the beginning that I was not going on an extensive five months fieldwork, primarily because of having given birth in August 1991 and the limited possibility of bringing my child with me to such a marginalised and, at the time, and maybe in the near future, unstable area. I still wanted to go through the process of collecting some primary data of my own and not at least to see the area and conditions of the people there in real life.

My gratitude goes to the many who are more or less directly involved and thereby made this study process a reality:

I want to thank NORAGRIC, first for organising the MNRSA-programme and secondly for giving me the possibility to participate. My fellow MNRSA students gave me the inspiration to continue when my own motivation was low.

Concerning the thesis, my supervisor, Karin Dokken, kindly took the responsibility to guide me through the whole process. From my first vague thoughts until the very end, she has provided me with ideas and constructive feedback. Both Anne Mossige and Cassandra Bergstrøm at NORAGRIC took their time to read through premature versions. Their linguistic and "technical" assistance as well as useful comments on the content, have been of great help.

I was lucky to get a student scholarship and a working desk at PRIO. My thanks go to the whole staff and especially the third floor students who were there when frustration wanted to take over.

The travel to Senegal in July-August 1992 provided me with a lot of information I had hoped to find. Many people and institutions were there to make the fieldwork a successful experience: First of all ENDA-SYSPRO which was my primary contact and institutional affiliation during my stay in Dakar. They provided practical support such as housing and gave me many names of useful contacts up at the river. My special thanks goes to Amy Wright-Tall and her family for the warm welcoming, and to Moussa Seck for his advice. In addition, I want to thank Muneera Salem-Murdock at the Institute for Development Anthropology (IDA), Philippe Engelhard at ENDA-SYSPRO and Christian Santoir at ORSTOM for their invaluable research in the Senegal River Basin. Arouna Fall at UNDP was most helpful. His many contacts all over Dakar provided opportunities to meet personnel in the "post-dam cell" (CAB), which in turn opened the way to the USAID and the World Bank.

In the river region, Djiby Sall at OMVS in Saint-Louis, and Mr.Faye and Mr.Niang at UNCHR/OFADEC headquarters in Rosso did not hesitate in assisting in every possible way. Warm thanks go to the deported Mauritanian refugees in BokiDiavé, Ndioum, Ando and Dagana for their hospitality and the inspiration they gave to the

continuation of this work, and especially to Fadel Ousmane Touré, whose knowledge about the area provided me with invaluable information.

Of the many "private" supporters, first of all I have to thank my daughter, Oda-Kange who decided to join this world in the middle of the MNRSA-programme, and since her arrival without reservation, has given me the most beautiful smiles and energy to start the day. My parents have been the best possible grand-parents and given Oda-Kange a second home during my fieldwork in Senegal and whenever I needed a break from the daily struggle. My two brothers, Stein and Tor, and Anu-Kati, were ready to give a helping hand when it was needed. Elisabeth and Ingeborg; what should I have done without you? Last, but not least, my love goes to my partner and "cuvâzo", Garba, who opened my eyes to the situation and never lost patience when being confronted with my many small or large questions.

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ACRONYMS:

CAB	Cellule Après-Barrage, "post-dam cell" (part of the Senegalese Ministry of Planning and Cooperation)
CR	Communauté Rurale; Rural Community Administration
ENDA	Environmental Development Action of the Third World
GIE	Groupement d'intérêt Economique; (local farmers' organisation)
IBRD/BIRD	International Bank for Reconstruction and Development (World Bank)
IDA	Institute for Development Anthropology (Binghampton, USA)
IUCN	International Union for Conservation of Nature and Natural Resources
OFADEC	Office Africain pour le Développement et la Coopération
OMVS	Organisation pour la Mise en Valeur du fleuve Sénégal; Organisation for the development of the Senegal River
ORSTOM	Institut français de recherche scientifique pour le développement en coopération (earlier: Office de la Recherche Scientifique et Technique Outre Mer)
PASA	Programme d'Ajustement Structurel Agricole; Agricultural Structure Adjustment Programme
PDRG	Plan Directeur Rive Gauche; Left Bank Master Plan

PIV	Périmetre Irrigué Villageois; Village Irrigated Perimeter
SAED	Société d'Aménagement et d'Exploitation des terres du Delta du Fleuve Sénégal et des vallées du fleuve Sénégal et de la Faleme; Delta Canal Development Corporation, Senegal
SAL	Structural Adjustment Loan
SONADER	Société Nationale pour le Développement Rurale, Mauritanie; National Company for Rural Development, Mauritania
SRBMA	Senegal River Basin Monitoring Activity (IDA and USAID)
SRV	Senegal River Valley
UNDP/PNUD	United Nations Development Program
UNHCR	United Nations High Commissioner for Refugees
USAID	United States Agency for International Development

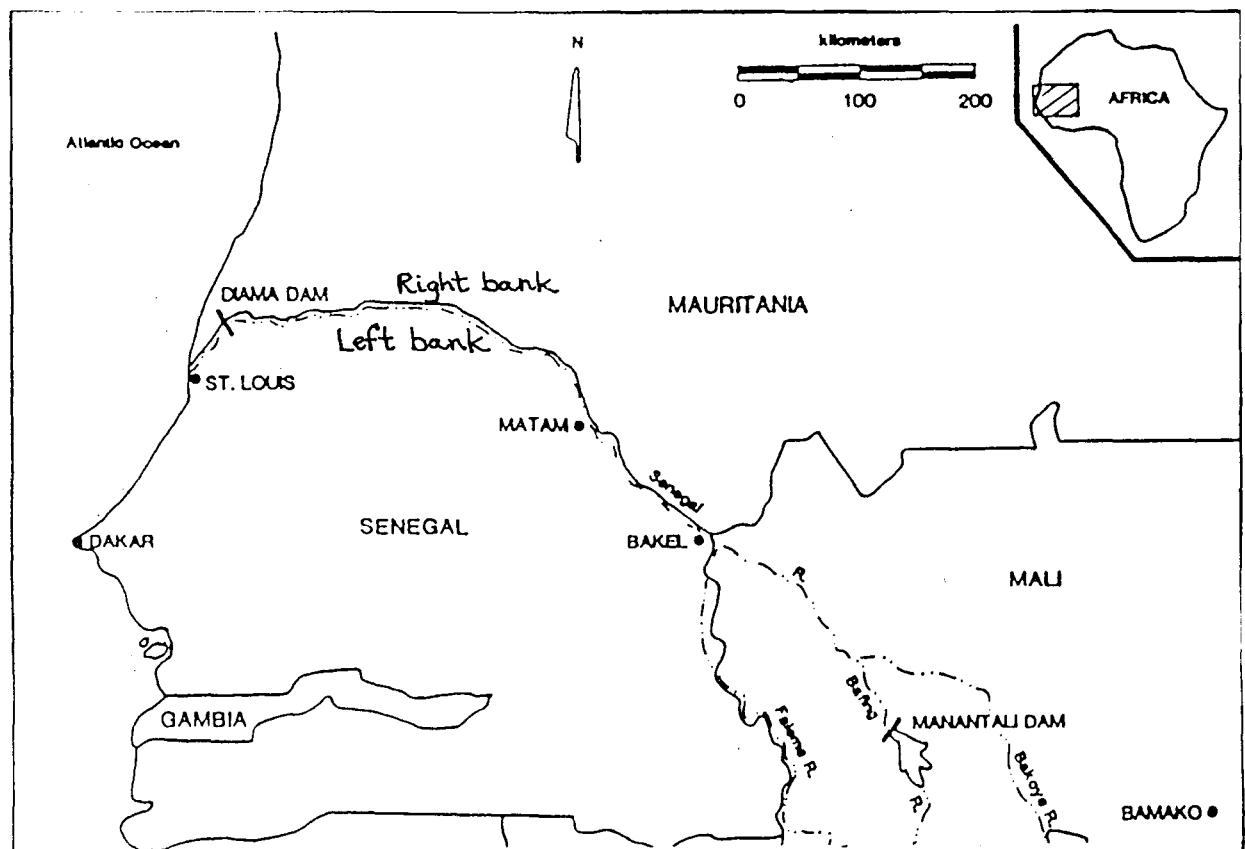
CHAPTER I

INTRODUCTION AND OBJECTIVES OF THE STUDY

1.1 FOCUS OF STUDY

This thesis will examine the Senegal River. The focus is the issue of access to and management of the river water and the agricultural land along this West-African river, and to what extent these vital natural resources can be linked to the recent Senegal-Mauritanian conflict.

FIGURE 1.1. THE SENEGL RIVER BASIN



(Source: World Rivers Review 1990)

A sustainable river basin management requires cooperation between the riparian states. The Senegal River Basin development organisation; Organisation pour la Mise-en-Valeur du fleuve Senegal (OMVS) , has been the coordinator of the construction of the Diama and Manantali dams during the last decade. The control of the river water and incorporation of the region's economy into the world market have given rise to new expectations as well as increased the value of the land along the river. The shift from traditional flood recession to irrigated agriculture is about to alter the riverine populations' way of life altogether. This has coincided with a severe

ecological degradation, especially in Mauritania, which in turn has increased the competition over scarce resources in the river region.

The Senegal-Mauritanian conflict

The problems which finally developed into the 1989-conflict started inside Mauritania. The **ethnic hostilities** between the Negro-African and the Moor communities in the country had been growing with the Moors' political dominance since independence from France in 1960.

In addition a shrinking resource base which came as a result of severe ecological degradation, pushed the nomadic population southwards. The pressure on the river region increased as competition for pasture and agricultural land accelerated. This was further accentuated by the Mauritanian government's introduction of a new tenure legislation in 1983, which abolished all traditional property regimes. The situation developed until the actual conflict broke out in 1989.

The break-up that came with the escalation of the conflict affected the population, both along and across the border.

The close link between Negro-African groups living on the north and south, or the Mauritanian right and the Senegalese left river bank, had until 1989 implied a certain exchange of pasture and crop land. This meant that there were many Senegalese who had interests, i.e. land, in Mauritania, and who became affected by the action of the Mauritanian government, and therefore the situation gradually developed into an inter-state conflict.

The people of the river region consider the conflict to be primarily an internal Mauritanian conflict, and hence, they object to the term 'the Senegal-Mauritanian conflict'. They argue that if the conflict had been a strictly inter-state conflict, it would have been more or less solved with the restoration of diplomatic relations. As it is, the actual problems causing the conflict are not yet solved.

The reason why this thesis still will use the term the Senegal-Mauritanian conflict, is that it is by this name the conflict is referred to in the media and by the world outside.

Two integrated countries

Although the area has a long history of empires and kingdoms, it was the colonial era that introduced the concept of modern nation-state. As a result, the riverine populations were left with a border separating the two new states, Senegal and Mauritania. The people of the area had always considered the two river banks a common territory, and used resources on both sides according to activity and season.

Until 1960, both Senegal and Mauritania were part of the colonial French West-Africa. Traditionally, people from the region, which suddenly was proclaimed to be two independent countries, were used to a continuous exchange of goods and labour. Several hundred thousand Mauritanian Moors were established in Senegal and mostly engaged in commercial activities, while tens of thousands of Senegalese had been living and working in Mauritania for decades or even for generations. This socio-economic integration between the people of the two countries and especially between the populations on the two river banks did not create any particular problem until the severe drought in the early 1970s, and the pressure on the fertile river region increased. Nevertheless, this interdependence implies that development of one river side would effect development of the other.

1.2 CHOICE OF OBJECTIVES

It is against this background, that the Senegal river is seen as representing a potential for life and income as much as a conflict source. This applies not only to the people and governments of today, but also to future generations and their production possibilities and strategies for survival. I felt that it was needed to take a closer look at the competitive resource use connected to the river to understand the many and complex management systems and the processes that led to the 1989 conflict.

Consequently it is interesting to take a closer look at the factors that determine access to these vital resources and also examine further their impact on the Senegal-Mauritanian conflict.

The two main questions

The following two questions constitute this thesis' objectives and focus of interest:

- 1) Which factors determine access to and management of the river water and the agricultural land along the Senegal River?
- 2) To what extent does access to and management of these water and land resources underlie and exacerbate the recent Senegal-Mauritanian conflict?

FIGURE 1.2 THE STUDY OBJECTIVES:

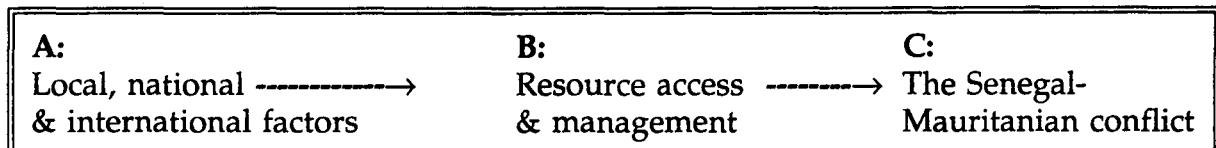


Figure 1.2 is an illustration of the study objectives. The implication from A to B corresponds to main question 1), and the implication from B to C corresponds to main question 2). In order to find out to what extent access to and management of the resources in focus underlies and exacerbates the Senegal-Mauritanian conflict, it is necessary to have an understanding of what is hiding behind the concept of 'resource access & management'. This can be obtained through the presentation and discussion of the local, national and international factors which either separately or collectively determine access to and management of the resources in question.

It would also have been possible to analyse another implication, i.e. the implication from C to B, which could be summarised as the effects of the Senegal-Mauritanian conflict on resource access and management. Although such an analysis lies beyond

the scope of this study, one cannot avoid touching this implication when talking about the conflict, e.g. the deportations etc. However, it is the implication from B to C and not vice versa which is the main focus in this study.

Further operationalisation of the main questions

Although the problem of water and conflict is old, the interest for research related to this field seems to be relatively new and growing. Hence it is relevant to pose questions of a general character. However, since the objectives of this thesis are formulated as general questions, it is important to highlight the many potential components and multidisciplinary subquestions implied in the general framework. Such subquestions open for possibilities of further operationalisation of the two main questions.

Subquestions

The subquestions which this thesis attempts to answer are the following:

- a)** Traditional and modern riverine production systems; how are water and land resources used today and by whom?
- b)** How do national policies in Senegal and Mauritania, especially tenure legislations, affect the water use and farming systems along the river?
- c)** To what extent can the competition over river resources be a source of conflict which threatens environmental security and cooperation?
- d)** What is the status of the existing interaction between the two river banks, and the prospects for a sustainable development for the riverine habitats and production systems, given the OMVS development projects and the role of the donors?

If one examines these subquestions all of them have incorporated components from both main questions. Together they give a better understanding and clearer picture of the factors that determine resource access and management. In addition they highlight the potential link between competitive resource use and the outbreak of the

conflict. Subquestion a) is discussed in chapter III and VI, subquestion b) in chapter IV and VI, while subquestion c) and d) are discussed in chapter IV, V and VI.

1.3 ENVIRONMENTAL SECURITY

When the ecological environment suffers from resource degradation there is a danger for an outbreak of conflict. Such danger increases with the increased value of the resources in question. The more serious the degradation, the more valuable are the productive resources and the tougher is the competition to control them. This is also the case in the Senegal River Valley:

Since both Mauritania and the northern part of Senegal are located in the Sahel region they are exposed to harsh ecological conditions with constant water shortage and a marginal resource base. When the resource base suffers from degradation, the value of resources connected to water, such as agricultural land, increases continuously. Under such conditions, it is a challenge to achieve the necessary **environmental security** and develop the local resource base.

The environmental security concept (discussed in chapter 5.4) suggests that scarce natural resources might be a direct cause, not only of resource use conflicts at a very local level, but may create conflict between different ethnic groups and nations. Hence the basis for sustainable development is threatened.

Sverre Lodgaard explains:

"Environmental security may be defined along three dimensions:(1) sustainable development of resources; (2) environmental protection in the traditional, more narrow sense of the term, meaning clean air, clean water, unpolluted soil etc.; and (3) minimization of risk... It follows that **environmental degradation** may be defined as degradation of the state of environmental security, i.e. a negative change on the same dimensions (Lodgaard 1992:20)

The ecological conditions in a region are linked to that region's political and economic situation. Proper resource management often requires **international cooperation**. The more scarce the resource base, the stronger is the need for such cooperation.

In Africa such cooperation efforts exist in several regions where a shrinking resource base threatens the existence of future generations, e.g. along the Sudano-Sahel belt and in the Horn of Africa. These inter-governmental authorities have been established for the purpose of achieving inter-state cooperation in the management of natural resources. Examples are the already mentioned OMVS, the Inter-Governmental Authority on Drought and Development (IGADD) , with six member states in the Horn of Africa, and 'Comité Inter-États de Lutte contre la Sécheresse du Sahel'; Interstate committee to combat drought in the Sahel (CILSS).

In order to establish a framework which can explain what natural resources are and how they eventually are shared, I will include a general presentation of flow resources and shared natural resources, and then take a closer look at water resources.

1.4 FLOW RESOURCES, SCARCITY AND CONSUMPTION

Rees (1990:7) defines resources to be:

..."an aid or means of support to the human species; they cannot be assessed other than through the meanings or values which people attribute to them."

There are two main categories of resources; stock and flow, or non-renewable and renewable. Stock resources do not constitute part of the management of natural resource discussion in this thesis. Hence, I will immediately jump to Rees' (1990:15) definition of flow resources:

"Flow resources are defined as those which are naturally renewed within a sufficiently short timespan to be of relevance to human beings; they include water, air, animal and plant life, solar radiation, wind power and tidal energy."

Rees underlines the important distinction between critical zone and non-critical zone flow resources. Examples of the former are soils which can be transformed from a flow resource to a short-lived stock resource because of human overuse or misuse. The same applies to aquifers such as those in the Sahel. Being products of past climate regimes, they might be exploited to exhaustion with no hope of recovery for

hundreds of years. Rees (1990:55-58) also points out that flow resource scarcity and degradation may be more pressing problems than stock resource exhaustion. She further claims that degradation and depletion of flow resources is connected to these resources status as 'common property' which cannot be privately owned. What Rees refers to as 'common property' should rather be labeled as 'open access' (confer the property regime discussion in chapter 4.3).

Rees argues moreover that the concept of 'scarcity' is cultural. If there exists an alternative, depletion or even extinction of a resource does not necessarily mean scarcity.

Shared natural resources

Some flow resources are shared by two or more nations. Examples are international rivers, running through or on the border between countries, air and international seawaters.

The General Assembly of the UN declares in their charter of Economic Rights and Duties of States, in article 3, adopted on December 12, 1974:

"In the exploration of natural resources shared by two or more countries each State must cooperate on the basis of system of information and prior consultations in order to achieve the optimum use of such resources without causing damages to legitimate interests of other States." (Godana 1985:8)

1.5 WATER, A VALUABLE RESOURCE

Water is essential to life. The value of water is particularly important in arid and semi-arid areas.

The UN declared the 1980s to be a water decade. One important objective of this declaration was to make clean water available for all human beings by the end of the decade. Underlying this noble goal were expectations of improved health and hygiene, better living conditions and improved management of local resources, increased food production and possibilities for economic surplus/benefit.

When one considers local water resources one finds that they are not only to the

interest of the local population, but also have consequences for how nations plan and form their resource management policies. Hence local water resources may create potentials for cooperation or conflict at both local and international levels. Having ownership rights of water resources gives status and power. The drier the climate, the scarcer are the water resources and more crucial is the water issue.

Water shortages which affect nearly fifty per cent of the world's population (Rees 1990:243) reduce human health and welfare and exacerbate difficulties in improving agricultural yields.

Clarke (1991:66) argues that water shortage has many dimensions and that because of being such a heavy water user, irrigation and hence, crop production are among the first to suffer when water supplies are inadequate. In the battle for water, farmers have a tendency of losing in competition with cities. Clarke points out that the first signs of water stress can involve conflicts between different types of water users, e.g. farmers and urban populations (*ibid*:77).

Rees categorises scarcity of resources like water and fuelwood as follows:

"These types of scarcity are created by a complex of economic, social, demographic, institutional and political conditions, and they are not amenable to simple solution... Moreover, baseline scarcities cannot simply be solved by investments in water supply provision, irrigation and other technical means of increasing the availability of resource products. The history of the 'green revolution' provides ample evidence that technological and financial aid packages have to be accompanied by socioeconomic, political and institutional change." (Rees 1990:244)

The scarcer the water resources the harder is the competition to control them, and the larger is the potential for water conflicts.

Conflict over access to fresh water has a long history. According to Clarke the Mesopotamian cities of Lagash and Umma were in dispute over water as early as 4500 BC. Clarke further argues that developing countries suffer from a general absence of treaties to regulate the use of shared river basins. Africa has 12 river

basins shared by four or more nations. According to Clarke the existing treaties are not sufficient to regulate their use:

"A lack of international agreements over water increases the potential for dispute. Competition for water is also intensifying as limited resources come under pressure from increasing populations, particularly in developing countries, and climate changes increase water scarcity in arid and semi-arid regions. Many water-scarce regions are located in the shared basin of a major river system; the fact that these regions are often areas of political instability increases the potential for international dispute still further." (Clarke 1991:90-92)

It seems that if water resources are shared by several states, the only way to avoid conflict goes through a regulated framework of cooperation. I will now take a closer look at the concept of 'international water resources'.¹⁾

International water resources

Godana presents in his book 'Africa's shared water resources' a modified version of O'Connell's (1965) definition of international water resources:

"Rivers and lakes together with their tributaries and distributaries, or fluvial inlets and outlets - now commonly known as drainage basins - and ground water systems which lie within the jurisdiction of two or more states" (Godana 1985:1).

He further categorises these international water resources under the term 'shared natural resources'.

A UN register of international rivers (sited in Clarke 1991:91) shows that 47 per cent of all land falls within international river basins. Nearly 50 countries have more than three-quarters of their land in such basins, and in terms of human population almost 40 per cent live within them. Since the majority of the population is concentrated in the vicinity of rivers, the potential for water conflict is as big as the need for cooperation is evident. Africa alone has 70 out of the world's 214 shared river basins, which constitute a significant portion of the freshwater resources of the world (Godana 1985:2). Proper management of these shared water resources stresses the need for international cooperation.

"It is only the last fifty (now seventy) years since the increased

development of hydro-electric power and since the introduction of systemic irrigation planning for the large arid areas of Asia, Africa and America, water relations between states have come to form extensive legal problem." (Berber, 1959, in Godana (1985:3))

The difference between sovereignty over water -a moving mass - and sovereignty over static territory of land has led to the emergence of conflicting interests between co-basin states. Due to the nature of drainage basins, water use in one part of the basin necessarily effects the use in other parts. Unilateral development of water resources can be done at the expense of an optimal utilisation and have far-reaching effects which threaten co-basin countries with ecological and economic disaster. (Clarke 1991:90) International law could be used to regulate such problems. Godana argues (1985:5) :

"Thus the physical, economic and political facts affecting international drainage basins strongly demonstrate the need for international cooperation and, consequently for the development and application of principles of international law..., the appropriate law has to be one of cooperation and not just the classical international law of coexistence."

According to Godana the Nile, Niger and Senegal rivers are not only among Africa's shared river basins, but they are the most advanced in terms of legal and institutional framework. Nevertheless, management of these rivers basins has created more conflict than is the case for other larger and more well watered African river basins such as the Congo and the Zambesi. (Godana 1985:11)

The Senegal River

Compared to the the largest international rivers in Africa, like the Nile, the Congo-Zaire or the Niger, the Senegal River is much smaller in size. According to different geographical sources and periods of time, the length varies between 1600 and 1800 km. (Marchés Tropicaux 1981:1063). Nevertheless, its importance as a source of life for people in the river basin is uncontestable. The river basin covers an area of approximately 300,000 square kilometers divided between the three riparian states; Mali, Senegal and Mauritania. (OMVS 1979:6). Most of this river basin is located in the Sahel region, where water scarcity is a recurrent problem. Hence the river constitutes one of the more reliable water sources. 1,700,000 people occupied this river basin i 1985, of whom 583,000 were in Mali, 692,000 in Senegal and 425,000 in

Mauritania.(Horowitz et al. 1991:11)

1.6 AN INTERDISCIPLINARY APPROACH

In the introduction to one of the recent publications about the River Valley, the editors underline the importance of treating the river as a global and complex system that needs integrated management, at least if one wants to avoid disappointment and irreparable mistakes. Further, a multi- or interdisciplinary approach is needed to understand the major transformations and the complexity of the situation in the region. (Crousse, Mathieu, Seck 1991:10)

This thesis relies on an interdisciplinary approach by the use of components from the following disciplines: ecology, political economy, tropical farming and production systems, resource planning and management, social anthropology and political science (cf. ch.2.3). The study sees the Senegal River Valley as a regional entity, despite the fact that it is shared by two different countries where geographical conditions and ethnic distribution vary.

However, this study has no ambition or illusion of trying to come up with a total synthesis. The post-dam experience, i.e. the time period that the Diama and Manantali dams have been operational, is still relatively short, and it is therefore too early to draw conclusions. However, by pointing out certain factors connected to resource management in the river valley and to which extent resource competition is connected to the Senegal-Mauritanian conflict, one might get an idea of the future prospects for a sustainable development in the region.

Research in the Senegal River Valley

Many studies have been undertaken in the Senegal River Valley. Economists, anthropologists, geographers, historians and social scientists have contributed to analyse the many interesting aspects and processes of change in the river region. According to Christian Santoir, senior researcher at French Institute for Scientific Research and Development in Cooperation (ORSTOM) in Dakar, the complexity of

the region makes it extremely difficult to make a synthesis of the situation in the river valley, and therefore all researchers end up treating just one small portion. (Santoir, personal comment).

Due to the political situation in Mauritania the majority of the research carried out during the last years, has taken place on the Senegalese river bank. Both governmental organisations like the 'Post-Dam Cell' (CAB) and the 'Delta Canal Development Corporation' (SAED) as well as non-governmental organisations such as Institute for Development Anthropology (IDA) and ORSTOM, have undertaken studies on various parts of the riverine production systems. The research documentation which is used for this study is further presented in the bibliographic essay in chapter 2.8.

1.7 DISPOSITION OF THE NEXT CHAPTERS

The methodology of the study is presented in chapter II. Basically the study is built on two components: Literature study and my own fieldwork in Senegal, undertaken during the summer of 1992. Some selected theoretical components constitute the framework which is needed to present the empirical evidence and the discussion. After the methodology chapter, the further presentation is done in three chapters - III, IV and V.

In order to reach the study objectives and understand to what extent access to the resources in question can be linked to the Senegal-Mauritanian conflict, I present the factors which I consider to have major influence on access to and management of these resources. In chapter III the presentation is centered around resource management in the Senegal River Valley, in relation to African river basins in general. Both traditional and modern production systems as well as who are involved in the management of these systems is discussed. Included is also a presentation of other relevant data of the area, the ethnic distribution and the historical evolution. Chapter IV concentrates on the prevailing land tenure legislation and practice on the two river banks. A theoretical discussion of the concepts of land tenure and property regimes

is included. In chapter V, environment and security in the Senegal River Valley is presented, and the discussion is based on three concepts; 'interdependence', 'environmental security' and 'the greenwar factor'. All three are presented with regard to the Senegal-Mauritanian conflict and the potentials for cooperation in management of the actual resources.

Chapter VI, the analysis, is a discussion of the connections between the different factors already presented in chapter III, IV and V, and their influence on the Senegal-Mauritanian conflict. The final conclusions and recommendations are given in chapter VII.

CHAPTER II

METHODOLOGY

2.1 INTRODUCTION

This study is built on two main components: 1) Documentation from the study area and 2) My own fieldwork. In order to reach the objectives of the study, that is first to find the main determinant factors for access to and management of the river water and the land resources along the Senegal river banks, and secondly to illuminate to what extent access to these resources can explain the Senegal-Mauritanian conflict, I have chosen some theoretical components through which the documentation is presented. In addition, the collected primary data will be included in the discussion.

