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Community of Practice (CoP) on climate informed advisory services for livestock farmers: The process of co-development and dissemination in Senegal.

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Key messages

- Pastoralists in the drylands of Senegal are adversely affected by climate-change related risk and shocks such as drought, livestock diseases, increasing cost of feeds etc.
- These shocks lead to livestock losses or the deterioration in the quality of products.
- Smallholder pastoralists make decisions under conditions of uncertainty and climate related risk adding complexity to decision-making.
- Provision of climate information services may play a significant role in planning for uncertainty in the agricultural sector.
- The CoP includes a diverse set of institutions, representation and expertise

Introduction

Livestock is an important source of income for millions of smallholder farmers, including women, in Senegal (Habanabakize, Ba, et al., 2022; Habanabakize, Diasse, et al., 2022). But drought, heat waves and extreme wet events, exacerbated by climate change, threaten food security, animal health and the livelihoods of many pastoral communities in the country. With the increased variability of the growing season, natural pasture and water availability, undernourished cattle must

travel longer and longer distances.¹ In order to reduce uncertainty and to protect their livelihoods and assets, herders utilise various adaptation strategies, including: (1) destocking by selling livestock at often low prices prior to and during drought; (2) transhumance, which entails a higher risk of animal loss; (3) purchase of feeds which can be costly; (4) utilisation of residues from croplands which may lead to conflict with farmers. In this context, extension services, developed on knowledge and innovations sourced from local-national-international research, can play a vital role in building the capacity of livestock farmers to improve their productivity and profit (Pousga et al., 2022).

Indeed, the increased vulnerability to a rapidly changing climate have resulted in growing interest in Senegal and elsewhere to engage in the provision of climate information services (CIS) to farmers as a means to enhance climate adaptation and reduce risks in the agricultural sector (Diouf et al., 2019, 2020; Ouedraogo et al., 2018). CIS are being developed worldwide for policymakers and decision-makers within the agricultural sector to enable rural society, especially the most vulnerable, to better manage risks and opportunities arising from changing climate and weather (Hansen et al., 2022, Hansen et al., 2019; Vaughan et al., 2019).

¹ https://www.ais.unwater.org/ais/pluginfile.php/629/mod_page/content/6/Senegal_EN.pdf

However, CIS tools mostly target risk management in crop farming, which cannot be directly applied to the context of livestock farming.

Therefore, it is timely to develop CIS-based tools for context-specific, tailored climate-informed advisory services in livestock farming, covering management practices to prevent, reduce and/or manage climate-related risks. Additionally, this can assist livestock producers in making management decisions to benefit from the opportunities offered by the livestock sector and to improve the resilience of the livestock and dairy value chains. This is done by collecting detail and advice from livestock support services/institutions, livestock producers organizations, value chain actors and associations or community-based organizations in order to help livestock producers to make practical, feasible and relevant decisions. Localized CIS must consider community perceptions, local knowledge, livelihood patterns, vulnerability and gender, and disseminate using reliable communication channels (Selvaraju et al., 2013). Such a service should also catalyse community participation and enhance two-way feedback by including end-users in the co-development (Selvaraju et al., 2013). To fill the gap of providing localized climate informed advisory services to build the resilience of livestock farmers in Senegal, AICCRA-Senegal initiated a Community of Practice (CoP) for climate-informed advisory services to pastoralists and agro-pastoralists.

1. CoP on climate informed advisory services

Based on the climate-smart agriculture (CSA) prioritization for livestock sector undertaken by Houessionon et al., (2022), climate risk management emerged as a priority for livestock farmers. A CoP was then created by AICCRA-Senegal cluster with an overarching objective to co-develop climate-informed advisory services to support livestock farmers, dairy producers and other actors involved in the value chains in making decisions under uncertainty regarding input use (pasture, fodder, feed use, access to water ponds, etc.), animal health and market information. The CoP aims as well at strengthening the network of actors and on building community within the pastoral and

agro-pastoral areas of Senegal through collaboration, dialogue and exchange of experience-based knowledge between institutions and livestock producers' organizations.

