Verification Report of Rehabilitation of the Sahel (Reach)

Name of Verifier(s)	Date of Review
Name and address	GANABA Souleymane, Senior Research Scientist in plant biology and ecology, Environment and Forest Department, Institute of Environment and Agricultural Research (INERA)/CNRST, BP 7047 Ouagadougou 03, Burkina Faso email: **ganabasouley@gmail.com** **Period of data verified:** November 2015-October 2020
Senior auditor	***Ganaba Souleymane***
Members of the verification team	Ganaba Souleymane, ecologist Cissé Mumouni, sociologist Barry Hamidou, fulfulde translator
Internal Audit Code	Independent Expert
Standard Version	Plan Vivo Standard 2013
Plan Vivo Certificates (PVC) issued (ex ante) ·	1,667 tCO2e
• **Of which were converted into buffer certificates ex postissued (ex-post)**	
Buffer Certificates	417 tCO2e

Description of the project

Background and justification

The Sahel is a semi-arid transition region that covers about 30% of Burkina Faso territory. Its vegetation cover is composed of steppe consisting largely of grassy formations and stunted thorny shrubs whose density, height and width of leaves increase as we move southward (World Bank, 2012).

The average rainfall for 2012-2022 is 501.5mm and the average number of rainy days is 38 days. The rainfall for the years 2012, 2013, 2016, 2020 and 2022 is higher than the average for the period under consideration (Figure 1).

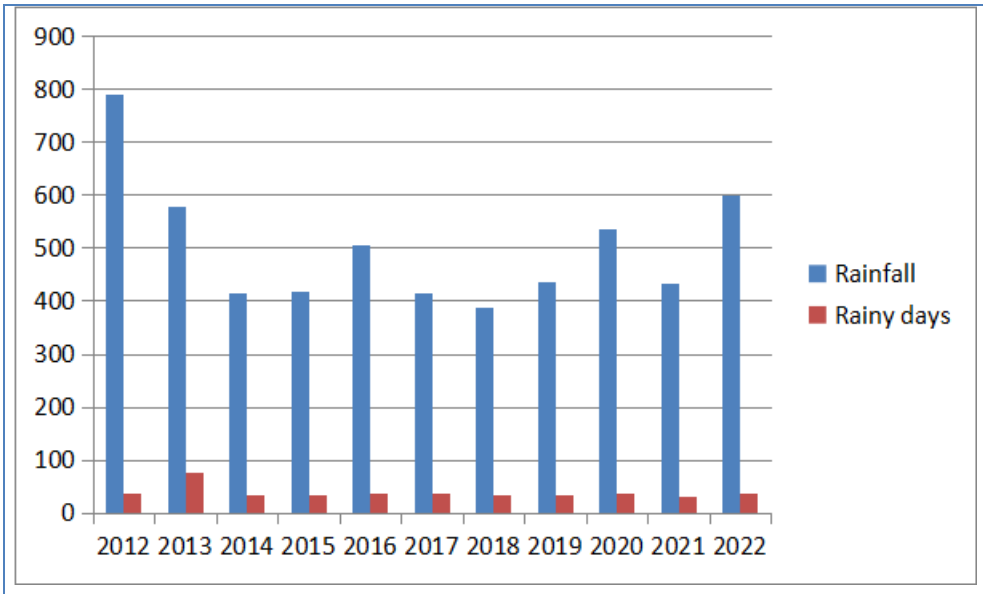


Figure 1. Evolution of rainfall between 2012-2022 in Gorom-Gorom

Historically, rainfall variability is significant and is expected to increase based on forecasts. According to estimates, Burkina Faso will suffer a reduction in rainfall from -3.4 percent in 2025 to -7.3 percent by 2050 ((National Climate Change Adaptation Program (PANA) of Burkina Faso, 2007). The Sahel is particularly vulnerable to climate change because of its geographic location and the dependence of its population on rain-fed agriculture and transhumance systems. The main livelihood strategies in the region focus on secondary services from land and water resources (food, fuel, fiber). Rainfall variability and desertification are the main factors that make the Sahel one of the poorest and least environmentally secure areas in the world (Kandji, Verchot and Mackensen, 2006).