2.2 CHOICE OF THEORETICAL COMPONENTS

I do not cover all the possible theoretical components that could have been used to serve my objectives. A more thorough presentation of the forms of pastoralist production in the area or a more-in-depth discussion about the hierarchy and the strict land use rights and patterns within the ethnic groups, are examples of aspects that very well could have been part of the study.

Instead, I have chosen to focus more on **the river water** in connection to **agricultural production** in the form of **cultivation**, and hence the **farm lands along the river** more than the pasture lands, which in addition, normally are located further away from the river main stream.

This choice is done according to the following criteria: **Firstly**, with the objective of distinguishing the determinant factors for access to the river water and the agricultural land on the river banks, the focus on **the riverine production systems** and the **land tenure** of the soils is logical. **Secondly**, the extent to which the access to the river water and the land on the river banks has to do with the Senegal-Mauritanian conflict, is taken up in the context of **threats to the environmental sustainability** of the region and the **interdependence** between the two river sides. **Thirdly**, both the study itself and the time period available are of **limited character**.

The theoretical discussion is therefore restricted to include the most essential elements which can give the necessary framework for the empirical presentation and the analysis, and which in turn may explain the potentials for conflict over access to the resources in focus.

According to the explanation given above, the components which are chosen to constitute the framework I use to reach the objectives of this thesis, are the following:

FIGURE 2.1 THE THEORETICAL FRAMEWORK:

- 1) Potentials and constraints of riverine habitats and production systems**
- 2) Land tenure and property regimes**
- 3) Environment and security, with focus on the three concepts:**
 - a) Interdependence**
 - b) Environmental security**
 - c) The Greenwar factor**

A presentation of the literature connected to these components is given in the bibliographic essay in chapter 2.8. The components themselves are more thoroughly presented and discussed in chapter III, IV and V.

2.3 INTERDISCIPLINARY APPROACH

The selected theoretical components have elements from different disciplines. Due to the complexity of the situation in the area, a holistic perspective seems to be a sensible way to approach the study. To answer the subquestions of the study objectives, one cannot avoid touching upon almost all the components of the Management of Natural Resources and Sustainable Agriculture (MNRSA) - programme, either in the form of theoretical components or in the form of empirical data to highlight the discussion.

However, not all MNRSA disciplines are equally emphasized. Due to the way I collected my primary data, I will not be able to do any statistical analysis on my own

data material. Neither would the data be of such a kind that they are suitable for any independent economic analyses.

Components from the following disciplines constitute this thesis' framework:

- 1) Ecology;** The ecological conditions give the base for all development in the area, and the renewability of the resources is essential. The arid or semi-arid environment with its Sahelian conditions of water scarcity, drought and desertification are factors to keep in mind throughout the study process.
- 2) Political economy** comes in when analysing the position of the two local governments in the context of Senegal and Mauritania's incorporation into the world market, the role of donors and financial institutions involved, and how structural adjustment programmes affect the agricultural policies of the two countries.
- 3) Tropical farming and production systems** along the river constitute natural parts of the empirical presentation of the study. With the prescribed transition from flood recession systems to irrigated agriculture, the local population would have to abandon their traditional management strategies in favour of a modernised system.
- 4) Resource planning and management** is the MNRSA component that could figure as a theoretical headline for the whole thesis. It could increase the understanding of the kind of plans the two states have in mind to achieve the resource management they wish to apply. Central components are land tenure and property regimes, and how these components appear in the states' legislations, political decisions and their implementation.
- 5) Social anthropology;** Looking at the different ethnic groups living in the study area and their respective production systems as well as their survival strategies, includes elements of social anthropology.
- 6) Political science;** Concepts like 'interdependence', 'international resources' and their distribution and 'environmental security' can contribute to understanding how

the two states act and how their interaction affects the local conditions in the river region.

2.4 INTEGRATION OF THEORY AND EMPIRICAL EVIDENCE

The theoretical framework, i.e. the components 1) Potentials and constraints of river habitats and production systems, 2) Land tenure and property regimes, and 3) Environment and security, (cf. ch.2.2) are meant to be the tools through which the collection of empirical evidence can be presented. If one examines the situation in the SRV through the help of these three components one finds the following:

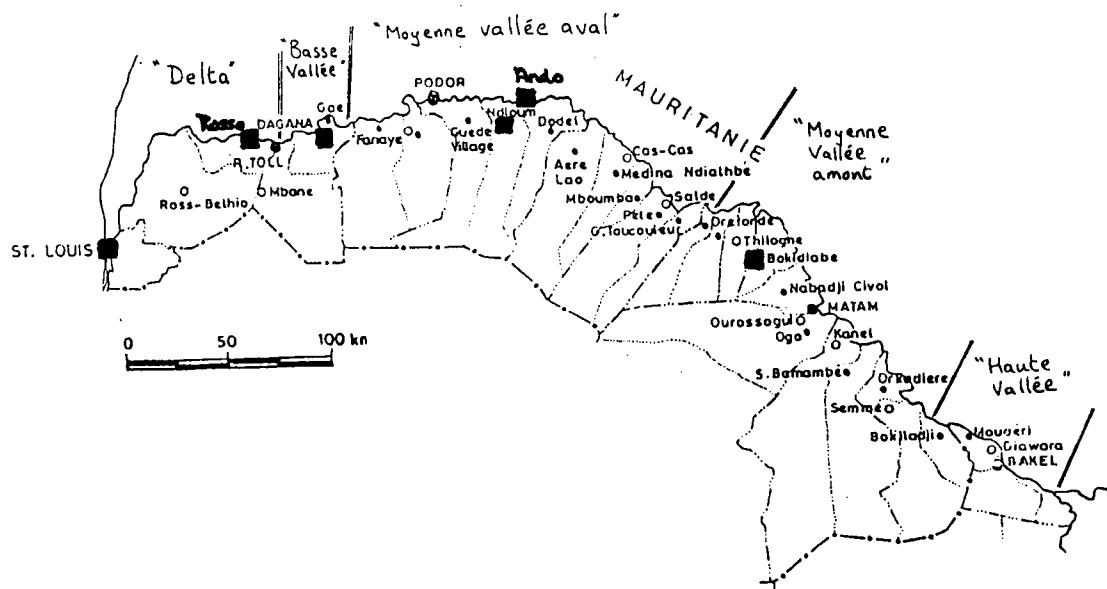
In the Senegal River Valley the transition from traditional to modern production systems is part of both national and international development policies. As a result new people and institutions have become interested in resource management in the SRV. New tenure legislations to facilitate the implementation of modern production systems have been introduced in both countries. Especially in Mauritania, where the ecological degradation is reinforcing traditional ethnic tensions, the new legislation has resulted in increased competition to acquire land in the fertile river region and thus threatens the environmental security in the area.

As the components 1), 2) and 3) can be applied directly to the situation in the SRV, I find it natural to present them in relation to the empirical evidence from the area and not in an isolated theoretical discussion. As already mentioned, the three components are discussed in chapter III, IV and V, respectively.

The three components and the concepts involved (cf. ch.2.2) could be operating on either local, national and/or international levels. The possible links between the different components and levels, and how they influence on each other, are of essential interest in reaching a conclusion and will be further discussed in the analysis in chapter VI.

2.5 THE STUDY AREA

FIGURE 2.2 THE STUDY AREA



■=sites visited

(Source: Woodhouse/Ndiaye 1990)

It is the part of the river basin which OMVS refers to as the **River Valley** and the **Delta** that constitutes this thesis' study area (OMVS 1979). This implies that the literature I have studied primarily is based on research in this area, and that the fieldwork was carried out in the area itself or by visits to organisations which are engaged in the area. Much of the literature, an example is Crousse, Mathieu, Seck 1991, uses the term the Senegal River Valley (SRV) to encompass both the River Valley and the Delta. For convenience, this study does the same. Hence the study area is synonymously referred to as the SRV. (Cf. ch. 3.2)

In local terms the Valley is referred to as '**Fuuta**' after the ancient kingdom of Fuuta Tooro (1512-1776). In this study both primary and secondary data from the '**Fuuta**'

are more extensive than those from the Delta. However, data from the Delta contributes to the discussion in order to achieve a qualitatively better understanding of the key questions the thesis will address.

The reasons for not including the Upper Basin is, first of all, that the conflicts over access to water and land are not as pronounced here as they are further downstreams. Secondly, both ecological and hydrological conditions in the Upper Basin are very different from the conditions found in the River Valley and Delta. Thirdly, fewer studies have been undertaken in this area, compared to all the research carried out on the River Valley. And, finally with the time constraint of my own field research there was no possibility to visit the Upper Basin. The different zones of the river basin are further presented in chapter 3.2.

Still the study area is vast, but to understand the dynamics and problems connected to the management of water and land resources along this river the scope would be too narrow if one would limit the study to one particular geographical zone. Although much of my own field data is collected on relatively limited spots, the majority of data used in this thesis is secondary and taken from literature and research covering the whole River Valley and Delta. Where there are particular experiences from certain regions or sites, these are included to substantiate the discussion.

The study area will be treated as a unit. Whenever there is a need to split the discussion and talk separately about Senegal and Mauritania, the countries' names will be used in the text.

2.6 THE FIELDWORK

The fieldwork was carried out in Senegal from July 18 to August 14 1992. Operating with theoretical components on three levels, implied that the fieldwork preferably should be organised to collect information from local, national and international levels. This was attempted in spending time both in the river region and in Dakar -

trying to visit as many national and international agencies and organisations as possible. The first ten and last four days of the fieldwork was spent in Dakar, while the other two weeks were spent in the river region. The institutions/ organisations that I visited were the following (cf. acronyms):

- Environmental Development Action of the Third World (ENDA)
- United Nations Development Program (UNDP)
- United States Agency for International Development (USAID)
- Cellule Après-Barrage (CAB)
- Programme Alimentaire Mondial (PAM)
- OMVS High Commission (cf. ch. 5.2)
- Institute for Development Anthropology (IDA)
- Forces de Liberation Africaine de la Mauritanie (FLAM)
- International Bank for Reconstruction and Development (IBRD)
- Institut Francais de Recherche Scientifique pour le Développement en Cooperation (ORSTOM)
- United Nations High Commissioner for Refugees (UNHCR)
- Office Africain pour le Développement et la Cooperation (OFADEC)
- Société d'Aménagement et d'Exploitation des terres du Delta du Fleuve Sénégal (SAED)

In addition to interviewing their representatives, these organisations provided me with many valuable documents.

The literature collected from different Nordic libraries such as the Scandinavian institute for African Studies (NAI) in Uppsala or the Centre for Development Research in Copenhagen, had proved its insufficiency. Most of these sources dealt with the situation before or during construction of the dams or African irrigation experience in general. I therefore had to rely on collecting more up-to-date documentation in the course of the field work. Active correspondance to a number of organisations that were assumed to be of any help, turned out to be extremely useful.

The questionnaire

As mentioned I had decided to try to visit as many 'involves' as possible to collect a broad scope of information and cover many viewpoints. Both IGOs and NGOs, parastatals and individual researchers, local farmers and Mauritanian refugees were on my interviewee list.

In order to collect information that could provide **answers to the subquestions** and thereby **help to reach the objectives** of the study, I had prepared a questionnaire divided in different sections: The **first** section is large and focuses on various topics; development projects in SRV, the OMVS and the existing cooperation between the riparian states, the land tenure practice on the two river sides, and the priorities of Senegal and Mauritania in their national development policies concerning the river region. The **second** section focuses on the riverine production systems, the cultivation of food crops on the two river banks, irrigation production, food security and risk management strategies of local farmers. The **third** section focuses on climatic factors and other threats to security in the SRV. The **fourth** section deals with access to water and land in the context of the Senegal-Mauritanian conflict, the reasons for and the consequences of this conflict, the Mauritanian refugees and foreign interest in the SRV (cf. appendix 1).

The questions in the three first sections are open-ended leaving the interviewee with the opportunity to elaborate and possibly bring in new elements. The last section also has open-ended questions, but many of them are formulated as multiple choice questions with alternative answers. This was done under the assumption that some of the questions might be difficult to answer. To 'help' the interviewee I had put up alternative answers. One of the drawbacks with such questions may however be that they function best when the interviewee can read the question and see the alternative answers in front of him/her, instead of being presented with the different answers orally one by one. The result could be that the interviewer would put different weight on the different answers and thereby create some kind of leading questions, or that the interviewee would not remember all the alternatives and picks the answer randomly and not out of his/her conviction.

Semi-structured interviews

The questionnaire was thought of as a framework and a base for conducting interviews that might end up more semi-structured. In this way the questionnaire represented more of a 'check list' of what the interviewee preferably should answer, an advantage if the interviewees would bring in new elements to the discussion and point out other aspects that I had not thought of while designing the questions.

All in all I conducted around 30 interviews. In Dakar all interviews were conducted in either French or English, so there was no need for an interpreter. **Mostly questions from section 1 and 2 were used.** The interviews were registered with a tape recorder. Sometimes I was able to follow the questionnaire and other times the interviewee would use a lot of time answering a few questions or would bring in other aspects of interest for my data collection.

In the river region I interviewed representatives from OMVS' documentation centre in Saint-Louis, from UNCHR and OFADEC in Rosso and from SAED in Boki Diavé. Other interviewees were individual Senegalese farmers and members of a Senegalese CR, in BokiDiavé, and deported Negro-African Mauritians in four different refugee camps; BokiDiavé, Ndioum, Ando and Dagana. These were people who before the deportation had different occupational background; from farming to state employment.

While the interviews in Dakar were mostly tape recorded, the interviews in the river region were registered in the form of writing. This was partly because of the language situation and partly because of having several respondents at the same time. Some interviews, especially in the refugee camps, were conducted as group interviews. Since many of the interviewees did not speak French, the interviews had to be conducted in Pulaar, the dominant local language in all the sites visited. With the help of an interpreter whose mother tongue is Pulaar this did not lead to any major problems. Travelling with one who is born and grew up in the area and has many contacts, is undoubtedly an advantage. However, I had to keep in mind the danger of biased information since my interpreter, like most of the interviewees in

the river region, clearly stated his own political opinion and antipathy against the Mauritanian government. Other constraints are discussed in chapter 2.7.

The contact net I had previously established, through correspondance and with help from organisations in Dakar again turned out to be very useful. People were ready to receive us and provide us with the information we were searching for.

In the river region, as mentioned, the interview situation often meant that several or many people would be present and answering the questions. The number of interviewees therefore far exceeds 30. An example is the night in the refugee camp in Ando, where around 20 people, mostly men, came to take part. Not all would talk openly, but the majority of those present wanted to contribute and had things on their mind that they would like to discuss. **In the river region mostly section 4 of the questionnaire was used**, but the multiple choice answers were seldom presented to the interviewees. Most of the time they had their opinion ready and did not need any additional alternatives on what to answer. Another aspect is that many of them cannot read and write, so the questions had to be presented orally. A general trend is that the interviews conducted in the river region more often turned out as semi-structured than those conducted in Dakar.

Observation

In addition to these semi-structured interviews, I would argue that the fact of being in the study area and seeing the river and the situation in real life added some qualitative understanding to the questions in focus. I also got a chance to carry out some participant observation, especially while staying among the refugees. Although my field observations were limited due to the time constraint, they provided me with information that no literature reference could have replaced.

2.7 CONSTRAINTS

I have already mentioned that the components and concepts I have chosen means that **others are left out** of the discussion. When it comes to the fieldwork the first constraint was the **time limitation**. Another major constraint concerning the primary data is that they are all collected on the **Senegalese** side of the river. The only ones to secure a Mauritanian representation are the deported refugees. Being deported and deprived of their citizenship, naturally they all more or less formally represent the opposition. Points of view from the Mauritanian government and its organs are not part of the primary data and appear in this thesis in the form of secondary data, i.e. official documents and reports etc.

The political situation in Mauritania has been unstable and insecure for the last years. In the river region there has been state of emergency and a 'war like' situation with killing and arrestations, deportations, imprisonment and destruction of Negro-African villages. The presence of soldiers at the right river bank has been a threat and reminded the local population still living in the area that new violence could break out any time. The decision not to plan for any fieldwork on the right river bank was therefore taken at an early stage when foreign observers were not allowed into the area.

Representativity

For the results from the collection of data to be representative, they should be the same as if one had examined all units in the statistical universe (Hellevik 1987:76).

Due to the already mentioned time constraint, a quantitative household questionnaire was never planned to be part of the collection of primary data. Instead the idea was to gather as much qualitative information and as many viewpoints as possible.

What the interviewed Senegalese and former Mauritanian farmers said, might not be representative for farmers in the whole study area. Every site visited seemed to have its specific problems that do not necessarily have anything to do with problems

elsewhere. An example is the situation in Boki Diavé where the attribution of land was completely blocked due to an internal fight in the CR-council. In addition, the visited sites were not randomly collected, but were chosen according to the contacts made available from organisations in Dakar.

Another aspect is that the former Mauritanian farmers were interviewed while living in exile in refugee camps. They were naturally preoccupied with other problems than if they had still been living and farming on the right river bank.

An additional constraint to the representativity of the primary data collected could be that interviewees were mostly men. However, I do not find gender issues of major importance in search for the information I needed.

These limitations of representativity can partly be compensated by the use of secondary data that other researchers have already collected from these farmers.

One could also argue that the primary data collected may appear biased for representing organisations and institutions more than the riverine populations. However, the choice to cover a maximum of organisations is no coincidence. The reason is that the theoretical framework necessitates that both local, national and international levels are represented in the data collection. There is a need to hear the viewpoints of those officially involved, their plans and strategies and how they evaluate the development taking place in the river region today.

Another interesting aspect is the difference between what these official representatives would say on behalf of their institution and what they would state as private persons. Several of the officials interviewed were surprisingly open and had viewpoints that they could never say when speaking as employees. Some of them had their roots in the river region and had family who had become victims of the conflict, directly or indirectly.

2.8 BIBLIOGRAPHIC ESSAY

This chapter will present the main written sources that have been used during the study process.²⁾

Due to changes in the production systems and the transformation taking place in the SRV during the last decade, the documentation produced after the construction of the dams is more relevant for this study. However, OMVS' original project plans and the general physical data about the river basin (OMVS 1979 and Marchés Tropicaux 1981) have been useful. Other "pre-dam" documents could have been the sources concerning the historical evolution in the study area. But as it appears, the historical references that are used for this study are written in recent years. Examples are Santoir (1990), Park et al. (1991) and Parker (1991). Naturally the documentation that is written in connection to the Senegal-Mauritanian conflict is also of relatively new date.

In the **introduction** chapter I base my presentation of flow resources primarily on Judith Rees' "Natural Resources: Allocation economics & policy". The author is a geographer and the book represents an interdisciplinary study of global resources. Rees represents the neo-classical economic tradition in her discussion of property regimes. The water discussion's two basic sources are Godana (1985) and Clarke (1991). Godana discusses the juridical framework and the institutional aspects underlying the management of shared river basins in Africa, more specifically the Nile, the Niger and the Senegal. He provides a clear definition of shared river basins and underlines the need for international cooperation and development of an international law in connection to management of these river systems. The limitation implied in using Godana, is that the book is written in 1985, when the OMVS was in the middle of their construction period and neither of the dams were operational.

Clarke's book "Water: The international crisis" is also occupied with the weaknesses of the legal framework which is used to manage international river basins. Water scarcity implies a potential for conflict. Clarke is not specifically oriented towards the Senegal river basin, and his arguments are therefore included more as a general base.

Concerning the **methodology** chapter, I will just point out that the questionnaire was worked out with help from Payne's (1951) 'The art of asking questions', Casley and Kumars' (1988) 'Structured Surveys' and lecture notes from 'Research Methods and Project Planning', MN10.

For the dicussion about **potentials and constraints of resource management in the SRV, chapter III**, I have used many sources. The general presentation of potentials and constraints of African river basins is mostly built on Thayer Scudder's "The African Experience with River Basin Development". Scudder is a professor of anthropology at the California Institute of Technology and Co-director of IDA. Since IDA has been in charge of a large research programme called "the Senegal river basin monitoring activity" (SRBMA) , a lot of his empirical evidence has originated from my study area.

In the course of the SRBMA, IDA has produced a number of research reports. The SRBMA was funded by USAID/Dakar and started out in 1987. The idea was to develop and test a methodology to monitor the socio-economic and natural resource management systems along the left bank of the Middle Senegal River Valley. Unfortunately IDA has so far not carried out any research on the right river bank. However, the SRBMA includes a two-year intensive field study of three principal village sites and their productive holdings, which later was extended to nine sites and 32 villages. Incorporated in the programme is the training of research assistants in data collection and analysis (Horowitz et al. 1991 and 1992).

IDA has in cooperation with CAB identified research priorities and goals. Some of these are: The development of the SRV, organisation and relations of production in the SRV, agriculture and herding in household production strategies, the role of irrigated agriculture in the the production systems of the SRV, the importance of an artificial flood etc. Consequently, the IDA reports have been a most valuable source for this study. In chapter III they are particularly important for the section on the

research. Santoir is a French geographer who has been working in the SRV for a number of years. He is currently employed at ORSTOM, Dakar, and mostly preoccupied with studying Peul societies and the impact of the Senegal-Mauritanian conflict on their pastoral activities. His research may carry a bias because of the concentration on Peul societies. When it comes to the history of the area, however, Santoir uses well known historians from the area as his primary sources, e.g. Oumar Ba and Boubacar Barry.

The presentation of the unfolding of the Senegal-Mauritanian conflict is partly based on Ron Parker's (1991) article "The Senegal-Mauritanian conflict". Parker has in turn followed a number of periodicals and newpapers' day-to-day cover of the conflict. Some of these are Jeune Afrique, Africa Report, Africa Confidential and West Africa.

Chapter IV focuses on land tenure and property regimes in the SRV. The theoretical discussion of the concepts and the transition from traditional to modern systems is primarily based on two main sources: Bromley/Cernea in World Bank Technical Paper, no 57 (1989) , and John Grayzel's article "Land Tenure and Development in Mauritania" (1988). Bromley/Cernea present four different categories of property regimes, and emphasise the importance of the differentiation between common property and open access regimes. I found their discussion highly relevant in the context of traditional and modern tenure practice and legislation on the two river banks of my study area. Grayzel states that his paper seeks to draw lessons from the Mauritanian experience, for the issue of land concentration in Africa.

However, the most important source when it comes to tenure legislation in Mauritania, is Park et al.'s paper "Conflicts over land and the crisis of nationalism in Mauritania" (1991). The paper gives a thorough presentation of the new Mauritanian tenure legislation introduced in 1983. In addition, the references give an extensive list of where and what to search for in other documentation, highly relevant for my study.

Another researcher with several years of experience from the study area, is Jean

Schmitz. He is a French anthropologist who has carried out research on tenure problems, and particularly the management of traditional production systems of flood recession and rainfed agriculture vis-a-vis the transition towards irrigation. I found his theory on three axes of explanation for tenure conflicts in the study area of particular relevance.

Chapter V uses three concepts through which the dicussion of **environment and security in the SRV** is presented. The first concept - **interdependence** - is found in political science. Keohane & Nye's discussion of the concept is used in the presentation. They argue that the concept has several dimensions. In the SRV, with the complementarity of the two river sides, the dimensions of interdependence could be environmental or ethnic.

References concerning the **environmental security** concept are researchers like Sverre Lodgaard, Peter Wallensteen and Arthur Westing which all have taken part in developing this concept. The concept is disputed as to whether it can contribute to a better understanding of the correlations between environmental degradation and warfare. I find the concept relevant for the SRV context, and particularly for the discussion of the Senegal-Mauritanian conflict.

The concept of '**the Greenwar factor**' is taken from the book called **Greenwar - Environment and Conflict** (Bennett 1991.) Based on empirical studies from the Sahel the book approaches the issue of environment and security from an angle which is closely linked to the environmental security concept. Different researchers presenting studies from different parts of the Sahel argue that environmental degradation is playing an increasingly important role among the causes of conflicts and war. I found Bennett's explanation of the vicious cycle to fit very well into the conflictual situation in the SRV.

As stated in the beginning of this documentation review not all references which are used in this study are discussed here. However, most of those which constitute the base for developing the analysis in chapter VI are presented.

CHAPTER III

THE SENEGAL RIVER VALLEY, PRODUCTION SYSTEMS AND PARTICIPANTS

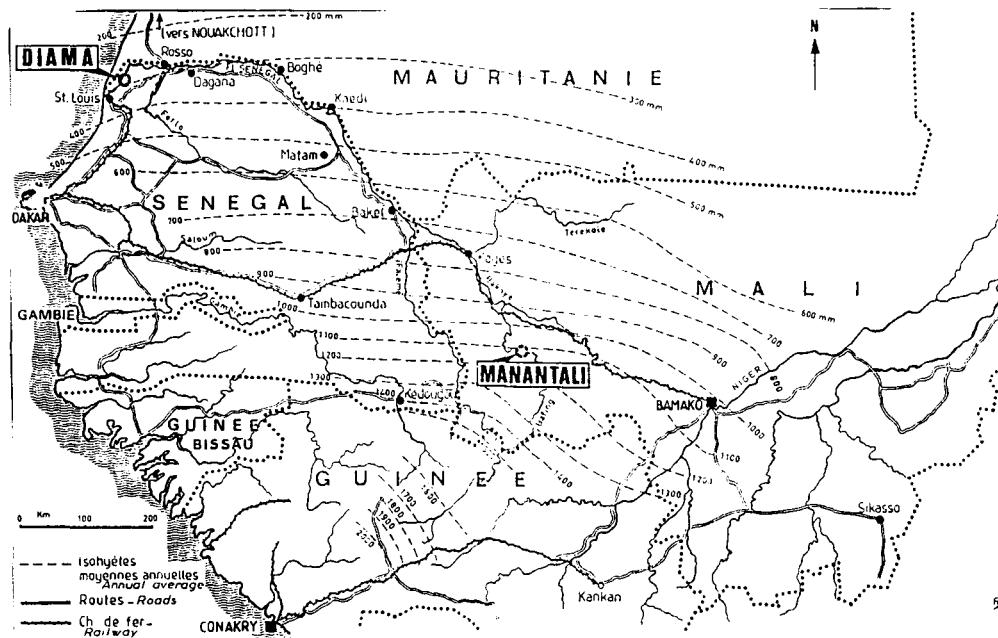
TABLE 3.1 RECORD DROUGHT YEARS THIS CENTURY*

Average	1904-84	$18,615 \text{ } 10^6 \text{ m}^3$
10th	1985	9,578
9th	1976	9,939
8th	1986	9,022
7th	1982	8,096
6th	1944	7,907
5th	1972	7,610
4th	1979	7,468
3rd	1913	6,207
2nd	1983	5,108
1st	1984	4,958

*measured by the flood volume at Bakel, August to October (Source: Hollis 1990:6)

Precipitation

FIGURE 3.1 ISOHYETS IN THE SENEGAL RIVER BASIN

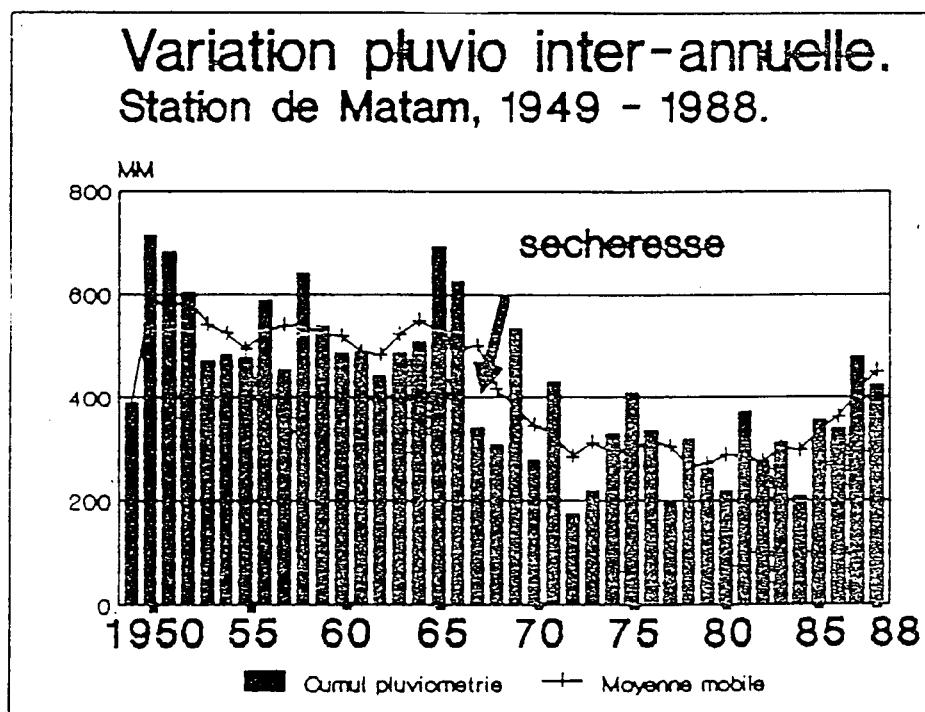


(Source: Marchés Tropicaux 1981)

In the upper basin the precipitation varies from Bakel with 685 mm to the Fuuta Jallon mountains with 2000 mm per year. The rainy season lasts, at the most, from May until November. The precipitation in the upper basin causes the annual flood that occurs between July and October. (ibid) The further downstream, the shorter the rainy season and the less abundant is the amount of rainfall. In the river valley and the delta the main precipitation period is in July and August. The annual rainfall varies from 300-500 mm. (cf. figure 3.1)

Significant ecological changes during the last two decades have seriously affected the precipitation level. Rainfall data from Matam in the middle valley illustrates this fact:

FIGURE 3.2 RAINFALL DATA, MATAM 1949-1988,



(Source: Horowitz et al. 1991:75)

While average rainfall from 1949-1966 was 537.5 mm, it dropped to 335.9 mm between 1967 and 1988. (Horowitz et al. 1991:74) With rainfall records of 300-400 mm, the precipitation is an insufficient water source and the people of the region have an absolute need of the water resources from the river to carry out their agricultural activities.

