

2nd Workshop – FMD-PCP: Value chain analysis and FMD risk mapping in Mauritania



Mission Report

4-8 May 2015

Nouakchott, Mauritania

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Mission report
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**SECOND WORKSHOP ON PROGRESSIVE CONTROL PATHWAY FOR FMD CONTROL
VALUE CHAIN ANALYSIS AND RISK MAPPING
Nouakchott, Mauritania 4-8 May 2015**

1. Background

The European Commission for the Control of Foot-and-Mouth Disease (EuFMD) workplan 2015, component 2.3, includes activities to assist Mauritania for the development and implementation of a Risk-Based Strategic Plan (RBSP) for FMD control and for improving the knowledge on FMD circulation in the country. The Progressive Control Pathway (PCP) for FMD, a tool originally developed by EuFMD and now used as a joint tool by EuFMD, FAO and OIE, has been developed to assist and facilitate countries to progressively reduce the impact of FMD. It relies on six successive stages in which countries are progressing from stage 0 (no or limited FMD surveillance and control activities) until they reach FMD free status with vaccination (stage 4) or without vaccination (end of stage 5).

Mauritanian national authorities recently showed interest in initiating a PCP for FMD control. So far, FMD activities have been limited and Mauritania is considered as being currently at stage 0 of the PCP. Thus, the support of EuFMD to Mauritania at this initial phase is mainly intended to train and work with professionals of the Veterinary Services and Laboratories to collect, analyze, discuss the information needed to design and prepare the RBSP. In February 2015, a first workshop was organized in Nouakchott to introduce the value chain analysis, one of the pillars of the RBSP. The workshop ended with an identification of necessary data to conduct a value chain analysis and a distribution of the data collection tasks among the workshop participants.

The second workshop intended to follow-up on the value chain analysis and to initiate a more detailed discussion about possible FMD transmission routes between herds and a socio-economic impact assessment. Possible options for FMD active surveillance and control activities were also discussed and prioritized. The agenda of the second workshop is provided in Annex 1.

A one-day training on outbreak investigation was also organized by EuFMD at the end of the second workshop (see section 5 of the present report).

2. Impressions of the workshop

The workshop was attended by 23 participants from the national and regional levels, veterinary services and laboratory personnel (see Annex 2). Approximately 50% of them already attended the workshop 1.

Participants showed high interest in the topic and were very active during the group works and discussions. Although homework was poorly completed between workshops 1 and 2, they confirmed their willingness to engage in the necessary steps leading to the RBSP for FMD in Mauritania.

3. Principal outcomes of the workshop

3.1 Value chain analysis

- **Review of the homework**

The value chain analysis of meat and milk production developed during the workshop 1 were used as a starting point. From the review of the homework that was planned to be completed between the workshops 1 and 2, it appeared that:

- The homework was poorly completed by the participants; main reasons that were provided were the lack of time, the lack of leadership and the lack of financial incentives, in particular for the participants based in Nouakchott who did not receive per diems for participating to the workshop 1.

Yet, some homework activities were completed:

- Useful data was collected by the regional delegate of the Gorgol region, about small milk factories (mostly related to NGO funded local projects), extensive livestock farming and transhumance, slaughter area and meat markets in the Gorgol region (see Annex 3 for more details about the data collected).
- Implementation of a national survey is currently in preparation, which will provide national statistics data about livestock farming in Mauritania; the questionnaire has been developed and the field investigators were trained so that the survey should start in the coming months (responsible person: Dr Teslem Mint Cheikh Ould Bourweiss, Ministère de l'Elevage/Monitoring service chief).
- Data were also collected about estimated livestock population in the different regions of Mauritania between 2000 and 2012 (see Annex 4).

- **Field visits**

Field visits were organized in order to collect additional data for the completion of the value chain analysis based on the list of necessary data that was developed during the workshop 1 and the data that were collected as part of the homework between the workshops 1 and 2. Participants were divided in four groups and asked to interview key stakeholders at different stages of the meat and milk value chains, namely: i) the primary production (semi-extensive and peri-urban livestock farming), ii) the informal meat market, iii) the formal meat market and iv) the cattle milk processing. Because of logistics and time constraints, only stakeholders located in the area of Nouakchott were interviewed. The main outcomes of the field visits are presented here. More details about the feedback provided by the groups are available in the Annexes 5 to 8.

Group 1: Semi-extensive and peri-urban livestock farming (see Annex 5)

From the visit of a farm with 25 heads of cattle located in the peri-urban region of Nouakchott, the following observations were made:

- Farmers buy animals presenting FMD lesions (in this case: a calf with oral ulcers recently bought at the final market) as they are cheaper.
- No quarantine is implemented before introducing new animals (even if apparently sick) into the herd.
- No control measures are implemented in case of FMD in the herd (in this case the calf finally died and was removed but no other measure was implemented).
- Biosecurity is very limited (use of washing powder and bleach before milking).
- There is no regular veterinary follow-up.
- The participation to current vaccination campaigns is poor (in this case the farmer only vaccinated once over several years although annual vaccination against CBPP is mandatory).
- Raw milk is sold directly from the farm to the consumer; cattle and camel raw milk consumption is very popular in Mauritania (consumed by “all” Mauritians).

Group 2: Informal meat market (see Annex 6)

The visit of an intermediate small ruminants market and a meat market showed that:

- Animal movements of small ruminants mainly occur from the South-Eastern part to the North-Eastern part of Mauritania; Nouakchott is a major intermediate step (some animals are then further transported to Nouadibou and Zouerate in the north of Mauritania).
- Animals are transported either by trucks or walking (up to several days, e.g. from Inchri or Trarza to Nouakchott).
- Cross-border movements are frequent, with animals in Nouakchott originating from Mali and Senegal, and later being sent to Sahara, Morocco, Senegal or the Gambia.
- Market activity is highly seasonal: the number of trucks arriving every day varies between 10 (dry season) and 100 (humid season).
- A veterinarian and an auxiliary veterinarian are present in the market to treat sick animals. They also conduct inspection services for the slaughter area.
- On the day of the visit, 500 heads of small ruminants were slaughtered at the slaughter area, 350 of them under official control.
- Illegal slaughter at home is common practice, especially in livelihoods located at a long distance from the market. Indeed, as they cannot maintain the meat at cold temperature during transport, they rather buy live animals and slaughter them themselves at home.

Group 3: Formal meat market (see Annex 7)

Unfortunately the slaughterhouse of Nouakchott could not be visited because it was closed on the day of the visit. However, the visit of the final market attached to the slaughterhouse and supplying the slaughterhouse with cattle and camels led to the following conclusions:

- The movements of cattle mainly occur from the South-Eastern part of Mauritania (Deux hodh /Assaba) to the North-Western part (Nouadhibou / Zouerate / Choum) via Nouakchott.
- The “final” market is also an intermediate market as cattle are sold again and transported to other markets in Nouakchott or other regions, including for export (Senegal, Gambia).
- Hygiene conditions are very poor and lot of contacts between animals can occur.
- Private veterinarians provide veterinary services to animals in the market.
- Dead animals are thrown away close to the market.

Group 4: Cattle milk processing (see Annex 8)

The visit at the Wataniya milk factory (main milk processing factory in Nouakchott with 380 employees) showed that:

- Milk is collected from 3 main regions (Trarza, Nouakchott and Brakna), including from the factory’s own farm (with 110 Holstein cows).
- Processed milk is distributed in 9 regions (4 other regions are hardly accessible because of poor road maintenance).
- Price paid to the farmer is the same all year long, although the milk production is highly seasonal.
- Feed is provided on credit by the company during the dry season and reimbursed by the farmers during the humid season when the milk production is higher.
- The milk factory has its own contracted veterinarian and cooperates with private veterinarians when needed.
- The milk factory has milk safety and quality self-control but there is no official control. Certification ISO 22000 is ongoing.
- Major knowledge gaps among the milk farmers are the appropriate use of medicines (problems with residues) and nutrition (balanced diet).
- FMD is perceived by the factory director as having a major impact on their production, but the impact has not been quantified.

- **Next steps to complete the value chain analysis**

The list of data available to complete the value chain analysis was updated with the additional data collected during the field visits (see Annex 9). The field visits were useful to collect some data that are not officially recorded (e.g. data about the brokers); however, it only provided data from the Nouakchott region.

Official data on meat and milk production are also available from every region of the country. Regional delegates (i.e. representatives of the veterinary services at the regional level) are the key persons to provide these data (see Annex 3 for an example of data provided by the delegate of the Gorgol region). It was made very clear to the participants that the value chain analysis and the FMD RBSP in general could not progress without collecting the necessary data. Six regional delegates attended the workshop and agreed on this point; they promised to collect the data before the next workshop. Dr Ahmed Salem El arbi, Deputy Director of the Veterinary services (Salem3tr@yahoo.fr) is the local focal point who will collect the data provided by the regional delegates, however, unfortunately he did not attend the second workshop as he was attending a meeting outside Mauritania.

3.2 FMD socio-economic analysis

Participants were introduced to the principles of a FMD socio-economic analysis, including several examples of how such studies were conducted in other developing countries (incl. South Sudan, Ethiopia and Cambodia).

Participants showed interest in the topic but because of time constraint, the group work could not be organized.

3.3 FMD risk analysis in Mauritania

The risk analysis framework for FMD entry and spread initiated during the workshop 1 was further discussed. Participants were asked to identify sources for FMD entry and exposure of susceptible animals in an extensive farm, a semi-extensive dairy farm and an intermediate market.

Overall, participants had a better understanding of the risk analysis approach than during the workshop 1. They identified a fairly comprehensive set of possible sources of FMD virus for farms located in Mauritania (see Annex 10), making the distinction between sources located outside of Mauritania (i.e. infected domestic and wild animals) and within Mauritania (i.e. infected domestic and wild animals, contaminated vehicles, feed, persons, material, meat products, contaminated pastures and water points and laboratory wastes). Possible sources of FMD virus for animal markets were also discussed (see Annex 11).

Further work is needed to develop proper risk pathways for each of the identified sources and to qualify or quantify the relative importance of each pathway. In order to present this work, an example of a more detailed risk pathway was developed together with the participants; it aimed at describing the introduction of FMD virus into a farm and the exposure of susceptible animals following the purchase of an infected animal (see Annex 12).

3.4 FMD active surveillance in Mauritania

As part of the preparation of the FMD serological survey that is planned to be organized in Mauritania, the participants were asked to design a sampling scheme for the implementation of a risk-based seroprevalence survey using the 4000 ELISA tests available at the central laboratory.

- All participants agreed that the objective of the survey should be to describe the FMD seroprevalence at the national level.
- Regarding the animals that should be sampled, it was suggested to focus on the cattle species (as it is more susceptible to FMD than the small ruminants), and to sample both calves and adults in order to distinguish recent and old infections.
- About the regions where samples should be collected, it was proposed to focus on the Southern part of the country where most of the cattle and small ruminants are located (although small ruminants are also present in the North). It was difficult to identify a priori the high risk areas because of the current lack of data about FMD in Mauritania. Possible risk factors that were mentioned as part of a risk-based approach were the high density of animals and the location in a major livestock passing area.
- The most favorable time for conducting a serological survey was the humid season when all animals are present (during the dry season, 50% of the herds are in transhumance and thus not available for any survey). It was discussed that blood sampling could be combined with the CBPP vaccination campaign (usually conducted between November and March) as it would make it easier to handle the animals and to get the support from the farmers (they are more reluctant to new activities than to activities conducted as part of existing programmes).
- The most adequate epidemiological unit was also discussed, especially for extensive farms where transhumance and mixing of animals occur. Proposed units were the animal owner, the drinking water source or the village.