Desertification is illustrated by strong soil erosion, which is converted into bare glacis that are resistant to rainwater infiltration (Bambara, 2016), frequent crop failures and low production of forage and firewood. Natural pastures, both herbaceous and woody, play an important role in livestock feeding. They constitute the basis, and most often the entire feed resources of ruminants in livestock. More than 90% of the energy consumed by cattle comes from pastures (Pagot, 1985). In livestock breeding conditions, such as those of the Sahel region, improving the potential of feed production, both in quantity and quality, is necessary for improving livestock productivity (Saïdou et al., 2010).

To restore Sahelian pastures, the Delfino plow is extremely efficient. Attached to a tractor, it can plow 15 to 20 hectares in a day, compared to 1 ha per day for a hundred farmers who dig by hand (Figure 2). Once the area is plowed, native woody or herbaceous species are sown directly or seedlings from nurseries are planted. These species are very resilient and grow well on degraded land. They provide vegetative cover and improve the productivity of previously barren land.

Figure 2. A worker is preparing a Delphino plow to start plowing in Burkina Faso (source ©FAO/ Giulio Napolitano)

Plan Vivo project aims first to revive degraded soils in the Sahel by plowing with the Delphino plow, which collects rainwater and restore the land, and then to empower local people through payments for ecosystem services, for a sustainable management of resources generated and improve livelihoods.

The benefits of nature that determine human well-being are ecosystem services (Millennium Ecosystem Assessment, 2005) and the flow of ecosystem services is determined to a large extent by biodiversity. The payment for ecosystem services (PES) scheme, including Plan Vivo carbon sequestration, is an opportunity to encourage and maintain their functionality.

The project was developed under the supervision of the BKF/017 program "Livestock Improvement Project of the Zebu Azawak and sustainable management of pastoral resources" implemented by the Ministry in charge of animal resources. The current project "recovery and sustainable management of degraded pastures by REACH Italia in the Sahel region of Burkina Faso" aims to reverse the degradation of pastures and promote the sustainable land management of grazing lands in the Sahel region of Burkina Faso. It uses the Plan Vivo standard as a framework to link the ecosystem services generated by rural communities to payment mechanisms and markets. CO2Logic shares knowledge and supports the development of the Plan Vivo file.

The intervention consists in restoring degraded pastures in the Sahel region of Burkina Faso with the close cooperation of local rural communities by restoring the structure, productivity and diversity of the pastures that have disappeared since the great drought of 1984. It aims to increase the productivity of herbaceous grassland and woody vegetation for the benefit of breeders and farmers. Sustainable pasture management is supported through the development of local land charters that build the capacity of communities to develop appropriate mechanisms for control and use of restored pastures.

This project is located in the Sahel, in the North of Burkina Faso. It first involved 4 old villages in the province of Oudalan: Bossey Etage, Gagara I, Pételdaye and Tadabat located in the urban commune of Gorom-Gorom, which have already benefited from the first transfers of Plan Vivo funds, to which were added 5 new villages around Dori, in the province of Séno, enrolled in 2018 namely: Bouloye,

Léré Ibaye, Péoukoye, Soffokel and Seytenga. These 5 new sites have not been validated but their technical specifications are applicable to the PDD and their PV PES contracts are signed with Plan vivo (Table 1).

The project has a 30-year credit period and a 10-year payment period. Certificates will be issued ex-ante, after an annual report to the Plan Vivo Foundation. After each successful monitoring period, payments will be made to participants. The certified carbon benefits resulting from the activity are 59 tCO2/ha. The first validation report was developed, submitted and accepted in August 2016.

