



# Country Pastoralism and Small-Scale Farming Profile - Mauritania



November 2022

## ACKNOWLEDGEMENTS

The Country Pastoralism and Small-Scale Farming Profile development exercise primary objective was to identify the current status of the governance landscape for pastoralist and small-scale farming in Mauritania.

The SLGA program supports the implementation of the AU Agenda on Land, in addition the program is part of the BMZ unique initiative ‘One World, No Hunger. This programme will have immense contribution to the initiative under the Action Area “promoting responsible land use and improving access to land”. The SLGA aims to strengthen the human and institutional capacities required to realise sustainable land policies that recognise the rights of marginalised groups such as small scale farmers, pastoralists, youths and women across Africa. One of the main areas of action for SLGA is the establishment and coordination of the Network of Excellence on Land Governance in Africa (NELGA) under the leadership of the ALPC (African Land Policy Centre).

This study generated evidence to inform SLGA’s capacity to provide advisory support on such issues to decision makers and other stakeholders. This information will contribute to the body of literature available on the Land Governance Agenda of the AU to improve land governance in Africa.

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## ACRONYMS AND ABBREVIATIONS

<b>AfDB</b>	: African Development Bank
<b>ALPC</b>	: African Land Policy Centre
<b>ANSADE</b>	: According to the National Agency for Statistics and Demographic and Economic Analysis
<b>BADEA</b>	: Arab Bank for Economic Development in Africa
<b>CIREF</b>	: Inter-ministerial Committee for Land Reform
<b>CNERV</b>	: Centre for Livestock and Veterinary Research
<b>CNRADA</b>	: National Agricultural Research Centre for Agronomic Development
<b>COTREF</b>	: Committee has a Technical Commission for Land Tenure Reform
<b>FAO</b>	: Food and Agriculture Organization
<b>GDP</b>	: Gross domestic product
<b>GIZ</b>	: Deutsche Gesellschaft für Internationale Zusammenarbeit
<b>IDA</b>	: International Development Association
<b>IDB</b>	: Islamic Development Bank
<b>IFAD</b>	: International Fund for Agricultural Development
<b>IRM</b>	: Islamic Republic of Mauritania
<b>LGAF</b>	: Land Governance Analysis Frameworks
<b>NADP</b>	: National Agricultural Development Plan
<b>NELGA</b>	: Network of Excellence on Land Governance in Africa
<b>OMVS</b>	: Organisation for the Development of the Senegal River
<b>OPEC</b>	: Oil Producing Exporting and Exporting Countries
<b>PARIIS</b>	: Projet d'Appui Régional à l'Initiative pour l'Irrigation au Sahel
<b>PATAM</b>	: Projet d'Appui à la Transformation Agricole
<b>PNDA</b>	: National Agricultural Development Plan
<b>PRAPS</b>	: Projet Régional d'Appui au Pastoralisme au Sahel
<b>PROGRES</b>	: Project for the sustainable management of natural resources, communal equipment and structuring of rural producers
<b>RSDS</b>	: Rural Sector Development Strategy
<b>SDSR</b>	: Rural Sector Development Strategy
<b>SRB</b>	: Shared Prosperity in the Senegal River Basin
<b>VGFD</b>	: Voluntary Guidelines for Responsible Governance of Tenure of Land, Fisheries and Forests
<b>WB</b>	: World Bank

# 1. COUNTRY AND MACROECONOMY

## General data

The Islamic Republic of Mauritania (IRM) is bordered by the Atlantic Ocean to the west, the Sahara to the northwest, Algeria to the north, Mali to the east and southeast and Senegal to the southwest. With an area of 1,030,700 km<sup>2</sup>, it is characterised by low relief. Indeed, the altitude is around 500 m except for the Kedia d'Idjil which reaches 915 m. The landscapes are mainly tabular plateaus and vast stony or sandy areas.

Rainfall is irregular in time and space with a winter season of 3 to 4 months, generally between June and September. A large part of the country experiences annual rainfall of less than 300 mm.