No final conclusions on survey design were drawn, because this work was mostly conducted to create awareness for the different decision points when planning a serological survey. However, the participants raised several relevant points that merit to be considered when planning and implementing the EuFMD-supported serological survey. In particular the timing of the survey (presence of targeted livestock) and the regional distribution of the samples (strong geographical concentration of FMD-susceptible livestock in the south) may have an impact on the representativeness of the survey and should therefore be carefully evaluated.

During an FMD outbreak in December, samples were collected from 5 cattle in M'bout city at Gorgol region, and sent to the laboratory in Nouakchott in January 2015. These samples were sent to the World Reference Laboratory in Pirbright on the 13th of April 2015, and the results confirmed that SAT-2 strain is present in Mauritania. This is the 3rd known serotype after earlier findings of O and A.

3.5 Prioritization of FMD control gaps and possible control measures

Starting from the major gaps for FMD control in Mauritania that were identified during the workshop 1, participants were asked to give their opinions (agree/disagree) on a number of statements aiming at prioritizing the identified gaps (see Annex 13).

From this exercise, the three major agreements on identified gaps were:

1. The lack of knowledge about the prevalence and the geographical distribution of FMD that prevents the initiation of a control programme
2. The lack of available resources to initiate a strategy to reduce the impact of FMD
3. The absence of control of animal movements

Here are few more comments about the outcomes of the exercise:

- The socio-economic impact of FMD was seen as lower than the one from PPR or CBPP because of the low mortality rate in extensive farms.
- Participants thought that most veterinarians and farmers are able to recognize FMD clinical signs.
- About the farmers' willingness to pay for FMD vaccines: some participants thought that farmers (esp. dairy farmers) would be willing to pay as they perceive high impact of FMD on their revenue. Other participants rather thought that vaccination would not

be implemented as a first priority by the farmers; they considered that farmers would first implement other (cheaper) control measures, such as biosecurity and good hygiene.

- In general, participants agreed that there were sufficient resources to be able to initiate a control strategy, but extra resources would be needed to be able to actually implement control measures and thus reduce the impact of FMD in Mauritania.

Then, a second exercise was conducted where participants had to successively choose between two possible control measures for FMD in Mauritania (see Annex 14). The objective of this activity was to prioritize control measures to reinforce FMD control in Mauritania. The answers showed that:

- Controlling FMD entry at border was perceived as more efficient than controlling the movements of animals within the country. The reason provided related to the recent introduction of CBPP from non-vaccinated animals originating from Senegal; these were not controlled at border and their entry led to a major CBPP outbreak in Mauritania in 2012-2013.
- Conducting an epidemiological study of FMD in Mauritania was perceived as more important than a socio-economic study, as the estimation of the prevalence of FMD is a prerequisite to be able to quantify the socio-economic impact of the disease.
- A lot of veterinary auxiliaries are already present in Mauritania; most of them received very short training (15 day- training) and their skills and knowledge are highly variable. The choices from the participants were balanced between the need to better train veterinary auxiliaries and to recruit more veterinarian personnel.
- The participants believed that priority should be given to implementation of existing FMD legislation instead of developing new legislation. Important to note however is that no FMD-specific legislation exists; however, there is legislation for general disease control. So-called “surveillance protocols” which include both outbreak investigation sampling forms and contingency plans were also developed for a number of notifiable diseases, but it was not so clear whether these were actually available for FMD.
- Participants considered that farmers first need to be made aware of FMD before they might think about purchasing vaccines. Implementation of awareness campaigns was therefore given priority over making available vaccines for purchase.

The results of the exercises led to some very good and relevant discussions that provided valuable considerations for the development of the RBSP. The results of these discussions should be followed up on during later workshops to provide the foundations for the RBSP.

4. Evaluation of the workshop

In the last session of the workshop, participants were asked to communicate anonymously i) what they preferred during the workshop, ii) what they would like to improve and iii) what topic they would like to cover during the next workshop.

- What they preferred

The value chain analysis and the socio-economic analysis

The relevance of the topic

The workshop organization and trainers

The field visits

The “benefit from” the Libyan Experience

The comprehensiveness of the information provided

The working approach and the volume of information collected

The inter-disciplinarity among the workshop participants

- *What they would improve*

Conducting field visits within the country
The homework and exchange of information with the regions
The possibility to also involve farmers
Increasing workshop length and number of participants
Providing workshop material in advance
Providing per diems for all participants
Improving transport (of participants?)
Provide a translation of the workshop in Arabic and French

- *What topic they would like to cover during the next workshop*

How to increase farmers' awareness about FMD and their willingness to control/report FMD cases
The value chain analysis
The inspection of animal derived products
How EuFMD is going to support the administrative structures that suffer from lack of material, financial and logistic resources
The control and long term eradication of FMD in Mauritania
Further work on sampling schemes
Further work on FMD risks
Further work on FMD socio-economic analysis

5. Training on outbreak investigation – (08.05.2015)

The agenda of the training day can be seen in Annex 15.

One of the objectives of the training day was to improve the capacity of FMD outbreak investigation. A total of 20 participants (Annex 16) have attended the specific training on FMD outbreak investigation. This training was attended by 10 participants from the Mauritanian network for epidemiosurveillance for animal diseases (REMEMA), and other 10 participants were veterinarians from central and regional levels.

The training was focused on the following main points:

- FMD overview and clinical signs,
- FMD diagnosis and sampling,
- Lesion ageing,
- FMD outbreak investigation,
- Biosecurity
- The Libyan experience,
- Sample collection,
- Mauritanian questionnaire (Annex 17) for sample collection and serosurvey.

The FMD serosurvey that was conducted in Libya was explained during the training day as an example.

The last part of the training was dedicated to the discussion on the proposed:

- a) Sero-surveillance; and
- b) Sample collection during outbreaks.

The presentation of the topics was held in Arabic and lead by Ibrahim Eldaghayes (EuFMD) and slides made available in English.

6. Conclusions and next steps

6.1 Conclusion

- Confirmation of the participants' willingness to be involved in the development of the RBSP for FMD control in Mauritania was received; however deliverables to demonstrate this willingness are still weak.
- Leadership by veterinary service has not yet been demonstrated clearly, for example by coordinating data collection for the value chain analysis. Meeting with CVO confirmed the interest. Leadership is essential to complete the work on the necessary pillars for the RBSP.
- Weak infrastructure and lack of resources require a more intensive support by EuFMD. It cannot be expected that a RBSP will be available after the traditional 4 workshops.
- Many of the preparatory steps for the RBSP are ongoing or in planning (value chain analysis, risk pathways, serological survey, outbreak investigations). Still largely missing is the socio-economic impact study. It should be considered to conduct this work in parallel to the current work, possibly with a smaller and carefully selected group of participants and using an approach that is more based on guidance rather than traditional workshops.
- Epidemiology of FMD in Mauritania has become more complex after the confirmation of SAT-2 serotype, however, on the short to medium term this will have no major impact on the control strategy, because many of the necessary first steps (awareness, recognition of clinical signs, sample submission) are equally valid for all FMD serotypes.

6.2 Next steps

A possible workplan for future activities was agreed with the CVO and the main topics discussed are mentioned hereunder.

- Workshop 3. The third workshop will be focused on a follow-up on value chain analysis (only to take place when homework has been submitted in advance), further work on control measures and their prioritization, further work on risk pathways.
- Socio economic study. A socio-economic impact study is a pre-requisite to enter in PCP stage 1 and essential to give evidence of the needs for development and implementation of a RBSP. The study can be conducted with the assistance of experts and the active participation of key officials of the Veterinary Services and other relevant offices of the Ministry of Livestock. The results can then be shared and discussed in the series of workshops. Studies previously conducted on other diseases (e.g. PPR) can be the starting point for this activity. Clear commitment for worktime for data collection and reporting is needed from the Direction of the Veterinary Services for the officials involved.
- Serosurvey and identification of circulating strain. A dedicated activity should be implemented to
 - 1- Investigate FMD suspected outbreaks.
 - 2- Investigate the seroprevalence of FMD in the country.

A detailed programme is developed and related costs (consumables, per diem, equipment) are under evaluation and discussion.

- Workshop 4. The fourth workshop can be conducted after completion of the socio-economic impact study and focus on the development of a RBSP as required by the PCP approach to move from the stage 0 to the stage 1. It will consist of bringing together and structuring the outcomes of the previous activities, namely: the value chain analysis, risk pathways, discussions on control measures, socio-economic impact study and serological survey results. These outcomes will be used to identify and prioritize actions in the RBSP.

Additional activities were also mentioned and with reference to the budget that will be allocated within the component 2.3 of EuFMD workplan (support to REMESA) for the next phase, the possibility of implementing the following actions will be discussed:

- 1) Participation to Real Time Training of 2 veterinarians and organization of cascade training in the country.
- 2) Participation to e-learning courses on FMD emergency preparedness (FEPC).
- 3) Dedicated activities could be implemented to support:
 - a) Laboratories, in order to:
 - Improve the procedures for collecting samples and to harmonize the collaboration between regional laboratories with the European National Reference Laboratories.
 - Improve the laboratory capabilities for FMD diagnosis in terms of equipment, reagents, and consumables.
 - b) Epidemiological unit, to:
 - Improve the capacity on risk assessment and data management.