More specifically, it aims to:

- a. Foster inter-institutional and multidisciplinary collaboration and dialogue on the development and dissemination of climate informed advisory services to livestock farmers;
- b. Promote knowledge sharing based on context-specific experience and innovation in livestock farming, recognizing that each actor has a unique angle to bring to the table; and
- c. Mainstream climate-informed advisory services into public and private institutions, NGOs, and livestock producers' and value chain actors' associations through the collective reach of all participants.

2. Participants of the CoP and process guiding the implementation of the system of co-development of climate informed advisory services

The CoP comprises representatives from ten (10) institutions, representing national institutions, NGOs, extension services, and livestock and dairy producers' organizations. Specifically in Senegal, it is a constellation of experts and representatives from the National Agency of Civil Aviation and Meteorology (ANACIM), National Agency for Agricultural and Rural Advisory (ANCAR), Directorate of Livestock (DIREL) and Directorate of Veterinary Services both of the Ministry of Livestock and Animal Production, Senegalese Institute of Agricultural Research (ISRA), Ecological Monitoring Centre (CSE), Association for the Integrated Development of Dahra (ADID, one of largest Livestock Associations in Senegal), Professional Association of Dairy Actors in Linguère (a woman-led industry association with majority female membership), Action Against Hunger (ACF), Union of Community Radios (URAC) and Jokalante. Each institution nominates two representatives, a principal and an alternate.

Starting in February 2023, monthly meetings were held to assess and prioritize the needs for livestock farmers in term of information and advisories based on CIS (see annex). Overall, five monthly meetings have culminated the co-development of a climate informed advisory services (Figure 1).

The CoP brought together the different institutions under a memorandum of understanding (MoU) that stipulates the role and responsibility of each institution (see annex). The detailed content of the MoU was validated by 5 institutions making the CoP formal. The MoU establishes the formal engagements of institutions in the CoP regarding their roles, responsibilities and respect of rules and

policies on data sharing. To facilitate CoP members providing consistent data following the same format, Jokalante, a private agritech social enterprise, developed a framework for two bulletins, which was validated by all CoP members. The bulletins are centered around two themes (pastoral resources and animal health) and ultimately guide the formulation of advice by the experts from each institution. In addition, Jokalante provided training for all the members of the CoP on how each institution should provide advice on the basis of its expertise. Based on the framework, the content of the first bulletins of climate informed advisory services was validated with all members of CoP.

