

# TECHNICAL NOTE

## WHEN SATELLITES GUIDE PASTORALISTS IN SAHEL

Key Lessons Learned from STAMP project (2015 - 2018)

The SNV logo is displayed in large, white, bold, sans-serif capital letters. A thick white horizontal line is positioned directly beneath the letters.

Ministry of Foreign Affairs of the  
Netherlands

Netherlands  
**Space**  
Office





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Herd of a pastoralist from Gao region , Mali - August 2018 © SNV



## PRESENTATION

The Sustainable Technology Adaptation for Mali's Pastoralists (STAMP) project aimed to improve resilience among climate affected pastoralists in Gao and Menaka regions of Mali by improving their use of and access to satellite data. Implemented between 2015 and 2018, it has initiated the **GARBAL** information service which allows them to better plan on their herds' movements.

**GARBAL** provides real-time information on the availability of surface water and vegetation, which generates enormous benefits to pastoralists; before they decide to migrate they can check the best options to follow and thus save money, time and their livestock. STAMP project was supported by the Netherlands Space Office (NSO) for as much as 70% of a total budget of 2.5 million Euros, the rest of the funding being provided by the partners. STAMP project is therefore a public-private partnership led by SNV – The Netherlands Development Organization.

This document is the result of a learning process that included all the partners involved in the implementation of STAMP project.

It aims to enhance the know-how learnt and to question the practices that influenced the achievement of the project results in order to disseminate them. The project was structured around four (04) work packages that determined the articulation and the restitution of the acquired knowledge.

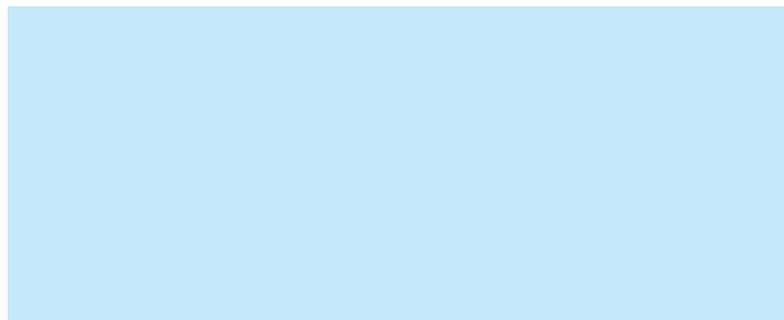
These are:

- 1- The project management,
- 2- The user's engagement,
- 3- The service provision,
- 4- The service scale-up and sustainability.

### NSO testimony

“SNV's strong network and credibility have brought together the key players in the field of pastoralism, satellite imagery, and mobile telephony. Despite difficult conditions, the determination, commitment and expertise of SNV were decisive in the success of STAMP project. SNV and its partners have demonstrated that the use of satellites can bring solutions to the daily lives of people.”

**Adri Bakker**  
STAMP focal point at NSO





## WHAT WAS PLANNED

This work package was about establishing the **institutional and governance foundations** for the project's partnership and the adequate management systems that included the financial & administrative procedures but also the project planning, the design of the reporting mechanisms and the monitoring and evaluation processes.

To this end, a baseline study and final evaluation were to be conducted with the technical assistance of Project Concern International. The establishment of the **foundations of the institutional viability of the public-private partnership (PPP)** were also planned, which included the contractualization of operational and strategic set-ups.

As this partnership also had to meet the criteria of the Organization for Economic Cooperation and Development (OECD) for PPPs, **compliance with these requirements** by partners such as TASSAGHT and HSS was planned. The project also was to commission an **evaluation of its environmental and social impact**, on a voluntary basis. Finally, the project had to carry out a **market study** to confirm its assumptions about the business model and update it accordingly.



## WHAT TO REMEMBER

While direct collaboration between implementing partners has increased over the course of the project implementation, SNV as a broker remains essential as their backgrounds differ very much. The context marked by the isolation of the area of intervention, **insecurity** and restricted mobility was challenging. Nevertheless it reinforced the usefulness of the information service, but required a **permanent and careful management of the risks**, taking into account the exposure of the teams on the field. The sizing

of the budget of the project has proven to be adapted to the requirements of the context.