Zones of the river basin

Before describing the role of the river in people's life it is necessary to elaborate further upon the concept of different ecological zones of the river basin. The total river basin can be divided into three different main zones: **The Upper Basin, the River Valley and the Delta.**(OMVS 1979:6)

a) THE UPPER BASIN

As already mentioned **the Upper Basin** extends from Bakel to the Fuuta Jallon mountains in Guinea. Apart from being the region where the river has its sources and from where the annual flood originates, the Upper Basin is not part of this thesis' study area. It will therefore not be described any further, except in connection with information concerning the Manantali dam.

b) THE VALLEY

The River Valley stretches from Bakel and downstreams to Dagana and contains the major part of the alluvial plain. The flood plain which is from 10 to 25 km wide is surrounded by semi-desertic and desertic zones of northern Senegal and southern Mauritania. The Valley can further be divided in the low (basse), middle (moyenne) and upper (haute) valley (cf.figure 3.2).

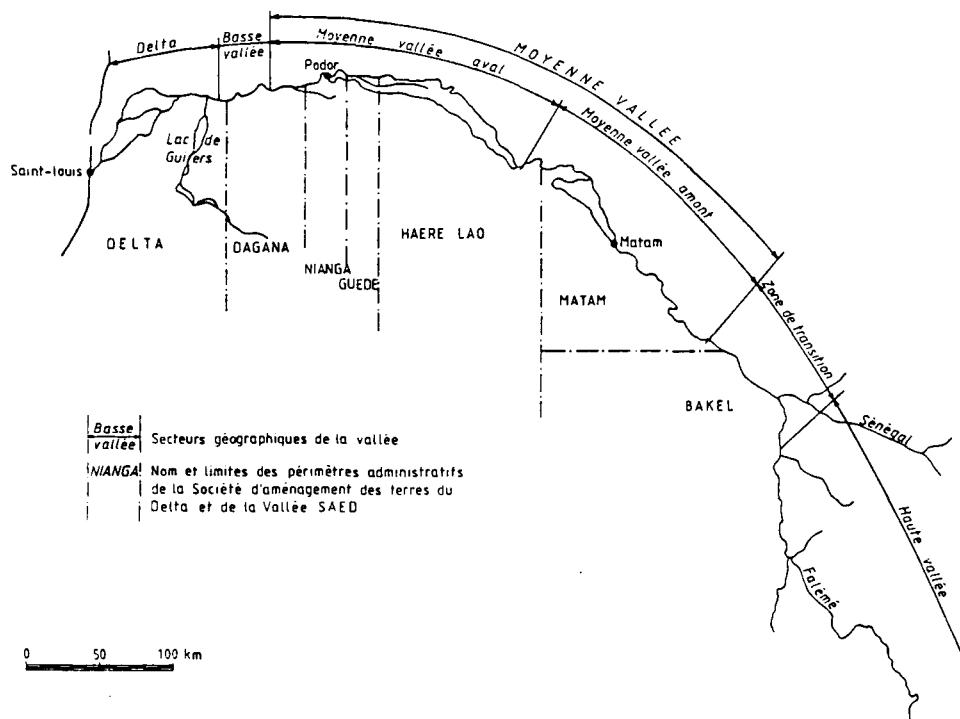
c) THE DELTA

The Delta is the river region downstreams from Dagana to the river mouth in Saint Louis on the Atlantic coast. Covering an area of "only" 5,000 square km the Delta still contains half of the surface of irrigated fields in the whole river basin.(Crousse, Mathieu, Seck 1991:162)

There is a certain discrepancy in the different sources on how they define and divide the zones and use the terms **River Valley** and **River Basin**. The two concepts seem to overlap and be substituted for one another. However, the entire River Basin includes the Upper Basin which is not part of this study (see above). As I have stated, my study area includes the whole Valley and the Delta (see figure 3.2). To avoid the use of two different names, I have chosen the same terminology as is done by

Crousse et al. 1991: The study area is synonymously referred to as the Senegal River Valley (SRV). (cf. ch. 2.5)

FIGURE 3.3 DIVISION OF ZONES IN THE SENEGLA RIVER VALLEY



(Source: Diemer/van der Laan 1987:212)

The left river bank in the national context of Senegal

Despite receiving substantial external aid, the Senegalese economy has been declining since the mid-seventies. The export income has to a large extent been dependent on peanut production which occupies about half of the nation's cultivated area.

The country's climatology ranges from Sahelian conditions with 300-400 mm rainfall in the north along the Senegal river to coastal swamps and 1500-2000 mm rainfall in the southern Casamance region. However, it is in these peripheric regions the national irrigation potential occurs (Moris & Thom 1987:85). The left bank of the Senegal river constitutes an area with potential to contribute to the nation's goal of food self-sufficiency. Actual figures show that Senegal imports 75% of the rice consumed (Djiby Sall, personal comment).

The Senegal river region has received more attention both from politicians and private investors in recent years. With expanding irrigation and increased value of the land, competition to acquire irrigable land has risen. Although in a more complex way, the same has happened on the other side of the border, in Mauritania.

The right river bank in the national context of Mauritania

While major parts of Senegal's 196,722 square km (Faarlund & Lautin 1989) are productive zones, most of the vast Mauritanian surface of 1,030,700 square km (*ibid.*) belongs to the Saharan desert. Only the river region in the south and some few oases are suitable for agriculture. In fact the right bank of the river constitutes the resource pool for most of Mauritania's cereal production. Naturally the population density is higher in the river valley. Since the drought in the 1970's, the country has gradually become more and more dependent on food imports. Until 1970, Mauritania was a net exporter of meat and self-sufficient in cereals and milk. In 1988, the country's cereal demand was 300,000 tons, but only 45% of this was produced locally. The rest came in the form of food aid, 20%, and commercial imports, 30%. (Barghouti & LeMoigne 1990:94). Seeing the potential of investing in the agricultural sector Mauritania also has participated in the OMVS regulation of the water flow for irrigation purposes and increased agricultural output.

3.3 POTENTIALS AND CONSTRAINTS OF AFRICAN RIVERINE PRODUCTION SYSTEMS

Most of the discussion in this chapter is based on 'The African Experience with River Basin Development' (Scudder 1989).

River basin development in general has the potential to benefit larger number of people through the possibilities for increased production, enterprise development and employment generation. At the same time, river basin development in Africa has to adjust to conditions such as aridity, irregular flooding and the riverine population's dependency on annual flooding.

Developers versus conservationists

Developers have traditionally been preoccupied mostly with the construction of large-scale dams for industrialisation and intensified agricultural production. The conservationists have focused on the serious environmental and socio-economic effects of large dam construction. Hence there is a need for a balanced assessment of achievements to expand the purposes of major dams to include controlled down-river flooding and regularised reservoir drawdown. (ibid:139)

A synthesis of both developer and conservationist activities might be necessary if regional development is to occur. More attention should be paid to the enhancement of riverine habitats and the development of local production systems.

Nature and potential of riverine habitats and production systems Riverine habitats contain valuable resources. Their biological productivity may prove to be more important than short term water storage to generate electrical power. Some of the explanation for this productivity and the riverine populations' key to survival has been the annual floods. These floods have often been ignored by planners in their eagerness to construct large dams.

The major components of riverine production systems are:

- Rainfed agriculture
- Flood water agriculture
- Smallscale irrigation
- Livestock management
- Artisanal activities
- Trade and small-scale commerce
- Fishing, hunting and gathering
- Wage labour (ibid:140)

The local populations have developed their own cultigens for flood water cultivation throughout centuries of experience. The cereal yields have been relatively low, 400-800kg/ha (ibid:141) , but the floodplains have provided pasture to sustain relatively

high stocking rates of cattle. In addition, the actual flooding provides fisheries. In floodplain river basins the reproduction of most species of freshwater fish is adapted to the flood, and the biomass of fish increases during the period of inundation. In the Lake Chad, Niger, Nile and Zambezi fisheries alone provide annual yields of more than 500,000 tons of fish (ibid:141)

In terms of development, riverine production systems have important advantages: Since they are already supporting millions of people one can build on the existing economies for expansion and intensification. An example is the millions of hectares not yet under cultivation.

Constraints to develop riverine production systems

Some of the constraints to achieve development are:

- Irregular rainfall and flooding
- Serious diseases
- Increasing pressure with population growth, drought and environmental degradation
- Current river basin development strategies; i.e. **major dams** which reduce the flooding and thereby the floodplains.

When the size of the flooded area decreases, naturally there are less grazing availability and less land for flood recession agriculture. The expansion of irrigation cultivation is often done in areas where flood recession used to be the dominant production form.

Enhancement of riverine production systems and habitats

New policies and strategies must consider a wider range of alternatives. One possibility is to start with intensifying rainfed agriculture and subsequently the infrastructure with irrigation and construction of dams if it can be justified. Construction of dams should combine hydropower generation with irrigation and enhancement of riverine habitats and production systems. One of the keys to such enhancement is **improved water management**.

3.4 TRADITIONAL PRODUCTION SYSTEMS IN THE SENEGLAL RIVER VALLEY

The riverine populations in the SRV have experienced, during the last decade, that their traditional resource management systems gradually have been altered. Water control and expansion of irrigation combined with new tenure legislations, seems to lead to competition between local people and new land owners. National and international companies have begun to appear on the scene. All this happens in spite of the fact that, for centuries, the flood recession production of the waalo lands has been and still is a significant factor in the management of river water and agricultural land along the river. People on both river banks, especially the Halpulaaren, have developed a production system where the annual river flooding is the basic component. Both in Senegal and Mauritania the fear for losing these lands to the newcomers is increasing.

Since flood recession cultivation is such a vital component in resource management systems in the SRV, I will include a short presentation of its basic functions.

In their final report from the Senegal River Basin Monitoring Activity, Phase 1, Horowitz et al. quote two different sources which both mention the remarkable of the agricultural system based on flood recession cultivation. One of them (King 1990) states the following:

"That system, which has provisioned a population for at least a millennium, is no less remarkable today. Despite being under continuous cultivation for such a long period, the floodplain shows little or no evidence of secular degradation, of a progressive deterioration in its productive capacity"

Horowitz et al. continue:

"The annual flood also makes possible complementary exploitation of the plain by fishers and herders, it provides for woodland and pasture generation, and it supports biologically diverse wild and domesticated fauna and flora.

That system and the dense populations that depend on it are today under threat." (Horowitz et al. 1991:xi).

Despite low precipitation and drought tendencies in the river valley and delta, the river itself provides for diverse riverine production systems that have developed and found their own sustainability through centuries of evolution. Due to climatic changes, the size of the inundated area varies from one year to the other, and before the Manantali dam the flood could cover from 15,000 to 150,000 ha (Marchés Tropicaux 1981:1063). Living with this uncertainty of whether the inundation would cover enough agricultural land or not, the farmers have developed strategies of risk management where flood recession farming would be only one in a whole specter of activities to meet the subsistence needs of the household.

In addition, the riverine populations may engage themselves in dry upland farming, fishing, livestock, or small irrigation projects at village level, all dependent on the geographical location of their site, their rights to land and their position within the complex hierarchy and sociological structures of their societies. Hence the populations in the different ecological zones have built a societal structure according to available resources and their specific ecological environment. Examples are the importance of the management of the waalo lands in the Haalpulaar societies, the ownership of herds and thereby control and domination in the Beydan societies, and finally the ability to mobilize the management of labour in the Soninké societies (Grayzel 1988:2-4).

The main ethnic groups are divided into sub-groups whose names reflect their geographical location and to a certain degree their main occupation. Examples are the **Peul** with their three main sub-groups; **Peul waalo** with the majority sedentary, raising cattle and farming the inundated river banks, **Peul jeeri** semi-sedentary, with cattle raising as their main occupation and farming rainfed lands as additional activities, and finally the **Fulaabe** with a semi-nomadic life-style. (Santoir 1990 a:559). The different ethnic groups are further presented in chapter 3.8.

Soil texture, waalo and jeeri

From Bakel to the river mouth, there are two main types of soil along the river, the **waalo** and the **jeeri**.

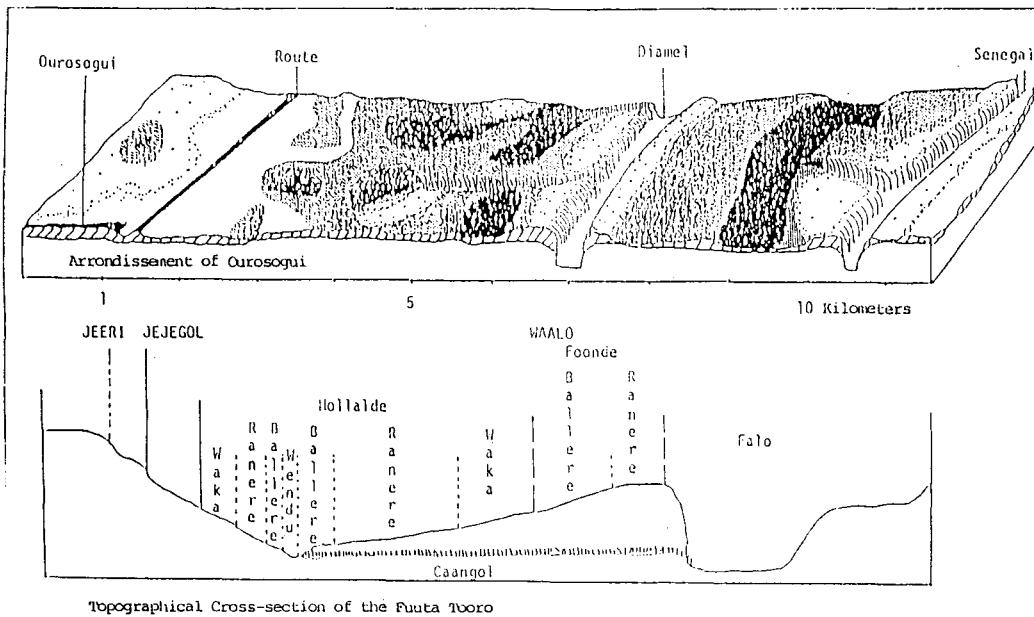
The **waalo** lands lie within the potentially inundated area. They are alluvial formations mainly composed of a varying percentage of clay and sand according to their location near or further away from the river main stream. Being the lands closest to the river, it is the **waalo** lands that are best suited for irrigation cultivation. Traditionally, they are managed under common or collective property regimes, in a wide specter of tenure arrangements, (cf. ch. 4.2 and 4.3).

The **jeeri** lands lie next to the **waalo** but are never inundated and rely only on rainfall as their water supply. Due to their relatively distant position from the river flow, the **jeeri** lands are not favorable for irrigation. These seldom constitute part of the land subject to competition. The **jeeri** lands are normally managed under 'open-access' property (cf. ch. 4.3). The **jeejegol** makes up the transitional zone between the **waalo** and the **jeeri**. A morphological transect/ topographical cross section of these different soil types and zones can be seen in figure 3.3.

As figure 3.3 shows the **waalo** lands can be divided further according to the physical properties and topographical location of the soils. Again there is a certain discrepancy in how the different sources present the division of zones, but keeping **waalo as the common term for all the potentially inundated lands** seems to be representative. (See figure 3.3)

The **falo** constitutes the soils located on drainage slopes closest to the river often occupied by the fishing caste, (subalbe) and devoted to recession cultivation. By contrast, the **fonde** (elevated area) represents less frequently inundated soils of the river banks where both rainfed and irrigation cultivation are practiced. The rest of the **waalo**, mainly the **hollaldé** soils are more regularly inundated and represent a crucial strategic productive area for the haalpulaar society (ibid:72)

FIGURE 3.4 MORPHOLOGY OF THE SENEGAL RIVER VALLEY



(Source: Horowitz et al. 1991:73)

Other characteristics of flood recession

Traditionally sorghum has been the principal flood recession cereal crop. Requiring relatively little preparation and maintenance, it has provided for the possibility of combining flood recession farming with other activities.

During the flood the inundation has stimulated fish production which has provided an additional protein and income source. According to Horowitz et al. (1991:4) the pre-drought production of fish was 70 kg/ha.

Other income sources have been small commercial activities and remittances from the male migrant wage labour who have left the region to search for jobs in urban areas or abroad. Although household production is essential to achieve the goal of food security, off-farming income is increasingly relied upon (Horowitz et al. 1991:19).

Floodplain interaction

The floodplain has been necessary for the reproduction of trees and bushes, especially the dominant species *Acacia nilotica*. Drought and overcutting for commercial profit

by supplying urban centres with firewood and charcoal have resulted in a rapid deforestation. (ibid:29) Trees are particularly important in a resource-poor environment such as the river valley and delta, both as sources of fruit and fodder and to protect against further environmental degradation such as soil erosion.

Flood recession cultivation has also stimulated the interaction between farmers and pastoralists. The floodplain constitutes a critical grazing zone during the dry season when the grass in the rainy season's pastures is already consumed. Furthermore animals have had access to crop residues of sorghum and maize. This practice has in turn provided the farmlands with manure that helped to maintain soil fertility and nutrient composition. These diverse and complementary production systems have developed interdependently.

Horowitz et al. (1991:33) states:

"The progressive domination of irrigation over all other productive activities -- recession cultivation, herding, fishing, forestry -- will generate not only economic costs that exceed the anticipated gains, but also great social and political costs, as ethnic and social segments that now have **complementary** access to resources (in succession of fishing, farming and herding), will find themselves in intense **competition** for a shrinking resource pool."

With the major changes taking place in this region during the recent years one wonders if there is a danger that this mutual and relative balance between the different activities within the production systems, will be replaced by increased competition over decreasing resources. The regulation of the river water has opened for one of the most significant changes in the region's production systems; the expansion of irrigation cultivation. Therefore I will include a presentation of the main features of this production system.

3.5 IRRIGATION IN THE SENEgal RIVER VALLEY

This headline could easily have been the title of a whole thesis. In this section, I will point out some of the most important experience connected to irrigation agricultutre in the Senegal river valley. Due to where the fieldwork took place and the documentation available, like much of the empirical material presented, this section cannot but carry a bias for the Senegalese side of the river.

One of the original OMVS objectives was management of 375,000 ha of irrigated land in the total river basin. Divided between the riparian states the possibilities were 240,000 ha (64%) in Senegal, 126,000 ha (34%) in Mauritania and 9000 ha in Mali (Crousse, Mathieu, Seck 1991). This maximum figure is wholly theoretical. One has not taken into consideration the amount of drinking water needed, the loss of water because of evaporation and the importance of crop rotations. For the left river bank a more realistic figure is estimated to be 165,000 ha (GERSAR/CACG et al. 1991:13).

Table 3.3 shows the expansion of irrigated lands in the Senegal river basin. In 1988 the Senegalese river side had a total surface of 39,410 ha regulated for irrigation. On the Mauritanian side the figure was 16,856 ha.

The Senegalese government has in their integrated development plan for the left river bank (PDRG) projected to expand the existing figure of 40,000 ha to reach 88,000 ha in 2017. At the same time they would leave 33,000 ha to be guaranteed an artificial flood of 15 days and subsequently left for flood recession cultivation while 62,000 ha of forest and pasture will be guaranteed by this artificial flood (République du Sénégal/BIRD/PNUD 1991:3). Table 3.4 shows the distribution between the different production systems.

TABLE 3.2 SURFACE REGULATED FOR IRRIGATION 1975/1988

Country		Mali		Mauritania		Senegal	
Perimeter & year		A	B	A	B	A	B
"Grands" p.meters	1975 1988	0 0	0 0	1 2	875 2089	6 13	5047 10530
Intermed. p.meters	1975 1988	0 0	0 0	0 0	1 754	0 3	0 2610
"PIVs"	1975 1988	6 23	103 406	14 404	510 13929	13 643	483 18577
Agro- industry	1975 1988	0 0	0 0	0 0	0 0	1 3	3000 7660
Agronomic research	1975 1988	2 4	55 64	3 4	48 84	2 2	53 33
TOTAL	1975 1988	8 27	158 470	18 411	1433 16856	22 664	8583 39410

A=number of perimeters; B=surface in hectares (ha)

(Source: Crousse, Mathieu, Seck 1991:23)

TABLE 3.3 OCCUPATION OF SPACE ON THE LEFT RIVER BANK 1990

Cultivated jeeri	50,300 ha
Silvo-pastoralist waalo production ³⁾	64,200 ha
Flood recession cultivation	44,200 ha
Irrigation cultivation	40,100 ha

(Source: République du Sénégal/BIRD/PNUD 1991:7)

However, the area laid out for irrigation is not fully exploited. At the most 60-70% of the surface disposed to irrigation is exploited. One is far from the objectives of double cropping with a yearly exploitation of the perimeters of 150-200%. (Crousse, Mathieu, Seck 1991:11)

Why irrigation?

Expansion of irrigation agriculture in the Senegal river valley has been one of the main objectives of the OMVS. Water management in the Senegal river required heavy investments from the states involved. Among the reasons for investing were the expected increase in value of the irrigable land along the river and the possibilities of an intensified agricultural production in the river valley. An increase in production could also be a way to pay back debts and make the investments rentable. Another aspect is the goal of becoming self-sufficient in food supply. Traditional cropping with flood recession or rainfed farming has relatively moderate outputs. With the potentials for increase in the agricultural output in the river area, both countries hoped to improve their food supply.

Types of perimeters

"Grands" perimeters are normally plots of more than 1,000 ha. They have their own pumping station and a separate system of distribution and drainage of water. The management of such perimeters has been under the administration of the development agencies SAED or SONADER. The "grand perimeters" covered in 1988 25,8% of the surface and 1.4% of the irrigated sites under peasant exploitation in the whole river basin. (see table 3.2) In Senegal they occupied 33% of the managed surface and they made up 44% of the irrigated production and 4% of the national cereal production. (Crousse et al. 1991:25). The management of these perimeters is totally under state control. The state defines the objectives and provides the necessary financing.

"PIVs" are small village perimeters with size of approximately 20 ha. A PIV normally has one motor pump and rarely any drainage system. The model was first introduced during the drought in 1972-73, and was easily adopted and spread by the populations, without external intervention or imposed hierarchy. Donors were not involved until after the model had been recognized and had proved its validity.

The PIVs - a success in the Senegal river valley?

The relative successful introduction of the PIV system had to do with the serious climatic crisis of the seventies, a crisis which lasted and severely effected the densely populated areas. It could also partly be explained by the successful breeding of new and more productive varieties of rice and the introduction of the pumping technique. Last, but not least, the innovation the PIVs represented could be introduced without altering the traditional socio-cultural patterns. The traditional land holders could still keep their land and maybe even strengthen their position by owning land that would be part of an irrigated area. Experience from Halpulaaren villages in the Senegal river valley shows that the PIV structure was designed in accordance with the existing pattern of land use and land rights. The PIV system reinforced the existing farming system and did not replace it like most other state-linked schemes. (Courier 124,1990) In 1988, PIVs were established on more than 1,000 sites. They occupied 32,900 ha and made up 67% of the irrigated surface exploited by peasants in the Senegal river valley. (Crousse et al. 1991:28-29). As the PIVs have reached a certain age one has seen a tendency of a socalled "shifting irrigation" (Horowitz 1989). Instead of putting any effort into the necessary maintainance, the farmers have abandoned the old PIVs in favour of new schemes.

A third type of perimeter is the **intermediate perimeter**, a recent model trying to combine the advantages of the PIVs with peasant involvement and labour, and the economies of scale and mechanisation of the large perimeters.

The fourth category of perimeters are those established for **agribusiness** purposes. CAB could tell that Senegal had put aside 11,500 ha for agroindustry and in 1988, (see table 3.3) , 7660 ha were already occupied, divided between only 3 perimeters.

Costs

Irrigation cultivation in the Senegal river valley has been costly. The larger the perimeter the higher are the costs. The average cost of "grand perimetres" already established figures between 3 and 5 million CFA/ha (Crousse, Mathieu, Seck 1991:25).

The PIVs are far less costly. Due to the amount of human labour involved in the construction work which to a large extent is done with simple and traditional tools, the average cost of establishing PIVs lies between 400,000 and 800,000 CFA/ha, which is five to twelve times cheaper than the costs of the large perimeters.

After the construction of the perimeter is completed, irrigated agriculture is more expensive than other forms of agriculture, due to the costs involved in the maintenance of channels and pumps, purchase of fuel etc. To survive on irrigated cultivation the farmers have to have income which can cover all these expenses. With the present existing subsidies a family earns about 60-70,000 CFA/ha in rice production, and this is not sufficient. (Engelhard, personal comment)

Rice production

75 % of the irrigated areas are currently used for rice production (Gersar/Cacg 1991:3). There are several reasons for choosing rice as the main crop. CAB personnel and other researchers had the following arguments: First of all Senegal is trying to become self-sufficient in food supply. Secondly there is a rice market in Senegal. A tendency of shift in people's nutritional habits is strongly in favour of rice compared to traditional cereals of millet and sorghum. At present Senegal imports about 3/4 of the rice consumed (Djiby Sall) and locally produced rice could easily be sold. Thirdly there is a pedological reason. Most of the irrigated areas consist of the soil types "hollaldé" or "faux hollaldé", and this soil is well suited for rice production. Fourthly rice production was inherited from the colonial period and relatively easy to expand. Another aspect or "the other side of the coin" is the cost connected to rice production. Irrigated paddy rice which is produced with assistance of the SAED is estimated to a full price cost of 360 CFA/kg. The current world market price is around 70 CFA/kg. Hence both the relative cost and the opportunity cost of rice production in the Senegal river valley are high. (Engelhard 1986, Engelhard personal comment)

Other irrigation production

Apart from paddy rice the irrigated fields are used for the production of tomatoes, sugar cane, sweet potatoes and different kinds of vegetables. According to CAB, production of vegetables is expanding. Such a diversification of the agricultural production is needed to achieve a certain level of self-sufficiency and food security for the people involved.