Table 1. Details of REACH Italia Plan vivo projects under review

Site identification	Village	# sites Number	Total surface (ha)
PV-REACH Italia-001	Bossey Etage/Gorom G./Oudalan	4	161
PV-REACH Italia-002	Peteldaye/Gorom G./Oudalan	2	79
PV-REACH Italia-003	Tadabat/Gorom G./Oudalan	3	42
PV-REACH Italia-004	Gagara I/Gorom G./Oudalan	3	94
PV-REACH Italia-009	Soffokel /Seytenga/Séno	2	253
PV-REACH Italia-010	Seytenga/Seytenga/Séno	1	47
PV-REACH Italia-011	Lere Ibaye/Dori/Séno	1	140
PV-REACH Italia-012	Peoukoye/Dori/Séno	2	116
PV-REACH Italia-013	Bouloye/Dori/Séno	2	97
Total	9	20	1029

The project activities defined in the Project Description Document (PDD) are listed in Table 2 below.

Table 2. Summary of PDD Activities

Type of intervention	Project activity	Description	Target group	Eligible for PV Accreditation
Ecosystem restoration	Restoration of degraded pastures	Direct seeding of native tree species	Community Groups	Yes
Improved land management	Land management	Implementing local land charters	Community Groups	Yes
Improved land management	Capacity building	Capacity building sessions e.g. seed collection and treatment	Community Groups	Yes

Presentation of the NGO REACH Italia, coordinator of the project

REACH Italia, a non-governmental organization with headquarters in Milan, Italy and a regional office

in Burkina Faso, is the project coordinator. It is recognized in Burkina Faso following the convention n ° 2003-133 / MATD / SG / DGIFAP / DAOSOC signed with the government of Burkina Faso. REACH Italia's office in Burkina Faso is also its headquarters for the African region. REACH Italia is active in 07 countries: Burkina Faso, Mali, Niger, Democratic Republic of Congo, Guinea Bissau, Cape Verde and Rwanda. The NGO registration number in Burkina Faso is 091-2014 / MEF / REACH. In Burkina Faso, REACH Italia is based in Ouagadougou, BP 9904 Ouagadougou 06, District 5 sector 23, Rue 29.20. Email reachbf@fasonet.bf tel. : +50 36 07 87 /+226 25 36 15 20, email : reachafrique@reachitalia.it

REACH Italia works closely with Community Based Organizations (CBOs) and local NGOs that have a good environmental knowledge. REACH Italia has already a long experience in the rehabilitation of degraded lands in close collaboration with local communities through the project for safeguarding the environment in the Sahel region of Burkina Faso, provinces of Soum, Séno and Oudalan: identification of degraded land areas suitable for rehabilitation; development of silvopastoral land use plans; rehabilitation of large areas of degraded land using the Vallerani half-moon technique; seeding of plowed areas; training and organization of communities (pastoralists and agro-pastoralists) for the management of the recovered sites.

The director of REACH Africa is Mr LONG Allain. The national managers are Mr Ouattara Allamadogo, regional coordinator of REACH Italia and Plan vivo projects, based in Dori (tel +226 65 20 19 30; email:oallamadogo@yahoo.fr

Mr Maïga Amadou Boureima, the animator in Oudalan based in Gorom-Gorom.

Mr Cissé Abdoul Azize and Mr Conseiga Raouda, facilitators in Dori.

REACH Italia has 46 staff members, including one expat, 18 local nationals and 27 non-local nationals.

The accounts of the NGO are opened in the two banks: BOA and ECOBANK.

Introduction

1. *Objective*

The evaluation of the Plan vivo carbon project takes place during the 27th UN Climate Conference "COP27" in Sharm El-Sheikh, Egypt, which is characterized by an acceleration of global warming with abnormal heat and drought this year in Europe. Africa generates only 3% of the world's greenhouse gases (GHGs) but is the most vulnerable to the impacts of climate change. Africa can contribute in reducing global carbon emissions through trees and phytoplankton.