Annexes

Annex 1: Workshop program

Main topic		Specific activities	Format / Speaker
Monday May 4th			
9.00 to 9.30	Welcome Opening		EuFMD/FAO, SAFOSO
9.30 to 11.00	Review value chain analysis	Review of the progress of the value chain analysis and homework completed since the workshop 1. Identification of possible data gaps	Plenary discussion
Coffee break			
11.30 to 12.30	Fieldwork preparation	Questionnaires are prepared in groups to collect missing data during the fieldwork (afternoon) <ul style="list-style-type: none"> - One group to visit primary production (extensive farming, peri-urban farming) - One group to visit informal meat market: marché intermédiaire/marché final, slaughter area, meat stalls, traders, brokers - One group to visit formal meat market: marché final, official slaughterhouse, meat shop, traders, brokers - One group to visit dairy industry: milk processing plant, sales point for processed milk, sales point for raw milk 	Group work
12.30 to 13.30	Feedback-preparation	Finalization of the questionnaires	Plenary discussion
Lunch break			
14.30 to 15.00	Socio-economic analysis	Introduction to socio-economic analysis	Presentation (SAFOSO)
15.00 to 15.45	Socio-economic analysis	Development of a framework for FMD socio-economic analysis in Mauritania	Group work
Coffee break			
16.15 to 17.00	Feedback - Socio-economic analysis	Feedback of the group work + Identification of data gaps for future completion of a socio-economic analysis for FMD in Mauritania and how to fill these gaps	Plenary discussion
Tuesday May 5th			
9.00 to 13.30	Field visit	Field work to collect data among relevant stakeholders in Nouakchott (slaughterhouse personnel, traders, milk processor) in order to complete the value chain analysis <ul style="list-style-type: none"> - One group to visit primary production (extensive farming, peri-urban farming) - One group to visit informal meat market: marché intermédiaire/marché final, slaughter area, meat stalls, traders, brokers - One group to visit formal meat market: marché final, official slaughterhouse, meat shop, traders, brokers - One group to visit dairy industry: milk processing plant, sales point for processed milk, sales point for raw milk 	Fieldwork in groups
Lunch break			

14.30 to 15.30	Feedback - Field visit	Feedback of the field work	Plenary discussion
Coffee break			
16.00 to 17.00	Value chain analysis	Finalization of the value chain analysis	Plenary discussion
Wednesday May 6th			
9.00 to 9.45	Libya example	Presentation of the Libya example with a focus on risk mapping	Presentation (Ibrahim Eldaghayes)
9.45 to 10.30	Risk mapping	Introduction to risk mapping and risk-based surveillance	Presentation (SAFOSO)
Coffee break			
11.00 to 12.00	Risk mapping	Development of risk maps for FMD in Mauritania	Group work
12.00 to 13.30	Feedback - Risk mapping	Feedback of the group work	Plenary discussion
Lunch break			
14.30 to 15.00	Sampling strategy	Introduction to sampling strategy (impact of within-herd sample size and between-herd sample size on confidence)	Presentation (SAFOSO)
15.00 to 16.00	Risk based surveillance	Development of a framework for a risk-based surveillance of FMD in Mauritania (participants are given 4000 samples to collect using in a risk-based approach)	Group work
Coffee break			
16.00 to 17.00	Feedback - Risk based surveillance	Feedback of the group work	Plenary discussion
Thursday May 7th			
09.00 to 11.00	Control of FMD and possible synergies with other diseases	Starting from the control measures prioritized during the workshop 1, discussion on possible synergies to implement these measures in combination with other diseases under control (e.g. PPR, CBPP)	Group work
Coffee break			
11.30 to 13.30	Feedback - Control of FMD and synergies with other diseases	Feedback of the group work	Plenary discussion
Lunch break			
14.30 to 16.00	Future activities	Planning of the next steps / Homework (socio-economic analysis, risk mapping)	Group discussion with 5 selected participants
End of the Workshop			

Annex 2: Workshop participants

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20	Doudou Diop					
21	Mohamed Lemine Ould Mohamed	Private vet	medleminesidinna@hotmail.com	22047855	Nouakchott	
22	Abdallahi M'bareck Bilal	Ministère de l'Elevage	abdallahivet@gmail.com	22496385	Rosso	
23	Sidi Abdallah Elwavi	Ministère de l'Elevage	elwavi.vet@gmail.com	20058343	Nouakchott	



Annex 3: Homework: value chain analysis- Data collected from the Gorgol region

REPUBLIQUE ISLAMIQUE DE MAURITANIE
WILAYA DU GORGOL
DELEGATION REGIONALE DU ME/GORGOL

Honneur-Fraternité-Justice

Enquête FA

Dr. Mohamed Saleck Amar

Les unités laitières

Les données nécessaires

Nombre

Au niveau du Gorgol existe six (6) unités laitière dont :

AMAD : 3 unités localisées à Gourjouma, Ganki commune de Ganki et Agureije commune de Lexeiba

Accord : 2 unités localisées Téthiane commune de Djeol et Pampidiel commune de Kaédi

GRDR : 1 unité basée à Kaédi ville

Capacité

Les unités d'AMAD : 150 litre par jour et par unité

Les unités de GRDR et Accord : entre 20 et 30 litres par jour

Nature de produits

Accord et GRDR produise le lait caillé sucré

AMAD produise lait caillé sucré, lait pasteurisé, yaourt brassé et yaourt tempo

Origine de produits

Sa vienne des élevages au tour des unités sur un rayon de 4 km

AMAD vendre ses produits au niveau de village ou les centres urbains les plus proches et le transport ces avec les charrettes ou avec des personnes.

Source de financement

ONG, Privé

Source d'énergie : énergie solaire, gaz

Source d'eau : l'eau de forage et puits

Contrôle du lait

Le test de l'ébullition, l'acidité et l'utilisation de Densitomètre pour la mesure de la densité du lait.

Prix du lait

Lait cru entre 150 à 180 UM/litre, 150 durant la période de l'hivernage

Le lait caillé : emballage de 100 ml à 50 UM, emballage de 200 ml à 100 UM

NB

Les unités d'Agureije et Ganki leur production dans la période de soudure

Estimé à 30 litres par jour.

Éleveurs extensifs

Les données nécessaires

Nombre d'éleveurs

Dans la Wilaya du Gorgol : 6700 éleveurs selon le bureau régional du GNAP

Composition des troupeaux

Essentiellement les bovins et les petits ruminants

Nombre d'animaux par éleveur (commercial)

Bovins, 35 têtes minimums et 2000 têtes maximums

Petit ruminant ?

Prix d'une vache et prix d'un petit ruminant

Une vache laitière à 135.000 ouguiyas, une chèvre à 16.000, laitière à 20.000 ;

Un mouton à 20.000, laitière à 25.000 ; une chamelle laitière entre 380.000 et 400.000 ouguiyas.

Renouvellement d'animaux (achat)

Taurillon de 2 ans vendus à 52.000 ouguiyas et une vache de réforme vendue entre 70.000 à 75.000 ouguiyas

Proportion vendue ou autoconsommée

Celons les besoins de la famille pour la nourriture ou à l'occasion des fêtes, on peut estimer l'autoconsommation entre 5 à 6 têtes bovines par ans

On consomme 10% de troupeau bovin en moyen

Transhumance

Sa concerne plus les bovins et les ovins et se dépend sur la pluviométrie

Destination : Sénégal et le Mali

Spécialement pour cette année de sécheresse particulièrement grave, le cheptel bovidés et petits ruminants de la wilaya en plus des autres cheptels qui viennent des autres Régions du pays (Brakna, Assaba, Inchiriet Trarza) font des mouvements massifs de transhumance vers le Sénégal et le Mali à la recherche des pâturages.

Ce mouvement saisonnier nécessite un suivi des services compétant de l'élevage tant au niveau des points d'entrées et de sorties qu'au niveau des itinéraires et des de point de concentrations et d'abrèvement du bétail.

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Les axes de mouvement sont aux nombres de deux :

- **Axe Kaédi-Maghama-Sélibabi-Mali**
- **Kaédi-Sénégal**

Abattoirs

Les données nécessaires

Localisation	Nombre	Volume	Origine des Animaux	Espèces	Infrastructure et systèmes d'hygiène	Clients (localisation pour les différents types de produits et sous-produits)
Aires d'abattage	Dans toutes les communes	Moyen 8-10 bovins/jour 18-20 petits ruminants/jour 2 camelins/ Semaine (vendredi)	Dans les différentes localités de la willaya	Bovine Ovine Caprines Et Camelines	Dale cimentée, poteaux, Barres en fer, et les crochets. Puits sources d'eau	Les populations des villes et villages (viande). Les peaux et les pieds par des acheteurs locaux (par les femmes qui font de la tannerie traditionnelle ou des acheteurs venant de Nouakchott, des pays limitrophes (Mali, Ghana).

Marché à viande

Les données nécessaires

Localisation	Points de ventes	Variabilités des prix (Région Gorgol, Kaédi)			
Dans toutes les communes	dans les marchés	Les prix varis suivant la qualité de viande et les espèces - Viande des Bovins=1200 UM/kg - Viande Ovins Caprins=1500/kg - Viande Camelins=1400/kg			

Annex 4: Evolution of the livestock population per region of Mauritania between 2000 and 2012

(source: Dr Teslem Mint Cheikh Ould Bourweiss, Ministère de l'Elevage/Monitoring service chief)

	Trarza												
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bovin	92300	93592	94902	96231	97578	98944	100330	101734	103159	104603	106067	107552	109058
Camelin	140800	141786	142778	143778	144784	145797	146818	147846	148881	149923	150972	152029	153093
Petits Ruminants	722270	758384	796303	836118	877924	921820	967911	1016306	1067122	1120478	1176502	1235327	1297093

	Hodh Charghi												
	2 000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bovin	405700	411380	417139	422979	428901	434905	440994	447168	453428	459776	466213	472740	479359
Camelin	223000	224561	226133	227716	229310	230915	232531	234159	235798	237449	239111	240785	242470
PR	1543732	1620919	1701965	1787063	1876416	1970237	2068749	2172186	2280795	2394835	2514577	2640306	2772321

	Hodh El Gharbi												
	2 000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bovin	283000	286962	290979	295053	299184	303373	307620	311926	316293	320721	325212	329765	334381
Camelin	164000	165148	166304	167468	168640	169821	171010	172207	173412	174626	175848	177079	178319
PR	1545139	1622396	1703516	1788692	1878126	1972032	2070634	2174166	2282874	2397018	2516869	2642712	2774848

	Adrar												
	2 000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bovin	0	0	0	0	0	0	0	0	0	0	0	0	0
Camelin	187500	188813	190134	191465	192805	194155	195514	196883	198261	199649	201046	202454	203871
PR	74200	77910	81806	85896	90191	94700	99435	104407	109627	115109	120864	126907	133253

	Tagant												
	2 000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bovin	49412	50104	50805	51516	52238	52969	53711	54463	55225	55998	56782	57577	58383
Camelin	117200	118020	118847	119678	120516	121360	122209	123065	123926	124794	125667	126547	127433
PR	590700	620235	651247	683809	718000	753900	791594	831174	872733	916370	962188	1010297	1060812

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Tiris Zemmour

	2 000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bovin	0	0	0	0	0	0	0	0	0	0	0	0	0
Camelin	58500	58910	59322	59737	60155	60576	61000	61427	61857	62290	62726	63166	63608
PR	14600	15330	16097	16901	17746	18634	19565	20544	21571	22649	23782	24971	26220

Inchiri

	2 000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bovin	0	0	0	0	0	0	0	0	0	0	0	0	0
Camelin	93600	94255	94915	95579	96248	96922	97601	98284	98972	99665	100362	101065	101772
PR	62300	65415	68686	72120	75726	79512	83488	87662	92045	96648	101480	106554	111882

Assaba

	2 000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bovin	258300	261916	265583	269301	273071	276894	280771	284702	288688	292729	296827	300983	305197
Camelin	105400	106138	106881	107629	108382	109141	109905	110674	111449	112229	113015	113806	114603
PR	1325036	1391288	1460852	1533895	1610590	1691119	1775675	1864459	1957682	2055566	2158344	2266261	2379574

Guidmakha

	2 000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bovin	110800	112351	113924	115519	117136	118776	120439	122125	123835	125569	127327	129109	130917
Camelin	58500	58910	59322	59737	60155	60576	61000	61427	61857	62290	62726	63166	63608
PR	518956	544904	572149	600756	630794	662334	695451	730223	766734	805071	845325	887591	931970