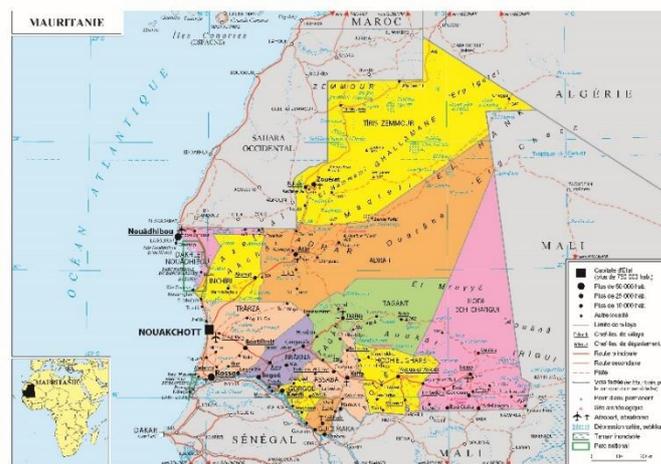
Mauritania's climate is influenced by latitudinal variables and the ocean. It is rather Saharan in the north and rather Sahelian in the south and is generally hot and dry. Maximum temperatures exceed 44°C in May and June, while minimum temperatures can drop to 10°C in January and February. Trade winds, predominantly north-easterly, are very frequent.

There are four different bioclimatic zones: the arid zone (81,000,000 ha), the Sahelian zone (17,500,000 ha), the Senegal River zone (2,200,000 ha) and the coastal zone (720 km long and 50 km deep). A large part is made up of dune alignments covered with pasture during the rainy season and allowing the practice of rain-fed crops.

## Demographics

The total population of the Islamic Republic of Mauritania is estimated at 4,173,078 in 2019<sup>1</sup>, of which 50.7% are female. The population is highly urbanised, reaching 49.0% in 2019. The average household size is 6 members;

The age pyramid of the country shows the dominance of young people. Indeed, the average age of the population is 22 years. 56.9% of the



population is under 20 years old and 77.9% is under 35 years old.

## Socio-economic indicators

The working age population (14-64 years) makes up 54.0% of the population with a majority of women (54.4%) and young people (66.6%). The unemployment rate is 12.2%<sup>2</sup> and affects more women (17.3%) than men (9.3%).

In 2019, the number of people living below the poverty line was 28.2%. Similarly, 12.8% of the population live below the extreme poverty line.

Gross domestic product (GDP) growth has followed an upward trajectory since 2015, rising from 3.0% in 2017, 3.6% in 2018 and 5.9% in 2019<sup>3</sup>. The share of the primary sector, agriculture, livestock and fisheries reached 25.9% of GDP in 2018. The resilience of the Mauritanian economy following the pandemic and the international crisis will rely mainly on the production of extractive industries, but also on the dynamics of the primary sector, particularly agriculture and livestock. Agricultural and livestock activities should experience sustained growth. GDP in this sector is expected to grow by 6.3% in 2023 to MRU 87,216 million, driven mainly by agriculture, which is expected to record a real growth rate of 9.3%.

<sup>1</sup> According to the National Agency for Statistics and Demographic and Economic Analysis (ANSADE)

<sup>2</sup> Source: ANSADE

<sup>3</sup> Source: ANSADE

## 2. SMALL-SCALE FARMING

### *General characteristics*

At first sight, there is a lot of vagueness when talking about agriculture and farms. Indeed, the generic term "farm" encompasses a wide variety of types of land use. This diversity concerns size, management, access, financing, etc. There are problems in defining these types of farms. In particular, it is necessary to explain what is meant by small-scale agriculture, also called small-scale farming and even family farming.

Mauritanian agriculture is essentially 'small-scale' or 'family' agriculture. Depending on the location of families in the different bioclimatic or agroecological zones, they develop farms that include productive activities in relation to the natural resources offered by the environment.

**In the arid or Saharan zone:** the family farm develops mainly the oasis-type production system characterised by the cultivation of palm trees and associated irrigated crops (cereals, alfalfa, vegetables and fruit). Livestock and rainfed crops are secondary.