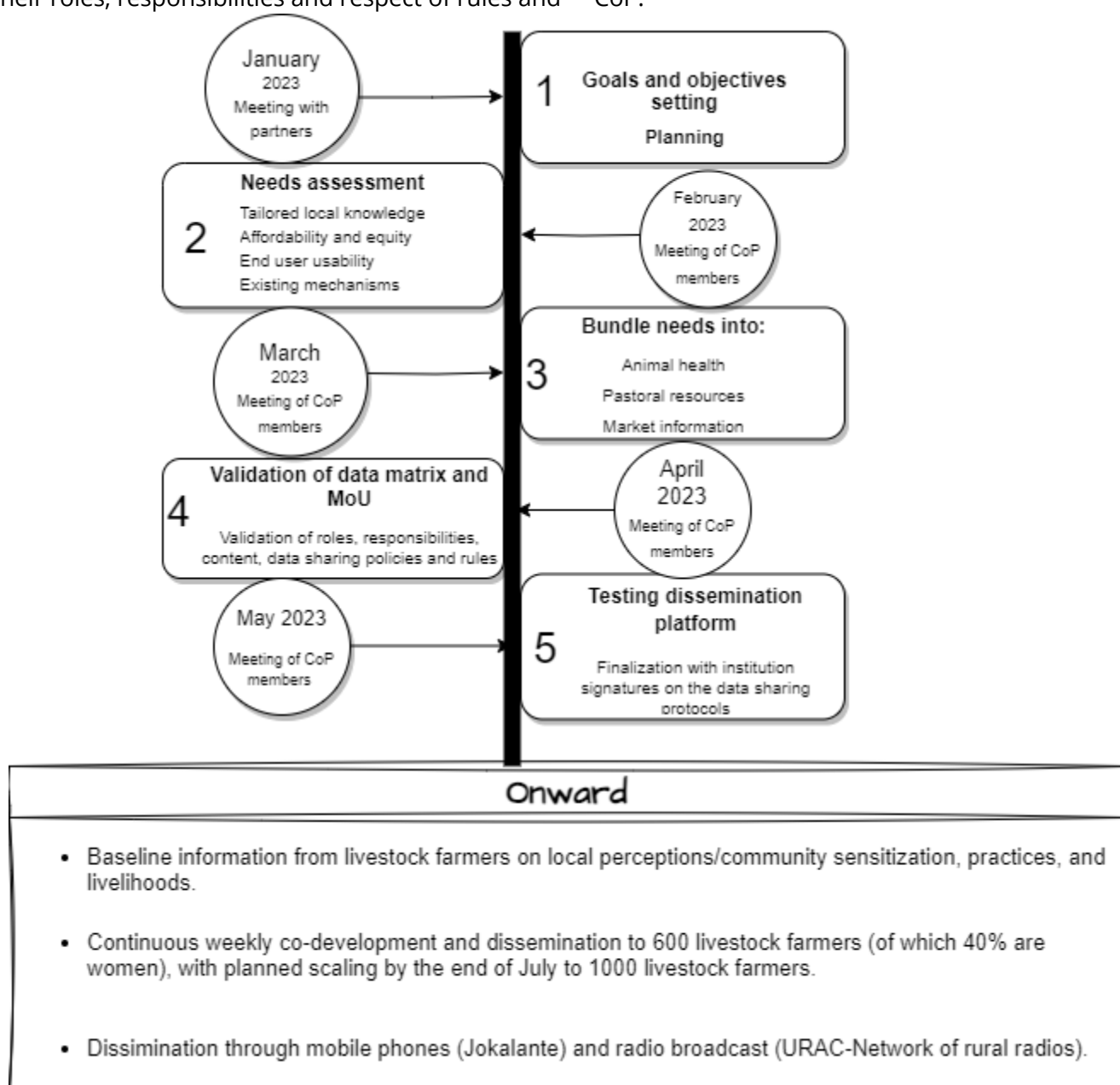


Figure 1. Process for co-development of climate informed advisory services to livestock farmers in Senegal.

3. Needs assessment and bundling of content for climate-informed advisory services and roles of institutions

A needs assessment of existing gaps, the key actors and their roles, dissemination mechanisms and key CIS was used for the co-development of climate informed advisory services that respond to climate-related risks. This assessment was carried out together with different categories of stakeholders engaged in the CoP and provided:

- a. An inventory of the existing CIS partnerships and mechanisms that could be useful for developing climate informed advisory services for livestock;
- b. Alignment with the inventoried and prioritized climate-smart practices and technologies to support livestock value chains in Senegal (Houessionon et al., 2022), of which one was agro-

advisories guided by climate information, integrating the management of rangelands, water ponds and improved forage species.

c. The identification of dissemination channels, key players and their roles in sharing costs and benefits.

The localized climate informed advisory services to livestock farmers are defined and bundled around two themes (Table 1). These components are defined based on the needs assessment for livestock farming under climate uncertainty. This is also to make the information useful at the local level and to ensure data collection and synthesis on local weather, climate, pasture and water resources, market price of cattle meat and cow milk, and feed. Since climate information can be used to inform advisories on all the aforementioned data points, it plays a significant role in the co-development of different advice by the members of CoP.