Gorgol

	2 000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bovin	147400	149464	151556	153678	155829	158011	160223	162466	164741	167047	169386	171757	174162
Camelin	11800	11883	11966	12050	12134	12219	12304	12390	12477	12565	12653	12741	12830
PR	1030955	1082503	1136628	1193459	1253132	1315789	1381578	1450657	1523190	1599350	1679317	1763283	1851447

Brakna

	2 000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bovin	129600	131414	133254	135120	137011	138930	140875	142847	144847	146875	148931	151016	153130
Camelin	70400	70893	71389	71889	72392	72899	73409	73923	74440	74961	75486	76015	76547
PR	1431752	1503340	1578507	1657432	1740304	1827319	1918685	2014619	2115350	2221117	2332173	2448782	2571221

Nouakchott

	2 000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bovin	3800	3853	3907	3962	4017	4074	4131	4188	4247	4307	4367	4428	4490
Camelin	15000	15105	15211	15317	15424	15532	15641	15751	15861	15972	16084	16196	16310
PR	20000	21000	22050	23153	24310	25526	26802	28142	29549	31027	32578	34207	35917

NDB

	2 000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bovin	0	0	0	0	0	0	0	0	0	0	0	0	0
Camelin	22950	23111	23272	23435	23599	23765	23931	24098	24267	24437	24608	24780	24954
PR	22980	24129	25335	26602	27932	29329	30795	32335	33952	35650	37432	39304	41269

Total Animal Population for 2012

Species	Population in 2012
Cattle	1,749,077
Camel	1,379,418
Small Ruminants	15,987,827

Annex 5: Feedback from the field visit - Group 1: primary production- extensive and peri-urban livestock farming

Groupe1

- **Thème** : Production primaire (élevage extensif et périurbain)
- Visite de terrain du 4/5/2015
- **Nom de l'éleveur** : Mohameden Ould Mohamedou
- **Localité** : Avenue El Moughawama(Moughataa Dar Naim)
- **Système d'élevage** : Semi-intensif
- Périurbain

- Zone d'élevage accessible, excepté quelques places occupées par des activités agricoles
- **Composition du Cheptel** :
- Effectif total : 25 (15 jeunes ,10 velles, 5 veaux, 10 adultes avec 10 femelles et 0 mâle)
- Parmi les femelles adultes on 2 primipares et 8multipares
- Espèce : bovine, race : Zébu maure
- NB/ mortalité d'un veau acheté à l'abattoir pour une cause d'aphtes sur les muqueuses
- Et d'une vache morte d'indigestion

- **Registre** : néant
- **Origine des animaux** : abattoir de Nktt et wilaya du Trarza
- **Motif de l'élevage** : autoconsommation et commercialisation
- **Maladies rencontrées** :
- indigestion par surcharge
- **Prophylaxie** : une seul vaccination depuis quelque années a raison de 350 par vache
- **Biosécurité** : utilisation de l'eau de javel et d'omo

- **Destination de produits** : vente du lait 500 ouguiyas par litre (6l/j/vache production maxi, 3l/j/vache)
- Vente de vache réformée et suitée : 140000 a 170000 UM
- Vente de taurillon : 50000 a 60000 UM
- **Alimentation** : tourteau de maïs – 5600 UM/50 Kg – 30 Kg/j de consommation
- Son de riz – 3000 UM/50Kg – 2 sacs de 50 Kg/3j
- **Abreuvement** : 3 tonnes d'eau a 4000 UM (ration de 3 a 5 jours selon les saisons)
- **Partenaires** : les clients
- **Conservation des aliments** : pas de stock

- **Contraintes** : aliments très cher et pas de qualité ; absence de suivi vétérinaire
- **NB** : les éleveurs accepteraient l'IA
- **Atouts** : pour les éleveurs , 10 vaches ont une valeur supérieure au coût d'une épicerie
- Il est possible de vendre du lait, des vaches réformées, des veaux ...
- Il est possible aussi de contribuer à l'éducation et a la santé

Annex 6: Feedback from the field visit - Group 2: Informal meat market

Présentation de groupe 2

Visite du marché informel du bétail
et de la viande

Marché informel Elmina.



- Nombre de negociants dans le marché:
 - Estimé a 150 personnes
- Origine des animaux:
 - Région de Mauritanie: Assaba, Hodh El Gharbie, Hodh El Chargui, Trarza, Brakna et Inchri.
 - Les pays voisins: Mali, Senegal.
- Logistique utilisée:
 - Par camions et par marche.

- Nombre des marchés:
 - 04 marchés: Marché principale d'Elmina, Marchés secondaires: Teyarette, Tounwishe et Toujounine.
- Localisation de marché: Nouakchott
- La fréquence d'arrivée des animaux dans le marché principal:
 - 100 camion par jour (125 têtes)
 - 10 camion par jour (période de soudure)

- Fréquence du marché quotidien:
 - 5 jours sur 7j.
- Gardiennage:
 - petits salaires.
- Alimentation et abreuvement:
 - Assurée par les petits salaires.
- Suivi sanitaire:
 - Techniciens, vétérinaires (publiques et privés).
- Destination des animaux:
 - Nouakchott, Nouadibou, Zouerate.
 - Sahara, Maroc, Senegal et Gambie.

- Aire d'abattage:
 - 500 têtes de petits ruminants, par jour.
 - 15 têtes de bovin (marché principal)
- Courtiers:
 - Nombreux et les clients plus nombreux .
 - Rentabilité, peu importante.

Merci

Annex 7: Feedback from the field visit - Group 3: Formal meat market

Travaux des groupes

Visite du marché du bétail
De Tenweich – Nouakchott
04 / 05 / 2015



I- Informations générales

- Nom : Marché du bétail de Tenweich
- Localisation : Tenweich – Toujounine
 - Type: formel , permanent
 - Date de création : 2003
- Infrastructure : pas de cloture
- Bassin d'eau : non fonctionnel
- Electricité : néant
- Capacité : 2000 – 3000 bovins
300- 500 camelins



II - Espèces et origines des animaux

Espèces : Bovins Camelins
Petits ruminants : occasionnellement
▪ Origine : les deux hodhs , Assaba
D'autres wilayas d'une façon irrégulière
Entrées quotidiennes :
10 – 12 camions
Chaque camion : camelin : 25 - 35
 bovins 45 – 50
 PR : 200 – 220

Ventes :
BV : 200 – 250 /j
CM : 110 – 120 /j
Clients : - bouchers
 - individus
 - exportateurs



Courtiers et Négociants

- Nombre des Courtiers : 400 – 500
- Financement : personnel
- Organisation : Association non fonctionnelle
- Nombre des négociants : 500 -600
- Motivation : pourcentage selon les ventes
- Charges :
 - Transport : camion 120 00 – 300 000
 - Berger 30 000
 - Taxes communales et autres : 1800 / M , 2000 ET 1000
 - Alimentation : paille 30 000 Concentrés : 6000 / Sac
 - Eau : 2000 – 20000
 - Frais de parage
 - suivi sanitaire : 3000



Vendeurs des intrants

- Vendeurs des intrants :
- produits : aliments bétail
- Types des produits :
 - tourteaux coton
 - blé
 - Paille
- prix : concentrés : 6000 / S
Paille : 30 000



Transporteurs

- Types des véhicules : camions
- Capacités : 40 BV
 - 35 CM
 - 200 PR
- Trajets : deux hodh – Assaba – Nouakchott – Nouadhibou / Zoueratt / Choum
- Prix : 8000 / BV et CM
400 – 3000 /PR



Suivi Sanitaire

- Assurer par vétérinaire privé
- Manque d'hygiene
- Sujets morts : jeter à coté du marché

Merci de votre attention



Annex 8: Feedback from the field visit - Group 4: Milk processing factory

G4 Transformation du lait

VISITE Usine EL Wataniya

Le 05/05/2015



INTRODUCTION

- CREATION EN 2007
- PERSONNEL : PLUS DE 380 TRAVAILLEURS
- CENTRES DE COLLECTE : ROSSO (TRARZA), PK (NOUAKCHOTT) ET ELB EJMEL (BRAKNA)
- FERME PROPRE : 110 VACHES HOLSTEIN
- NBRE D'ELEVEURS : 735
- PRIX DU LAIT CRU : 200 UM PAR LITRE

CIRCUIT DE COLLECTE

- COLLECTE JUSQU' AU CENTRE DE COLLECTE A LA CHARGE DES ELEVEURS
 - TRI ET REFROIDISSEMENT DU LAIT AU NIVEAU DU CENTRE
 - ACHEMINEMENT DU CENTRE DE COLLECTE AU SITE DU PROCESS
- 3 CITERNES ISOTHERMES
- CAPACITES: 12, 17 ET 25 TONNES

SOURCE D'ENERGIE ET D'EAU

- SOMELEC
- GROUPE ELECTROGENE (DEUX)
- SNDE
- FORAGES (DEUX) EN COURS POUR LA DESALINISATION

APPUI AUX ELEVEURS

- ENCADREMENT ET SUIVI SANITAIRE
 - VETERINAIRE CONTRACTUEL
 - POSSIBILITE DE FAIRE APPEL AUX VETERINAIRES PRIVES
- PREFINANCEMENT DE L'ALIMENT BETAIL SOUS FORME DE CREDIT REMBOURSABLE PENDANT LA PERIODE D'HIVERNAGE

GAMME DE PRODUITS ET MARCHES CIBLES

- CAPACITE DE PRODUCTION: 120 TONNES/JOURS
- COUVERTURE NATIONALE: 9 WILAYAS
- TROIS CAMIONS FRIGORIFIQUES DE 10 TONNES
- 70 BUS REFRIGERES POUR LA DISTRIBUTION A NKC
- 51 PRODUITS (LAIT FRAIS PASTEURISE, LAIT FERMENTE, YAOURT, CREME.....)