**In the Sahelian zone,** family farming in the eastern part of the country is mainly characterised by livestock breeding and traditional rainfed cereal crops (sorghum, millet, maize). In the western and southern parts, family farming is mainly characterised by the cultivation of traditional cereals behind dams, dykes and in the lowlands, particularly in Assaba (in Affolé), Brakna (Magta lahjar and Aleg) and in the Moughataa of M'Bout and Monguel. In these areas, livestock farming is transhumant.

**In the Senegal River valley area:** the family farm practices the agricultural production system in its various forms, with the irrigated crop system in the lead, followed by the natural or controlled flood recession crop system of walo, and the rainfed crop system. Livestock farming is sedentary and semi-intensive, with a short transhumance during the growing season.

It should be noted that the populations in areas close to aquatic environments include inland

fishing in the productive activities of the family farm, whether as professionals or amateurs.

**In the Atlantic seaboard area:** the family farm includes mainly fishing activity, there is also a possibility of developing horticulture and livestock in the peri-urban areas.

- **Soil types and cropping systems:**

*Extensive rainfed cropping system in the sandy or "diéri" zone: area and production from 2016 to 2021*

For this cropping system, a total area of 137,993 ha has been sown in the 2020-2021 crop year. The main crops grown are sorghum (128,913 ha), millet (8,911 ha) and maize (170 ha). The average size of the family plot is 5 ha. The number of farmers varies according to rainfall.

### **Cropping system behind dams and lowlands**

For this cropping system, a total area of 47 378 ha has been sown in the 2020-2021 crop year. The main crops grown are sorghum (33,234 ha), maize (13,316 ha) and wheat (828 ha).

*Natural or controlled flood cultivation system of walo,*

For this cropping system, a total area of 24 592 ha was sown in the 2020-2021 crop year. The main crops grown are sorghum (14,901 ha) and maize (9,691 ha).

*Oasis system*

The last census of oases and farms conducted by the Ministry of Agriculture in 2012, there were 26,836 farms, 352 oases covering a total area of 19,687 ha. The Wilayas (regions) with this cultivation system are Tagant (127 oases, 4,275 ha), Assaba (97 oases, 7,914 ha), Adrar (75 oases,



5,673 ha), Hodh Gharbi (31 oases, 1,357 ha) and Hodh Charghi (22 oases, 468 ha).

#### *Irrigated cropping system with total water control*

The nature of this cropping system allows, in principle, for several cropping seasons to be carried out on the same plot of land in the same year (wintering, cold counter-season and hot counter-season). However, the rule is to carry out only one wintering season and exceptionally one counter season. A total area of 72,397 ha was sown in 2020-2021. Winter rice (37,130 ha), off-season rice (35,035 ha) and off-season wheat (232 ha). The average size of the family plot is 0.5 ha. Rarely, in some large developments (1,000 ha and more), this average size can reach 1 ha and exceptionally more.

#### ***Role and place of women***

Mauritanian society in all its components (Arab-Berber, Halpular, Soninke and Wolof) is Muslim and patriarchal. To date, this society is very conservative and not very receptive to changes in social relations, gender equality and even human rights to some extent.

Thus, the place of women is still essentially that accorded to them by tradition, i.e. secondary to that of men.

Access to land ownership has always been an issue jealously managed by the archaic chieftainship, which controls it with great rigour. Land, animals and water are essential resources for the well-being of the people. Consequently, they are subject to uncompromising management.

Also, the results of the studies conducted on women's access to land ownership describe a situation that is known in advance. In the Senegal River Valley, where most of the modern farms in operation are concentrated, the number of women who have gained access to property is rather insignificant. Only 4.2% of them hold a land title.

In general, women are on family farms where, given the division of labour, they play a large role. In addition to domestic tasks, they provide a

significant part of the labour force in all phases of production. There are no statistics on the female labour force in family farming. However, in rural areas and depending on the cropping system (rainfed, behind lowland dams, recession, irrigated or oasis) the labour force is mainly family-based (head of household, wife and child(ren)). There is a division of labour. Each member has tasks to perform at each phase of production. For rainfed crops (diéri, behind dams, recession), the women put the seed in the pots, participate in weeding and weeding, take care of the guard and fight against birds... They take part in the harvest and post-harvest operations. For irrigated farming, it is also the same thing. They take part in transplanting or sowing, participate in weeding, bird control, and post-harvest operations. In other words, there are women on almost every family farm. However, despite the customary barriers and sociological prejudices mentioned above, neither Muslim nor modern law prevents women from owning land.