Chapter 3.4 and 3.5 have dealt with the traditional and new production systems in the SRV. To understand the process of transition from traditional to modern systems, the resulting resource competition and its influence on the Senegal-Mauritanian conflict, it is important to know the different institutions that are involved. The institutional capability is crucial for an adequate management, and an important factor concerning access to resources, both at local, national and international levels. I will therefore first present the general framework of such institutions, and secondly, take a look at the major institutions involved in the SRV.

3.6 INSTITUTIONAL INVOLVEMENT IN RIVER BASIN MANAGEMENT

Different institutions that possibly may be involved in river basin management are: River basin authorities, national parastatals, international donors, consultants, contractors, riparian populations, local organisations and private voluntary organisations (Scudder 1989).

River basin authorities

A critical question is whether these organisations can address themselves to a wider range of development options and leave their preoccupation with hydropower in favour of a policy of integrated development. However, experience suggests that river basin authorities are more effective during construction than during subsequent development stages. Development is allocated to national institutions while international river basin authorities concentrate on dam construction.

SARSA, (a USAID organ; Bureau for Science and Technology under its 'Human Settlement and Natural Resource Systems Analysis') , recommends that national and

international river basin authorities' responsibilities should be restricted to planning and coordination, to raising and disbursing funds and to monitoring project implementation (*ibid*). Underlying is that the actual implementation and management should be handed over to other agencies.

Local organisations

The local populations are facing an era of change. In order to formulate sustainable policies where the local populations' interests are considered, it is necessary that local as well as national and international institutions are involved in planning and implementation of new production systems.

Although local organisations do exist, they are often bypassed by government agencies during planning and implementation of national projects. For local organisations to manage successfully they should be 1) Demand driven, i.e. local people should see needs, initiate action and be responsible for maintenance. 2) Have strong leaders, and 3) a proper amount of external help (*bid*). Too much assistance undermines the local initiative and might create a dependency mentality. It also implies a major risk of foreign domination/control.

The private sector and research institutions

The main private sector entity in African river basins is the local household. Development and early industrialisation depend on these households' raising of disposable incomes. The importance of local household production systems is often overlooked by heads of state and national policy-makers as well as oversea agencies. The private sector does not necessarily refer to the involvement of international firms, but such involvement can play a key role in catalysing regional development. However, often they are operating at the expence of local farm households.

In tripartite joint ventures with the private sector, government and smallholders, the latter is the weakest partner and the two formers' interests are often contrary to the interests of the local population.

Private voluntary organisations, (PVOs) , can introduce new and alternative technologies and help build up local competence to handle local resource management. PVOs have a role to play as partners of local people as long as they coordinate, evaluate and do not undermine the local initiatives.

Last, but not least, African research institutions have played and will continue to build their research capacity and play a more important role in river basin development.

Donors' involvement

Donors might play a leading role in alerting heads of state to the fact that existing policies do not achieve the expected multiplier effects. Donors might be representatives from or in close cooperation with international financial sources. Hence they are often eager promoters of structural reforms. In recent years there has been a stronger emphasis on socio-economic studies, and more focus on the social and environmental impacts of dam construction. Donors could play a leading role in reorganising river basin authorities to include NGOs, private firms and local organisations. And, there are still many examples of inadequate coordination among donors.

Donors also have a tendency to require more planning from African countries with low planning skills than they require at home. Better planning capabilities in the riparian states require institutionalisation of effective data storage, analysis, planning, monitoring and evaluation units within river basin authorities and planning ministries. Training is needed if local personnel are to replace expatriates with their high salaries and time constraints.

TABLE 3.4 FINANCING SOURCES FOR THE DIAMA AND MANANTALI DAMS:

Financing sources	Million US dollars
Abu Dhabi	50
Saudi Arabia	100
Islamic Development Bank	20
Canada	8.5
France	56
Iran	4
Italy	24
Kuwait	68
Germany	92
African Development Bank	52
European Development Fund	19
Total	493.5

(Source: OMVS 1979:25)

NGOs

Many NGOs, both research and aid institutions are represented in the river valley and quite a number of them are directly engaged in development projects. Some have, for a shorter or longer period of time, provided assistance to the Mauritanian deportees in the refugee camps. The most important of these is the UNHCR and the OFADEC. (cf. ch. 5.5) Others include Médecins du Monde, Médecins sans Frontières, ENDA, Caritas etc.

SAED and SONADER

Both Senegal and Mauritania have their own parastatal organisation/development agency which have been responsible for the development of irrigated agriculture. Until recently these organisations were financed by the state, but could operate on

a "free basis". With the new policy of state disengagement to the advantage of private financial initiatives and responsibility, both in Senegal and Mauritania, the roles of both the SAED and the SONADER are changing. In Senegal the new agricultural policy introduced in 1984 stated that the SAED would begin a programme to terminate its activities which would be taken over by private operators and peasant organisations. The SAED would to a lesser extent provide input supplies like machinery, fertilizers and other technical assistance. The SAED has not yet terminated its activities completely, but the result of this partial withdrawal is that the burden of risk is being shifted onto the farmers. (Woodhouse and Ndiaye 1990:14). The conclusion is that since the beginning of the state disengagement, despite a certain increase in the irrigated area, there has been no substantial increase in rice output in the valley (*ibid*:1).

On the Mauritanian side the SONADER could run its projects without intervention from the involved ministries up to 1987. They were there to manage the development of the river valley which was mostly supported by foreign donors. From 1987 the local authorities claimed their right to participate in the development process, and already from 1988 it was necessary with the state's authorisation for any attribution of land. The farmers could no longer apply directly to the SONADER, but had to submit their applications to the "prefet" (local governor) which in turn eventually would bring the case to the SONADER. (F. O. Touré, personal comment)

Structural adjustment programmes and loans (SAL/PASA)

Both Senegal and Mauritania have signed agreements with the World Bank and the IMF to obtain structural adjustment loans (SAL). Senegal first signed such an agreement in 1979 (Delgado & Jammeh 1991:10). In Mauritania the government launched an economic and financial recovery programme backed by the IMF structural adjustment facilities in 1985 (World Bank 1991).

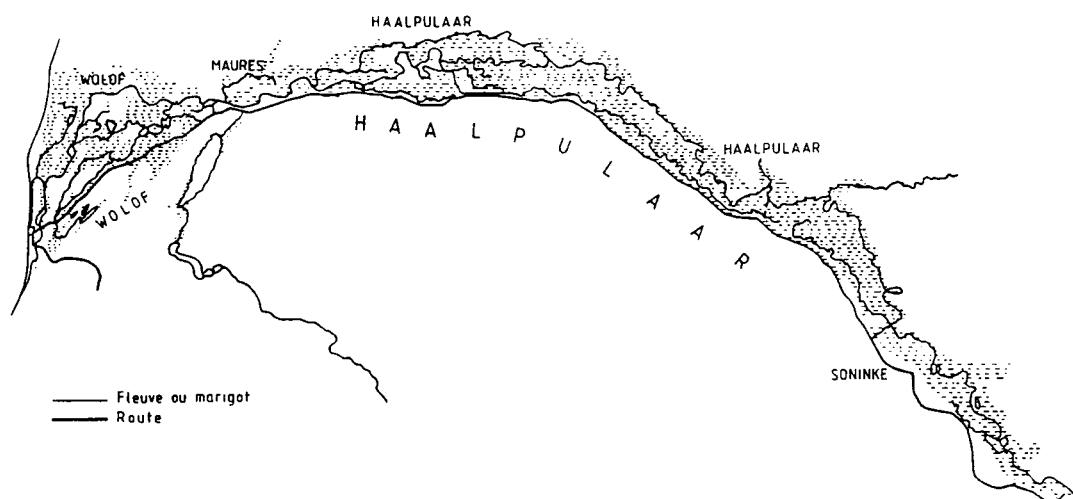
With regard to development in the Senegal river valley more specifically, and especially the Mauritanian river bank, the World bank came on the arena after the

The Mauritanian river bank:

On the right river bank the composition of Negro-African ethnic groups follows the structure on the opposite river side with the Wolofs, Halpulaaren and the Soninké when moving from west to east. However, lying in the transition of what is often referred to as 'North' and 'Black' Africa, Mauritania is a multi-racial nation. In addition to the already mentioned three Negro-African ethnic groups, the population is made up of Moors.

The Moors presently refer to themselves as Arabs as the Mauritanian Constitution from 1991 declare that Mauritania's people are Muslem, Arab and African (CHAAB no 4607 1991).

FIGURE 3.5 ETHNIC DISTRIBUTION IN THE STUDY AREA



(Source: Diemer & van der Laan 1987:213)

1. WOLOF is one of the dominant ethnic groups in Senegal. On a national level they accounted for 44 per cent of the population in 1988 (EIU 1991:9). In the river region they are less numerous and mainly found in the western part, around the delta, from Rosso to the Atlantic ocean where they live as sedentary farmers.

2. HALPULAAR literally refers to 'those who speak Pulaar' (Gerteiny 1981:89). As one can see on the map above, the Halpulaaren constitute the largest ethnic group in the study area. This ethnic group which is found along the Sahel from the Red Sea to the Atlantic, is known by different names such as Fulani, Peul and Toucouleur. In

Mauritania and Senegal they are generally referred to as 'Halpulaar', or more specifically under the two known sub-groups Peul and Toucouleur, which both speak Pulaar. Some references like Santoir (1990a and b) , use the terms 'Toucouleur' and 'Halpulaar' synonymously as opposed to the term 'Peul'. In this study the term 'Halpulaar' is used to encompass both subgroups; Peul and Toucouleur. However, when I am talking about the Senegal-Mauritanian conflict it is necessary to distinguish between 'Halpulaar' and 'Peul' societies.

In the national context of Senegal the Halpulaar constitute the second largest group and account for around 25 per cent of the population (EIU 1991-92:9) , when including the Toucouleur.

- 2a)** The **Peul** are mostly pastoralists and thereby spread over a large area throughout the River Valley. Some are nomads, but the majority are more or less sedentary with some members of the family taking care of the herds.
- 2b)** The **Toucouleur** are descendants from inhabitants of the ancient empire of Tekrur. They primarily live in the middle valley, in the area that used to be part of the Fuuta Toro, and still today is referred to as 'Fuuta'. (cf. figure 3.2) They are sedentary and mainly occupied with different forms of farming such as flood recession cultivation, small scale irrigation and rainfed upland farming.

3. The SONINKÉ, also sometimes referred to as SARAKOLE, are mainly settled in the upper valley, from Bakel and eastwards, in the transitional zone on the way to the upper basin. They were among the first to inhabit this region (Gerteiny 1981:97) and have built their society around agricultural activities.

Hierarchical organisation

All three Negro-African ethnic groups have their own African languages; Wolof, Pulaar and Soninké. Like in many other Negro-African societies, these three are also organised on a hierarchical basis with a strict social stratification between different professions.

An example is a traditional Halpulaar society organised according to distinct castes. On the top you will find the Toorobbe, the noble caste who control religious, political and land tenure powers. The Fulbe (herders) can either belong to the top cast or to the level below which also consists of Sebbe (former warriors) which used to defend the society from foreign intruders, but now they are mostly engaged in farming activities. It is within those two levels one can find the majority of Jom leydi (land owners). The third level is occupied either by other farmers or Subalbe (fishermen). They are often under the administration of the upper castes. However, within each of the three upper castes some farmers occupy the position of Jom leydi or Jom ngesa (land distributor) and hence they would decide the annual allocation of farm lands.

The two lowest castes consist of people with professions within artisanal activities, Waylube (blacksmiths), Maabube (weavers), etc., and the landless Maccube (slaves). Traditionally, these two castes have been considered having a servant status with no real freedom. Part of their production would always belong to the upper castes (Schmitz & Boutillier 1987, Horowitz et al. 1991, Salem-Murdock, Niasse and Horowitz 1992).

4. The MOOR society is also built on strict hierarchical principles and can further be divided into two main categories;

4a) Beydan (arabic for white) or white Moors are descendants from Berber nomads and Arab immigrants and have traditionally been dependent on pastoral activities and adapted to live in arid and semi-desertic conditions in the northern regions. With the severe drought of the seventies and a continuously deteriorating ecological resource base, many of the Beydan have been forced to abandon their nomadic life style. While some have migrated to urban areas and engaged in commercial activities, others are trying to find new occupation in the agricultural sector in the more productive southern regions of the country.

4b) The **Haratins** (freed slaves) originally constitute the slave cast in the Moor society. They are of Negro-African origin, but centuries of domination from the Beydan masters have resulted in assimilation into their culture. This implies that both the Haratin and the Beydan speak Hassaniya, a dialect of Arabic. The status of the Haratins is further discussed in ch. 4.5 and in ch. 6.7.

The demographic situation in Mauritania is complex and it is difficult to estimate the exact distribution of the different ethnic groups. Population censuses were taken in 1976 and 1988, but the results still remain secret (Bourgi and Weiss 1989:39). Rough estimates from 1980 indicate that out of a total population of 2 million, the Negro-Africans account for 40 per cent while the Moors make up around 60, whereof the black Haratines are estimated to constitute about 40 percent (*ibid*).

The existence of different ethnic groups has influenced the historical evolution of the SRV. Naturally this evolution constitutes the foundation of the present and future access to and management of the river water and agricultural land. Hence some of the factors behind the upbuilding of the conflict have their roots in the history of the SRV which is presented below.

3.9 HISTORICAL EVOLUTION LEADING UP TO THE 1989 CONFLICT

When reading the history of the SRV the most recurrent factor seems to be the degree of both **ecological** and **political instability** rendering the population to cope with uncertainty and an unpredictable resource base. Periods of drought would come and have taught the population to incorporate risk management strategy into their way of life. A scarce resource base has resulted in a fight for the existing resources in general, and more particularly the stable and predictable ones like the river water and the land resources along the Senegal River.

Both farmers and pastoralists have experienced that the river region could provide the necessary agricultural land and pasture. The main question was therefore how to get hold of these resources. Despite a certain coexistence and exchange between the two groups, the ongoing rivalry contributed to or came as a result of a certain

level of political instability. A further explanation of this instability could be:

- Many different ethnic groups inhabiting the river region
- Minorities trying to avoid pressures both from the majority and those in power
- Conquest raids and expansionist ideas/needs leading to (civil) warfare
- Establishment and down-fall of different empires
- Classical confrontation between farmers and pastoralists
- Cultural confrontations between different ethnic groups' cultural values and conceptions; i.e. the question of slavery and different casts
- Lack of an inter-ethnic administrative and juridical framework to handle disputes and one ethnie's claims towards others.
- The political power during and after colonial times not representative for the population
- Decision-making on national and international level with little or no validity for the reality of daily life in rural areas.

Ethnic cleavage or coexistence

The River Valley has always represented an area with access to resources and possibilities for production, not only to cover local needs but also to get surplus for sale and the exchange of other goods. Nevertheless, the river basin seems to be an area of extensive migratory moves both north- and southwards.

Throughout the last centuries there has been a certain "pattern" of co-existence between Peul and Moor populations on the northern river bank. According to oral tradition, communities of Peul have been present in the river valley since ancient times.

Despite the Moors' dominance in land ownership and usufruct rights during the 18th century, a dominance that forced the Peul population to manage under conditions of more or less constant moorish pressure, permanent Peul settlement/ presence has been a fact. When the tension became strong, the Peul still would not give up their land, but kept it in the form of fallow. In certain regions like the Gorgol, there are areas where the Peul have never left their land. (Santoir 1990 a:562)

Although Peul dynasties were ruling the Fuuta Toro, the Moors kept on increasing their pressure from the north. Especially in the Trarza region, the Peul and other Haalpulaaren were forced to pay tax which represented a stable source of income for the Moors. Towards the end of the 18th century, the Moors had, with the exception of a few Haalpulaar population centres, a total control of the right river bank. (Becker & Lericollais 1989, Santoir 1990 a:554). Many Peul left the right river bank and settled on the other side, but due to ties with certain Moorish groups like the **Awlad A'li**, some were able to come back and cultivate the waalo lands.

At the beginning of the nineteenth century, the Moor emirates of Trarza and Brakna in Mauritania took control over the Trarza and Brakna regions of the right river bank. This dominion was established through the Islamic principle of conquest. Most of the Halpulaaren living in these regions fled to the south bank of the river. However, some of them made arrangements with the Moors to come back and cultivate the land. These arrangements either consisted of tax payments to the emir or certain marital ties. An example is the marriage between the queen of the Waalo, a kingdom on the south bank, and the emir of Trarza on the northern bank. This is an example of several political alliances between the Negro-Africans and the Moors in order to resist against the French invasion. (F.O. Touré, personal comment, Schmitz 1990) Later in the colonial period the Halpulaaren were encouraged by the French, who wanted them to come back and reoccupy the land, that the Haratin had cleared and cultivated under the principle of Indirass (cf. ch. 4.5). (Park et.al 1991:4).

The Moors had on-going fights with the Haalpulaaren throughout the whole 19th century, But despite the hostilities the Haalpulaaren's presence was somehow more accepted than the Peul's since it provided the Moors with a stable source of income, 'bah' and 'gafaka' taxation (ibid:557). The Moors defended their land ownership and property regimes acquired by conquest. The Peul population being less sedentarised, had more possibilities of escaping Moorish suppression than the other Halpulaaren.

The French era

The Peuls' escape necessarily meant that they would have less control over land and other resources. This left the colonial power with an easier task in introducing their new laws and regulations. On the other hand the French invasion/presence meant that many Peul would move eastwards. When the colonial system proved to create some kind of continuous pacification, the Peul population started a slow emigration back to their areas on the right river bank. However, their reappearance meant that the old question of "land-sharing" came into focus once again.

Three important reasons for the Peul coming back were; (1) The ecological situation with drought and pasture scarcity, (2) the possibility of escaping the French administrative presence and control on the left river bank, which also implied registration and tax paying and (3) finally to avoid animal diseases and confiscation of cattle by the French to supply their troops during the World Wars (*ibid*:560). The result was that the entire population of the right river bank changed and the Moors partly withdrew from the territories occupied during the 18th and 19th century, but left behind their former and present slaves, the Haratins.

The waalo lands closest to the river came under the control of Haalpulaar and Soninké while in some departments the Moor pastoralists still had access to important agricultural resources by controlling the land with ownership rights over wells, wadi (water course/valley that occasionally gets filled up during rainfall) and other water points, and forcing both the Haratin agriculturalists, and the Peul pastoralists to pay tax. In Soninké areas in the east the newly arrived Peul and Haalpulaaren had to pay tax to the Soninké. This led to a hostile climate between these two negro-African communities.

Santoir claims that the opening up for the Negro-African population to come back is due to the French colonial power's passivity. Hence the French government did not actively try to prevent the Negro-African population from reoccupying their previous territories. (Santoir 1990 a) At the same time, after independence, the French handed political power over to the Beydans who ever since have controlled political life in

Mauritania.

However, the colonial administration wanted to avoid land tenure problems and tried to introduce a new legislation and implement it through different decrees in 1891, 1904 and 1933. Traditional land tenure and tenure legislation on the two river sides will be further discussed in chapter IV.

After independence

Senegal and Mauritania got their independence in 1960. The French administration considered the right river bank as Moorish territory and saw the river as a practical and clear borderline between the two newly created countries (*ibid:564*).

Independence therefore meant the introduction of a new border on a territory that for centuries had been considered a "common home" for people from both sides of the river.

However, the reappearance of the co-existence and "land-sharing" between the two main ethnic groups that partly came as a result of the colonisation, did not create specific or new problems before the first big drought in 1972, when tens of thousands of moorish nomads and other pastoralists lost their animals which were their main source of income. This triggered a migratory move towards the more fertile areas in the south. Most of these areas were already inhabited by Wolof and Halpulaaren and the resource competition became more acute.

Before the actual conflict broke out, tensions had been growing for decades. The black population in Mauritania were claiming their rights in taking part in public affairs and opposing the arabisation policy of the government. Underlying this question of identity was the severe economic situation/crisis partly explained by Mauritania's warfare against the Polisario, in West-Sahara, and the drought leading to serious socio-economic changes and thereby exacerbating the rivalries between the different ethnic groups. Many pastoralists had to give up their cattle raising tradition and migrate to urban areas. The ecological crisis automatically meant a heavy pressure

on the cultivable areas and an increasing pressure in the already densely populated regions like the river valley. The introduction of the new land reforms increased the tension further. The 1989 events which led to a continuous conflict between Senegal and Mauritania might have been the pretext the Mauritanian government needed to execute a well prepared plan. (Santoir 1990,b:580)

Unfolding of the crisis

The following points are mainly taken from Parker (1991) and Doyle (1989).

- Senegalese who were farming on the right river bank were chased away by Beydans from Nouakchott, (end of 1988)
- Mauritanian camel herds grazing in Senegal were caught and sent back to Mauritania,(Nov.1988)
- Establishment of reciprocal transportation and river blockades and embargoes on fish, mineral water and food imports from Mauritania and oil, animal feed and fresh vegetables from Senegal
- Mediation attempt by Houphouët-Boigny followed by a meeting in Ivory Coast,(January,1989)
- Senegalese farmers captured Mauritanian herd grazing on their land and two of them got killed while 13 others were taken as hostages by Mauritanian border guards, (April 9th,1989)
- Senegal's Interior minister visited Nouakchott to establish a joint investigation committee but the Interior Minister of Mauritania, (Djibril Ould Abdoullahi), provoked Senegalese by dismissing the importance of the incident
- Escalation of violence between Blacks and Arabs in border villages, (19-20 April)
- Pillage against the Mauritanian embassy and moorish shops in Dakar
- "Black Tuesday" in Nouakchott,(April 25th), when hundreds of black Senegalese and Mauritians were killed or wounded
- Mass exodus of refugees from Mauritania to Senegal
- Mauritanian 'hunt' in Senegal with at least 50 deaths, mostly in Dakar
- Curfew in both countries
- Airlift repatriation to both countries organised with foreign help

- Expulsion of tens of thousands of black Mauritanian citizens towards Senegal and Mali

Conflict management and reconciliation

Political instability and emotional reactions in both countries made the conflict develop from a minor incident to a total break of diplomatic relations (Parker 1991:164). This situation lasted until April 1992 when the two governments decided to start the process of reconciliation.

On the surface, the recent reconciliation between Senegal and Mauritania has made the situation appear normalised. The border is officially reopened, at least at one site, and governmental representatives from the two countries have met to restore the bilateral relations. However, the fundamental issues and underlying causes of the conflict are still not taken up in the negotiations for conflict resolution.

In the following two chapters I will present and discuss some of the other factors that play a major role in management of and access to the resources connected to the river, and may in turn be of crucial importance to solve the conflicts both at a local, national and international level. The Senegal-Mauritanian conflict itself is further discussed in chapter V, under the 'environmental security' and 'greenwar' sections, and in the analysis in chapter VI.

CHAPTER IV

LAND TENURE AND
PROPERTY REGIMES

4.1 INTRODUCTION

In 1989 we witnessed the tragic consequences of the intensified resource competition along the right bank of the river, as Mauritanian elite acted violently to take control over strategic resources, expropriate land and forcibly expel the local Negro-African population. In retrospect these events should have been predicted.

"Although Senegal, unlike its neighbour to the north, is without tradition of ideological apartheid, we are not at all sanguine that violent conflict over land will not occur along the left bank too." (Horowitz et al. 1991:33)

This chapter discusses traditional and modern land tenure systems, and the transition from the former to the latter in the SRV. Both the tenure legislation and property regime practice on the two river banks are important factors in management of and access to the resources in question. The presentation of the Mauritanian legislation is more extensive since it appears that the introduction of this legislation has had a major influence on the development of the Senegal-Mauritanian conflict. The chapter also includes a theoretical discussion of the concepts of land tenure and property regimes. As in chapter III, it is primarily subquestion a) -the actual use of the water and land resources and b) -the affect of national policies in Senegal and Mauritania on the farming systems that is discussed in this chapter. In addition, the chapter's discussion partly covers subquestion c) -to what extent competition over these resources threatens environmental security and the formation of sustainable cooperation policies.

4.2 TRADITIONAL LAND TENURE PRACTICE IN THE SENEGAL RIVER VALLEY

In the Senegal river valley the control of flood recession land, i.e. waalo land (cf. ch. 3.4), has long been a source of competition and tension within the communities or across communities and ethnic groups.

This thesis does not give a full presentation of the many and complex land tenancy arrangements that have developed in the area. The following discussion will however, point out some basic information which will help to explain the background for the present tenure conflicts.

The land tenure patterns of the area are complex. They include a number of compromises among different castes and ethnic groups. Trying to reform these patterns can easily lead to conflict. (Park et al. 1991:vii) Before looking at the new tenure regimes it might be useful to draw up the basic structure of the traditional way of land management in the river valley.

The traditional tenure system

- land is defined as lineage property
 - there is a close relation between parentage and territoriality
 - agricultural communities identify themselves by the land of their ancestors
 - control is exerted over waalo lands while jeeri lands generally have free access
 - ways of acquiring land: 1) be the first to occupy vacant land, 2) conquest and thereby depopulation of land or 3) heritage, donations or purchase of land
 - administration and management of land is on collective basis
 - local land lords, (jom leydi) are responsible for redistribution of land between lineage members
 - complex system of renting and tax payments, to either land lords or those managing the land,(jom ngesa) according to the status of the cultivators and on which conditions the cultivators have got rights to use that particular piece of land.
- (Leservoisier 1991)

The current land tenure practice of the middle river valley has its roots from the land distribution of 1776, when the kingdom of Fuuta Toro (1512-1776) experienced an "agrarian and anti-slavery revolution"; the state which preceded Fuuta Toro was based on slave labour (Park et al.1991).

Traditionally **Halpulaaren** have had land rights in most of the middle Senegal river valley on a **collective** ownership basis. The Halpulaaren have operated which a system where land has been inherited, and hence divided between the actual members in the clan/family. Those who have a piece of land within the clan own it individually. Further east the **Soninkés** have traditions of a **common property** ownership. They would not inherit land. Instead the land would stay as the whole clan's property while one of the sons of the clan's land manager would be appointed to take over his father's position.

Waalo lands have represented a reliable asset and an important factor to increase the production of the household, and thus each dominant social group has attempted to control them and thereby exercise authority (Park et al. 1991:ix).

With regard to waalo land ownership rights extend over the full flood plain, and there is a spectrum of tenure arrangements; Primary rights, secondary rights and contractual arrangements. This ranges from full ownership to temporary usufruct rights. In good years 80% or more of the cultivators have adequate primary or secondary rights (*ibid*).

Jeeri lands are less attractive and have more open access. They are easily exposed to high risk of birds and cattle when isolated and are therefore, preferably located near settlements and thereby often command a rent. (The concepts of waalo and jeeri are presented in ch. 3.4)

Traditionally the agricultural production systems of the area have incorporated risk management strategies. One of the reasons for this is the unpredictability of the waalo (flood recession) lands when it comes to how much land is being inundated and which lands are best suited to agriculture in a given year. An example of such strategies can be land management under a common property regime. (Property regimes are further discussed in ch. 4.5 & 4.6) Common property gives the possibility to increase the size of the portfolio of lands accessible to each cultivation through an annual reallocation of lands after the flood recedes to ensure that shareholders have

access to a viable holding. In addition the traditional system of "tithes" tax payments to the land owner, obligates the recipient to use some of these revenues for community welfare. Small-sized individual tenure would be generally unviable or inefficient in the flood-recession context. (ibid:8)

Other aspects of risk management strategies are the relationship and thereby the **complementarity** between the fishing, pastoral and agricultural sectors.