MANAGEMENT DE QUALITE

- LABORATOIRE D'AUTOCONTROLE EQUIPE
- PERSONNEL QUALIFIE
- EN COURS DE CERTIFICATION ISO 22000





PERSPECTIVES

- EXTENSION POUR DOUBLER LA PRODUCTION
- SYSTÈME D'ENCADREMENT DES ELEVEURS DANS LE CADRE LA CERTIFICATION
- SOUS TRAITER LA DISTRIBUTION A UN PARTENAIRE PRIVE

CONTRAINTES

- AU NIVEAU DES ELEVEURS:
- ABSENCE D'ENCADREMENT (MEDICAMENT ET RATIONNEMENT)

- AU NIVEAU DE L'USINE :
 - MANQUE DE CADRES QUALIFIES POUR LA MAINTENANCE DES MACHINES
- TAXES ET CONCURRENCE DELOYALE

- DEFICIT DE CONTRÔLE DES PRODUITS IMPORTES



Annex 9: Updated list of data necessary for completing the value chain analysis (in bold=data already available)

Etape/acteurs	Données nécessaires	Source (si disponible)	Comment renseigner (si pas disponible)	Qui ?	Quand ?	Disponible oui/non
Eleveurs extensifs	Nombre d'éleveurs par région Composition des troupeaux Nombre d'animaux par éleveur Prix d'une vache Prix d'un petit ruminant Renouvellement d'animaux (achat) Proportion vendue ou auto-consommée Transhumance	- Statistique nationale - GNAP : Groupement national des associations pastorales (pour les éleveurs inscrits) - Association pastorale lait viande (APLV)- - Delegates régionaux et inspecteurs départementaux du Ministère de l'élevage (campagnes vaccinales d'une partie des animaux) - site internet : fews.net Certificats zoosanitaires (delegates régionaux)	Demander aux éleveurs (questionnaire/enquête de terrain préparé)	Dr Mohamed Salem Mr Sall Hamadi Dr Marega Dr Lehibib Dr Mohamed Saleck	40 jours	Oui : Gorgol, NKC Non: nombre d'éleveurs (vérifier les données de Gorgol); nombre d'animaux par éleveur, transhumance
Negociants	Nombre de négociants Localisation , origine Couverture géographique, nombre de marchés Stabilité professionnelle Saisonnalité de son activité Logistique pour le transport		Interviews	Dr Teslem		Nombre de négociants : estimé pour NKC, manque pour les autres régions
Marchés intermédiaires	Localisation Nombre Fréquence Taille Espèces présentes Origine des animaux Destination des animaux (dont exportation)	Delegates régionaux et inspecteurs départementaux du Ministère de l'élevage	Interviews	Dr Teslem		Disponible pour NKC, manque d'information pour les autres régions Abattage à la maison chez les clients (la majorité, abattage informel)
Marché hebdomadaire	Localisation Nombre Fréquence Taille Espèces présentes Origine des animaux Destination des animaux (dont exportation)	Delegates régionaux et inspecteurs départementaux du Ministère de l'élevage (mieux renseignés)	Interviews	Dr Teslem Dr Ahmed Salem		Information des régions manque encore
Marché final	Localisation Nombre Fréquence	certificats zoosanitaires enregistrés au niveau des autorités régionales ou	Interviews des chauffeurs	Dr Teslem Dr Ahmed Salem		

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	Taille Espèces présentes Origine des animaux (etapes intermediaires) Destination des animaux (dont exportation)	deprtementales				
Courtiers	Nombre Organisation Localisation Nombre de clients Destination des animaux	Pas de donnée formelle Federation nationale des commercants de betail	Interview	Dr Teslem	40 jours	Disponible pour NKC Interviews pour l'interieur
Bouchers	Nombre Organisation Localisation Nombre de clients Adhésion à la fédération des bouchers (Age) Source de financement Volume d'activité Système de distribution, nombre de points de vente	Federations de bouchers (federation principale = federation nationale des bouchers) Société des abattoirs de Nouakchott (SAN)		Dr Boubacar Dr Ahmed Salem	1 mois	Pas disponible encore, mais majorité dans une Fédération (Fédération pour NKC, Fédération pour l'interieur)
Abattoir	Nombre Localisation Volume Origine des animaux Espèce Infrastructures, systèmes d'hygiène Clients (localisation) pour les différents types de produits et sous-produits	SAN Délégation régionale et départementale du Ministère de l'élevage Mairies	Interview	Dr Boubacar Dr Ahmed Salem	2 semaines	Pour l'interieur : chercher chez les délégations Déjà disponible pour quelques régions (rapport de Gorgol)
Marché à viande	Localisation Nombre Marché spécialisé ou non, point de vente, boucherie moderne Variabilité des prix	Marie Fédération des bouchers	Interview	Dr Boubacar		Chercher chez les délégations Quelques informations d'un marché disponible pour NKC
Consommateurs	Quantité consommée par personne Espèce	Office national des statistiques Association pour la protection des consommateurs		Dr Boubacar		
Service veterinaire public et privé	Role, taches Nombre Couverture géographique	Service vétérinaire Rapport PVS de l'OIE Ordre des vétérinaires		Dr Yedali Dr Mahfoud		

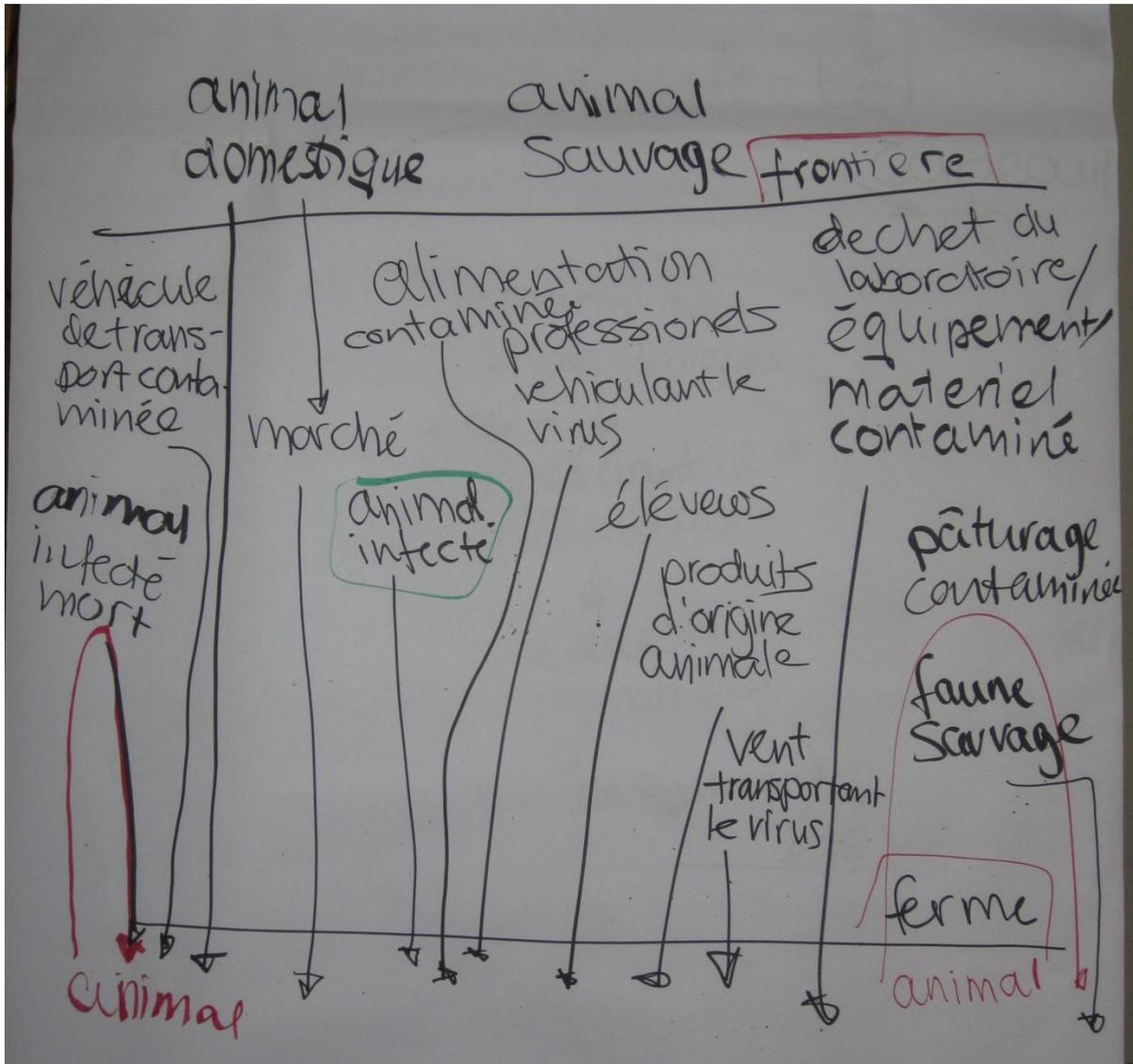
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	Formation	Syndicat national des vétérinaires Association des professionnelles de l'élevage (infirmiers, assistants)				
Eleveurs semi-extensifs	<p>Nombre d'éleveurs Localisation Nombre d'animaux Volume de production laitière semestriel Renouvellement Vente d'animaux Coopérative, organisation Destination du lait (vente de lait cru, au centre de collecte) Prix du lait et variabilité Transport du lait Race des animaux, programme d'amélioration Source d'alimentation, système de pâturage Source de l'eau Suivi sanitaire, gestion de l'usage des médicaments (résidus) Vaccination</p>	<p>Coopérative, associations Vendeurs Industriels Service vétérinaire Direction des filières animales - GNAP: Groupement national des associations pastorales (pour les éleveurs inscrits)</p>	Interview avec éleveur, vendeur	<p>Dr Marega Dr Mohamed Salem Dr Ahmed Salem Dr Lehib Dr Mohamed Saleck</p>	1 mois	<p>Pas encore disponible, faire des interviews</p> <p>Quelques données disponibles suite à la visite de l'usine de NKC et de l'élevage laitier péri-urbain</p> <p>Chercher dans chaque région, quelques régions avec des cooperatives</p>
Centre de collecte	<p>Localisation Volume, capacité Nombre Nombre de fournisseurs Materiel Origine et destination du lait Circuit de collecte Transport du lait Source d'énergie Source d'eau Organisation, ressources humaines Types de contrôle du lait Prix du lait et variabilité</p>	<p>Industriels Centres de collecte</p>	Visite et interview	<p>Dr Lehib Dr Marega Dr Mohamed Salem</p>	3 semaines	<p>Quelques données disponibles suite à la visite de l'usine de NKC</p> <p>Chercher dans les régions, faire des interviews</p> <p>Quelques régions avec des cooperatives</p>
Usine laitière	<p>Volume Capacité Origine du lait Types de produits Transport</p>	<p>Usine Service vétérinaire Association des industriels Direction des filières animales</p>	Visite et Interview	<p>Dr Bezeid Dr Ahmed Salem Dr Navea Dr Boubacar</p>	1 mois	<p>Disponible pour une usine de NKC</p> <p>Faire des interviews, chercher</p>