## ACHIEVEMENT

The effectiveness of the project resulted from the **accountability of the partners** on the basis of clear mandates that were guided by their respective expertise. Given **the variety of their work profiles and cultures**, and their geographical dispersion, SNV has invested in **regular communication** in order to maintain everyone's commitment to the highest level of decision-making.

Despite this, an **agile and flexible project management** was required to adapt to the different internal procedures, which resulted in the grant budget depletion up to **98%** of the total project budget and **turned to be realized 100%**, thanks to a 102% contribution from partners.

However, the **commercial operations** of the **GARBAL** service were only able to start in November 2017, and the final evaluation took place in July 2018 with 400 pastoralists. Although the period was short, the data collected demonstrates an **improvement** in project performance indicators among service users compared to non-users, which is encouraging.



## DEVIATION

Activities planned in this work package were executed except for the signing of a consortium contract which was to determine the operating modalities of the service at the end of the project. However, the partners have agreed on various scenarios to ensure the sustainability of GARBAL service and were collectively mobilized for this purpose. In this perspective and, in agreement with the donor, they requested an extension without budgetary consequences of two (2) months (until December 2018) to ensure continuity of service.



"PCI learned about working understand the differences East Africa. We also learned critical information to pastoring."



A decrease of losses for about 157€ per GARBAL users

A 9,6% increase in milk production

Clear correlation with the use of the service but we need to deepen the causality link between GARBAL and these results

GARBAL users have seen the value of their herd shrink by only 2, 3%

Figure 1 : STAMP project performance indicators, at the end of the final evaluation

in West Africa and thus better and similarities with pastoralists in about new modalities of delivering raliststo enhance migration decision



**Jason Rubin**  
Technical Advisor- Monitoring, Learning and Evaluation  
Project Concern International

**IER testimony**



With STAMP, I worked in a mindset that differs from classical scientific research: I learned to link the techniques proposed by research to the technological feasibility and financial profitability. I also had to translate into simple terms, technical concept for a better understanding and restitution of contents to users



**Bara Ouologuem**  
Director of Research at  
Institut d'Economie Rurale

## USERS' ENGAGEMENT



### WHAT WAS PLANNED

This work package focused at engaging the pastoralists to use the information service by accessing the call center and a USSD menu as clients. It included : (i) the acquisition of equipment for the extension of the call center and, the recruitment of new call centers operators, (ii) the design and implementation of a **marketing strategy adapted** to the needs of pastoralists, (iii) the production and distribution of associated marketing materials, (iv) the training and supervision of sales agents, (v) the training and supervision of the call center operators and (vi) the application of quality controls to measure clients satisfaction. It was originally planned that the pastoralists responsible for the collection of data on the ground would carry out the commercial promotion of the service in their respective areas.



### ACHIEVEMENT

After one year of commercial operation, GARBAL service recorded **57,134 users** (of which 97% via the USSD menu), which represents 76% of the initially planned target over the three (3) years. This result was partly achieved through the integration of **GARBAL** into a combined M-Agri offer from ORANGE Mali which ensured its **promotion on a national scale**. However, this association did not allow a differentiated marketing that took into account the specificities of the main target of **GARBAL** service.

The involvement of the data collectors on the ground, supervised by TASSAGHT during **demonstration sessions on the use of the service** brought together more than **7,008** people. It also strongly contributed to people's awareness on the service mobilization. The brand of the service was chosen by the local population themselves via a **contest** organized on local radios which contributed in building a strong commitment to the service. This was then maintained by the involvement at the call center of **operators speaking local languages** (Sonrai, Tamasheq, Arabic and Fulani). The final evaluation conducted with four hundred (400) people, reveals that **98% of the users surveyed were satisfied**.

## WHAT TO REMEMBER

The strong involvement of **local leaders as service ambassadors** during the awareness sessions, provided a strong credibility to **GARBAL** owing to their central role locally, and the importance of word of mouth. Despite the lack of interoperability between the networks and the cost of the service, which limits its access to some part of the target group, the **demand expressed has steadily increased**, showing the existence of a need. **20% of GARBAL users are traders** mainly interested in market prices. Although this segment has not been specifically addressed from a marketing point of view, it nevertheless allows to smooth out the seasonality of the demand formulated by the pastoralists. A **more regular engagement** with end-users would have been helpful in better understanding their needs and improving the service accordingly, as user education requires ongoing investment.