However, there has been a timid improvement in this area through the development of modern agricultural activities such as market gardening. Thus, the situation of the files for registration at the level of the Bureau of Land Affairs of the Ministry of Agriculture, all phases combined (exploitation permits, provisional concessions, definitive concessions) for the Wilaya of Trarza, the place of concentration of developed irrigated farms, there were 103 files belonging to women in October 2022, distributed as follows: 60 files belonging to individual private individuals and 40 files belonging to collective private individuals (co-operatives, associations...).

#### ***Evaluation of research/literature related to small-scale agriculture***

The sector benefits from the existence of a research institution. Indeed, there is the National Agricultural Research Centre for Agronomic Development (CNRADA) at the service of plant production and extension. The centre has several operational stations throughout the country's Wilayas.

### *Public policy for small-scale agriculture*

In terms of texts, the sector has a set of references, including mainly the LOI D'ORIENTATION AGROPASTORALE (**LOAP**) drafted and adopted in December 2012. Its purpose is to determine the policy guidelines constituting the reference framework for the development of agriculture (plant and animal production).

As planning tools for agriculture under the **LOAP**, a Rural Sector Development Strategy (**RSDS**) for 2025 was developed and adopted in 2013 as well as a National Agricultural Development Plan (**NADP**) for the period 2015-2025.

### *Access to land and land governance*

#### **Policy, legislative and regulatory framework for land resource development**

The current land tenure system in Mauritania is mainly based on Ordinance No. 83-127 of 5 June 1983 on land and property reorganisation. Its main content is that :

Land belongs to the nation and any Mauritanian, without discrimination of any kind, may, by complying with the law, become a part owner. (ART.1) ;

The State recognises and guarantees private land ownership which must, in accordance with the Shariah, contribute to the economic and social development of the country. (ART.2.) ;

The system of traditional land tenure is abolished (ART.3.) ;

Any property right which is not directly related to a natural or legal person and which does not result from a legally protected development is non-existent (ART.4.).

The application of Ordinance n°83-127 of 5 June 1983 was the subject of the following decrees:

- Decree No. 2000-089 of 17 July 2000 repealing and replacing Decree No. 90.020 of 31 January 1990 implementing Order 83.127 of 5 June 1983;

- Decree No. 2010-080 of 31 March 2010 repealing and replacing Decree No. 2000/089 of 17 July 2000;
- Decree No. 2014-075 amending certain provisions of Decree No. 2010-080 of 31 March 2010.

In addition, other legislative and regulatory texts relating to land exist, such as the environment code, the pastoral code, the forestry code, the water code, the law relating to the participatory management of oases and its application decree...

#### **Land reform in preparation**

The implementation of Ordinance No. 83-127 of 5 June 1983 was met with a great deal of incomprehension on the part of populations attached to traditional land ownership and tenure. There have been many disputes and conflicts on this subject that have made it difficult, if not impossible, for the state to grant operating permits to foreign investors in the field of agriculture, particularly in the Senegal River valley. It has to be said that the said law lacked awareness and listening to the communities concerned.

This is why, starting in 2016, the Government has embarked on a process of land reform that it hopes will be transparent, inclusive and participatory, with a view to adapting its legal instruments as best it can in the interests of food security and the sustainable development of its territories.

Thus, it created the Inter-ministerial Committee for Land Reform (CIREF), a steering structure for the process, which is responsible for defining, monitoring and steering the government's land policy. This Committee has a Technical Commission for Land Tenure Reform (COTREF), which is responsible for developing and proposing an action plan for land tenure reform, disseminating all information, decisions and producing all reports and recommendations under its supervision.

Similarly, a national platform for dialogue was set up, bringing together the actors involved in

Mauritanian land management (state structures and civil society).