The overall objective of the audit approach is to conduct an assessment of the registered and functioning Vivo Plan project against the Vivo Plan standard to ensure that the project continues to comply with the standard, and continues to deliver carbon emission reductions and other expected benefits to local ecosystems and community livelihoods. This is to provide an audit like opinion, answering the following questions:

- Does the project continue to meet the requirements of Plan Vivo standard (v. 12/2013)?
- Were the project activities implemented as planned in the PDD and as reported in the project annual reports?

- Did the project activities contribute to the project overall climate benefits to the extent expected?
- Did the climate benefits generated by the project meet those estimated in the project technical specifications?
- To what extent did the project generate the expected livelihoods and biodiversity benefits?
- Are there any new types of project activities or significant changes to the project design (activities, procedures, or monitoring protocols) as documented in the project annual reports and PDD updates, that have been effectively implemented in accordance with Plan Vivo standard??

2. Scope of work

The audit took place over the entire project physical area and include the project activities that have been implemented to date. Only data from the period as of the validation in November 2015 to date (October 2020), i.e. five years, were considered.

3. Methodology

The implementation of Plan Vivo project by REACH Italia is hampered by the insecurity situation due to terrorism. Since 2018, Burkina Faso has been experiencing increasingly frequent and deadly attacks in its northern zone, perpetrated by both al-Qaeda and Islamic State affiliated groups.

The region hardest hit by these attacks is the Sahel ("North"), which shares a border with Mali and Niger. In 2019, more than 600 security incidents were reported by ACLED, resulting in approximately 2,200 deaths, more than half of which occurred in the Sahel region, especially in Soum and Oudalan provinces. In 2022, terrorist attacks on people and institutions of Burkina Faso since 2015 resulted in serious human rights violations and the deaths of more than 10,000 people, according to Africanews. In this context of widespread insecurity, the project sites remain inaccessible, preventing the audit of carbon sequestration and other ecosystem services associated with each site.

Therefore, an alternative approach is proposed to ensure that the project activities continue and that monitoring is in place despite the insecurity situation.

This approach consists of three components:

1. Community focus group meetings to assess the governance and socio-economic impact of the Plan Vivo project.
2. An audit of climate benefits/field measures;
3. An update of the PDD with a proposal to add the SOC (Soil Organic Carbon) model.

Our initial document review started on June 3, 2022, and a reflection was conducted with the definition of an audit plan. Discussions continued with the BKF/024 project and Plan Vivo. During these exchanges, information about the project was discussed, including objectives and timelines. Several field trip schedules were postponed on several occasions due to insecurity in the Sahel region

(Table 3).

Table 3. Plan vivo project audit implementation steps

Phase	Activity	Date
	Audit Approval	June 25, 2022
1. Organization of the audit	First programming of Plan vivo project verification	July 25 - August 1, 2022
	Second programming of the project verification	August 8 - 13, 2022
	TdRs scoping discussions with Plan vivo	September 6 - 13, 2022
	Third programming of the project verification	September 26 - October 2022
	Fourth programming of the project verification	November 7-14, 2022
	Fifth Programming of the project verification	November 14 - 21, 2022
2. Field audit	Visit and exchanges with project actors	November 14 - 21, 2022
3. Preparation of reports	Submission of draft Report	December 14, 2022
	Review of draft report by Plan vivo	December 14, 2022 January 28, 2025
	Submission of final report	January 31, 2025

The audit covered the 2015 until 2020 annual reports and the minutes of the project's meetings, interviews with the beneficiary populations and the partner technical services of each municipality, as outings to the sites were not possible due to insecurity.

During our verification period, we received all the necessary cooperation and documents required by REACH Italia project coordination in Dori as well as by BKF/024 project in Ouagadougou.

1. Verification of Governance and impact: Community meetings with focus groups

Since the security situation does not allow for village visits, representatives of beneficiary villages were invited to Dorí by REACH Italia for a community consultation meeting. For each village included in Plan Vivo project, 5 people are invited in Oudalan villages. The number of producers reached 10 people in Séno villages. As it is not common for women to travel without men, this minimum was set at half (Figure 1). Communications were brought to the Village Development Councils (VDCs) which selected representatives from each village. All ethnic and social groups, especially the marginalized groups in each village, are expected to be included in the delegation invited to Dorí for two days.