4.3 FROM TRADITIONAL STRUCTURES TO NEW POLICIES

As mentioned above, traditional tenure structures and production systems, the way they are found in rural Africa, have incorporated the aspect of risk management, where people rely on numerous economic activities and are able to alter their working ability according to where there is highest net present benefits and lowest opportunity costs. Traditional structures build on the idea of subsistence and low input/modest output systems.

Execution of the new agricultural policies implies a shift to high input/high output farming systems based on capital and labour intensive cultivation. Governments need private owners who are willing to invest and a large enough labour force to do the actual farming activities. One way to fulfill these plans is to introduce legislation to simplify the complex existing management strategies in order to reduce the number of categories of ownership and tenancy rights. With regard to Mauritania Grayzel argues:

"...the process of modern legalization, especially if it is formulated (as is the case of large monocrop irrigation schemes) with the intent to promote the adoption of a specific (and locally unproven) technology, can result not only in a disruption of existing production systems, but can impose significant long-term constraints on the evolution of new and appropriate land uses because of undue restrictions on the future creative manipulation of available resources by local producers." (Grayzel 1988:334-335)

The characteristics of such an operative process of new land tenure legislation are:

- 1 Introduction of the new system is generally supported except from the traditional rights-holders
- 2 To determine the content of the new system there should be a chosen group with representatives from different levels.(The question is who should choose the group?)
- 3 The new system has to be adaptive to the modern sector
- 4 Selective incorporation of traditional rights
- 5 Simplification of traditional rights
- 6 Present practices reduced to few categories (Grayzel,1986:18)

The result of this process is the general status of inflexibility, and consequently a loss of risk management strategies. The government's general idea of lifetime tenancy on large holdings is self-limiting. There would always be a certain need for small-holders to make up the needed labour force. If people find the new system far from satisfactory for their needs there would be a tendency of social instability resulting in migration and/or unrest.

Integration of traditional and modern law

Rural people need to be part of the modern legal system and its protection. Their rights need to be institutionalized to stop the legislation process from being an instrument to prevent evolution of appropriate land uses and effective production. An alternative is to incorporate traditional rights into modern law.

Under the process of structural adjustment and introduction of a new legislation there is a need for institutions that can reflect the opinion and the needs of the rural populations.

Incorporation into the world economy means a stronger competition for scarce resources. In the case of the Senegal River Valley this incorporation implies concentration of international financing and a following rush to acquire irrigable land

made newly valuable due to the promising development potentials.

4.4 THREE AXES OF EXPLANATION FOR LAND TENURE CONFLICTS IN THE SENEGAL RIVER VALLEY

Schmitz (1991:1-2) argues with special reference to the conflicts observed in the Senegal River Valley, that land tenure conflicts, can be examined along three major axes.

The **first** one insists on the opposition between the State, either represented by local authority or national agencies, and the local farmers. This explanation claims that the State intervenes and forces the local farmers to adapt their production systems to the development projects of the State.

The **second** explanation is more economically oriented and emphasizes the opposition between the small-scale production for subsistence of the rural household and the introduction of large-scale agro-business for commercial and maybe export production.

The **third** axis is more connected to a socio-economic explanation insisting on the opposition between tradition and innovation. Villages with traditional land tenure, established production systems and successful experiences with small irrigation perimeters, often resist the new tenure legislation and implantation of new perimeters managed by new land owners.

The second axis of explanation is still not very predominant in the SRV since the number of large-scale holdings is limited. It is likely that the number of conflicts related to competition between subsistence and commercial production will increase with the expansion of agro-business. As it is, the first and the third axes of explanation are highly relevant for the present situation in the SRV. Conflicts between the state and the local citizens are found, but to a different degree, in both Senegal and Mauritania. In both countries the state has introduced new tenure legislations (cf. ch. 4.5 & 4.6) in order to change the management of the agricultural land, especially

in the river region.

However, the conflicts along this axis are more pronounced in Mauritania where the state has even gone as far as to deport the local citizens in order to control the land and implement its policies. Since the introduction of the 1983-84 legislation the debate focus concerning the "question nationale" has been access to land in the Senegal River Basin. The recent crisis and conflict have most fundamentally been a national dispute over access to land. Expelling Halpulaaren citizens has advantages if the goal is to obtain land in the middle valley. Government circulaires provide easy means for Beydan absentee landlords to develop land in the flood plain (Park et al. 1991:21). Whether the new land lords are able to exploit the land is another issue. (cf. ch. 4.7, 4.9 & ch. VI)

Although the situation in Mauritania also has to do with the dispute between tradition and innovation, the third axis of explanation has first of all proved its validity on the Senegalese river bank where the CRs are dominated by traditional land lords who until now have been able to resist the implementation of the state policies (cf. ch. 4.6 & 4.9)

What all three explanations have in common is that the local farmers are incorporated into new structures where they can no longer choose between their old strategies of risk management and subsistence of the household, but are forced to be part of a system belonging to the world market forces.

4.5 THE CONCEPTS

The concepts of **land tenure** and **property regimes** are closely related. Tenure legislation gives the framework for what kind of property regimes which are to prevail within the legislation area. Both political, economic, socio-economic and ecological reasons can play a role when law makers and politicians are to decide the most appropriate tenure legislation.

Land tenure can be defined as follows (International Encyclopedia of the Social Sciences 1968, vol 8:562) :

"Under the general and confusing label "land tenure", we are concerned with the complex relationships that exist between categories of individuals in reference to land, water, and their respective products. These relationships can be analyzed in terms of sets of rights and obligations held by these categories of people with regard to the acquisition, exploitation, preservation, and transfer of specific portions of terrain and products. Some of these rights...are part of a well-established system of legal rules, while others have their foundation in **de facto** situations."

In access to, and management of, a certain resource, tenure rights are linked to the prevailing property regimes connected to that resource. Before presenting different property regimes it is necessary to define the two concepts '**resource regime**' and '**property**'.

"**A resource regime** is a structure of rights and duties characterizing the relationship of individuals to one another with respect to that particular resource."

"**Property** is ... a right to a benefit stream that is only as secure as the duty of all others to respect the conditions that protect that stream." (Bromley & Cernea, World Bank discussion paper 57:5)

4.6 CLASSIFICATION OF PROPERTY REGIMES

There are four different types of property regimes within which a resource can be managed (Bromley & Cernea, 1989:11-20):

- 1) **State property regimes**
- 2) **Private property regimes**
- 3) **Common property regimes**
- 4) **Open access regimes**

1) **State property regimes**

In state property regimes the state has control and ownership over the resources

involved. Examples are national parks and forest or military reservations. The state can either manage the resource directly or decide to give usufruct rights to individuals or groups for a specified period of time. The usufruct rightholders can further get ownership rights of the produce of the resource they manage.

2) Private property regimes

"Private property is the legally and socially sanctioned ability to exclude others" (ibid:12)

Private property can be either individual or corporate, i.e. administered by a group. Private property regimes appear stable and adaptive because they "have the social and legal sanction to exclude excess population", and "to resist - through the power of the state - unwanted intrusions" (ibid:13). Bromley & Cernea claim that there is no clear evidence that privatization reduces land exploitation when other economic incentives are kept unaltered. In addition, they criticise private property regimes of concentration of land in the hands of a few powerful families. Secondly, they object to the illusion that private property necessarily implies the best land use. They also point out that "a good deal of theft has ended up as private property" (ibid:13).

3) Common property regimes

Since non-owners are excluded from use of and decision-making within, common property represents private or corporate property for the group involved. Individual group members have rights and duties.

"The property-owning groups vary in nature, size, and internal structure across a broad spectrum, but they are social units with definite membership and boundaries, with certain common interests, with at least some interaction among members, with some common cultural norms, and often their endogenous authority system. Tribal groups or subgroups, or subvillages, neighborhoods, small transhumant groups, kin systems or extended families are all possible examples. These groupings hold customary ownership of certain natural resources such as farm land, grazing land, and water sources." (ibid:15)

Many developing countries have resources of the public domain, i.e. resources which do not belong to individual private property regimes, managed as common property.

Examples are pastoral lands and commonly owned agricultural lands under the control of certain clans or families. Some of the reason for the viability of these regimes are the incentives that encourage the members' "compliance with existing conventions and institutions" (ibid:17). However, there are many other examples showing that such incentives have become inoperative because of outside pressure and internal socio-political factors.

Common property regimes could be considered "in a continuum between the free-for-all of an 'open access regime' and complete individualization that is the essence of a 'private property regime'" (ibid:10). Bromley and Cernea present several new socio-economic research findings which are optimistic concerning the efficacy of common property regimes under well-defined circumstances.

Any property regime is dependent on an authority system able to meet the expectations of the right holders. When this authority breaks down, proper management of the resource can no longer be exercised and, in the case of common property, it degenerates into open access.

4) Open access regimes

As mentioned above, open access regimes could come as a result of the breakdown of the management and authority system connected to the regime or from the absence of such a system. In an open access regime, there is a situation of 'no property' and the resources involved will belong to the party that is the first to effect capture. As Bromley & Cernea argue "everybody's access is nobody's property" (ibid:19).

It is important to understand the strong links between property regimes and resource management. However, the common property regime concept is frequently misunderstood.

Many planners and development administrators confuse the concepts of '**open access**' and '**common property**'

Bromley & Cernea strongly object to the famous conclusion of Hardin's allegory 'The tragedy of the Commons' and argue (ibid:1)

"This inadequate diagnosis is very serious in its consequences since it further invites inappropriate policy recommendations and misguided operational decisions."

The 'Tragedy of the Commons'

The World Conservation Union (IUCN) Sahel Studies presents a summary of Garrett Hardin's paper published in the journal Science, 1968. According to IUCN, Hardin's main conclusion is that common ownership obliges rural people to pursue strategies that degrade their natural resources. IUCN compares Hardin's conclusion with the game theory argument of the 'Prisoners' Dilemma' where two competing users of a public good who have the choice of conserving or depleting a resource, would choose to deplete for immediate gain, in lack of guarantee that if one conserves the other will also conserve. Such resource use inevitably leads to overuse. However, what Hardin referred to as 'common property' corresponds to what is later defined as 'open access' (IUCN 1989:144)

Bromley & Cernea point out that this allegory has had "a remarkable currency among researchers and development practitioners" (Bromley & Cernea 1989:6). This confusion between 'open access regimes' (free-for-all) and 'common property regimes' (in which group size and behavioural rules are specified) leads to a denial of resource users ability to act together for the benefit of their environment (*ibid*).⁴

The different property regimes prevailing in the Senegal river valley will be further discussed in chapter 4.7 and 4.8.

4.7 TENURE LEGISLATION AND PRACTICE ON THE RIGHT BANK

When talking about the tenure problems confronting the Mauritanian state one should keep in mind the country's different agro-ecological zones: The desertic zone, the river region, the littoral marine zone and the agro-sylvo-pastoralist zone in the east (Crousse, Mthieu, Seck 1991:262). Each zone has its own rules for how to organise the space available and its own type of producers. These producers may

have contradicting interests. One example is the traditional conflict between cultivators and cattle raisers (cf. ch. 4.9, present tenure conflicts in the study area).

Another aspect is that the different social categories cohabiting, such as former land owners, traditional farmers, agricultural capitalists etc., often have conflictual relations. The state, the local collective management systems and individuals do not always coexist in harmony (*ibid*). This is due to the complexity of the social and economic system where different groups base their claim for land rights on different principles; Conquest, the Islamic principle of "Indirass"⁽⁵⁾ etc. (Park et al. 1991:ix)

Colonial tenure legislation in the Senegal River Valley

Between 1830 and independence in 1960 the French colonial power introduced a number of laws and decrees. While trying to legislate tenure rights, these laws generally implied confirmation of traditional tenure. However colonial legislation arrogated to the state unoccupied land which became part of the national domain (*ibid*:ix).

The earliest significant 1905- "arrêté" establishes the boundary between the two river sides but approves that residents on the left river bank have the right to cultivate on the right bank and vice versa. The "arrêté" hence confirms the right to "the exchange of cultivable fields" - a practice accepted until the recent conflict when the Mauritanian government decided to dishonour it (*ibid*: 9-11).

Tenure legislation in independent Mauritania

One of the independent Mauritania's first pieces of legislation was the decree of 1960. The decree claims that vacant land without an owner, unregistered land or land that has not been subject to a regular concession and is left undeveloped or unoccupied for ten years, belongs to the state. The Decree confirms customary tenure rights as long as they involve a permanent use of the soil. It also recognizes the right to just compensation for a person whose land is expropriated for public utility (*ibid* 11-12).

Ordinance 83.127 of June 5 1983

The new legislation introduced in 1983 changed the position of customary tenure rights. Ordinance 83.127 concerned land tenure reforms and organisation of Domain lands. With this ordinance Mauritania is provided with a modern legislation in conformity with the Shari'a law (Hesseling 1992).

"The tenure legislation of 1983 to 1984 affirmed Beydan neglect of the black residents of the Senegal River Basin by removing the legislative backing for maintenance of the blacks' traditional tenure rights. The legislation made provisions for Beydan customary tenure (pastoral collectives) while it eliminated the legal basis for traditional tenure in flood recession lands. The legislation is worth close scrutiny" (ibid:13).

Some of the most important articles in the new law are:

First article: Land belongs to the nation and every Mauritanian, without discrimination of any kind, can, in conformity with the law, own land.

Article 2: The state recognizes and guarantees private property which must, in conformity with the shari'a, contribute to the economic and social development of the country.

Article 3: The traditional land tenure system is abolished.

Article 6: The collective rights legitimately acquired under the former regime, initially confined to agricultural lands, benefit all those who have either participated in their initial development or contributed to their continued exploitation.

Individual ownership is normal. When there are no arrangements for division, and when the social order requires it, redistribution will be arranged by the administration.

Article 7: Collective lawsuits concerning property are legally inadmissible. Such lawsuits now pending before the courts and tribunals will be struck off the rolls by special decisions of the jurisdiction concerned. The decisions or judgments to strike such lawsuits off the rolls are not appealable.

Article 9: Dead lands are the property of the state. Lands which have never been developed or whose development has left no trace are considered dead.

Extension of property by "indirass" (the passage of time) , can be opposed by the original proprietor and by his heirs, but not in the case of properties which (since) have been (officially) registered (by someone else) (Park et al.1991:13-14).

Decree 84.009

The implemton of the Ordinance 83.127 was provided with the decree 84.009 where two important articles are:

Article 2: To be legally protected, the development of a plot must include constructions, crops, or dikes for retaining water. This development must be in conformity with Ordinance 83.127 of 5 June 1983 and the present decree.

Article 21: Any collectivity that wishes to retain lands undivided must transform itself into a regularly constituted cooperative in which members have equal rights and duties.

The same is true for collectivities whose land cannot be divided among individuals for economic or technical reasons noted by the Commission referred to in Article 13 of the present decree (ibid:14).

(French original of the legislation can be found in the appendix)

The most sweeping of the new principles is the idea that customary tenure is abolished and individual tenure would be the norm. The decree makes a concession to collective property useful for pastoral tradition where all members have equal duties and rights. But for the lands in the Senegal River Valley, where land is commonly owned but one has **unequal** rights and duties, the new legislation cannot be applied. Hierarchical structure within the ethnic groups is further described in ch. 3.8.

Another major purpose of the new legislation is to facilitate state-backed development to increase the national production. One of the proclaimed ambitions of the Mauritanian government and a condition to receive Structural Adjustment Loans (cf. ch. 3.7) , is to strive at food self-sufficiency. The state can increase production by taking over vacant land according to the principle of "indirass". However, due to the ecological constraints in the region with great parts of the lands lying vacant

following the flood vagaries, the population of the River Valley, although being Muslims, has never relied on the shari'a courts to settle tenure disputes.

The legislation makes some provision for division of common property, but generally lacks support to those with minor tenure rights, and no compensation is available for those who cannot establish ownership in the eyes of the law, and many tenure rights do not constitute such ownership (ibid:16)

Secondary tenure rights have been systematically undermined by the Indirass principle leading to former available lands being absorbed in development schemes (ibid:11)

In addition, the government can use article 9 and the concept of "dead lands" to avoid payment of just compensation to the former land owners.

The 1983-84 legislation was followed up with a series of circulars. These were designed to facilitate the granting of concessions without going through a full legislative process. Hence the development of the River Basin for the profit of Beydan entrepreneurs (ibid:15).

Decree 90.020

In order to further regulate the attribution of land the Mauritanian government launched a new decree 90.020 in 1990. This decree introduces new elements such as a regulation of the previously conceded attributions, an attribution process divided in three indispensable phases; the authorisation to exploit, the provisory concession and the definite concession, and creation of consultative commissions. Despite this positive adjustment to the land tenure reforms, they still cause problems in conciliation with the local tenure practices (Hesseling 1992).

Abolition of traditional land tenure and application of the 83-84-legislation implies that only the government can settle tenure issues. The smallest producers can easily become worse off since they would be the first ones to be pushed off their land and

become employment seekers. Such is the case for many Haratinas. Push for development in the western end of the middle valley has led to many casualties where Halpulaar-en villages have been eliminated by the government.

The government's attempts to confiscate land also affected the traditional ownership rights of Senegalese farmers living on the left bank but cultivating on the right, which the decree of 1905 gave them the right to continue. The Mauritanian government was not afraid of any land loss. With a Senegalese response on the corresponding territories on the left bank, the only losers would be the Halpulaar-en who used to cultivate the land. The freed Senegalese lands on the Mauritanian side would still be available for the Beydan expansion. An agreement between the two governments in Aleg 1988 tentatively resolved these problems, but later the Mauritanian government withdrew its officials "realising" that the agreement on several points contradicted the 1983-84 legislation. (Park et al.1991:17)

The aspect of slavery

The Mauritanian government's abolition of slavery in 1980 was followed by an ordinance in November 1981, declearing that former slave masters should get compensation for lost slaves, i.e. slaves should according to Shari'a law pay their former masters a substantial compensation. This is why repeated abolition of slavery in Mauritania has no real significance. (ibid:5) The slavery issue is relevant when speaking of the Beydans' use of slave labour. Much of the agricultural development on the Mauritanian river side since 1984, especially at the west end of the River Valley, is financed by Beydan entrepreneurs using slave or Haratine labour. Haratinas have also cultivated in other areas of the valley, either for Beydan or themselves. The Haratinas were also mobilised to assist the Beydans during the events of 1989. (Cf. ch. 3.8. ethnic groups, and ch. 5.6 the conflict)

Development schemes in the river basin have become increasingly attractive to the Beydans as drought has deprived them their traditional income sources and they have had business losses in Senegal during the recent conflict. Donors' insistence on privatization and individual tenure/land ownership has facilitated Beydan dominance

(ibid:x)

A significant portion of the land granted by the state to the Beydan, is claimed by the Halpulaar-en. They cultivate the great majority of the flood recession lands on both sides of the middle Senegal River Valley. They insist on their land rights despite their inability to cultivate because of drought. Their dominant position in terms of landholding makes them obstacles to the expansion of development schemes in the middle valley. Both Halpulaar-en and Soninkes can make legitimate historical claims to tenure of flood-recession lands (ibid:3). (Cf. historical presentation in ch. 3.9)

4.8 TENURE LEGISLATION AND PRACTICE ON THE LEFT BANK

The law of the national domain.

In 1964 the Senegalese state promulgated the law of the national domain. This law stipulates that all the land which is not formally registered under an official land owner, automatically is state property. (Diemer & van der Laan 1987:153). With this reform 97% of the land in Senegal was nationalised. (Woodhouse & Ndiaye 1990:7). Officially the citizens were given the chance to manifest and claim their legal property rights before the introduction of the law, but more than 90% of the land turned out to be without formal land owners. In the river valley practically no land was registered under formal ownership in 1964. The law therefore meant that those who formerly had been operating as land owners were deprived of an important element of their power. (Diemer & van der Laan 1987:153)

The law which has been followed up with several decrees, the latest in 1987, (see below), states that rights to land use are to be allocated by the CRs, through their elected councils. The CRs are the rural communities which constitute the local administration and the closest link between the Senegalese farmers and the state apparatus. Each of the CRs has a council where two third of the members are elected from the community and one third consists of professionals. (Comments from CAB personnel, August 1992) With the allocation of land use rights by the CRTs the law follows up the traditional tenure practice in the area and its distinction between land

ownership and land use. (For traditional tenure see history ch. 3.9 & ch. 4.2) It aimed however, at improving equity of access to land through the fact that the allocation was to be done by an elected body. A practical constraint to improving the equity was that the representatives elected to the rural councils were often members of traditional landholding families.

"The modern law practically reinforced the local standing of the traditional chief by conferring upon him a new state function." (Woodhouse & Ndiaye 1990:8).

One further provision of the law is the subsequent decree of 1972, which gives the state the opportunity to declare an area a "zone pionnière". Within such a zone "the jurisdiction of the local rural councils are suspended in order to implement projects deemed to be in the wider national interest" (ibid). A second provision concerns the possibility for the CR to reallocate land which they consider currently under-utilised. Such reallocation however, requires that the new users have to pay compensation for any buildings or infrastructure on the land. Woodhouse & Ndiaye claim that both these provisions have been significant for the development of land rights on the left river bank. Already in 1965 the Senegalese part of the delta region was declared "zone pionnière" and put under the management of the SAED. In the delta, prior to the construction of irrigation schemes, the population was sparse. The land was not previously exploited and hence traditional land rights were weak. This meant that it was relatively easy to "redistribute" the land to the heterogeneous groups of both peul pastoralists and wolof farmers. (ibid).

(Production systems and ethnic groups are further described in ch. 3.4, 3.5 and 3.8 respectively)

The declaration of 1972 was extended in 1980 to apply to the entire left river side. However in the middle and upper river valley the opposition against the new land tenure law was very strong. Due to such opposition, even today people claim that the law of the national domain has so far not been applied in the Fuuta region. Throughout the 1970s and 80s, SAED found it politically smarter to accommodate the wishes of the local rural councils. Here the villages were long-established and local

land rights well defined. In zones like Matam and Podor, land belonged to families, which resisted the application of the law of the national domain. Up to now the elected members of the rural councils are old land lords who are not interested in attributing the land in the same way as the members of councils in the delta. Farmers from the area said that in the process of aquiring land, very often the CR would say that this used to be the property of mister X and you have to go and see him, if he agrees the CR can handle the case, if not... In addition there is a certain solidarity between all the elected members of the council, because they are all concerned about the implication of the new system.

Another aspect of this is that the families who own the land would never give them up without being part of the cooperative/ organism that will exploit the land. If you ask these families for land you might end up having a small parcel which is not viable. Hence the new development projects are most successful in the delta region. In the middle valley by contrast, nobody accepts to give up their land. They know about the existence of the law of the national domain, yet the traditional property rights are respected. (Djiby Sall, personal comment)

Decree 87-720

With the decree no 87-720 of June 4 1987, the land of the delta which used to be characterised as "zone pionnière" is transformed into "zone de terroir". Under these terms a particular form of state disengagement is implied (Crousse et al.1991:169). While being considered as pioneer zones the lands of the delta were under the administration of the SAED which controlled the management and could eventually engage workers from outside the area. Having the different status, "territory zones", the land is under the management of the CRs, i.e. the CR-council which is composed by two thirds of local farmers, who often come from traditionally rich and powerful families. The result is that the new land management system is somehow blocked. (Schmitz 1991:13).

Agrobusiness

In the "Left Bank Master Plan" the Senegalese government has reserved 11,500

hectares for the purpose of expansion of agrobusiness. The question is whether the installation of agro-business could be under the control of the CRs as long as they control the attribution of land. If the state finds it conflicting with its development strategy, it can withdraw the distribution right of the CR. So far the presence of agrobusiness in the valley is very limited. The sugar estate at Richard Toll is one of the few companies which are making profit. (Comment from CAB personnel)

4.9 SOME PRESENT TENURE CONFLICTS IN THE STUDY AREA

The modern legislation implies that both river sides are facing new types of tenure conflicts. At the same time traditional conflicts, like the one between farmers and pastoralists, are being reinforced. On the Senegalese river bank the situation in the Delta is different from the situation in Fuuta. The expansion of irrigable land in the Delta region has effected the pastoralists which used to exploit pastures near the river in the dry season. These people experience that the availability of pasture is shrinking every year. The director of the OMVS documentation centre, Djiby Sall, told that in August of 1992, 40 people were in prison in Saint-Louis because of intensified conflicts over access to pasture. Both OMVS and CAB representatives claim that the new development projects have been more successful in the Delta. This has to do with the fact that much of the project land used to be unexploited, but with the construction of the dams, it has been changed to irrigable land. One of the problems, however, is the anarchic installation of perimeters. One perimeter might be put up criss-crossing the irrigation channels of another and prevent the water from reaching the parcels of the already established perimeter.

While the land in the Delta region has been fairly easy to redistribute and transform for irrigation purposes, in Fuuta traditional tenure is still dominant. The land along the river belong to families and has been occupied for centuries. The elected members of the rural councils are old land owners who solidarise with each other. Nobody accepts giving up their land and hence the application of the law of the national domain is resisted and the traditional property rights are respected. The concept of 'state property' of all land, only with usufruct rights for those who exploit the land

does not exist in the middle valley. To a large extent the hierarchical structures are maintained and the former landless remain landless.

The introduction of irrigation has often given certain groups changed access to land. 'Fonde' land (see ch. 3.4) is rarely naturally inundated, but some places it can easily be transformed to irrigable land. There are examples of 'fonde' villages and areas inhabited by fishermen and warriors, traditionally not the main land owners, but who are now cultivating a larger percentage of the managed perimeters than their corresponding number of people (Boutellier/Schmitz 1987:546). In other cases the introduction of irrigation has aggravated the marginalisation of certain groups. People who used to live in fringe areas of the waalo land where the natural flooding was highly unreliable and where no perimeters have been installed, have been severely affected by the lack of peak flooding after the operationalisation of the Manantali dam. (Horowitz et al. 1991)

On the Mauritanian side the main tenure conflict is linked to the presence of new land owners who operate under support from the government and the credit system while many traditional land owners have been deported and those left have problems in keeping their parcels. (Cf. chapters 4.8, 5.3 & VI)

Installation of perimeters implies that the local farmers have to take yearly credits to be able to pay the costs of and perform cultivation. Recent examples are found in Kaedi and Boghé where the exploitation of rice fields became too costly for the indebted farmers. The government therefore wanted to perform some extension work to attribute the land to new owners. The present owners rejected but the government has deployed soldiers (2000 to Kaedi) to force this extension (Le Flambeau no 6, 1992).

This chapter has shown that the factors of land tenure and property regimes are among the most important when it comes to access to and management of the agricultural land along the Senegal river. The transition from traditional to modern management, especially the introduction of new tenure legislation produces conflicts

on both river banks. Three axes of explanation for such conflicts are reviewed in this chapter. The tenure conflicts, especially those which have developed in Mauritania, are closely linked to the outbreak of the Senegal-Mauritanian conflict. This is further discussed in chapter VI.

CHAPTER V

ENVIRONMENT AND SECURITY

5.1 INTRODUCTION

With special regard to the Senegal-Mauritanian conflict, this chapter discusses the aspect of environment and security in the SRV. The dicussion is presented through the use of three theoretical concepts; **interdependence**, **environmental security** and **the greenwar factor**. The greenwar factor can be interpreted as a vicious cycle which constitutes a fairly good summary of what has happened in the SRV.