With a view to implementing this new policy, COTREF has drawn up a roadmap whose sources of inspiration are

- The African Union Framework and Guidelines and the Land Governance Analysis Frameworks (LGAF) for improving land management at national level and in the Senegal River Basin.
- The Voluntary Guidelines for Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGFD)
- Improved Land Governance for Shared Prosperity in the Senegal River Basin" (SRB) project implemented jointly by FAO and the Initiative Prospective Agricole et Rurale (IPAR) in Mali, Mauritania and Senegal.

### *Climate change and small-scale farming<sup>4</sup>*

Since the 1960s and especially the 1970s, climate change in Mauritania has resulted in the delay, or even the almost total absence, of a normal winter season for the geographical area. Thus, the frequency of rainfall has become rare. The average annual rainfall, generally between 600 and 500 mm, has notoriously dropped to below 300 mm in many regions. Then, the start of the season experienced a major shift. The first rains, which used to fall in June, now only arrive in August, etc. The 1970s, 1980s and 1990s saw catastrophic disruptions to rainfall, which totally affected the traditional economy (agriculture, livestock farming, inland fishing) but also traditional social relations (between social classes, between the sexes, etc.). This period was above all marked by an unprecedented rural exodus. Nouakchott, the capital, saw its population rise from 55,000 in 1972 to 590,532 in 1988 and 958,399 in 2013. The rural populations hit by the shortage left their lands en masse to take refuge in the capital.

Regarding government policies in this area, there is the National Mobilisation Initiative for the Promotion of Agriculture, which aims to cultivate about 300,000 hectares, including more than 200,000 hectares in the traditional rainfed cereal system.

About 80,000 hectares in the irrigated rice system, with an expected total production of about 60,000 tonnes of cereals, including about 150,000 tonnes of traditional cereals and more than 400,000 tonnes of raw rice, which will cover 47% of the national needs for traditional cereals and 93% for rice.

In order to support and upgrade rainfed agriculture, more than one thousand tons (1000) of traditional crop seeds have been provided (2022-2023), more than five hundred production sites have been fenced by extending about two thousand linear kilometres to protect farms from stray animals and avoid conflicts they cause between farmers and herders.

In order to create appropriate and attractive production conditions for young people towards rainfed agriculture, the state will develop the progressive mechanisation of farms by acquiring more than 1,600 traditional ploughs and about 60 mechanised ploughs, in addition to the purchase of 15 tractors with various accessories. With regard to irrigated agriculture, the authorities have provided 10,000 tonnes of urea and 5,000 tonnes of composite fertiliser in advance, to cover the needs of this winter season. Similarly, a central directorate for plant protection has been created.

The impacts of climate change require coordinated action between the environment, agriculture, infrastructure and water for a resilient development pathway. In the face of threats to agriculture, water and the environment, there is a need to ensure the collective conservation or restoration of natural capital.

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<sup>4</sup> See National Climate and Development Report, World Bank Group, June 2022

### *International or regional cooperation for small-scale agriculture*

In order to create the best conditions for the sustainable development of its agriculture, the Mauritanian State is a member of several international and sub-regional organisations, and cooperates with development partners, States and international non-governmental organisations in the field of agricultural development:

- The Food and Agriculture Organization of the United Nations (FAO) ;
- The International Fund for Agricultural Development (IFAD) ;
- The World Bank (WB);
- The African Development Bank (AfDB);
- Islamic Development Bank (IDB);
- The Arab Bank for Economic Development in Africa (BADEA) ;
- The Organisation for the Development of the Senegal River (OMVS) ;
- Other.

#### • **Some examples of cooperation projects**

*Regional Support Project for the Sahel Irrigation Initiative (PARIIS)*: The World Bank has granted funding to a regional project led by CILSS and the six countries (Burkina, Chad, Mali, Mauritania, Niger and Senegal). This regional project entitled "Projet d'Appui Régional à l'Initiative pour l'Irrigation au Sahel" (PARIIS), also known as SIIP, is receiving US\$170 million in funding from the International Development Association (IDA).