REACH Italia Plan Vivo projects cover 9 villages including 4 old villages of Oudalan namely: Bossey Etage, Gagara I, Peteldaye and Tadabat validated and certified as Plan Vivo projects in 2016 and 5 new villages, Bouloye, Lere Ibaye, Péoukoye, Seytenga and Soffokel, integrated subsequently in 2018.

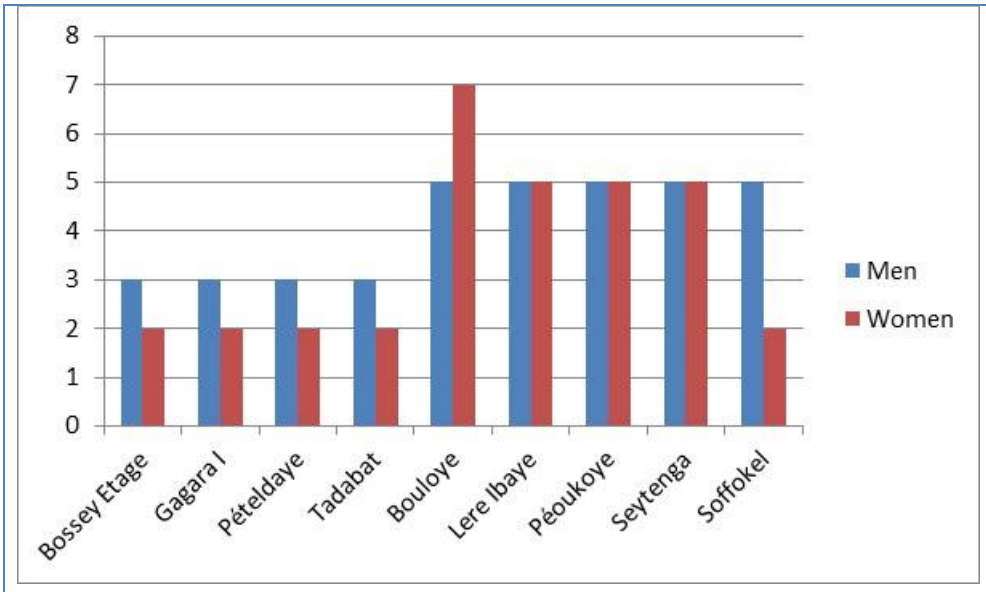


Figure 3: Representation of men and women from REACH Italia PVCs at the interviews in Dori

The methodology consisted of focus group sessions organized per village and per gender, considering the schedule and especially the presence of the village delegates. These focus groups are conducted in Fulfulde, the local language, during the information collection process. For this purpose, a male sociologist from another local NGO was included in the team to facilitate the women's focus group meeting with a view to improving the exchange of information using the questionnaire prepared with and approved by Plan Vivo.

A total of 70 people, including 33 women (45.71%), represented their respective communities at the interviews in Dori (Figure 2). Despite the very difficult security context in Oudalan, the villages were able to travel to the interviews at a rate of 5 people per village under the supervision of the head of the antenna, Mr Amadou Boureima Maïga. For the new Séno villages, the parity of 5 men and 5 women was respected in Lere Ibaye, Péoukaye and Seytenga. Bouloye was represented by 7 women and 5 men and Soffokel by 5 men and 2 women, this village displaced due to insecurity (Figure 3).

During the discussions with beneficiary communities, the following items were checked:

- understanding, awareness, involvement and perceptions of Plan Vivo project beneficiaries,
- cross-checking information received from communities against the annual reports of AGED implementing NGOs;
- beneficiary communities' perceptions of climate benefit, condition changes (plant density) and biodiversity at sites;
- community perceptions of the impact of plant regeneration and biodiversity on their living conditions;
- auditing the validity of PES agreements, the effectiveness of payments of PES funds to communities, and how these funds were used by communities.