Table 1. Data requirements and institutions responsible for the co-development of climate informed advisories

Key data for co-development	Institution(s) involved
Pastoral resources	
Weather forecasting (daily, weekly and seasonal)	ANACIM
Onset and duration of rain season	
Date of the first rains	
Evapotranspiration	
Temperature for maintaining the quality of milk	ISRA
Good hygienic practices in dairy processing	ANCAR
Production itinerary for cultivated fodder	
Good practices on harvesting and conservation	
Good practices in agroforestry	DIREL (Ministry of Livestock)
Information of pastoral units distribution and status in Senegal	
Status of functional/non-functional boreholes	
Monitoring water points: appropriate timing of access to water ponds to prevent disease	CSE
Market information (feed, milk and live animal prices)	ACF
Cultivation calendar for rice straw	APAFIL
Raising awareness of the use of firebreaks	ADID
Animal health	
Early warning of pests and diseases	ISRA
Heat index (heat stress)	ISRA and ANACIM
Deworming and vaccination period	DSV
Vaccination coverage rate, departmental level	

4. Institutional interaction, governance and co-development

The climate information provided by ANACIM is central in the co-development of climate-informed advisory services. Ultimately, the process follows an approach that can be broken down as follows in Figure 2. The knowledge production and co-development of climate-informed advisory services are built from the interaction between the institutions engaged in the CoP. The meetings help each participant understand their role and how to provide the required data for developing advisories to livestock farmers. Then, this follows with the CoP turning these into weekly advisories on the dedicated platform based on the climate information provided by ANACIM. The different advisories provided are synthesized into key messages and adapted locally, and then disseminated to livestock farmers. To summarize:

- a. A bulletin based on the weather forecast is produced directly in the platform by the members of the CoP.
- b. An expert panel, checks and summarises the advice provided by the CoP members into key messages.
- c. The first communication channel: Jokolante, an agritech company specializing in disseminating advisories to farmers, transforms the key message into a voice message and sends it to registered end users.

d. A second communication channel: URAC, develops broadcasts for community radio stations, provides a wider reach to livestock farmers.

e. Monitoring is conducted with feedback from livestock farmers, which improves the design, development, content and dissemination of the advisories.

5. Dissemination channels of climate informed advisory service to pastoralists and agro-pastoralists

The dissemination channels used are Jokolante and are community radio through the partnership with URAC. These channels were chosen by the members of the CoP as most appropriate to reach livestock farmers in the rural areas given the mobile nature of livestock farming in pastoral communities in Senegal, as most herders have a radio to listen to while conducting their herds to pasture or a phone for communication.

Jokalante serves as a link between these different institutions to facilitate access to reliable information for targeted livestock farmers in the project area.

The web platform of Jokalante (Figure 3) enables the dissemination of advisories to livestock farmers. The same platform also allow experts to exchange information and comment on relevant advisories. The platform groups advisories by thematic, relevance to each value chain node, geographical zones and period of validity and relevance.

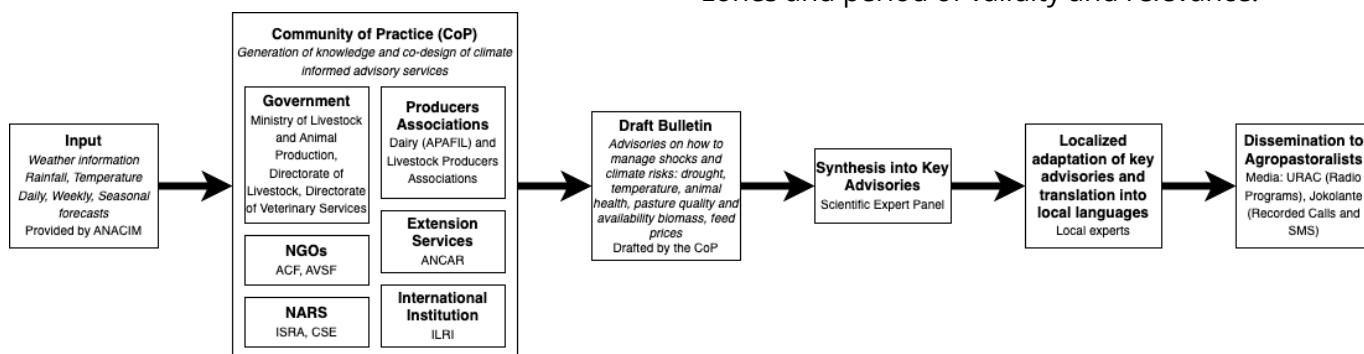


Figure 2: Process of co-development and dissemination



Figure 3: Screenshot of the Jokalante platform for climate informed advisory services co-development and dissemination