The interdependence between the two countries and the formal cooperation within the OMVS is followed by a closer look at the Senegal-Mauritanian conflict, the deportation and the present situation for the deportees. In this chapter it is subquestion c) -the extent to which the actual resources represent a source of conflict and d) -the status of the existing interaction, that constitute the basis of the discussion.

5.2 INTERDEPENDENCE

The concept

The need for cooperation underlines the aspect of **interdependence** in states' environmental matters. Keohane & Nye argue that the concept of interdependence contains several dimensions; **economic**, **social** and **policy** dimensions (Keohane & Nye 1977:368). Interdependence has to do with "some degree of mutual effect" (ibid:367). They further point out that the two terms 'interdependence' and 'integration' can be regarded as conceptually interchangeable.

"They differ only in the connotation that integration often takes place within an institutional framework". (ibid:368)

With regard to the **economic dimension** of interdependence, Gasiorowski argues that if the interactions that create interdependence were not beneficial, countries would forego them to avoid paying the connected costs (Gasiorowski 1986:26).

Interdependence between co-basin states is however, not necessarily of a strictly

economic character, but also has to do with common management of natural resources and creation of a suitable institutional framework. In the introduction to the book Greenwar the authors argue:

"In the Sahel , ecological interdependence is indisputable and no state can ever resolve questions of resource use and allocation in isolation."
(Bennett 1991:6)

One can also distinguish between what could be labeled as 'direct interdependence' on a state-to state, i.e. bilateral or international level, and 'indirect interdependence' which primarily consists of the many unformalised exchange activities across borders, taking place on a local level. These activities might in turn effect the national economy and hence, the bilateral relations and the 'direct interdependence'.

Interdependence between co-basin states comes with the necessity of a common river basin management. Godana claims that there is a widespread awareness of the mutual dependence between states sharing water resources (Godana 1985:6). Such interdependence has led to the formation of international management institutions. One of them is the OMVS (see chapter 5.3) which Godana mentions as a successful example of how the river basin states have accepted the philosophy of multi-purpose projects and basin-wide development programmes which permit a relatively complete and optimum harnessing of the waters (*ibid*). Whether Godana's statement fits reality is further discussed in chapter 5.3 and VI, the analysis.

Interdependence and complementarity of the two river sides

The two river sides have been regarded as one common territory where the different regions could supplement each other with the necessary resources. Still people living on the left river bank just refer to Mauritania as "the other side" and vice versa for people residing on the right bank. Traditionally the exchange pattern used to be the following: During the rainy season pastoralists from the left river bank would conduct their animals to the pastures of the right bank and in the dry season the Peul farmers would come to cultivate their fields on the right side. Vice versa, herders from the right side would cross for pastures in the residues of the flood recession

farming on the left bank (Santoir 1990 a:569). The left bank would generally provide a more humid climate in drought periods and the right bank provide more favorable conditions for cattle rearing in humid periods.

(The two river sides in their national contexts are further described in chapter 3.2)

5.3 SENEGAL RIVER DEVELOPMENT ORGANISATION (OMVS)

OMVS is an example of the how interdependence across borders between neighbour states has resulted in the formation of an institutional framework for cooperation.

Conventions

Initiatives to develop the Senegal river started already during the colonial era. Replacing several unsuccessful predecessors, the organisation OMVS was founded in 1972. The three member states have signed four conventions which govern all the activities aimed at harnessing and developing the resources of the river basin:

- 1) Convention on the establishment of the OMVS, 1972
- 2) Convention on the legal status of the Senegal river, 1972
- 3) Convention on the legal status of the jointly owned structures, 1978, and
- 4) Convention on the financing modalities of the jointly owned structures, 1982

Concerning the last convention, the current cost allocation key is the following:

TABLE 5.1 OMVS COST ALLOCATION KEY

Mauritania	22.6%
Senegal	42.1%
Mali	35.3%

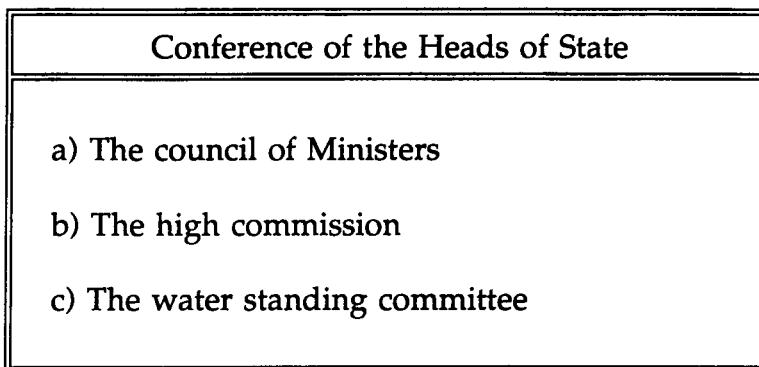
(source: OMVS 1990)

Organisation structure

The first convention (see above) places the OMVS under the supreme authority of the Conference of the Heads of State and of Government. It is this Conference which

defines the organisation's cooperation and development policy. Principally the Conference has an ordinary session once a year. The presidency rotates between the three Heads of State, with the duration of two years each. Decisions are taken unanimously. The organisation structure further includes the following three standing organs:

FIGURE 5.1 OMVS' ORGANISATION STRUCTURE



a) The council of ministers is the supervision body of the organisation and supposed to elaborate its development policy and define the priorities of action. The council meets twice a year, unless there is a need of extraordinary sessions, and decisions are taken unanimously.

b) The high commission is the organisation's executive organ and includes different departments and divisions, such as the departments of investments and debt, of development and coordination, and of regional infrastructure.

c) The water standing committee is responsible for the allocation of the river water among the member states and among the various utilisation sectors, such as agriculture, industry and transport. The water standing committee has advisory status before the Council of Ministers.

Subsidiary organs include the Consultative Committee and the Regional Planning Committee.

Objectives

OMVS implementation programme which was adopted just after the severe drought in 1974 had the following general objectives:

- Management of 375,000 HA of irrigated land.
- Production of electricity
- Provision of navigation possibilities in the river

(Leservoisier 1991:1)

According to OMVS' own information materials from 1990 the four long term development objectives of the OMVS-programme are interdependent. They are stated as follows:

- 1) *To secure and enhance income of the river basin inhabitants as well as in the neighbouring zones.* This can be achieved by letting a maximum of river basin inhabitants get access to irrigation cultivation and assuring them a certain income in order to prevent the emigration tendencies.
- 2) *To assure the ecological equilibrium in the basin and to encourage its maintenance in the Sahelian zone.* This requires an intensification of the production by the use of more efficient methodes which do not extinguish the natural resources but allow them to regenerate.
- 3) *To make the three member states economy less vulnerable vis-a-vis the climatic conditions and outside forces.* This can be achieved by a certain diversification of the production to avoid that the exportation is based on one or few products and that terms of trade are further deteriorated. In addition, with their own production of hydro-power all three countries will be less dependent on the import of energy.
- 4) *To accelerate the economic development in the member states by intensive promotion of regional cooperation.* The management of the river can contribute to development the common interests of the member states and thereby create interdependency bonds between them. This will in turn stimulate the inter-state cooperation, both by regional interaction and a reinforcement of the cooperation in the heart of the organisation

structure. (OMVS 1990:25-26)

These objectives were to be accomplished through the construction and management of the two dams **Diamma** and **Manantali**.

The dams and control of the river water

The Diamma

The Diamma dam is located across the river, between Diamma village on the left bank, and Tounde Berette on the right bank. At 27 km from the Atlantic ocean it is constructed as an anti-salt dam whose basic function is to prevent intrusion of seawater into the river. The idea has been to improve the agricultural production potential in the Delta, where lands were uncultivable because of their salinity. The construction work was carried out from 1981 to 1986. The barrage gates are meant to be opened during flood periods and closed during low water periods and thereby secure a reserve of fresh water. A rise in the water standard between 1,5 and 2,5 m allows for irrigation of an area from 42,000 to 100,000 ha. In addition, it will improve the filling of several lakes; lake Guiers in Senegal and R'Kiz in Mauritania. Besides the depression 'Aftout es Sahel' in Mauritania will be filled. (OMVS 1990)

The Manantali

The Manantali is located across the main tributary, the Bafing (cf. ch. 3.2) 90 km south-east of Bafoulabe in Mali (cf. figure 3.1) It is a multi-purpose storage dam which can impound 11 billion m³ of water and hence allows to regulate the river flow. It is designed to contribute to the development of 225,000 ha of irrigated agriculture, to ensure year-round navigability of the river from Saint-Louis to Kaye, and to generate hydropower with a guaranteed output of 800 GWH/year. The construction work started in 1982 and was completed in 1988 (OMVS 1990). Due to lack of financing the hydro-electric power plant is not yet constructed. The member states have also had heavy discussions on the location of the electrical tracés. According to both CAB and OMVS personnel these disagreements are more or less solved.

Achievements

Record to date is that while dam construction is completed, irrigation is expanding at a very slow rate. Concerning the production of hydropower, no turbines have been installed to this date.

The original objective of a total transition from flood recession to irrigation cultivation has been replaced with a recognition of the complex and multi-faceted riverine production systems, as well as the necessity to preserve, at least to a certain degree, the existing diversity. There is also a consensus that a complete replacement of recession to irrigation is neither economically nor environmentally feasible (Horowitz et al. 1991). Until two years ago, both OMVS, other governmental organs and the donors were convinced that after a transitional period, the artificial flood from the Manantali would be terminated and the river would be managed uniquely for hydropower, irrigation and navigation (*ibid*:3). The donors (cf. ch. 3.7) have promoted large scale irrigation projects in order to achieve economic return of their investments in the dam projects as soon as possible.

The Manantali dam implies a control of the annual river flood. The riverine populations have had negative experiences with the management of the dam. Both in 1990 and 1991 there was almost no flood, and the many producers who used to depend on the flood recession system had to face a situation even more difficult than during earlier drought years. The context of no flood is further discussed in chapter VI.

It is too early to draw conclusions concerning the environmental impacts of the Diama and the Manantali dams. They are not yet fully operational. The OMVS is trying out their capacities, and the riverine populations have still not experienced the complete impact of the projects. With the expected increase in water level and expansion of permanently inundated areas they fear health and sanitation problems and increase in animal diseases. Besides there are several villages and towns which have to resettle as they are situated in areas that will be inundated. (Fadel O.Touré, personal comment)

5.4 ENVIRONMENTAL SECURITY

The concept

The concept of **environmental security** is closely linked to that of the '**Greenwar factor**' which is presented below. Being a concept which shed alternative light on the correlation between environment and conflict, it has led to scientific debate and extended research. Sverre Lodgaard explains:

"Environmental security may be defined along three dimensions:(1) sustainable development of resources; (2) environmental protection in the traditional, more narrow sense of the term, meaning clean air, clean water, unpolluted soil etc.; and (3) minimization of risk, e.g. in connection with large-scale industrial activities and the use of technologies which may do great harm in case of accident, as in the chemical and nuclear industry. It follows that **environmental degradation** may be defined as degradation of the state of environmental security, i.e. a negative change on the same dimensions.(Lodgaard 1992:20)

He further claims that environmental degradation may cause harm comparable to wars and also be both cause and consequence of armed conflict (*ibid*). Lodgaard examines the relationship between environmental degradation and armed conflict as follows:

- 1.Where there is armed conflict, environmental degradation usually follows (nuclear war being the extreme case).
- 2.Where there is environmental degradation or acute scarcity of vital resources, war may follow.
- 3.Environmental degradation exacerbates conflicts that have originated for other reasons. Environmental degradation adds another dimension to existing conflicts. (Lodgaard 1990)

Another researcher dealing with environmental conflict resolution, Arthur Westing, claims:

"...in the theaters of war environmental disruption can be either incidental or intentional, and in either case is often quite severe." (Westing 1988:262)

He classifies three types of natural resources over which wars might be waged; 1)

Territorial resources within a nation, 2) Shared or international resources which do not respect boundaries or 3) Extra-territorial resources which are part of the international commons (*ibid*:260).

Peter Wallensteen emphasises that so far little attention has been given to highlight connections between environmental degradation and major social conflicts. He argues that the relationship between environmental degradation and the emergence of serious social conflict is complex and seldom linear. On the contrary the relationship might be indirect or even in the opposite direction, i.e. serious social conflict can cause environmental degradation (Wallensteen 1992:47-48). He presents a table of connections including the following statement:

"Environmental destruction leading to reduced resources available to society (scarcity) and thus resulting in more (intense) contention in society at large (*ibid*:49).

In theoretical discussions about environmental conflict resolution one of the factors of concern is the achievement of an acceptable level of environmental security. It seems to be a precondition for the sustainability of further development of a certain area. The way to achieve this level of security goes through proper management. As Westing points out:

"The optimal and equitable utilization of our shared resources requires management within an integrated ecological framework that deals with ecosystems as the fundamental unit irrespective of the vagaries of political boundaries. Such management thus requires the establishment of comprehensive bodies of law that enjoy wide multi-national acceptance." (Westing 1988:261)

Degradation of the state of environmental security may be both cause and consequence of armed as well as social conflicts. Since the Senegal-Mauritanian conflict appears to find some of its origin in severe environmental degradation, the concept of environmental security is useful in the analysis of the situation in the SRV.

5.5 THE GREENWAR FACTOR

As mentioned above, the concept of the **Greenwar factor** is closely linked to that of environmental security. The Greenwar factor underlines the link between unwise

development, environmental degradation and bloody conflict and is defined as follows:

"In the complex web of causes leading to social and political instability, bloodshed and war, environmental degradation is playing an increasingly important role." (Bennett 1991:1)

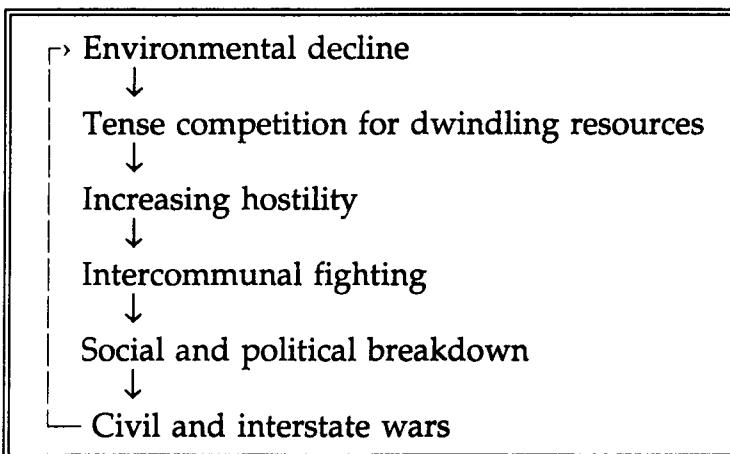
When natural resources are diminishing competition over their use increases and violent conflicts are becoming more frequent (*ibid*:1). The authors insist that the environment is increasingly important and that "if the implications of ecological decline are not recognised, the prospects for the Sahel's future stability are bleak" (*ibid*:4). Governments often fail to address the issue of resource depletion and would instead try to increase their military strength and tend to use military force in response to non-military challenges. Governmental action might exacerbate the situation as poor people's means of survival becomes targets for the state (*ibid*:148-149). The authors argue further that peace established through military force without consideration of the Greenwar factor, is bound to be short lived (*ibid*:3).

The vicious cycle

The Greenwar factor can be illustrated as shown in figure 5.2.

In short, the vicious cycle completes itself when pressure on the environment leads to instability which in turn breeds further insecurity and violence.

FIGURE 5.2 THE VICIOUS CYCLE⁶⁾



(source:Bennett 1991:8)

Key to breaking the vicious cycle

According to the authors one of the keys to breaking the vicious cycle is to establish greater local control over resource allocation. They argue that lack of people's participation in setting and implementing priorities has undermined the achievement of sustainable development. In the control over survival resources, voices of all involved sections of society have to be included. Hence, there is a need for long-term commitment to the process of democratisation and a fight to get the priorities of the powerless on the agenda of the decision-making process. (Bennett 1991)

Other consequences of the Greenwar factor

Due to intensified competition for resources, the local populations are no longer free to choose their pattern of life. Forced migration because of environmental degradation or political instability lead to homelessness, loss of livelihood and cultural dislocation (ibid:113). Whether they are classified as displaced or refugees these people might add pressure on the surrounding environment and hence, cause tensions between themselves and the local population. Many would no longer be able to continue their ancient lifestyle, i.e. risk management strategies through exploitation of a wide range of possibilities in accordance to timing and the resources available.

Another aspect is the increasing competition between farmers and pastoralists. This ancient symbiotic relationship is threatened with collapse. Traditionally, governments have in their legislations actively favoured agriculture. The exception is Mauritania and Chad where it is ethnic groups of nomadic origin that control political power (Bennett 1991). In the struggle for control over their territories governments seek to sedentarise their population. Settled farmers are easier to keep within the framework of a state than is the case with nomads. Although central authorities favour agriculture, private persons still consider livestock to represent individual wealth and social status. Hence people would invest in livestock as absentee owners and engage local pastoralists as paid herders. At the same time improved animal health has contributed to growing herds.

"So-called excessive pressure on the ecosystems by livestock is regarded by many as a major factor in desertification."(ibid:40)

Drought and environmental degradation have forced the farmers to cultivate land that formerly was used for grazing. Shrinking pastures distort the balance and imply increased competition between farmers and pastoralists (*ibid*:36-37).

The nation-state model

An important point in the Greenwar argument is the "inadequacies of the concept of the independent nation state when it comes to natural resources." (Bennett,ed. 1991:6) Parker (1991:168) points out that historically African borders are relatively permeable and more ethnic than territorial. Nevertheless, the colonial heritage with the importation of the new nation-state model still constitutes the framework for the borders we find in Africa today, and more specifically the border between Senegal and Mauritania. Parker argues that it has been widely recognised that these geopolitically 'artificial' borders must be accepted to create order and stability and that one has to maintain the status quo to avoid disputes. Parker further points out the paradox that despite the imported nation-state model, disputes occurring between states make them less arbitrary and instead render them as more functional units. Hence the central questions: Are stability and peaceful relations promoted by reinforcing delimitations and the nation-state model, or by making boundaries more permeable and as a consequence weakening central control?

Centrism versus federalism

In Europe borders have been defined through wars and people have learned to live with boundaries. An important point in which Europe differs from Africa, is that most European borders were not defined and implemented by 'outsiders'. One of the issues concerning African border policies is whether the optimal resource allocation for the nation-state is achieved by stricter centralised border control or by initiating federalism and increased exchange across borders. An argument in favour of the latter is that less border control reduces central authorities disposition over peripheral resources, but at the same time provides opportunities for neighbouring peoples' economic exchanges. Victims because of loss of trade, occurring when the border is closed, would be fewer, and hence less of a burden for the state. Introduction of a federated structure with stronger local bodies implies a move away from the

centralisation and elite-oriented policies dominating in many African countries. Political power in the hands of certain privileged ethnic groups might also be easier to realize in a centralised system. Parker argues that

"Centrism might increase ethnic conflicts as various groups vie to dominate the unitary political apparatus, since an 'all or nothing' competition is likely to be created." (ibid:170)

However, canalisation of investments from national bodies and foreign sources could be more difficult in a federated structure. A strong institutional cooperative framework is needed if regions are to coordinate development activities. Such coordination might be of crucial importance if sustainable resource allocation and use is to appear. In favour of more democracy and less centrism Bennett et. al. (1991:21) argues:

"In the rural areas of the Sahel today, the demand for democracy is essentially linked to the urgent need to loosen the grip of centralised state control and to establish the conditions for local people to take charge of their own destiny - especially with regard to land management, and environmental protection and improvement."

Questions concerning the border concept between Senegal and Mauritania will be discussed in the analysis in chapter VI.

5.6 ENVIRONMENTAL SECURITY AND THE SENEGAL-MAURITANIAN CONFLICT

The vicious cycle in the Senegal River Valley

The vicious cycle (see figure 5.1) seems to fit well into the context of the Senegal-Mauritanian conflict. Drought and desertification displaced thousands of Moorish nomads towards the south. This resulted in increased competition over scarce resources. Resource scarcity coupled with the traditional animosity between the Moors and the Negro-Africans, led to intercommunal fight involving Negro-Africans on both river sides on the one hand, and the Moors on the other. This caused widespread socio-economic break-down which in turn developed into inter-state conflict between Senegal and Mauritania.

The drought

The drought and its related problems which started with the severe Sahelian drought in the early 70s, have rendered the right river side's pastures useless and forced the herders to accept a larger degree of migration towards both Senegal, Mali and further beyond (Timberlake 1985). The left river side has been invaded not only by Peul ,but also to a large extent by Moorish herders and animals; i.e. camels. Due to the negative environmental impact of these camels, the Senegalese government was forced to prohibit the camels to graze in certain regions (Santoir 1990a:570). This in turn led to confiscation of Senegalese farmlands (cf. chapter 3.9).

The drought has underlined the complementarity of the two river sides, but also forced people to migrate or become sedentary. Naturally people would try to settle in areas where there are exploitable resources, and access to the land along the river has become a crucial issue. The pressure on the river valley has increased every year until 1989 when the crisis culminated into an open conflict between Senegal and Mauritania. At the same time the old competition for the inundated lands was intensified as the belief grew that they would become the future's bread basket of the whole region. The river region plays a crucial role in food production in both Senegal and Mauritania. This is further discussed in chapter 3.2.

Competition for power in Mauritania

A number of sources, some of which will be referred to below, link the expulsion of black Mauritanians to the competition over access to land along the river and the arabisation attempt of the Mauritanian government.

Since the drought in the 1970s, successive Mauritanian governments have tried to expropriate land along the Senegal River. The progression of these land policies resulted in the land reform in 1983, (cf. ch. 4.7) and culminated in the massive deportations of non-Arab farmers and land-owners in 1989-90 (Fleischman 1991:14).

Africa Confidential (1989:2) claims:

"...expulsions in Mauritania are part of a government policy of ridding

Mauritania not just of foreign nationals but of black Mauritanian citizens who are an obstacle to the arabisation of the country."

Africa Confidential goes on (*ibid*:3) :

"Underpinning the problem of ethnic antagonism lies competition over land in the Senegal River Valley, the most fertile land in the country. It has been made even more valuable by the construction of dams at Manantali and Diam, opening important possibilities for the development of the Senegal river. The Beydanes, themselves victims of the growing desertification of Mauritania, have designs on land belonging to their Peul, Wolof and Soninké fellow-countrymen. This is made explicit, for example, by bye-law number 119/DB enacted by the prefect of Boghé on 10 May 1988. This measure confiscates land belonging to blacks in the fertile Boghé region for redistribution to Beydanes from the north."

Diallo (1991) writes that the increase in repression against blacks appeared to be aimed at diverting people's attention away from the real development problems confronting the country. Anti-black policies stirred up the old racial tension between Beydans and Negro-Africans. A part of these new policies was the arbitrary imposition of land reforms in 1983-84 (see chapter VI) in order to expropriate fertile land along the Senegal river. This generated angry reactions from the Negro-African community who felt that their ancestral land and most valued life base was undermined by the government's land policies. Arrestations and dismissal of Negro-Africans from their jobs in the public sector and armed forces, came as a reaction to the publication of "The Manifesto of the Oppressed Black Mauritians" in 1986. Further, hundreds of black service men were imprisoned or confined to remote villages. All these measures directed against black Mauritians finally culminated in the deportation/flight of 150,000 black Mauritians into Senegal and 60,000 into Mali in 1989-90 (*ibid*:3).

Park et al. (1991:vii) argue that the Beydans' desire to increase their landholding along the river appears as a consequence of both the drought in the north of Mauritania and the expectations of development of the Senegal River Basin. Park et al. further points out that the conflict is related to the internal cultural and economic policies of the Mauritanian state (*ibid*:ix).

The deportation

In April 1989, at Diawara, Senegal, Senegalese farmers confiscated a Mauritanian herd, grazing on their land. This sparked off a violent dispute during which two Senegalese farmers got killed while thirteen others were taken as hostages by Mauritanian border guards (Parker:1991). (Cf. unfolding of the crisis, ch. 3.9) The outbreak of violence in both capitals and the killing of hundreds of blacks in Nouakchott was the prelude to the Mauritanian regime's deportation of citizens towards Mali and Senegal. Eyewitnesses who observed the way the massacres were carried out in Nouakchott, were also stricken by the amazing efficiency of the Mauritanian government during the deportations. As one World Bank representative in Dakar puts it: How could the Mauritanian regime succeed in the implementation of deportations in a country where nothing functions, i.e. infrastructure and transportation facilities are very poor, the economy is in crisis etc., unless there is an organised plan behind? Santoir (1990,b:578) says that the expulsions were organised either by the local police forces or the army, and escalated one to two months after the April events. Some of the Mauritanian refugees I interviewed told about how the deportation came as a total surprise. Although they were somehow aware of the growing tensions, many had never expected that it would take such a form. One woman in Boki Diavé refugee camp told that in her village, Windé Diami, they were about to celebrate a wedding when the soldiers came in July 1989.

A report written by the former village chief of Windé Diami tells the following: "Military vehicles surrounded the village, and the soldiers gave orders that all inhabitants, from the youngest to the eldest, had to gather. We were told that we had to cross the river and join Senegal, and that we were not allowed to come back. Everybody had to undress in order not to bring any valuables. The women even had to take off their earrings and other jewellery. We were then ordered into the trucks and taken down to the river escorted by guards."

Other refugees could tell about how they themselves or their friends and neighbours had been exposed to humiliation and torture before being sent across the river.

The present situation

In addition to the existing documentation about the situation of the Mauritanian refugees, the opportunity to visit four different refugee camps and to interview the chief coordinator of the UNHCR/OFADEC⁷ projects provided me with important background materials on the situation.

The refugees are spread in 220 camps all along the river, from Rosso to Bakel. When one travels along the Fuuta main road one cannot avoid noticing the many huts covered with the blue UNHCR plastic materials. The latest UNHCR figure (August 1992) estimates that 60,000 refugees are still living in these camps. However, it is difficult to conduct any exact census since some of refugees have left the camps to search for a living elsewhere. In addition to these 60,000, many have never had their names registered in the UNHCR statistics. Many of them perform a transhumant lifestyle and have moved with their animals further south into the Senegalese Ferlo region.

One could categorise the refugees into three different groups: 1) Those who got deported and lost all their belongings, inclusively their identification papers. 2) Those who managed to escape with some of their property like cattle before the authorities reached their villages, and 3) Those who were prewarned early enough to escape and bring along their animals and other belongings. How many that belong to each category, remains unclear, but it is likely that many of those who managed to bring along their animals have moved further south and do not rely on any support from the UNCHR, while those who are forced to live in the refugee camps came without anything. Santoir (1990,b:587) claims that according to the number of animals saved, the refugees survive on agro-pastoralism, petty-commerce, clan solidarity or international aid.

Conflict victims

When counting the Mauritanian deportees in Senegal the Peul groups constitute the majority. All categories of Peul are represented, though the Peul waalo seem to be more effected.