PARIIS aims to prepare stakeholders to achieve the qualitative and quantitative objectives of the "Dakar Declaration", which invites stakeholders to increase investment in irrigation in the six countries, with a view to achieving 1,000,000 ha of irrigated land in the Sahel.

*Project for the sustainable management of natural resources, communal equipment and structuring of rural producers (PROGRES)*: Financed by the International Fund for Agricultural Development

(IFAD), the "Project for the sustainable management of natural resources, communal equipment and structuring of rural producers (PROGRES)" targets vulnerable households in the regions of Brakna, Assaba, Gorgol, Guidimakha, Hodh El Gharbi and Hodh Ech Charghi in Mauritania. The project aims to support the populations towards sustainable land management through the rehabilitation of dams/lands and development of ponds; development of pastoral corridors) which are subject to climate resilient management.

The project aims to empower the rural poor in their sustainable access to natural resources and community facilities.

Its funding is provided by :

- International Fund for Agricultural Development (IFAD)
- OPEC Fund for International Development

*Agricultural Transformation Support Project (PATAM)*: The Projet d'Appui à la Transformation Agricole (PATAM) aims to contribute to the improvement of food security and the living conditions of the target populations through an inclusive and sustainable development of the agricultural sector. The project aims at the inclusive and sustainable development of the agricultural sector. It contributes to the improvement of food security and the living conditions of the target populations. More specifically, it will support agricultural transformation in Mauritania by improving productivity and adding value to agricultural products.

Funding is provided by the African Development Bank, the Nigerian Special Fund and the Mauritanian Government.

## **3. PASTORALISM**

### *Livestock potential and pastoral systems*

In 2021, Mauritania will have approximately 2,402,077 million cattle, 15,571,303 million sheep, 10,006,999 million goats and 1,560,108 million camels. It should be noted that, given the climatic

characteristics, pastoral mobility - or transhumance - is a long-standing tradition in the country. Due to the difficult environmental conditions that affect crop and livestock production, including food security, mobile livestock farming provides access to water and pasture. As a result, the timing and routes of transhumance are made in accordance with the rains, as well as the distribution of water and pasture, which vary from one season to another.

In addition to ensuring the country's self-sufficiency in red meat, this wealth makes it possible to export to countries in the sub-region such as Senegal, Mali and even beyond.

It should be noted that Mauritania, an important livestock country, does not have a precise vision of its animal resources, particularly due to the lack of a general livestock census. A ministerial department in charge of livestock has just been created and plans to carry out this census.

### *Pastoral systems*

Mauritania is currently characterised by the following main pastoral systems:

- **Nomadic pastoral systems:** The main animals in this system are camels and goats. It is characterised by high mobility.
- **Transhumant pastoral and agropastoral systems:** transhumant livestock farming is characterised by the fact that the herd or fraction of the herd used to transhumance for seven to eight months. Pastoral mobility can take herders out of the country (Mali or Senegal) and back to a base point where the family of the herd owner resides.
- **Agropastoral systems with sedentary livestock associated with agriculture:** the animals concerned by these systems are cattle and small ruminants. Livestock are kept throughout the year on the same land where the herds exploit crop residues in addition to natural fodder.
- **Extensive urban systems:** generated in response to the effects of drought and as a corollary to urbanisation, these systems are

specialised in goat rearing and sheep fattening.

- **Semi-intensive peri-urban systems:** these consist of camels and cattle.

### *Role and place of women*

As with the work in the fields in the development of agricultural land, there is a social division of labour in the herders' family. It should be pointed out that the Mauritanian population, although 100% Muslim, comprises two very distinct civilisations with different practices in many areas. There is the Arab-Berber civilisation and the Black Mauritanian civilisation.

The issue of access to animal ownership is as complex as access to agricultural land. Indeed, there are steps according to the size of the herd.

In any case, all Mauritanian families practice livestock rearing in one form or another. There is what is known as 'hut rearing', which corresponds to the group of 'small-scale livestock farmers', which consists of a family having a small herd of sheep, goats and sometimes cattle at home. This herd allows family members to benefit permanently from by-products (milk, meat, etc.). It also constitutes traditional savings that enable the family to meet urgent and unforeseen expenses (illness, family ceremonies, etc.). This domestic herd is generally managed by the women.