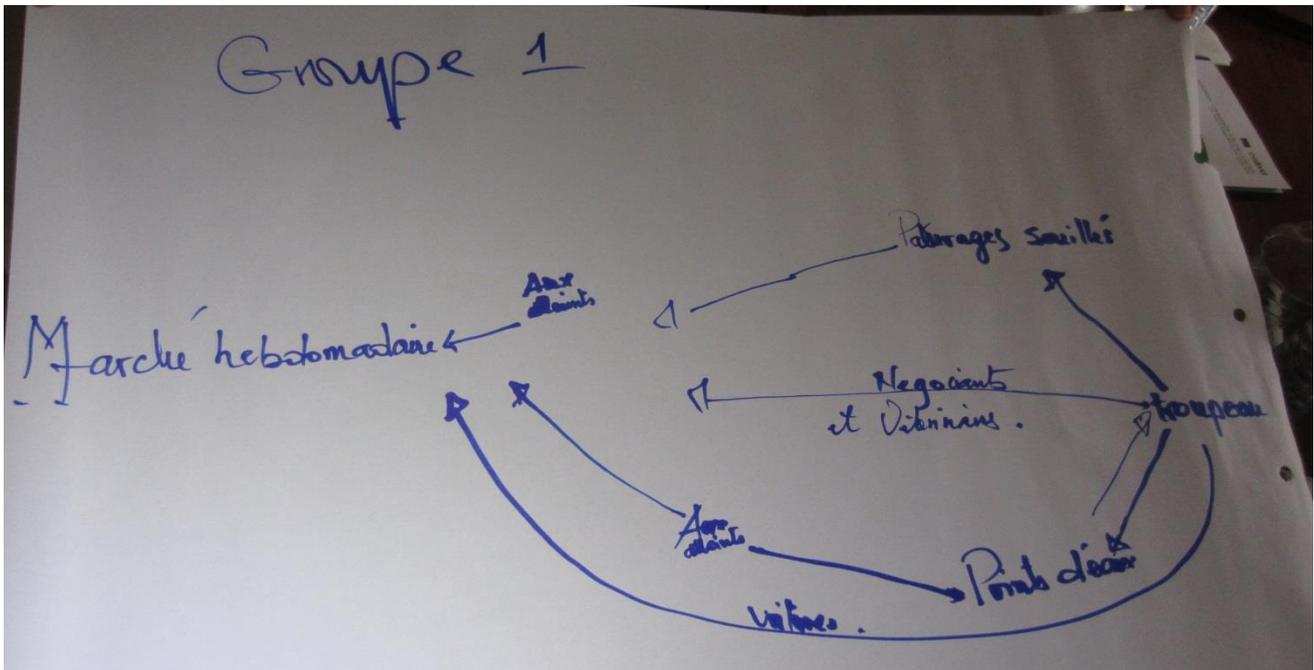
May 2015

	Circuit commercial Organisation Localisation Système de contrôle et d'auto-contrôle Sources d'énergie et d'eau Prix du lait et variabilité Gestion du stock (périmés, non conformes)	Ministère de l'industrie				dans les régions Quelques informations disponibles pour Gorgol
Points de vente	Nombre Localisation Volume Origine des produits Prix du lait et variabilité Transport Organisation		Interview	Dr Boubacar Oumar Sylla	1 mois	Faire des interviews
Unités laitières	Nombre Localisation Capacité Nature des produits Origine et destination des produits Clients Sources de financement (ONG,privées) Prix du lait Couverture géographique des clients, zone d'écoulement Transport du lait Système de contrôle	Unités laitières Bailleurs Service vétérinaire Direction du développement des filières animales (niveau central)		Dr Mohamed Saleck Dr Lehbib	3 semaines	Disponible pour 1. ONGs sont connues Quelques informations disponibles pour Gorgol
Consommateurs des produits laitiers	Quantité consommée par personne Localisation Espèce (lait de bovin ou camélidés ou chèvre)	Office national des statistiques Association pour la protection des consommateurs FAO stat		Dr DIA Mamadou Lamine Dr Teslem	1 mois	Association de consommateurs (basée a NKC)
Service vétérinaire public et privé	Role, taches Nombre Couverture géographique Formation	Service vétérinaire Rapport PVS de l'OIE Ordre des vétérinaires Syndicat national des vétérinaires Association des professionnels de l'élevage (infirmiers, assistants)		Dr Yedali Katia Isselmou	1 mois	

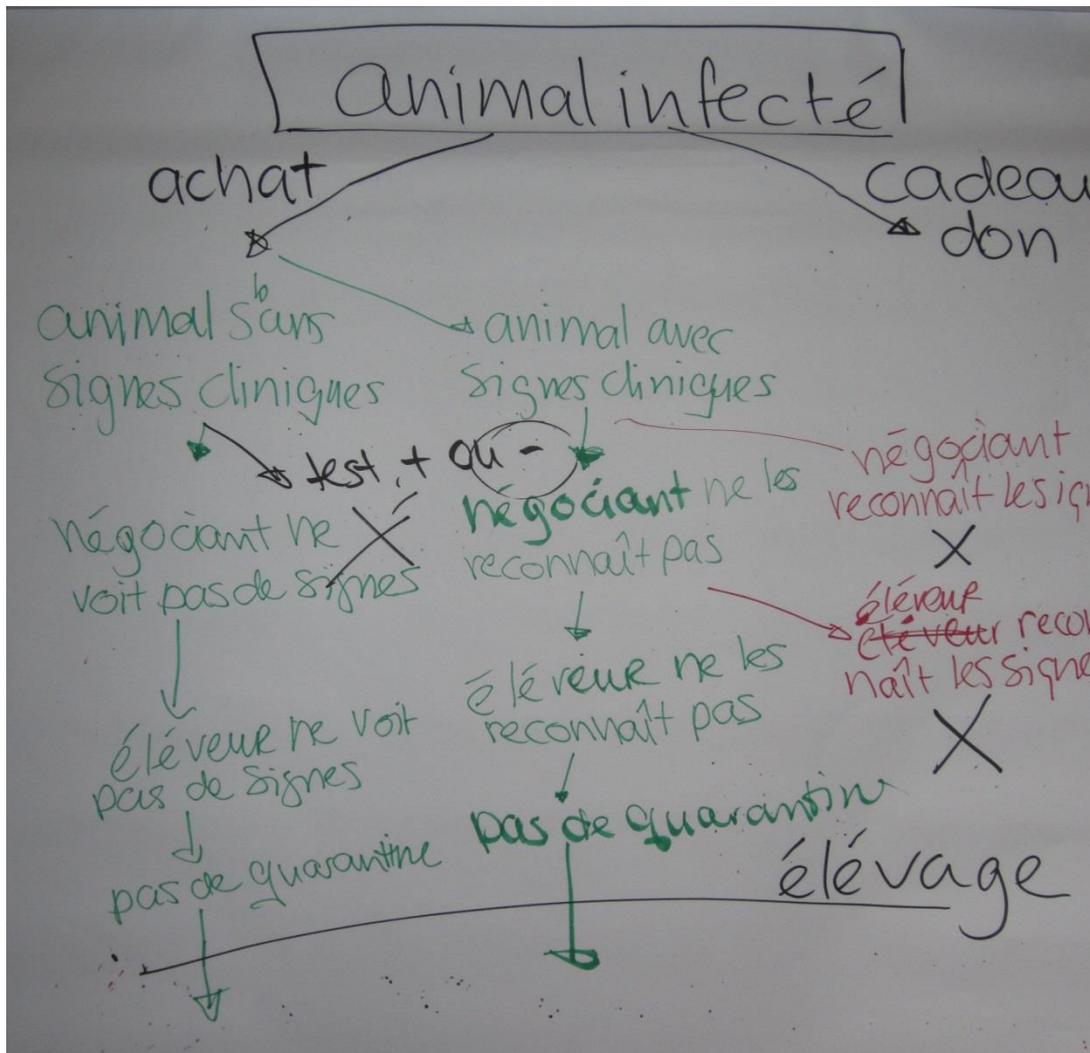
Annex 10: Potential sources of FMD virus for a farm located in Mauritania



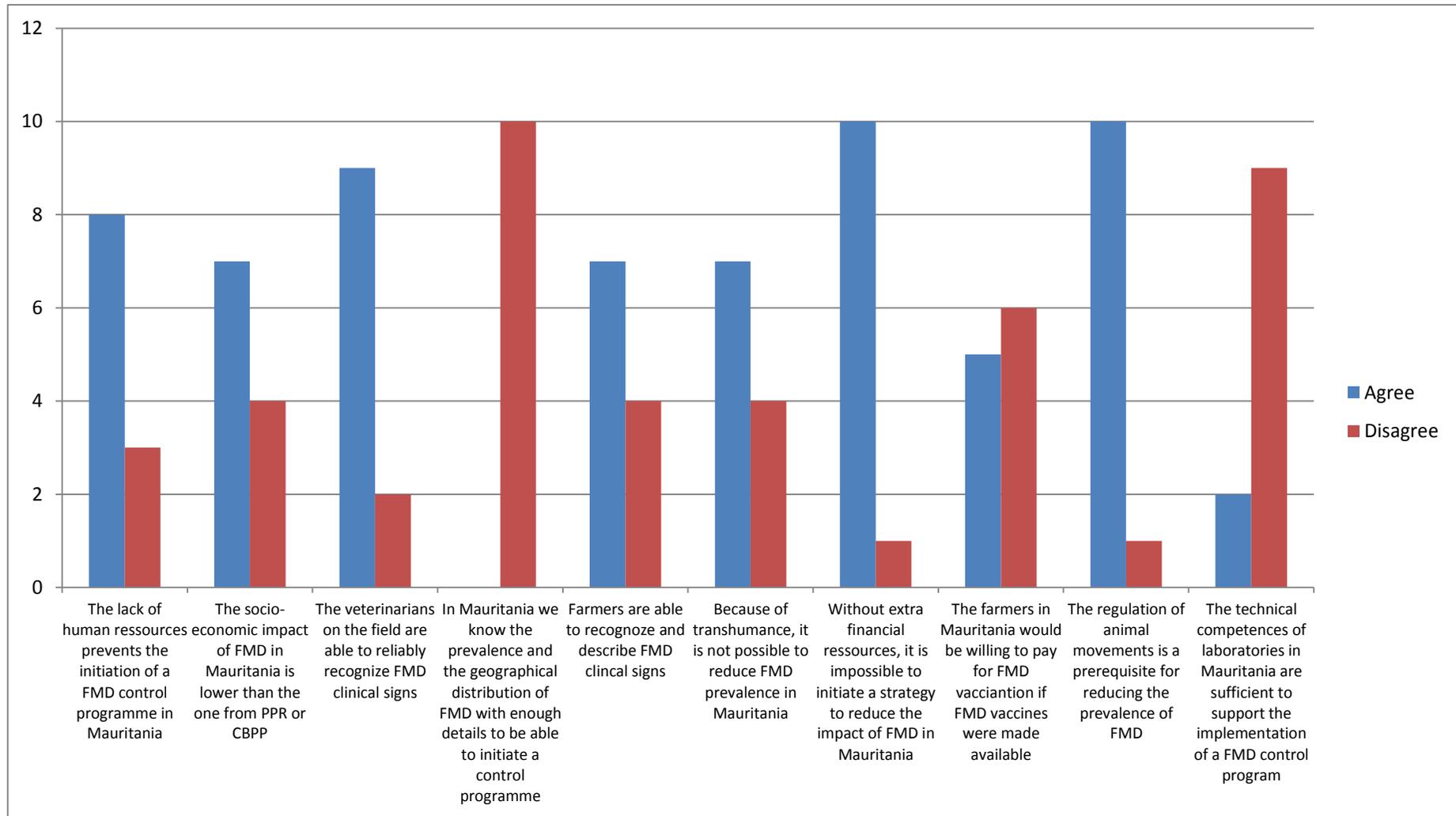
Annex 11: Potential sources of FMD virus for a livestock market located in Mauritania