Santoir operates with a number of explanations for the Peul being the worse effected victims of the Senegal-Mauritanian conflict; 1) First of all their nomadic lifestyle makes it easier to contest their citizenship/nationality. Not only in Mauritania but also in the other Sahelian countries this group of "nomadic jews" has become a victim of nationalism. 2) Their socio-political and spatial organisation is weak. The more spread they are, the less they are able to resist and the easier it is to attack them. 3) Their values are movable as oppose to the sedentary farmers' fields and thereby easier to confiscate. 4) Expelling the Peul not only meant confiscation of animals, but also a recapture of tracks and pastures. 5) A majority of the expelled Peul were cultivating both in wet and dry seasons and left the Moors with more agricultural lands. (ibid:583-584)

However, the Peul have been better organised and more determined than the other groups when it comes to crossing back to Mauritania to recapture their cattle. Some of the interviewees pointed out that the Peuls' actions might have been a strong element in preventing the Mauritanian regime from further expulsions. Some even said that if the Mauritanian government should have succeeded better in their deportation plan, they should have concentrated on the Halpulaaren which do not seem to have the same will to fight back as the Peul.

Refugees versus local Senegalese citizens

When the refugees arrived on the left river bank they were taken warmly care of by their Senegalese neighbours. In Boki Diavé the former village chief, Baydalahi Kane, could describe how the refugees came, many even without clothes. The people of Boki Diavé gave them shelter, food and clothes, and organised a collection of money to be divided among the refugees long before any official organisations appeared on the scene. One of the reasons for this warm welcome might be that many refugees had parts of their families on the Senegalese side of the border. Even if they did not have direct family bonds, people on the two river banks belong to the same ethnic groups and subgroups, and have never considered the river as a border. On the contrary many of those who received the refugees and gave them support, had for several generations been cultivating on the Mauritanian river side but since the

conflict broke out they had not been able to do so.

As the UNHCR and other organisations like the WFP and Médecins du Monde came on the arena with a structured aid program to support the refugees in the camps, the relationship between the two groups somehow deteriorated. One WFP-representative could tell that the Senegalese had reacted negatively when they experienced that the refugees got more and easier access to services like primary health care and food supplies than they did themselves.

Access to land

Another aspect is the question of access to land, and preferably waalo land 3). The jeeri land involves a lot of risk and gives limited output, especially if the rain is inadequate and one does not have any other income sources. Hence many refugees are interested in getting a parcel of waalo land to cultivate. Munene writes:

"While jeeri lands are readily accessible to refugees, the aquisition of waalo plots proves to be much more difficult due to the social, cultural and economic climate of the Fuuta. The cultivation and allocation of land to displaced persons is a key issue of the current crisis and necessitates an understanding of the current land tenure situation and the relationship of actors to it." (Munene 1990:33)

A large number of the refugees were farmers in Mauritania and would easily be able to engage in agriculture if they were given enough land. Many refugees said that they had tried but had not succeeded in getting hold of a parcel. Many Senegalese who have spare land are afraid to let the refugees rent it. They fear that if the refugees are allowed to go back, the land they have rented would end up in the hands of the state.

In Boki Diavé camp the refugees had been trying to get access to waalo land for three years. There were Senegalese who were ready to lend them land, but the problem was the CR and the CR-council which prevented any new attribution of land.

The refugees in the camp of Ando were somehow luckier. They had got access to a plot of land right next to the river where they perform irrigation cultivation to grow

rice. The parcel was given to them since the donor had family members among the refugees. The refugees had formed a cooperative in which the members had to contribute a considerable amount of money to cover the costs of fuel, spareparts, grains etc. Some had had to withdraw for not being able to pay, and a repeated problem was the breakdown of the pump.

Several organisations have tried to interfere and reach agreements which could be attractive both for the local population and the refugees. OFADEC could tell about seven established perimeters, and six more to come, each 15 hectar, where the local population has provided the land. The refugees, through the UNCHR, have provided the necessary equipment. These projects are established on land which has not previously been exploited. The output is shared, one third to the locals and two thirds to the refugees. The Senegalese are necessarily more interested in lending or renting out land if they can benefit from the projects. But, even in such cases, there can be conflicting interests between individual land owners willing to invest and harvest benefits from the presence of the refugees and the local CR which can prevent them from doing so.

Rights in Mauritania

So far the refugees are determined not to go back unless they can do it with official/international guarantees that they will get back or be compensated for what they lost. If they go back little by little anonymously, they would lose all their rights and possibilities of being given back what was taken away by the Mauritanian regime.

From their irrigation plot the refugees in Ando could look over to their former village across the river, and they could tell that they had seen their village been occupied and further that their houses were destroyed and used for firewood. They knew many villages that got their old African names changed into Arab names. FLAM has made a census about affected villages and come up with a list of 371 which are completely destroyed (FLAM 1992). Much of the land is taken over by Beydans or the Beydans have engaged Haratins to cultivate the land. The cattle is confiscated and the houses occupied. According to Flambeau the Mauritanian Society for

CHAPTER VI

ANALYSIS

6.1 FOCUS OF THE ANALYSIS RELATED TO THE STUDY OBJECTIVES

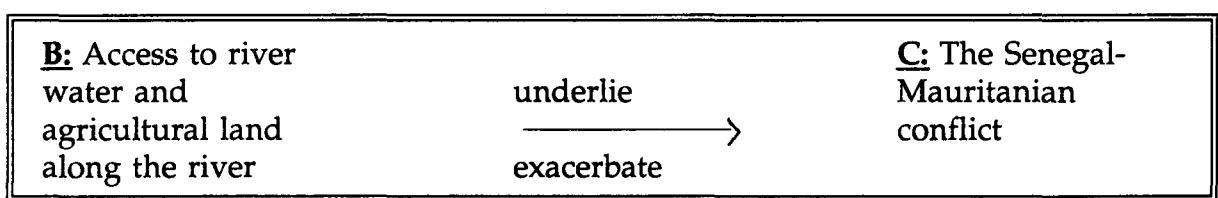
The first objective of this study is to point out the factors which determine access to and management of the river water and land resources along the Senegal river. These factors are already presented and discussed in chapter III, IV and V.

Table 6.1 gives an overview of the factors involved, as well as the context to which they are a part. Each factor is organised according to the level where it has direct influence on the access to and management of the resources in focus.

The second objective of this study is to determine to what extent access to the river water and land resources along the river underlie and exacerbate the Senegal-Mauritanian conflict.

The total sum of the factors which determine resource access and management on both sides of the river, may appear as an expression of the ecological, political, ethnic and economic situation in the area. This chapter seeks to analyse to what extent this situation underlie and exacerbate the Senegal-Mauritanian conflict.

FIGURE 6.1 THE SECOND OBJECTIVE



As I have stated in chapter I, it is the implication from B to C which is my focus of study, i.e. to what extent or in what way the competition to get access to these resources underlie and exacerbate the conflict (cf. figure 1.2).

TABLE 6.1 FACTORS FOR CONSIDERATION:

Local resource management in SRV	National resource management in SRV	International resource management in SRV
<ul style="list-style-type: none"> -Climatic factors; water scarcity, drought, desertification -Resource degradation/ ecological instability vs environmental security -Traditional vs modern production systems; flood recession vs irrigation -Competition to acquire land; property regimes, private vs common property, social hierarchy/castes -Small vs large perimeters -Farmers' and local organisations' involvement 	<ul style="list-style-type: none"> -States' declared objective of increasing food production/food self sufficiency -The states' agricultural policies -SAL/PASA debts, economic returns -States and nationalism -Political instability & state arbitrarism -Tenure legislation & tenure conflicts -Competition between different ethnic or professional groups to acquire land -Historical aspects co-existence & rivalry, ethnic conflict in Mauritania -Credit access -SAED & SONADERs involvement 	<ul style="list-style-type: none"> -Interdependence & complementarity; existing interaction/cooperation, -No-flood context -OMVS and the S-M conflict, success or failure -Hydropower vs integrated development -Different tenure legislations in the two countries -The border problem -The refugees -Conflict management -Donors' involvement

The following discussion is focusing more on the Mauritanian side of the river valley than the Senegalese, since it appears that the conflict has its origin inside Mauritania.

6.2 ECOLOGICAL INSTABILITY VERSUS ENVIRONMENTAL SECURITY

In the SRV and particularly on the Mauritanian side, which has suffered more from and is more threatened by drought and desertification, it is important to stabilise the local/national resource base in order to sustain the carrying capacity of the environment. The carrying capacity of an ecological habitat is the equilibrium that is reached without human predation or exploitation (Hartwick and Olewiler 1986:249). This can be achieved by not letting the harvest rate exceed the rate of natural reproduction of the resources in question.

A stable environment may in turn result in a certain level of environmental security, both in terms of less competition between the resource users and less need for people to migrate. It can give signals to the surrounding communities that they don't need to fear invasion from people who want to get control over their resources, and that they can instead concentrate on building their own resource base which in turn would contribute to further increasing the environmental security.

In the SRV, the desertification tendencies following the two severe drought periods in the 70s and the 80s have contributed to a shrinking resource base. Many nomads and semi-nomads have had to give up their traditional life-style and become sedentary. Many so-called environmental refugees from the northern parts of Mauritania have moved to urban centres or towards the SRV in search of improved conditions in order to survive. The riverine populations live in constant fear of losing their own resource base in favour of the newcomers.

The problem has also become part of the reality on the Senegalese river bank since the local Senegalese feel that the presence of the Mauritanians refugees can result in a stronger competition for resources like land, pastures, project aid from NGOs, etc. In addition, local Senegalese farmers also find themselves in a situation where different national interests compete to acquire a piece of land in the river region. After the dam constructions this competition has intensified, but according to UNDP-officials in Dakar and statements from the farmers themselves, the big rush has not yet begun.

From natural to human-made resource degradation in SRV

In an environment which already suffers from ecological instability, even small changes may have major impacts on the potential for renewability and sustainable balance. However, ecological degradation often comes as a result of human activity.

In the SRV the changes in the traditional production systems have appeared because central authorities, to a large degree, have created the premises for what kind and the means by which resource management should take place. Local people frequently have to give up their risk management strategies with a number of parallel activities, e.g. flood recession waalo production of sorghum, rainfed jeeri farming of sorghum and millet as well as livestock production, and concentrate on putting most of their labour force into irrigation cultivation. This transition from a multifaceted low input/medium output to a more intensified high input/high output production system, implies increased pressure on the existing resource base. In addition, the environmental degradation in certain regions has increased the competition to control the resources in the productive regions.

One consequence is that farm land would be under more or less permanent cultivation, and both farm land and pasture and grazing resources would have little or no chance to restore fertility due to lack of fallow. Another aspect is the pressure on the woodland and forest vegetation. The more sedentary the population the less chance for the forest to recover. The poorer the people, the less choice they have on how to exploit their resource base. Rural peasants exist on a day-to-day, hand-to-mouth basis. To be able to invest in their local environment, they have to get secure access to basic resources. (Timberlake 1985)

When driving from Rosso to Bakel on the left river bank, there are refugee camps all the way. These refugees originally represented many categories of producers; flood recession farmers, jeeri farmers, fishermen, pastoralists or trans humans. Since the deportation they became permanently sedentarised "residents" who have no options when it comes to exploitation of resources. Although the opinions vary, it appears that the presence of the refugees add pressure to an already overstretched

environment. In large circles around the refugee camps all vegetation is cut and used as construction material for huts or for firewood (Santoir 1992:14, Bennett 1991:92). The refugees' resource utilisation go beyond the carrying capacity of the local environment. Being "tied on hands and feet" as deported refugees, implies that these people are not able to carry out their ancient life-style and hence are not able to exploit a wider range of possibilities in management of the local resource base.

Another acute problem concerning local resource degradation, is the cutting of protected forests. In Mauritania there are examples of forests with conservation status which are currently being cut down for commercial profit (World Bank 1992:15). One example is the region between Dara and Dar el Barka where there are large fields of trees "recently killed" (Hesseling 1992:25). New land owners have privatised property and hence the right to exploit the resources within this property. Trees are cut and sold as charcoal on the streets of Nouakchott. This is particularly serious in a country which suffers from severe environmental degradation and hence should put a maximum of efforts into sustainable utilisation.

6.3 POLITICAL INSTABILITY IN MAURITANIA

The political reality in Mauritania is that the Beydans control all political power in the country. Despite the political reforms introduced in 1992, with presidential elections in January and parliamentary elections in March, the situation has more or less remained status quo. Neither the Negro-Africans nor the Haratins are sufficiently able to influence the Beydan dominance in the government, the parliament or the state apparatus (Courier no.137 1993). According to former and present employees in the SONADER and the OMVS, the SONADER administration is dominated by Beydans. Mauritania's state representatives in the OMVS are also Beydans, although the majority of the riverine populations which the OMVS development projects are meant to benefit, consist of Negro-Africans.

Since independence from France in 1960, and especially since 1978 when a military regime took control, the government's arabisation attempt has taken more and more violent forms (Bourgi and Weiss 1989). Recent violations of human rights in

Mauritania are directly linked to land tenure. Earlier incidents have had to do with other components of the "question nationale"; A student strike in 1966 against mandatory Arabic in secondary schools. Later the same year the "Manifesto of the 19" provoked a debate concerning the French-Moor collusion in the negotiations before independence, and second class citizenship of black Mauritanians on racist grounds. The proclamation of the "Manifesto of the oppressed black Mauritanians" - by the opposition movement FLAM - in 1986, was followed by arrestations, torture, and imprisonment without trial. Protest demonstrations were followed by new arrestations. The result is that ethnic hostilities have increased throughout the last decades and these culminated in the 1989 conflict. (Park et al. 1991:5) (cf. ch. 3.9).

Over the last 25 years the Mauritanian leadership, dominated by Arab/Berbers, has linked its fortunes to the Arab world, at the expense of its black majority population. A wide range of human rights violations against black Mauritanians - from efforts to impose Arab culture, to deportations, land confiscation, and murder - has been documented, demanding attention by the international community (Omaar and Fleischman 1991:34)

In such a political context the land tenure issue becomes even more complex. When these lands in addition are located in a river basin with internationally shared water resources, many aspects need to be considered to find sustainable solutions. One aspect is that these water resources are shared, and hence preferably managed on a cooperative basis, between governments which have differing cultural and ethnic identities.

Identity search

For centuries and long before any European colonialism or the creation of the modern independent states, there existed ethnic rivalry and on-going fighting between the different ethnic groups inhabiting this part of West-Africa. (Cf.ch 3.9)

Many people would argue that the concept of the "new" states of Senegal and Mauritania has added another dimension to these ethnic hostilities. The fact of being defined as a state and the need to clarify the bonds and relations to the world outside

has resulted in Mauritania's attraction towards the arab world. Located in the transition between North and West-Africa, Mauritania is in a constant search for an ethnic identity.

State arbitrarism

According to the Mauritanian government's preferences and needs, some geographic regions are of more interest than others and would therefore be the first ones to undergo dramatic changes of management control. The right bank of the SRV represents a region where vital national resources are found, and hence a potential for development of high output agriculture. Other regions which are less fertile and hence less productive, are not exposed to major changes. The lack of a homogenous practice renders the population insecure. Application of the law varies from one region to another and legal decisions are unreliable and the future thereby unpredictable. The effected groups have to face a situation of state arbitrarism and might have to find new means of survival because of turbulent transformation of traditional and reliable structures. (Grayzel 1988)

Resource competition

Additional components to this picture are the ecological situation with a depleted resource base and subsequently the economic dependence on the international financial support system. As mentioned above, the ecological degradation has first of all effected the nomadic population. Many former nomads find themselves as "desert refugees" in and around the capital Nouakchott and other urban centres. In fact the population of the capital has grown from 6.500 in 1960 to around 600.000 in 1990 (Baduel 1989, Hegtun 1990). The government is forced to work out some sort of solution. The "easiest" option is to turn to the existing resource base and try to redistribute the available resources.

A crucial question is how to get access to these resources. If they cannot be aquired through the existing legislation, one option can be to transform the legislation in such a way as to render the reallocation of land possible.

6.4 TRADITION VERSUS INNOVATION

In SRV the application of the new tenure legislations vary according to the governments' plans of action and the resistance they meet from the local populations. Nevertheless land tenure patterns and property regimes have been changed. New landowners or land managers have easier access to the necessary capital. The installation of agrobusiness or large perimeters is an example of the implementation of governmental plans which alter the riverine populations' traditional resource management.

Old hierarchies versus new tenure rights

As already mentioned, (cf. ch. 4.1) a transition from a multiple risk management system to irrigation production, implies many changes in traditional practices. Some people may argue that modernisation is the only way to do away with old hierarchies and social stratifications. On both sides of the river the introduction of a new tenure legislation has, at least in theory, incorporated a component of democratisation. New legislations means that new groups would get access to land. Being born and belonging to the upper landholding castes is no longer a precondition, nor does it imply an automatic right, to acquire access to waalo land, at least on paper.

In the Fuuta region there has been a sustained resistance against the implementation of new legislations on both river sides. Old land lords from the upper social castes, do not want to give up their privileged position.

In Senegal the land lords have strong influence in the CRs and hence are able to manipulate the land attribution process to safeguard their own interests. (Cf. ch. 4.7)

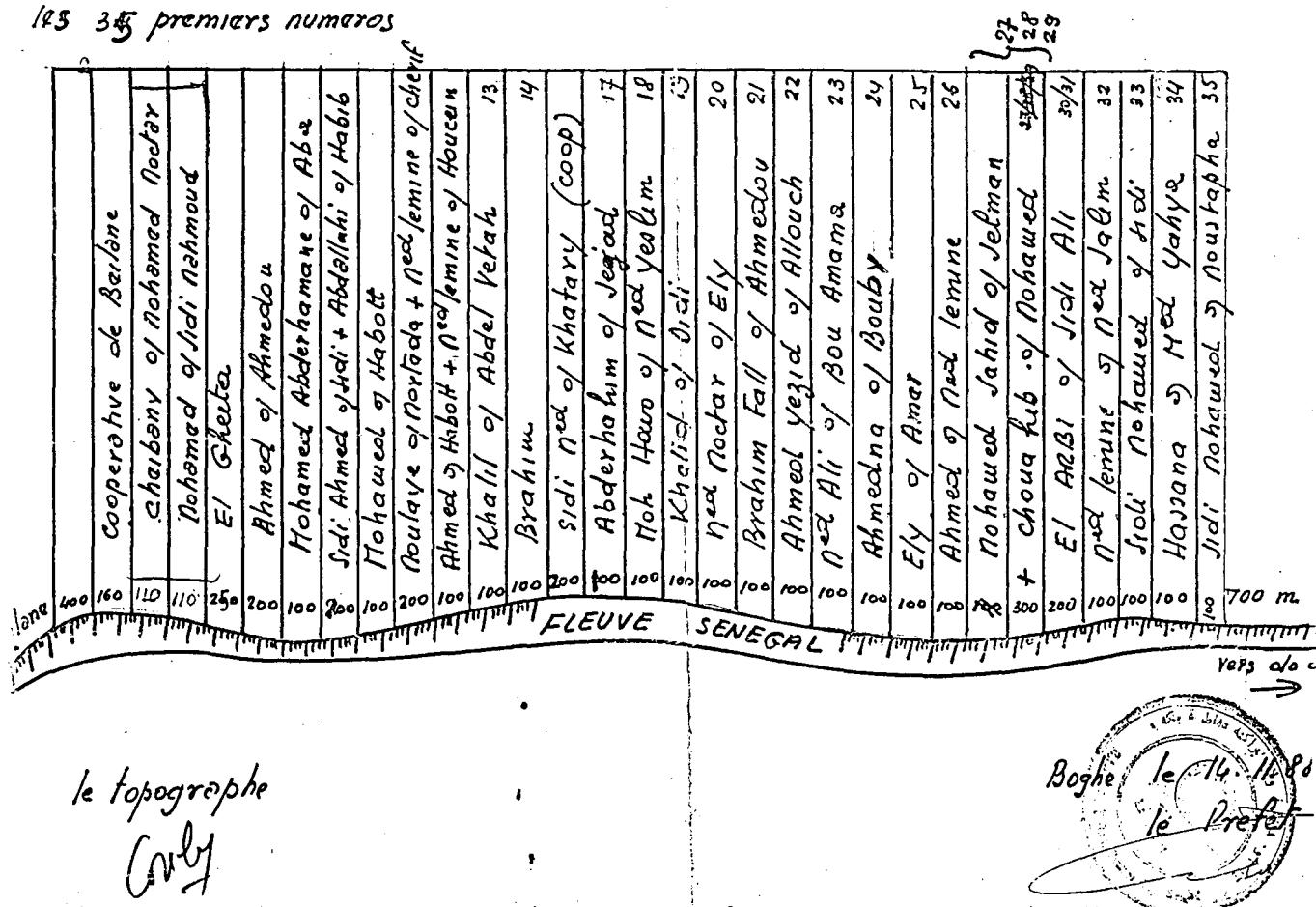
In Mauritania the introduction of ordinance 83.127 has given the state more freedom to act than is the case on the Senegalese side. Although the traditional land owners resist the implementation of the new law, they find themselves in a situation where they do not have the financial nor the political means to compete with the government. Due to the drought and lack of funding, traditional land owners have to leave large parts of their land uncultivated. According to the new legislation such

land, which has no sign of being under utilisation, would automatically be converted into state property. The state would in turn attribute the land to people who could provide the financial means to put it under cultivation.

To illustrate the new situation I have included an example from one zone in the region of Boghé 1988, fig. 6.2. The map shows that almost all the land closest to the river is under Beydan administration.⁸⁾

FIGURE 6.2 LAND ATTRIBUTION IN BOGHÉ 1988

LONE 10
les 35 premiers numeros



Source: Prefet, Boghé 1988

An important issue is to find the driving forces and motivation behind such an attribution policy, or the reasons behind introducing a new legislation that makes such an attribution policy possible. Parts of the explanation can be found in the ecological and political situation in Mauritania, of which an outline was presented earlier. Other components are the ethnic situation and the weak national economy which both will be discussed later in this chapter. In order to understand the major impacts of the new land attribution policy, there is a need to take a closer look at the contents and effects of Mauritania's new tenure legislation.

6.5 ORDINANCE 83.127, A POLITICAL TOOL?

Ordinance no 83.127 of June 5 1983 and the following decrees of 1984 and 1990, state that the land belongs to the nation and by concession to those who are able to put it under permanent cultivation. All traditional forms of land ownership are abolished (cf. ch. 4.7).

The ordinance was introduced in the context where the Mauritanian state had a number of serious economic and ecological problems to consider: the engagement in the OMVS and the difficulties connected to the management of the river valley, the necessity of making the dam construction projects profitable, food dependency, increased urbanisation, decreased rates of return from mineral industry, ecological degradation and further desertification. (Leservoisier 1991:19)

Theoretical content vs practical application

Some people claim that **on paper** the Mauritanian land reform is the best in West-Africa. It makes the farmers responsible, since they are the ones who can and should develop the agricultural management. Their rights are put forward, the local "prefectures" do not have the right to attribute more than 5 ha of land.

The rural concession could be given after a period of three months during which the local administration would have investigated, and announced the possibility for eventual land owners to claim this land. This announcement should be done at all

gathering points and on the local radio in all national languages. If nobody claims the land it would belong to the national domain, and those who get concession to the land must prove the feasibility of the project they want to start, the necessary financial means etc. But this is the theoretical version of the reform. When it comes to the practical application in real life, the situation is quite different: The local administrative authority declears a piece of land as "dead land" and divides and distributes it according to their own interests and convictions (F.O. Touré, personal commment).

Despite announcements in the Mauritanian media during the introduction of the new legislation, the first concerned, the peasants, are not aware of it's content. According to the deported Mauritians, the law text exists only in French. An Arabic version is hard to find and there is no official translation to other national languages. Since only a small minority of the rural population in the river region speaks French, the door is open for all sorts of applications of the law. The non-limitation of individual tenure opens for all forms of speculation. At the same time the state administration which is known for its corruption and nepotism encourages all sorts of abusements.

The peasants have been totally marginalised by those responsible for the reform. They are facing enormous difficulties when trying to communicate with the administration and they are the most affected victims of the reform. The beneficiaries are the regional administrators, businessmen and feudal landlords. The way the new legislation has been applied in Mauritania has provoked the Senegalese which had lands on the right river bank, especially the Halpulaaren (Crousse, Mathieu, Seck 1991:262-270).

The real effects of the reform

Despite the stated objectives to emancipate former slaves and redistribute land for the benefit of a larger group of cultivators, the true beneficiaries of the new legislation has turned out to be the new land owners, coming from other parts of the country, with means to invest and put land under irrigation and intensified cultivation. In the Rosso region the area under private management in 1988, doubled the size of the area

the public sector, through the SONADER, was able to administer the last ten years. (Leservoisier,1991:20).

The increase in private property management is due to the decree from the former Minister of Interior, Djibril Ould Abdallah, in 1985, who warned the governors and prefects not to give authorisations to traditional collectives managed on a common property basis. The decree has so far not been followed by another to amend this message. The attribution of land is thereby done according to the conviction of the local administrators, who happen to be Beydans.

Collective organisations are not recognized unless they are restructured under the form of a cooperative where all members have equal duties and rights. The three key words that can summarize the new legislation are nationalisation, redistribution, and individualisation (*ibid*).

Naturally the practical application of the new tenure legislations in both Senegal and Mauritania, and particularly the ordinance 83.127, have led to a number of conflicts. Some of these have already been addressed in chapter 4.9. The discussion below seeks to add some elements to chapter 4.9.

6.6 TENURE CONFLICTS & PROPERTY REGIMES

Due to prospects of major economic profits in the river valley, there has been a continuous and increasing pressure on the land. The transition from traditional production systems towards irrigated agriculture implies a rupture in the evolution of tenure regimes in the river valley, tenure that has its roots in the so called agricultural revolution of 1776, the feccere Fuuta, (Park et al. 1991)

Many people in the valley have been forced to leave their land because of severe drought and lack of economic support or help from the government. Migration has left land non-exploited and after a certain period it has been declared "dead" and automatically become state property. What will happen when the new management

system provides the possibilities to exploit previously deserted land? One has already seen incidents between peasants ready to come back and exploit their previous land and the administration claiming the land to belong and be utilised by the state.

The border

The decision taken by the Beydan préfet of Boghé, Jiddi Ould Mini, in May 1988, to confiscate agricultural land usually exploited by Senegalese farmers and redistribute it to new Beydan land owners from other parts of Mauritania is an example of how the border can create problems for people from the area (Sennen 1989). The laws, on both sides of the river, state that the land belongs to the nation while people in the river region are used to a practice where families have land on both sides of the river. Several border incidents led to a meeting in Aleg in August 1988, where representatives from the two governments met to discuss how to operate these reciprocal access agreements between the two river banks.

After the events in 1989 and closing of the border there was no longer any question of crossing the river to farm land on the other side, but now when the two states have restored their diplomatic relations and the border is about to be reopened, the question of these exchange activities comes up again. There are many Senegalese who used to farm on the Mauritanian river bank who have been waiting for three years and are eager to get back their farm lands on the north bank, and vice versa with Mauritians who used to bring their cattle to graze on the Senegalese side or exploit cultivable lands of the south bank - lands that had belonged to their families for centuries. The complexity of the problem increases when one knows that their previous land might have been taken over by repatriated citizens or on the Mauritanian side; the socalled "environmental refugees". These are former Moorish nomads who had to abandon their traditional life style and settle in urban areas or the southern and more fertile region. The government's policy has been to resettle some of these people in the villages where the deported Negro-Africans used to live.

Tenure conflicts are not only actual at the level of peasants against the administrative

power. The fact that the states try to maximize profit to make the dam constructions rentable, implies a new agricultural policy where there is little room for the old complementary activities of sedentarised farmers and nomadic or semi-nomadic pastoralists who used to exchange products and services. Especially in the Delta region, the multiplication of irrigated perimeters along the river means that most of the earlier animal tracks and access down to the water are being blocked. The relations between farmers and pastoralists is therefore deteriorating alarmingly.