## DEVIATION

The **deterioration of the security context** prevailing in the project intervention area that occurred between the project submission and its funding cancelled movement capacity for some partners and prevented the holding of meetings in Gao & Menaka regions. This change has led to a reallocation of tasks within the consortium, which may have reduced the scope of promotion actions; for example, the training of collectors in commercial promotion has been provided by SNV with the support of ORANGE Mali.



Figure 2: Illustrations of the flyer used for awareness sessions



Awareness session, Forgho, Gao region, Mali- © TASSAGHT



### TASSAGHT Testimony

At TASSAGHT, we are proud to be pioneers, together with SNV and our partners in STAMP project, for in the development of new solutions to meet the practical needs of pastoral communities



**Abdul Aziz Ag Alwaly**  
Head of Programs TASSAGHT

## SERVICE PROVISION



### WHAT WAS PLANNED

This work package aimed at **designing, testing and commercially exploiting GARBAL** information service so that it would be fully operational and available to inform pastoralists.

This was made possible by (i) the acquisition, processing and transmission of **satellite data** for the detection of biomass and surface water and (ii) the collection on the **field by pastoralists of data** on biomass quality, livestock concentration around natural resources and prices on livestock and cereals.

This work package also concerned the **quality control and the validation of the processed information** with for their integration in an **intuitive web interface** accessible to operators at the call center. Insofar as the information service depends on the skills of data collectors, field supervisors and call center operators, they have also benefited from a **capacity building plan**.



### ACHIEVEMENT

Thanks to continuous improvement of satellite imagery, it was possible for Hoefsloot Spatial Solutions to **increase the level of resolution** of biomass and surface water by 10m x 10m during the implementation of the project. This data was enriched with **digitized cartography** carried out with the communities, in order to **exclude the cultivated zones of the grazing areas**. This activity was conducted with the support of ACF.

In addition, ORANGE Mali has developed an **application for the collection of data** by pastoralists spread over 16 geographic areas of twenty (20) kilometers radius. Methodologies have been designed with IER to inform this application which is based on the **valuation of endogenous knowledge** of pastoralists. The combination and quality control of the various data ensure **98%** accuracy according to the users surveyed.

From **simple phones**, pastoralists can now access in local languages to **GARBAL** service's call center operators (at 37 333) or send USSD requests (to # 222 #) **to instantly obtain decision-making support information**. Despite limited network coverage and reduced connectivity, **95%** of users find **GARBAL** easy to use and **91.2%** reported to have made different decisions based on the information received via GARBAL.



### WHAT TO REMEMBER

**The design and experimentation of the service was longer** than expected (18 months instead of 8 months) because of the absorptive capacities of some partners otherwise tasked.

The project established a **database** by accumulating information on many parameters **without planning their dynamic exploitation**, which could have added value to the service.

Remote sensing of biomass is not sufficient in the dry season, to locate the fodder still available, whereas this is of crucial importance for pastoralists at that period. However, the current technological developments give hope that this shortcoming will be solved in a near future.



### DEVIATION

To ensure the **sustainability of data collection** on the ground, alternates have been identified to take over from the incumbent collectors in case of absence or impediment, which **has led to an unexpected and permanent training effort**. In addition, a **dialogue box/dashboard** has been initiated in order to display at the call centre ran automated content that makes the **experience of each user similar**.



### HSS testimony

What I appreciated in the management of the project is the contact group that brings together all the people involved in the implementation, and that allows sharing images of the ground or, alerting on possible breakdowns so that they are quickly resolved. This helps to understand each other's realities and to create a common commitment.



**Peter Hoefsloot**

CEO Hoefsloot Spatial Solutions

### ACF testimony

“Several innovations of this project have been very important for ACF, especially the fact that through this model the information reaches livestock farmers directly; this offers new perspectives for the development of early warning systems for humanitarian actors, who traditionally focused on disseminating information to the institutional level.”