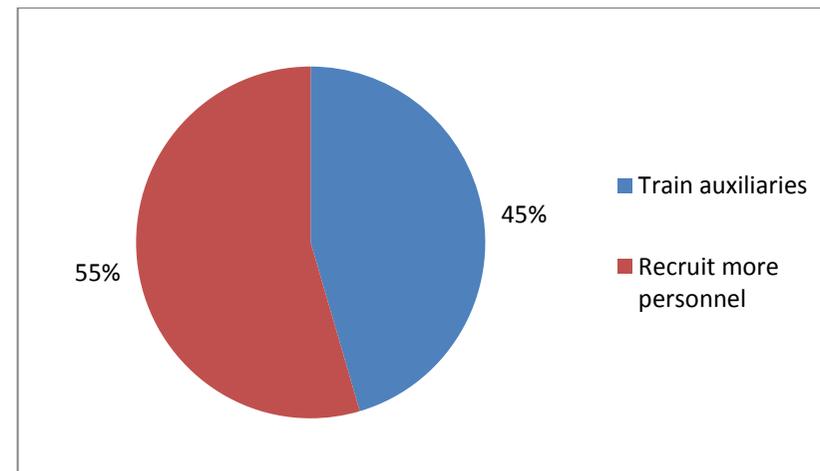
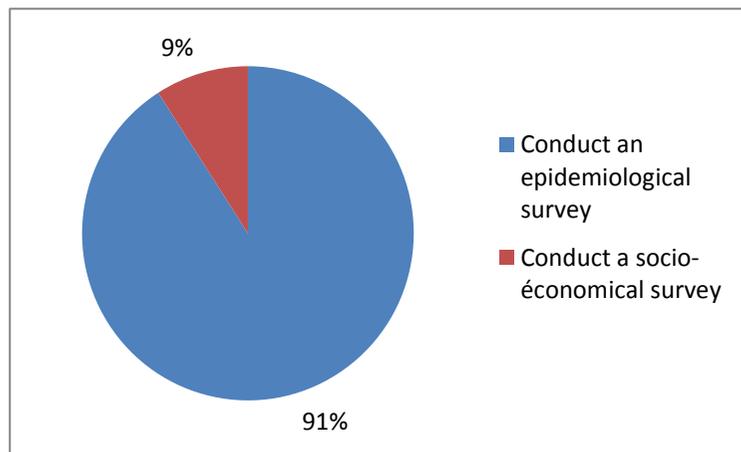
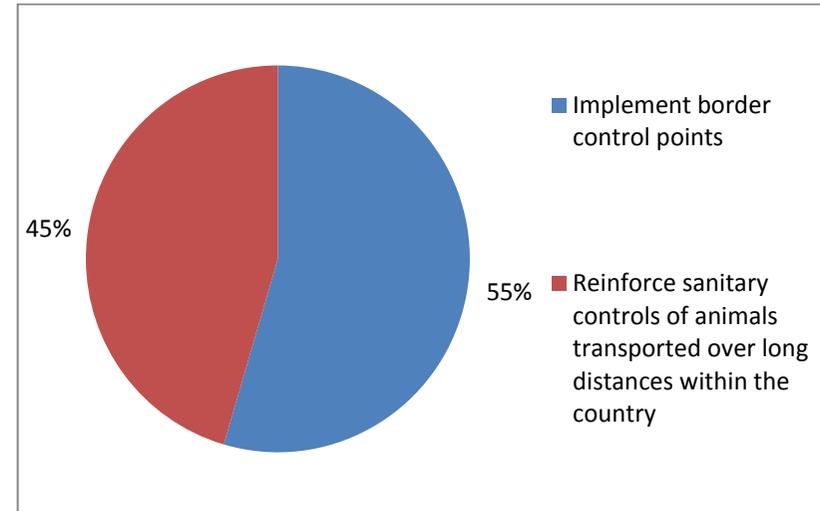
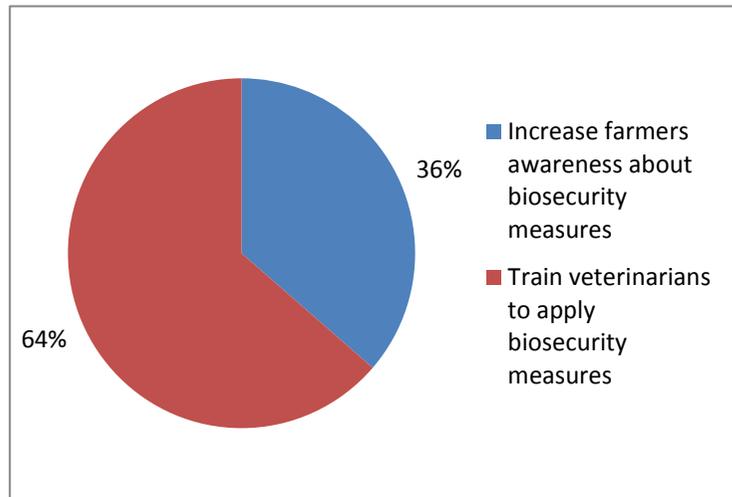
Annex 12: Risk pathway for FMD entry into a farm following the purchase of a new infected animal

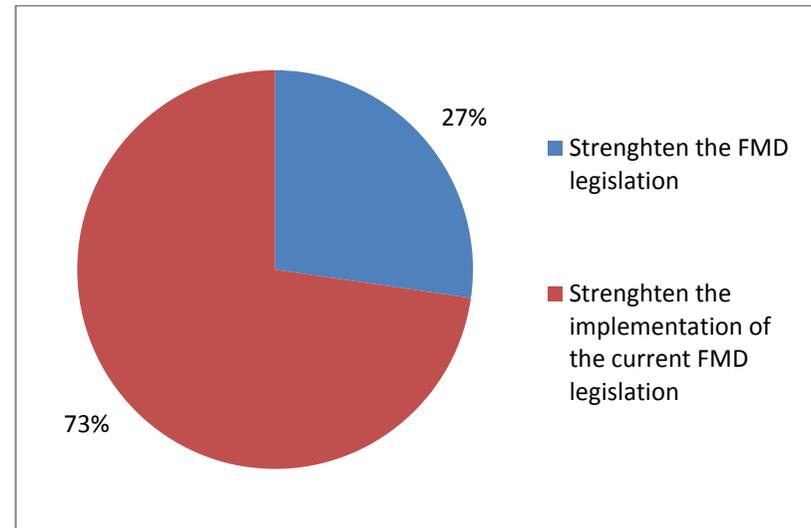
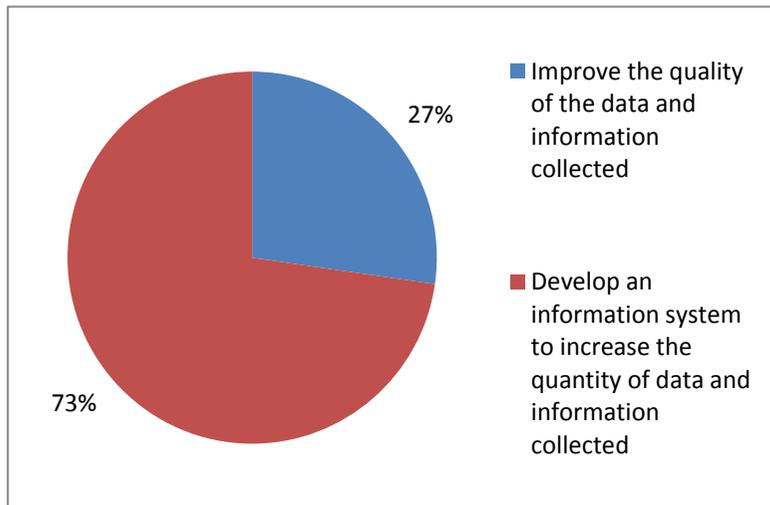
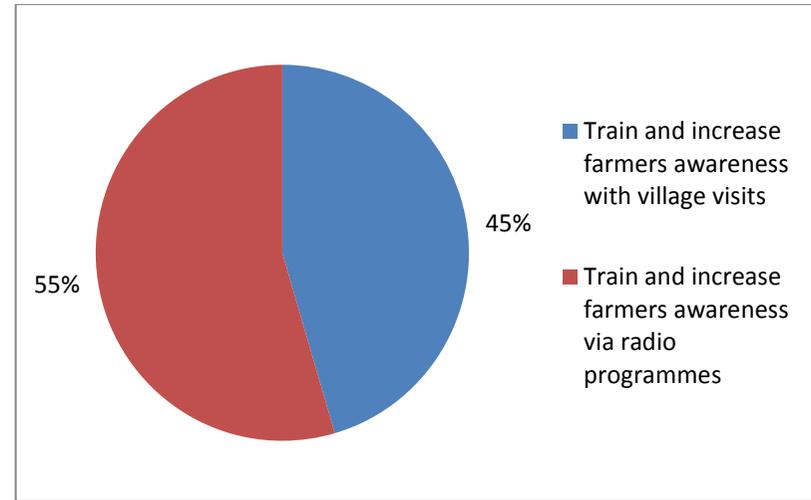
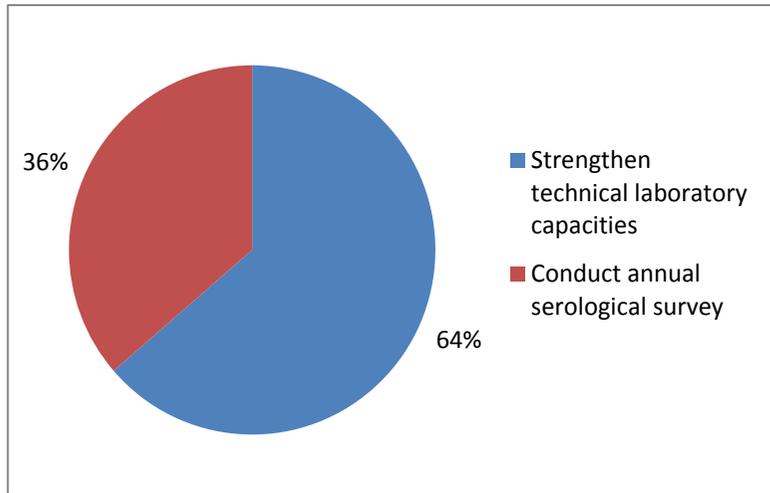