Conclusion

The provision of CIS in agriculture has largely focused on crop-based farming, leaving behind pastoral communities. Senegal in particular has had many initiatives contributing to scaling the production, dissemination and adoption of CIS by crop-farming communities. The lack of timely and accurate climate information and advisory services for livestock farmers for decision-making on fodder production, harvesting, storage, feed regime, access to water points etc. has led to inefficiencies in the use of dwindling resources. This makes it difficult for livestock to survive the long dry season, which in turn can affect the income and well-being of farmers in Senegal.

The CoP on climate informed advisory brings together different institutions in livestock and climate change to provide livestock producers and value chain actors with appropriate advisory services based on weather patterns. This is expected to guide their decisions and use of limited resources to overcome and reduce the gap in resource availability during the dry season.

It is essential as well to build the capacity of end-users and sensitise them on the application of

climate informed advisory services provided through the CoP. The project continues with baseline and endline surveys to assess the impact of climate informed advisory services for improving dairy and meat production. The feedback will also guide the future design and content of advisories, training needs for an effective integrated CIS to inform livestock management strategies.

Acronyms

ADID	Association pour le Développement de Dahra
ACF	Action contre la faim
AICCRA	Accelerating the impacts of CGIAR climate research in Africa project
ANACIM	Agence nationale de l'aviation civile et de la météorologie
APAFIL	Association professionnelle des acteurs de la filière lait local/Linguère
ANCAR	Agence nationale de conseil agricole et rural
AVSF	Agronomes et vétérinaires sans frontières
CIS	Climate information services
CSA	Climate smart agriculture
CSE	Centre de suivi écologique
DIREL	Direction de l'élevage
DSV	Direction des services vétérinaires
ILRI	International Livestock Research Institute

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About AICCRA INFONOTES

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**Accélérer les impacts de la recherche en climat
du CGIAR pour l'Afrique**

Communauté de pratiques pour la dissémination de conseils agro-climatiques et information aux éleveurs et agro-éleveurs au Sénégal : Convention de partage d'information et de données avec AICCRA-ILRI

CONTEXTE

Le système pastoral dans les zones arides du Sénégal est extraordinairement vulnérable à la plus forte irrégularité des précipitations, à la fréquence accrue des sécheresses avec de longues périodes de sécheresse et à l'augmentation des épidémies de parasites et de maladies induites par le changement climatique. L'élevage étant le moyen de subsistance de 60 % de la population sénégalaise dans le système pastoral, il est essentiel de renforcer la résilience climatique des éleveurs pour éviter un effondrement dévastateur des moyens de subsistance et de la sécurité alimentaire. Ainsi, le projet « Accélérer les impacts de la recherche en climat du CGIAR pour l'Afrique (AICCRA) » est une initiative de trois ans financée par la Banque mondiale et mise en œuvre dans six pays d'Afrique subsaharienne (Sénégal, Ghana, Mali, Ethiopie, Kenya et Zambie).

Au Sénégal, AICCRA est coordonné par l'Institut International de recherche sur l'élevage (ILRI) et mis en œuvre par le CIAT, l'ICRISAT et l'IRI en partenariat avec des institutions nationales (ISRA, ANACIM et ANCAR) et des compagnies privées de TIC et médias (Jokalante et URAC). Dans le but de renforcer la résilience des pasteurs et agro-pasteurs et surtout à mieux gérer les ressources pastorales, l'alimentation des animaux et la santé animale sur toute l'année pour sécuriser leur bien-être, ILRI à travers le projet AICCRA met en place une communauté de pratiques pour conseils agro-climatiques et information aux pasteurs et agro-pasteurs.

Figure i. Screenshot of the CoP data sharing agreement signed by CoP members



Figure ii. Meeting with CoP members