On the other hand, there are more and more women's organisations (cooperatives, associations) for the development of livestock by-products such as the sale of milk and its derivatives, leather. When the herd moves during transhumance, it is mainly the shepherds (men), sometimes accompanied by their own families, who move with it. The women are involved in domestic husbandry and the processing of by-products such as milk, leather etc.

### *Assessment of available research / literature on pastoralism*

The sector benefits from the services of the National Centre for Livestock and Veterinary

Research (CNERV), whose activities are based on seven main poles:

- Epidemiological surveys ;
- Diagnosis of animal diseases ;
- Microbiological quality control of animal products ;
- Research activities in animal health, - Research in zootechnics;
- Bromatological analysis of animal feed ;
- Advice to farmers.

### **Establishment of genetic improvement farms**

In the milk sector, the State intervenes on the one hand through compulsory vaccination campaigns and on the other hand through the establishment of genetic improvement farms. The latter aim to compensate for low milk productivity by genetically improving local dairy cows by crossing with exotic breeds (Holstein, Montbéliard, Tarentaise). Following a genetic improvement programme in 2006, the Idini station in Trarza was set up in 2009, followed by Kankossa in Assaba and Mahmouda in Hodh El Charghi.

### *Available literature on pastoralism*

The agriculture and livestock sectors have always coexisted within the same ministry called 'Ministry of Rural Development'. In 2016 and since 2021, there are now two separate ministries, one for agriculture and the other for livestock.

Also, a number of texts and much founding literature are common to both departments. Thus, as for agriculture, the planning tools for livestock provided for in the **LOAP**, a Rural Sector Development Strategy (**SDSR**) to 2025 was developed and adopted in 2013 as well as a National Agricultural Development Plan (**PNDA**) for the period 2015-2025 are the same references.

### **The pastoral code**

In legal terms, the livestock sector is governed by (i) Law 2000/044 on the Pastoral Code and its implementing decree promulgated in 2004; (ii)

Law n° 97007 of 20 January 1997 on the Forestry Code; (iii) Ordinance 85.144 and Circular n° 90 31/MINT/MHE on the Water Code; and (iv) Law 83.127 on land and property reorganisation and its implementing decree promulgated in 2000

### *Climate change and pastoralism*

Since the 1960s and especially the 1970s, climate change in Mauritania has resulted in the delay, or even the almost total absence, of a normal winter season for the geographical area. Thus, the frequency of rainfall has become rare. The average annual rainfall, generally between 600 and 500 mm, has notoriously dropped to below 300 mm in many regions. Then, the start of the season experienced a major shift. The first rains, which used to fall in June, now only arrive in August, etc. The 1970s, 1980s and 1990s saw catastrophic disruptions to rainfall, which totally affected the traditional economy (agriculture, livestock, inland fishing). As with agriculture, livestock have been greatly impacted by climate change. Grazing and watering places have all but disappeared. Herds have been decimated. Some herders have lost all their animals, others have lost a good part. Some transhumant herders have managed to save their livestock by moving the most resistant ones to less hostile geographical areas.

However, livestock production is expected to provide solutions in the face of limited resources and increasing food demand. Predictions of extreme weather events and droughts mean that the most vulnerable populations will pay a heavy price for climate change. Therefore, livestock will contribute to resilience by

- Allowing to face hostile climatic conditions (deserts, high plateaus, steppes...) by providing transport, access to water (animal drainage), source of food and source of income;
- Allowing the maintenance of knowledge and practices (water management, conservation of food products, etc.) and biodiversity (animal breeds, grazing, etc.) adapted to extreme climatic conditions;

- Enabling the development, maintenance and protection of fragile and very low-productivity environments that could not otherwise be developed;
- Contributing to the food security of the most vulnerable;
- Improving the diet and nutritional balance of rations (traditionally based on cereals or tubers). The elements provided by eggs, milk or meat contain minerals such as calcium, essential amino acids, vitamins (D and A) and crucial trace elements such as iron or zinc. These elements are essential for good physical and cognitive development, especially in children... ;
- As a standing saving. As such, it plays an indispensable buffer role that improves the resilience of these populations.