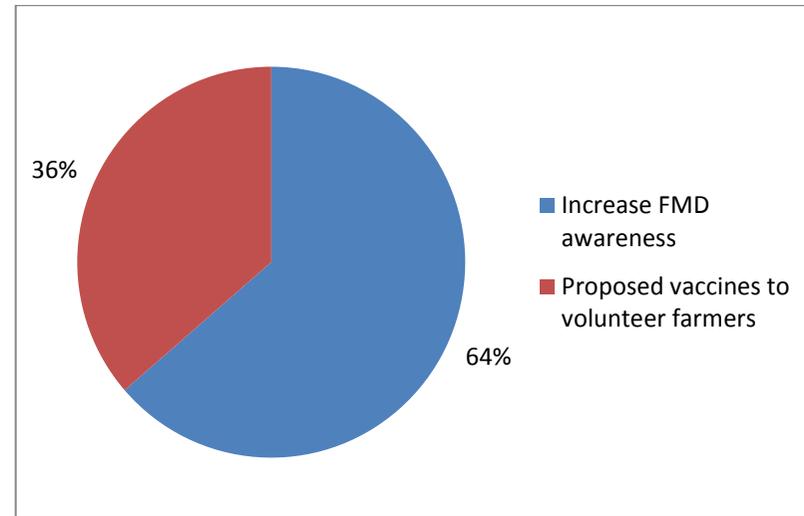
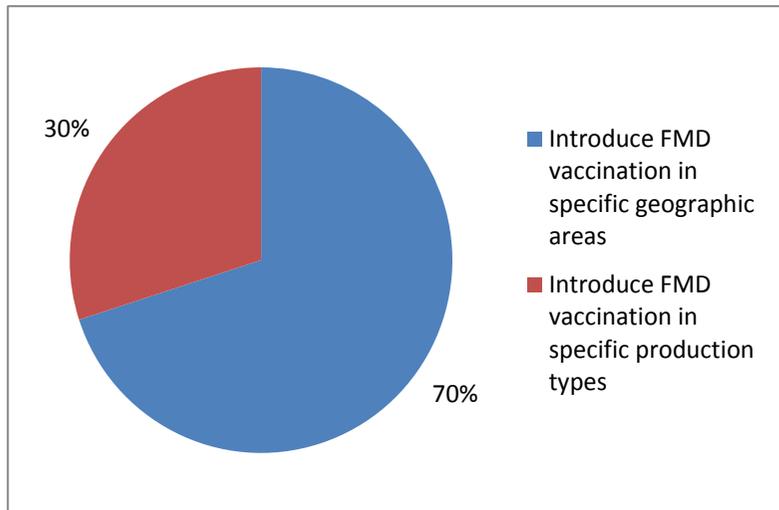
Annex 13: Prioritization of gaps in FMD control in Mauritania



Annex 14: Prioritization of control measures to reinforce FMD control in Mauritania







Annex 15: Agenda of the one-day training on outbreak investigation



FMD Outbreak Investigation - Training Day

(Component 2.3, Support to REMESA)
Nouakchott, Mauritania 8th of May 2015

AGENDA

Friday, 8 th of May 2015 Trainer: Ibrahim Eldaghayes (EuFMD)	
09:00 - 09:40	FMD Overview and Clinical Signs
09:40 - 09:50	Discussion
09:50 - 10:30	FMD Diagnosis and Sampling
10:30 - 10:40	Discussion
10:40 - 11:00	Coffee Break
11:00 - 11:40	FMD Lesion Ageing
11:40 - 11:50	Discussion
11:50 - 12:30	FMD Epidemiology
12:30 - 12:40	Discussion
12:40 - 14:30	Friday Prayer and Lunch
14:30 - 15:10	FMD Outbreak Investigation
15:10 - 15:20	Discussion
15:20 - 16:00	FMD Biosecurity
16:00 - 16:10	Discussion
16:10 - 16:30	Coffee Break
16:30 - 17:30	FMD Survey in Mauritania, the Questionnaire and Libyan Experience
End of the Training Day	



Annex 16: Participants to the one-day training on outbreak investigation

FMD Outbreak Investigation - Training Day

Friday 8th of May 2015

	NOM ET PRENOM	INSTITUTION/FONCTION	Phone	Region	DISTANCE (Km)
1	Tall Samba	Ministère de l'Elevage/agent REMEMA	22236359	Tiris Zemmour	1400
2	Sall Hamady	Ministère de l'Elevage/agent REMEMA	36691561	Assaba	1500
3	Ba Ifra	Ministère de l'Elevage/agent REMEMA		Kaedi	900
4	Ba Mohamed Hamady	Ministère de l'Elevage/agent REMEMA		Hodh Chargui	2400
5	Mohamed Ould Moussa	Ministère de l'Elevage/agent REMEMA		Adrar	900
6	Wagué Chouaibou	Private vet		Guidimakha	1300
7	Diop Abdoulaye	Ministère de l'Elevage/agent REMEMA		Guidimakha	1300
8	Ahmed Ould Hacen	Ministère de l'Elevage/agent REMEMA		Brakna	500
9	Sidi Ould Mokhtar	Ministère de l'Elevage/agent REMEMA		Nouakchott	0
10	Mohamed Salek Ould Ahmed Salem	Ministère de l'Elevage/agent REMEMA		Nouakchott	0
11	Mahfoudh Ould Mohamed Salem	Private vet	22317607	Tagant	1200
12	Abou N'Diath	Ministère de l'Elevage/agent REMEMA		Trarza	410
13	Diop Bocar	Ministère de l'Elevage/agent REMEMA		Hodh Gharbi	1500
14	El Yedaly Ould Mohameden	Ministère de l'Elevage/animal health service chief	22435583	Nouakchott	
15	Ahmed Bezeid Mamy	CNERV (lab), infectious diseases	22245552	Nouakchott	
16	Teslem Mint Cheikh	Ministère de l'Elevage/Monitoring service chief	22245562	Nouakchott	
17	Lehbib O Abdelaziz	Ministère de l'Elevage/Délégué régional	22113012	Brakna	500
18	Mamadou Demba Seck	ENFVA	41 50 50 88	Kaedi	
19	Abdallahi M'bareck Bilal	Ministère de l'Elevage	22496385	Rosso	200
20	Sidi Abdallah Elwavi	Ministère de l'Elevage	20058343	Nouakchott	



Annex 17: Mauritanian questionnaire for sample collection and serosurvey

FMD Survey in Mauritania

FMD is known to be present in Mauritania since long time, however, data about the distribution of FMD outbreaks is not known and the serotype of FMDV circulating in the country has not been investigated in the last few years.

According to the PCP stages, Mauritania can be listed in **Stage 0** (to move to **Stage 1**). In this regard a monitoring program will be implemented in Mauritania in order to gain a better insight into the epidemiological situation.

Cattle population in Mauritania is about 1.7 million (animals per herd: 30-160) and small ruminant population is about 16 million (animals per herd: 20-350).

As there is no vaccination against FMD in Mauritania, a surveillance system can be designed and implemented with two components:

- 1- Investigates FMD suspected outbreaks.
- 2- Investigate the seroprevalence of FMD in the country.

The 1st Component

This will focus on any suspected FMD outbreak in the country. Veterinarians and technicians in the field should be trained on how to increase their awareness about FMD and its differential diagnosis, how to collect samples, the right samples according to the age of the lesion, how to send the samples to the lab in the right way, ...etc

This component is very important in order to confirm any recent FMD outbreak and also to get knowledge of the strain that is circulating in the country.

The 2nd Component

The first step in this component will focus on serology as a tool to investigate on the level of FMD virus circulation (anti-NSP antibodies) in large and small ruminants across different livestock production systems and geographical regions of Mauritania.

The sampling scheme varies according to the species and also within the species depending on the type of animal husbandry and livestock production.

LARGE RUMINANTS: For cattle a random selection of **120 herds** (epi-units) from different areas of the country (13 Wilayas = Regions) according to animal husbandry, population and distribution. **10 sera**

samples will be collected from each herd (Total collected samples will be **1200**). **5** sera samples from cattle between 6 and 12 months of age and other **5** sera samples from cattle above 12 months of age.

SMALL RUMINANTS: For small ruminants (sheep and goats) a random selection of **140 herds (epi-units)** from different areas of the country according to animal husbandry, population and distribution. **20 sera** samples will be collected from each herd (Total collected samples will be **2800**). **10** sera samples from small ruminants between 6 and 12 months of age and other **10** sera samples from small ruminants above 12 months of age.

As there are 4 different production systems in Mauritania (Nomadic, Transhumance, Rural sedentary and Urban sedentary), then herds will be divided among these 4 categories (30 herds of cattle and 35 herds small ruminants for each system). Additionally, the 30 herds per production system will be selected randomly from the different regions in which these production systems are present.

The outcome to be measured is the proportion of epi-units with livestock positive to NSP antibodies, categorized by production system and regions. As the NSP-antibodies are measured at animal level, additional outcome indicator is the proportion of animals testing NSP-antibody positive (by production system, region and age-category). The combination of these two parameters is the within epi-unit proportion of NSP-Ab positive testing livestock. These results are providing quantitative measures of recent FMD infection in both large and small ruminants.

Total sera samples from large and small ruminants will be **4000**, that can be tested by the **9 NSP ELISA** kits that already provided to Mauritania by EuFMD.

It would be preferred and if possible if some samples can be collected from animals that don't move outside the country and the other samples from animals that are moving to the neighboring countries.

These sera samples should be collected as soon as possible, as many animals will be moved from Mauritania to the neighboring countries. These animals will be returned to Mauritania after few months. It would be interesting if another survey with less number of samples can be conducted only on animals that returned to Mauritania after 6 months from the first survey (from the same herds to reduce the herd to herd variation if possible).

After conducting the NSP test for all sera samples, the next proposed step would be to determine which serotypes present (anti-SP serotype-specific antibodies) among only NSP positive samples.

I assume that EuFMD will support sample collection and transport.

SAMPLING FORM

Clinical Samples []

Blood Samples []

- 1)- Name of the owner:
- 2)- Address:
- 3)- GPS Location (if available):
- 4)- Telephone (if available)
- 5)- Date of visit / /
- 6)- Total number of animals in the farm:

Species	No. of animals less than 12 months of age	No. of animals more than 12 months of age	Total
Cattle			
Sheep			
Goat			

- 7)- Type of husbandry: Nomadic Transhumance Dairy Beef
 Rural sedentary Urban sedentary Other:
- 8)- Indicate if the owner has experienced one or more of the events that may be related to FMD in the last 6 months (Fever, Salivation, Lameness, Foot and Mouth lesions): No Yes
- 9)- If answered (Yes) then provide the date of onset: / /
- Main Clinical Signs observed:
- 10)- New animal(s) introduced (bought or given) to your farm in the last 6 months: No Yes
- 11)- How far the animal market from your animals (Km):
- 12)- How far the vet clinic from your animals (Km):
- 13)- Do you usually move your animals outside Mauritania: No Yes
- 14)- If yes, Where to: the date (month of the year) of movement:
 and the expected month to return back:
- 14)- Visitors of your animals in the last 6 months, and how often they visit your farm:
 Vets/Tech (0)(1)(2) Milk collector (0)(1)(2) Dealers (0)(1)(2) Butcher (0)(1)(2)
 Other
- (0): once; (1): sometimes, irregular visits; (2): regular visits, more than once every two weeks.

Clinical Samples

No.*	Sample Code	Type of sample	Species	Age in months	Source of animal (0=born in herd, 1=born in other herd)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

*5 samples from each herd is minimal

Notes:

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Name and Signature of the Veterinarian/Technician

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Blood samples from Cattle

6-12 months of age					More than 12 months of age				
No.	Sample Code	Breed	Age in months	Source*	No.	Sample Code	Breed	Age in months	Source*
1					6				
2					7				
3					8				
4					9				
5					10				

Blood samples from small ruminants

6-12 months of age					More than 12 months of age				
No.	Sample Code	Breed	Age	Source*	No.	Sample Code	Breed	Age	Source*
1					11				
2					12				
3					13				
4					14				
5					15				
6					16				
7					17				
8					18				
9					19				
10					20				

*Source: If the animal was born within the same herd (record: 0) or if it has been brought into the herd (record: 1).

Notes:

.....

Name and Signature of the Veterinarian/Technician

.....