There seems to be a general tendency that tensions appear when those with usufruct rights claim the property rights of the land they are cultivating. This in turn makes the land owners careful not to rent out land to "foreigners" for fear of losing it later on. This has been the situation when it comes to land access for the deported refugees. Many Senegalese farmers in the SRV have spare land which is not currently exploited, but for fear of losing this land to the Senegalese authorities after the refugees have left, they hesitate to lend it to the refugees.

Private versus state property

An inquiry from parts of the Trarza region in Mauritania in 1990 showed that out of 13352 ha only 2783 ha (21%) was in the hands of the public sector. Another important point is that 55% of the total surface divided between 209 private perimeters was utilised/operated without any kind of authorised exploitation (Leservoisier 1991:21).

This reveals the important discrepancy between the surface put in operation and the surface actually exploited. For many private smallholders/peasants the most important is to acquire land use and property rights for future use. This explains the opposition against the newcomers who are motivated by the possibilities of getting immediate profit. People of the valley want to benefit from the "post-dam possibilities" and not let all the potential profits fall into the hands of outsiders. In Mauritania there are examples of families joining in cooperatives to put land under cultivation and avoid it to be declared "dead land" and thereby state property.

To avoid this land speculation the decree of 1990 prolongs the period before getting

the final concession from three to ten years. One has to obtain authorisation to exploit the land for five years. During these years one has to put all the land under cultivation and this has to be maintained for another five years before the final concession is obtained. (*ibid*:22) The transfer from collective or common property to individual/private or state management has changed the whole "climate" of the valley and appears as one of the most important reasons for the current hostilities.

One way to privatise land in the river region has been through the implementation of the new legislation where property has been transformed from communally owned to privately owned land with the state as mediator. This has happened both in Senegal and Mauritania. However, in Senegal officially there is no land which is privately owned. The land is part of the national domain, but private persons can acquire usufruct rights.

By contrast, in Mauritania the state's confiscation of "dead land" has provided means for redistribution of this land to new private hands with the financial means to exploit it. On the right bank there is also a strong ethnic aspect mixed into the tenure conflicts; the neo-rich white Moors with the economic means to speculate and invest in intensive agriculture on one side and the Negro-African peasants on the other. The Moors have the government and the administration on their side and are far more often able to get access to credit and show that they have the economic means to put land under cultivation, and thereby obtain the necessary concessions and take over land that used to be under the management of Negro-African communities.

Generally the ethnic aspect has been reinforced by the plan to liberalise the economy. One can of course discuss whether the demand for liberalisation, launched by the donors, is used by the Mauritanian state as a strong argument when there is question of getting control over the land in the south. No matter whether it is the donors' demand for liberalisation of the economy that reinforces the ethnic rivalry, or it is the Beydan dominance which accelerates the liberalisation of the economy, the results are land tenure conflicts which in turn prevent effective riverine production systems to be established. The survival of the riverine populations and development of a sound

and sustainable future where the states have possibilities to make their investments rentable, is dependent on their ability to solve the land tenure conflicts and create peace and livable conditions for all the involved parties. Earlier, tenure conflicts could be solved on a local level, but this has become more and more difficult to achieve when social structures are being broken and new tenure legislations have been imposed on people.

Loss of risk management

With the transition from common to private property there is a risk that the flexibility that is prevalent in the traditional production systems will disappear. In order to prevent this from happening there is a need for regulations and institutions which can supervise the implementation and fulfillment of the rights and duties of the producers. Privatisation of land implies that the land owners can exploit the land the way they want, e.g. keep it under permanent cultivation with no access for cattle that used to feed on crop residues, etc. In SRV one can observe that the complementary relationship between farmers and pastoralists is at stake.

6.7 THE MAURITANIAN "SOLUTION"

Instead of concentrating on how to find a solution to satisfy both reform-supporters and the riverine populations, the Mauritanian regime seems to have chosen the short-term solution by trying to get rid of as many as possible from one of the two parties. Naturally the choice fell on the so called "trouble makers", mostly the Halpulaaren, who resisted the implementation of the new policies and hence prevented the Mauritanian government from getting the goodwill of the donors, and thereby the necessary loans and credits to expand the new agricultural systems.

Another argument might have been that strategic national resources of the country were located in the southern part and under Negro-African control, and to be able to influence the economic development in the future, the government had to get access to these resources. At the same time, the ecological degradation in Mauritania was

status of the Haratins has been marginal, both in the political and economic sphere. One could argue that the change in tenure legislation, with the theoretical possibility for the Haratins to acquire property rights, could be a way to provide for increased Haratin integration.

The Mauritanian government is facing a dilemma of whether or not to include the Haratins. It could be "dangerous" to include them and also dangerous to leave them out. A central question is what kind of solidarity bonds the Haratins would have with the Negro-African community vis-a-vis the Beydans. With enough political influence they might use the possibility to change hierarchic structures to the benefit of both themselves and the Negro-Africans. Alternatively they can act on Beydan promises and thereby create an arabised front against the Negro-Africans. Bonte argues that a political alliance between representatives from the Negro-African and Haratin opposition movements proved its failure, when looking at the Haratins role and performance during the conflict (Bonte 1991). It was Haratin militias who carried out the massacre of Negro-African Senegalese and Mauritians in Nouakchott in April 1989. In addition, the Beydans actively exploited the Haratins as some sort of "buffer zone" along the river after the deportation of the original citizens. The Haratins were sent to settle in the villages of the deportees. Many of these villages were attacked in raids organised by the deportees who crossed back to Mauritania in search of their cattle and other belongings. According to the latest information from the opposition forces in the area these attacks will be intensified in the near future. As long as their case is not treated seriously in the international negotiations, many of the refugees are ready to resort to armed struggle.

6.8 DEBTS AND DONORS

Throughout this century, due to price fall of the export article of gum arabicum, increasing competition with the peanut basin further south and a general lack of investment in the agricultural sector, there has been a general decline in the economy of the area. Such a decline is among the factors that can explain the up-building of tensions in the SRV (Leservoisier 1991:17).

this pressure because such a policy provided an entry for expanded Beydan landholdings in this region (*ibid*:19).

Agricultural policies and production systems in SRV

In addition to debts in connection to the OMVS projects, the two countries have agreements to receive PASA loans to adjust their agricultural policies. The conditions include privatisation, responsabilisation of farmers and state disengagement (cf. ch. 3.7).

One can assume that both the Mauritanian and the Senegalese government want to change the production systems in the SRV in order to increase their income. Whether the governments actually will acquire any economic benefit through this development projects remains to be seen. So far they have mostly invested, especially in the construction of the Diama and Manantali dams. This has been possible through loans granted by various donors. According to people from the area neither of the two governments have put any sort of taxation on the use of river water in the perimeters or on the installation of agro-business. So far it seems that the economical beneficiaries in the SRV are the private entrepreneurs and not the official governments.

Nevertheless, donors seek a rapid transformation of the production systems. They encourage a shift from low input/ modest output flood recession production to high input/high output irrigation farming. It appears to be a certain contradiction in this policy. The states incur heavy debt and demand from their farmers who do not even have the financial means to put their land under cultivation, to be able to perform a high yield output agricultural production in order to help the states pay back their debts.

Production results versus access to land

Both Senegal and Mauritania have for the last decades experienced deep economic crises. Chronic food deficiency has made the two countries dependent on food imports and aid. In Mauritania the declared national objective of increased food production

with a future aim of food self sufficiency, is among the factors which has turned the focus towards the southern productive region. Whether this objective will be achieved, remains to be seen.¹⁰⁾

Even if certain international organisations are amazed by the incontestable positive results of the private Mauritanian rice perimeters in the SRV, they often forget that the results are based on an uncertain equilibrium without a future: The hegemony of the upper classes belonging to a single communal group, which maintain their status through violence against other groups (Crousse, Mathieu, Seck 1991:272). They underline the necessity of recognizing the priority of access to land for the residents of the river region instead of concentrating on a guarantee for other citizens' possibility to participate in development of the SRV (ibid:273).

Newly developed irrigation schemes based on certain labour arrangements with Haratins/slaves have produced superlative yields due to the long-fallow soils. But if social costs were to be included one might end up with net losses. Park et al. argues however, that figures from Mauritanian development schemes are not reliable until democratic processes are established. (Park et al.1991:19)

6.9 FLOOD RECESSION VERSUS IRRIGATION

Expenditures for food items predominate in household budgets, and hence a stable household income is a vital component in maintaining food security. Therefore, from the farmers' standpoint it makes sense to give priority to the agricultural activities that are least intensive in the use of household revenues. In addition most farmers have trouble acquiring the necessary financial means for irrigated cultivation which is far more costly than flood recession or rainfed jeeri farming (Cf. ch. 3.5). This is why many farmers have joined local organisations like the GIEs. (cf. ch. 3.7)

Another aspect is the allocation of labour time. An IDA survey conducted on the left river bank shows that irrigated farming of rice requires from 501 to 727 days labour input per hectare, whereas in flood recession cultivation of sorghum 23 to 62 days per

hectare is sufficient (Horowitz et al.1991:19).

OMVS and the no-flood context

The two first years after the completion of the Manantali dam in 1987, releases from the dam or the socalled "artificial flood", were sufficient to inundate large parts of the floodplain. This made the local population believe that the government promises of a reduced risk, because of a more stable and predictable flooding, were true. However, both in 1990 and 1991 rains were poor, and the OMVS decided to retain all the water stored in the reservoir. This was done without alerting any of the producers dependent on the flood-recession system (Niasse 1991 a & b).

Villagers' almost total lack of information on the management policy of the Manantali is inconceivable:it would have been possible, by informing the population in time to save them a lot of inconvenience and thus lessen the present crisis, which is not only a food crisis, but also a crisis of confidence. To date, paradoxically the dams have increased uncertainties in an environment already sufficiently capricious. The "water control" the dams were ostensibly to allow remains a reality only for the engineers and bureaucrats. For those agriculturalists, herders, and fishers who live in the Valley and depend on the flood system, the dams have - at least for the moment - greatly disrupted production strategies (Niasse 1991b:19).

Another aspect is that if the peak flows from the Manantali are cut off, i.e. the duration of the flood is shorter and the amount of water released is reduced, the lands of the farmers who are not members of landholding casts, will be flooded even less than what they are now. The result will be a further widening of the gap between the landholders and the landless, where the latter would have less ability to produce, even for their own subsistence.

Hydropower versus integrated development

Problems connected to lack of flooding will be further accentuated if OMVS and the two governments decide to give priority to the production of electricity. Both countries suffer from shortage of energy supply. They might be facing an era of industrial expansion where they would need the hydropower the Manantali can

produce. This has to be balanced with the general agricultural development and production potential further downstreams.

The latest OMVS development strategies show that both countries recognise and consider the importance of an expanded agricultural sector, both to feed their own population and to produce a surplus for export production which in turn can generate income to serve and pay back debts. Hence OMVS has abandoned the idea of a maximum of hydropower and underlines the need for an integrated development in the SRV, i.e. to ensure a certain coexistence of both modern and traditional production systems (World Rivers Review 1990:5).

6.10 INTERACTION AND COOPERATION BETWEEN MAURITANIA AND SENEGAL

When it comes to Mauritania's relationship with its neighbour in the south, the 1989 conflict seriously affected the link with Senegal. As mentioned, diplomatic relations broke in August 1989 and were not restored until April 22 last year. The temporary break seriously affected the already existing interaction between people in the two countries, i.e. the exchange of labour and goods between the states as such, and the exchange of pasture and crop land between populations on the two river banks.

The post-dam development of the SRV is accompanied by a stronger nationalism and more focus on the individual states as far as utilisation of resources is concerned, particularly land resources. The application of new tenure legislations allows each state to control the land, to define the attribution conditions and the management practice. With the regularisation of the river water, the irrigation of the waalo land in the SRV constitutes part of the national strategies of agricultural development and strife for food self sufficiency (Crousse, Mathieu, Seck 1991:297-298).

Such nationalism contradicts the objectives and development strategies of the OMVS, and the attempt to regard the SRV or the whole river basin as a regional entity which preferably should be treated under the same conditions. This implies that also within the framework of the OMVS the cooperation in management of the river resources

tension between the different ethnic groups, peripheral resources along the river are maybe seen as so crucial for the central authorities to control, that the positive impact/benefits of economic exchange across the border is seen as being of less importance; especially in Mauritania where the 'river resources' are located in areas generally inhabited and traditionally controlled by the Negro-African population (Parker 1991:159).

This focus on national interests can often be contradicting with the general economic progress and development potentials of the region. With their commitment and participation in the OMVS both states recognise their interdependence and that the only way to achieve environmental security as well as a sustainable and positive development in the area, goes through cooperation and integrated development. This naturally implies real involvement of the local populations.

CHAPTER VII

CONCLUSIONS AND
RECOMMENDATIONS

there has been ethnic rivalry between Negro-African and Moorish societies in the area. With the establishment of the independent nation-state of Mauritania, tensions have increased. The Moors, i.e. the Beydans (white Moors), have occupied political power since independence and thereby been able to create policies to favour their own ethnic group. With the drought periods of the 1970s and 80s, their traditional nomadic life style became destroyed as pasture and water resources disappeared and their livestock could not survive. Their economic base was shrinking, and they had to look for other resources to support life. The choice fell on the river region where the ecological degradation had not taken such acute forms as further north. Since the river region traditionally has been a Negro-African area, an integration of Moors was not likely. The Negro-African community was not ready to give up their ancestral land and leave it in favour of the Beydans. The price many of them had to pay was loss of all their land and belongings, even their citizenship as they were deported to Senegal and has lived there as refugees since the events took place during the spring and summer of 1989.

International level:

The competition to control resources in the river region takes place in a context where the two countries have the river as their common border, and where future development depends on proper resource management of these international water resources to the benefit of both river sides. This interdependence has resulted in the establishment of the OMVS. The organisation's declared objectives of enhancement of riverine populations' income, maintenance of the zone's ecological equilibrium, as well as acceleration of economic development in the member states, underline the need for cooperation. In order to achieve its goals, OMVS is dependent on coordination and political stability, i.e. governments that can claim legitimacy and representativity in the eyes of the local populations, in order to support the implementation of the new policies. This is definitely not the case in Mauritania where the Beydan government has proved to be willing to use any means in the process of national policy implementation.

Because of close links between the Negro-African communities on the two river banks they have never considered the river as a border. On the contrary, they are used to conditions where people live on either river bank and have farm and pasture lands on the other. When the Mauritanian state decided to take control over these resources it automatically involved many Senegalese whose lands had always been on the northern river bank. The internal Mauritanian resource competition therefore developed into an inter-state conflict between two neighbouring states which have had and also in the future will be dependent on close contact, cooperation and exchange of resources.

It seems that Senegal and Mauritania's nation-state policies with a more outspoken nationalism concerning resource management in the SRV, is contradictory to an integrated development where the aim is to achieve food self-sufficiency, environmental security and future sustainability. In addition, by looking at the Mauritanian case it is clear that such nationalism, through the use of a national legislation, can be used as a pretext to discriminate against certain ethnic groups.

In Fuuta, after the expansion of irrigated cultivation started, but before the outbreak of the conflict, the issue of access to land could be summed up in the following paradox: Those who had land did not have the financial means to exploit it, and those who had the necessary financial means did not have land. The process that led to the Senegal-Mauritanian conflict and the following events have shown that the Mauritanian government was ready to use any means to turn this paradox "up-side down". They have partly succeeded when it comes to controlling more land, but as long as the local population are either temporarily deported or not allowed to participate on fear terms, the management of this land cannot take place in a framework of environmental security and cooperation.

These findings show that getting access to river water in the SRV is primarily a question of getting access to land. With the construction of the Diama and Manantali dams, the value of this land has increased. However, for those who have land and depend on the annual inundation of the waalo lands, the dam constructions and

OMVS' manipulations with the flood and levels of the river water seriously threaten their subsistence. These problems will be further accentuated if the Manantali water will be used for generation of hydropower.

In Mauritania the internal competition to acquire land on the right river bank has taken violent forms. There is no doubt that this **competition** which finds its base in both ecological, political, ethnic and economic factors, is the **principal reason** behind the outbreak of the conflict and the subsequent deterioration of the relationship between Senegal and Mauritania.

The Mauritanian government has created a refugee problem and a conflict with Senegal. At the same time both countries claim their interest in the OMVS integration and consider the implementation of the new agricultural policies a tool to reach self-sufficiency and economic surplus. The **contradiction** between nationalistic resource management on either of the two river banks on the one hand, and the two governments' interdependence and subsequent need for cooperation on the other, should be subject to further research.

Below I include some recommendations for future development in the SRV. (The first three are extracted from Horowitz et al. 1991)

- 1 If local people are to make necessary investments in sustainable agricultural production, they must be assured secure access to critical inputs such as land, both flood recession and irrigation land, and water.
- 2 The dams should be managed to support a diversified production system, i.e. to release enough water to maximize the floodplain production as well as promote environmental sustainability consistent with the requirements of hydropower and irrigation. Risk management strategies seem to be a critical component of any development programme due to the river's variability in annual flooding.

- 3 Further monitoring and research concerning management of the artificial flood is needed.
- 4 The two governments have to find a politically acceptable solution to the refugee problem in order to prevent reappearance of armed actions along the border.
- 5 Change in leadership might be essential for a resolution of the crisis. Donors should give priority to more legitimate governments until Mauritania has restored internationally respected legal procedures, eliminated arbitrary arrests and torture and installed a government with the intention to represent the entire people of the country.
- 6 The ecological unity of the valley argues for multi-lateral solutions. There are regional and national potentials which can be exploited. The member states of the OMVS should commit themselves to construct a regional entity to promote mutual exchange and cooperation rather than focusing on their own governments' national interests.

NOTES

NOTES:

1) For discussions concerning international river systems and conflict management, see also J.M. Trolldalen (1993) *'International Environmental Conflict Resolution, the role of the United Nations'*
 WFED/UNITAR/NIDR

2) The many oral sources have also been of invaluable importance for the ability to complete the write-up of this thesis.

3) 'Silvo-pastoralist waalo production' indicates a production system which combines the production of forest and vegetation such as pastures with livestock and cereal production

4) NEO-CLASSICAL, MARXIST AND INSTITUTIONALIST PERCEPTIONS OF PROPERTY REGIMES

The following is a very brief summary of the three main prevalent economic schools and their assumptions of property regimes. The arguments are mostly taken from Shanmugaratnam's lecture in 'resource planning and management' at NORAGRIC, Nov 8 1990.

Neo-classical economic theory, of which Hardin constitutes an example, has regarded private property as the most efficient and productive property regime. Many third world governments have been encouraged through the international bank- and finance system to adapt their legislation to introduce or promote private property, in order to get the necessary capital to invest in development projects. While traditional and common property regimes have been disregarded and considered inefficient and unproductive neo-classical economy does not make any distinction between 'open access' and 'common property'.

While neo-classical economic theory would regard private property the inevitable outcome of scarcity, marxist theory would state the opposite; Scarcity is the inevitable outcome of private property. Means of production, i.e. the property rights are owned by the capitalist class who would compete with each other to exploit, while the labour class are property-less and fighting for work.

Institutionalists try to modify neo-classical concepts with reference to institutional settings. Property rights represent access to and one aspect of the total institutional framework which defines what individuals must/must not do. Neo-classical economy assumes that individuals constantly act in self-interest while institutionalists would claim that people also act collectively, that humans can't act in isolation. Most practicing economists have assimilated concepts from both the neo-classical and the institutional school.

5) Indirass means "with the passage of time". When land has been left uncultivated for a certain time, a new land user has the right to take over and exploit the land

- 6) For models of the interrelationship between environmental degradation and acute conflict, see also Homer-Dixon T. (1991) 'On the Threshold, Environmental Change and Acute Conflict', *International Security* Vol 16 No 2, pp. 76-116
- 7) OFADEC is the organisation which is responsible for the effectuation of the distribution of the UNHCR rations to the refugees from Rosso to Bakel. OFADEC is also cooperating with WFP and USAID and is one of the more active NGOs in the region.
- 8) The letter o/ is an abbreviation of "ould" meaning son of, which is part of the family name of all Moorish men, both Beydans and Haratins.
- 9) The Haratins' position is also discussed by Paringaux R. (1990) , 'The Desert of Slaves', *The Reporter*, Anti-Slavery International's annual journal, December
- 10) In a recent meeting between president Ould Taya and the General Confederation of Mauritanian Employers (CGEM) there were discussions about the cereal production which has decreased from 30,000 tons yearly in the 80s to 12,000 tons in 1992. *L'Unité* No 24, Dimanche 21 février 1993.

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APPENDICES

11. How are the traditional land rights incorporated in the new system of legislation with the state as a land owner (S and M)
12. Which advantages do the new development projects have compared to the old farming practice along the river
13. Which disadvantages
14. To what extent have the OMVS-objectives come through
 - hydro-electric power
 - navigation
 - irrigation schemes
15. To what extent have they been adjusted
16. OMVS - decisions made, to what extent do these decisions function like laws for the member states,
17. What kind of control/follow up of national implementation
18. How is the emphasis in the project planning stage about development for the riverain people taken care of, (given the context of national policies of structural adjustment, export oriented production, paying back debts etc.)
19. In what fields is it easier to keep a common policy for the member states
 - land tenure
 - investments
 - structural adjustment policies
 - first priority sectors of development
 - others
20. Are there any difficulties in having a common policy in the two member states Senegal and Mauritania, what kind of difficulties
21. What are the priorities of the Senegalese state concerning the general development of the river valley
22. What are the priorities of the Mauritanian state
23. To what extent is flood recession culture still practised, where, and how large percentage of earlier inundated area is still under this type of cultivation
24. How large increase in irrigated fields per year, on the right and left river bank
25. Where in the river valley is this increase taking place
26. Why has there been less focus on development in the "haute vallée"

9. What are the conditions of structural adjustment loans concerning food security, to what extent is there room for subsistence compared to commercial production
10. Which foodcrops are best suited to reach the goal of self sufficiency
11. Which foodcrops are preferred as nutrition at a local level
12. Which crops do you prefer for domestic use
 - millet,
 - sorghum,
 - maize,
 - rice,
 - others
13. How large percentage of irrigated areas are used for export production
14. Do the farmers still have possibilities of other income sources in addition to work connected to irrigation farming on large perimetres, on PIVS
15. What kind of additional income sources are prevailing/do you have
16. To what extent are these income sources necessary for survival of the family
 - every year,
 - some years,
 - seldom
17. How much of your working hours are spent in irrigation farming activities
18. Why is it necessary to rely on other activities
19. To what extent are prices used as incentives for farmers to invest in irrigation farming
20. What prices are paid for the crops you grow
21. How much of your crops are being sold

SECTION 3, ECOLOGICAL CONSTRAINTS:

1. How does the varying rainfall affect the farming activities both the irrigated ones and the rainfed ones
2. In years with sufficient rainfall, do you prefer irrigated or rainfed farming, why
3. How does the irrigation development projects effect the ecological conditions,

- soils
- pastures
- exchange between farmers and pastoralists

4. What about the population density in the river valley, any change the last years, what kind, any new-comers
5. How does population increase affect the environment
6. What is needed to overcome the drought and environmental problems
7. What is being done to overcome increased ecological pressure on land and environment
8. Which are the major threats to the security of the people in the river valley
 - lack of water
 - conflict between states
 - conflict between ethnic groups
 - lack of labour force
 - lack of money
 - general scarcity of natural resources
 - others, specify

SECTION 4, FROM LOCAL TO INTERNATIONAL CONFLICTS

Most of the following questions are multiple choice questions which might be answered either by choosing the correct answer or by ranking the choices according to their importance

1. Which factors are more determinant for private persons access to water
 - money,
 - employment within the government
 - labour capacity
 - ownership of land
 - geographical location in the river valley
 - ethnic belonging
 - social position
 - others, specify
2. Which factors are more determinant for acquiring land use rights
 - money,
 - employment within the government
 - ethnic belonging
 - location in the river valley
 - social position
 - labour capacity
 - others, specify

3. What are your preferred agricultural activities

- flood recession
- PIV-agriculture
- rain-fed agric.
- large scheme irrigation agric.

4. How often do you have contact with governmental representatives

- very often
- often
- sometimes
- seldom
- never

5. How can you influence on the decisions made for development in the river valley

6. What are the (most important) reasons for the recent conflict between Senegal and Mauritania

- fight for land,
- control of the water resources,
- disagreement on the border line location,
- political differences,
- internal political problems in S/M
- others, specify

7. In what way does the relationship between the two countries affect the ecological environment, and why

8. How have the governments' involvement affected the environmental situation in the river valley

- to the better
- no change and why
- to the worse

9. How can the governments take best care of the resources in the river valley, alternative solutions

- federalism,
- local autonomy,
- ask for more foreign aid,
- concentrate on increasing irrigated land,
- respecting traditional land rights
- increasing coop. with neighbour states
- others, specify

10. What are the most problematic consequences of the increased

- competition to acquire irrigable land,
- more difficult for subsistence economy,
- higher population density,
- destruction of traditional land regimes,

- environmental degradation,
- others, specify

11. How can the exchange and cooperation between the two river sides be developed and improved

12. Which groups are more effected by the recent conflict,

- traditional land owners,
- haratins,
- waalo cultivators,
- jeeri cultivators,
- pastoralists
- others, specify

13. How does the new land policy/legislation affect the production

- more effective
- no change
- less effective

14. How to keep stability and peace, by open or closed borders, why

15. How many foreign countries are involved in development projects in the river valley

16. What are their main interests,

- provide development aid,
- commercial agriculture,
- getting access to land,
- others, specify

17. Who are the primary beneficiaries of the development in the river valley

- foreign investors,
- governments,
- certain ethnic groups,
- local farmers
- others, specify

18. How does the presence of the refugees effect the environment

- large
- medium
- small WHY
- none

19. What are the activities the refugees are able to perform

20. How many percent of the refugees have been registered under UNHCR

- 21.** When there are tensions because of unequal access to water resources, who is the frustration more often directed towards, local neighbours or the government
- 22.** What kind of water conflicts are more common
 - inter-familial
 - inter-neighbours
 - inter-ethnic
 - inter-state
- 23.** What are the governments' preferences, S and M
 - large scale irrigation agriculture,
 - PIVs,
 - flood recession,
 - livestock,
 - rain fed agric.
- 24.** Who decides distribution of land
- 25.** What is necessary for individual farmers to obtain usufruct rights of land along the river
- 26.** What does such rights mean/implies
- 27.** What do you pay for using the land
- 28.** Have you experienced any change in land tenure the last 3-4 years, what kind of change -
 - more/less difficult to obtain rights,
 - increased prices,
 - new owners,
 - others, specify
- 29.** What kind of support do you get from the state -- credits,
 - equipment,
 - supplies of fertilizer
 - others, specify
- 30.** What kind of foreign organisations are present in the river valley
- 31.** Have you felt the presence of these foreign organisations
- 32.** What are their aims
 - development aid,
 - commercial interests,
 - export production,
 - others, specify

33. Have you been affected by the recent S-M-conflict, how

34. What kind of solutions do you suggest for establishing a good relationship between the two states

35. What kind of solutions for establishing positive development in the river valley,

- more state control/involvement
- less state control/involvement
- local autonomy,
- federalism,
- creation of new states

36. In what way have the border exchange activities been affected by the conflict between the two countries

37. What kind of border is preferable - open or closed, why

38. How are the general relations between the different ethnic groups in the valley,

- amicable
- neutral
- hostile

39. Are there any on-going fights over land tenure rights, if so where

40. Who controls the water resources

41. What are the advantages of trade across the border

42. What kind of border trade is more common

43. What is more important for the national states,

- political stability
- to satisfy local people's needs - to meet donor demands
- others, specify

44. How have donors influenced on the development policy in the river valley

45. In what way has the new development policy affected the former and present slaves

- more access to land
- less strict ties to masters
- less access to land
- more strict ties to masters