**Alex Orenstein**  
Regional GIS Advisor,  
RRC and supervision Systems - ACF

### The best of satellite information

Dataset	Sensor	Resolution	Frequency	Archive
Biomass DMP	PROBA-V	1km	10 Daily	1998- Present
NDVI	METEO EUMETSAT	3km	Daily processed as 10 days composite	2006-Present
Small water Boodies	PROBA-V	1km	10km daily	998-Present
	Sentinel 2	10km	Monthly composite	2015-Present

GARBAL service relies on several types of satellites in order to benefit from their advantages for a better resolution

### Constant improvement of the resolution



Participatory mapping workshop for field delineation



© ACF, 2016

## STAMP + - What's new?

Budget :	€ 3,3 million funding by the Royal Embassy of the Kingdom of the Netherlands in Mali
Duration :	36 months, 01.01.2019 – 31.12.2021
Intervention area :	Gao, Menaka + Kidal, Timbuktu, Mopti => opening of SNV office in Sevaré
Service offer :	GARBAL + livestock advisory services, animal health, financial product for input access
New Partnership :	TASSAGHT, ORANGE MALI, HSS + Ministry of Livestock & Fisheries
Expected Résultats :	+ 45, 000 repeated users, + 15 % productivity, + 10% financial inclusion




### ORANGE MALI testimony

ORANGE Mali through GARBAL service is carrying out Mali's digital transformation project to serve populations, including rural ones. This service is part of our M-AGRI offer and has demonstrated the existence of a market combining pastoral communities and new technologies in a fragile context

#### Ousmane Touré

Head of CSR Division Orange Mali



## SERVICE SCALE UP AND SUSTAINABILITY



### WHAT WAS PLANNED

This fourth work package aimed at ensuring that **GARBAL service reaches the break-even point** during the lifespan of the project and that it could expand to other comparable contexts. For that purpose, it was planned that a **full viability, sustainability and replicability assessment** of the **business model** would be conducted early in the third year, in order to capture all the lessons learned and, where appropriate, take the necessary corrective measures to bring the service to a balance, and make it sustainable.

It was expected that the analysis of the business model would make it **easy to consider its expansion in other parts of Mali, such as Mopti or Timbuktu**, but also in pastoral areas of central and northern Niger. In that perspective, **plans for scaling up** had to be developed to improve the service offer and present them to a selected number of **investors and donors**.



### WHAT TO REMEMBER

ORANGE Mali's commitment to this partnership is part of its **corporate social responsibility policy**. This helps **GARBAL** to benefit from subsidized air-time tariffs, and to attract a wider adhesion with a price policy that will not solely focus by bounded by profitability.

The investment required for the development of the service could not have been achieved without **public funding that covers risk-taking**. These incompressible costs are, however, likely to be **covered by scaling up** under similar conditions.

The demonstration of the usefulness of **GARBAL** for pastoralists, the commitment of private partners to continue the service, and a **strategy to mobilize new income** through the widening of the supply were decisive in convincing the public partners of its expansion.



### ACHIEVEMENT

As **GARBAL** is accessible for a **modest fee** of 75 XOF per USSD request and 25 XOF per call minute, the service has **generated income, though they are insufficient** to cover operating costs and therefore reach the break-even point over a period of operations reduced to 14 months.

However, it was possible to **demonstrate that the value of GARBAL was as societal** - the service meets a need - **as economic** because it is based on a business model. The sustainability analysis highlighted the importance of continuing to invest in awareness in order to **increase its adoption rate**.

This is why SNV has designed scaling plans for the **regions of Kidal, Timbuktu and Mopti** and proposed to extend the offer to consolidate and support private partners, in the sustainable delivery of the service that have attracted the attention of the Embassy of the Kingdom of the Netherlands in Mali for a new phase.



### DEVIATION

During the implementation of STAMP, **exploratory exchange visits** took place with farmers and pastoralists organizations from Niger, who came to discover the experience of the project in Mali.

**Presentations** were made to authorities, experts and projects from Senegal, Cameroon, Benin and Togo, as well as to all the countries associated in the implementation of the Programme Régional d'Appui au Pastoralisme au Sahel (Regional Support Program for Pastoralism in the Sahel (PRAPS) implemented by CILSS with funding from the World Bank. This investment generated **future prospects**.



# SNV

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DEVELOPMENT  
WORKS

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