Similarly, livestock farming, combined with mixed farming, contributes to the diversification of production on peasant farms and improves the adaptability of families to changes in the production environment (income, food and diversified outlets).

### *International or regional cooperation in favour of pastoralism*

In order to ensure better development of the livestock sector, the Mauritanian state has increased its exchanges and shared its means and capacities with friendly countries and development partners. Thus, Mauritania is a member of the Projet Régional d'Appui au Pastoralisme au Sahel (PRAPS)

The Project aims to improve access to markets and essential production assets and services for pastoralists and agropastoralists in the project's target areas, as well as to improve national capacity to respond in a timely and effective manner to pastoralist crises or emergencies. The decision to develop the project stems from the Nouakchott Declaration on Pastoralism, adopted on 29 October 2013, by the leaders of six Sahelian countries (Burkina, Chad, Mali, Mauritania, Niger and Senegal).

The PRAPS aims to finance and implement pastoral infrastructure such as vaccination parks, pastoral reserves, livestock markets, rest areas for transhumant herders, milk collection centres and mini-dairies, slaughter areas, wells, boreholes, dug-out ponds, large quantities of vaccines and large-scale vaccination campaigns, epidemiological monitoring stations and chemical reagents. It is financed by the States, the World Bank and the beneficiaries.

## **4. MAIN CONCLUSIONS AND RECOMMENDATIONS**

### *Main findings*

For the Mauritanian economy to grow in a sustainable manner, it should be driven, among other things, by continued growth in the primary sector and the strengthening of the services sector. Agriculture and livestock should perform well.

### *Main recommendations*

#### **For small-scale farming**

- Reform land policies, strengthen formal land rights including those of women, secure land titles and support inclusive land management and conflict resolution mechanisms at the local level as a basis for increased investment and productivity of cropland and pasture;
- Professionalise farmers, including smallholder and women farmers, and disseminate information and assistance to (i) adopt effective practices such as soil, water and agronomic improvements, (ii) increase the adoption of relevant irrigation technologies; (iii) improve crop breeding (such as the use of drought-resistant varieties); and (iv) mainstream the use of early warning system and hydrometeorological information to improve farm productivity and resilience;
- Facilitate the supply of fertilisers and promote efficient distribution by the private sector;
- Enhance climate change adaptation programmes, through the establishment of larger strategic grain reserves, food crisis

management systems, crop and livestock insurance schemes, efficient food storage systems and improved extension and advisory services, specialising in climate change adaptation and resilience;

- Invest in sustainable land use, animal feed, vaccines and improved veterinary services, and sustainable fisheries practices to make the livestock and fisheries sectors more resilient;
- Develop and strengthen agroforestry value chains to enable farmers to benefit from agricultural and tree products and other benefits of greening;
- Develop efficient irrigation systems and water harvesting practices.

### **For pastoralism**

In order to prepare peasant and pastoral livestock for climate change, two complementary approaches are needed:

- Recognise and strengthen the role of livestock in the adaptation of populations to climate change;
- Develop national programmes to diversify agricultural production, including the development of small-scale livestock farming in vulnerable areas.

In order to properly prepare for climate change, the following suggestions should be taken into account:

- To strengthen the economic and political power of women (who are often marginalised), in particular by supporting their increased involvement in the livestock sector, both in production and marketing;
- Develop multi-stakeholder governance systems based on local communities that enable grazing pressure to be distributed, facilitate access to water, control pastoral land, improve infrastructure and prevent conflicts;
- Develop community-based animal health services that will enable livestock keepers to cope with emerging diseases (changing

biotopes), increased population and livestock movements and increased livestock vulnerability (conflicts over access to resources);

- Involve livestock farmers and their organisations more closely in national consultation forums;
- Develop partnerships between livestock organisations, development NGOs and research.

The current food, climate and economic crisis shows that it is absolutely necessary to develop crop and livestock farming models that are more respectful of humans and their environment.

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