2. Verification of climate benefits

In agreement with NGO REACH Italia and the attending producers' representatives, it was admitted that no village is accessible, due to the very dynamic security situation.

A. Checking whether the trees are healthy and have high survival rate.

We were not able to conduct the field trip to verify the number of half-moons, nor were we able to have geo-located images or long video recordings while walking through the half-moon site to show the presence of trees, their quality, and allow the listener to evaluate the very approximate number of trees. Indeed, the developed sites have become havens for HANIs (Unidentified gunmen) and carrying any kind of camera is a big risk for the person. A producer sent with a camera to Touka Bayel site of AGED was caught by the HANI and was lucky to have his life saved.

Some sites were photographed.

B. Checking plant density

Given the context of generalized insecurity in the area, a conceptual study was conducted in Q4 2019 in order to assess the evolution of restored pasture sites. Satellite images (Landsat 8 or Sentinel) of the dry and rainy seasons in different years can allow the project to monitor the evolution of vegetation cover according to the normalized vegetation index (NDVI). In addition, high resolution Google Earth images have been used to count the number of trees or even estimate biomass sequestration. These results were cross-checked with in situ measurements to assess the relevance of the conceptual study. Unfortunately, the study was not able to achieve the desired results.

The very high-resolution images from Google Earth are a source of information for estimating woody density on recovered land in the Sahel. However, it is desirable to acquire raw imagery because those offered by Google Earth are not always available for the entire territory at the desired temporal resolution (Karambiri et al, 2020).

The direct scanning technique using visual interpretation of very high-resolution images is an accessible method for counting trees and shrubs under Sahelian conditions. This method can be applied to all sites in the Sahel.

The technique of counting by segmentation and classification of very high-resolution satellite images allows for faster counting of woody plants from satellite images. However, this technique requires a fairly high level of knowledge in satellite images treatment. This method allows counting over larger areas using raw images. The raw images offer fixed accuracies and resolutions.

Although both methods are applicable to Sahelian sites, raw satellite imagery must be available and samples must be properly selected from the images. This counting method has limits because it only takes into account the number for density but not the diversity and size of the listed plants (Karambiri et al., 2020).

In addition, the support of an external party specialized in analysising remote sensing data is not effective.

3. PDD update: inclusion of the soil organic carbon (SOC) model in the technical specifications.

In the current technical specifications, only the above-ground biomass of trees is taken into account

in the carbon model. To demonstrate the conservative nature of our carbon model, an estimate of the expected evolution of soil organic carbon after recovery of degraded lands in the Sahelian zone will be added to the PDD. It has already been proven that recovery through natural regeneration by creating "half-moon" shaped micro-watersheds with the Delphino plow of Vallerani system and direct seeding increase not only carbon sequestration in the tree biomass, but also carbon sequestration in the soil. A proposal for estimation is offered bellow.

3.1. General information on soil carbon

The carbon cycle is a biological, geological and chemical one that corresponds to all the carbon exchanges on the planet. Carbon is an essential element for all forms of life. We find two types of carbon in the nature. Carbon is at the base of complex molecules (proteins, lipids, carbohydrates) which are used to build the tissues of living organisms such as roots and leaves of plants. This is organic carbon. We also find inorganic carbon when it is not linked to living organisms. This is the case of dioxide and methane, two greenhouse gases that have a major impact on the planet climate.

Soil management methods that preserve the carbon stored in the soil are essential for controlling atmospheric carbon concentration. Indeed, they contribute to climate change mitigation by slowing the increase of CO2 in the atmosphere. Agriculture and forest production systems that reduce atmospheric carbon concentrations, by trapping it in biomass and soil organic matter, are thus carbon "sinks"; this is also known as "carbon sequestration". Soil carbon is generally located between 0 and 30cm.

Figure 4. Goats grazing forage in the Sahel (source BUNASOLS)

Techniques for desertification control (LCD), whether mechanical, cultural or biological, contribute to soil carbon sequestration. On the other hand, land-use changes (such as deforestation) and certain inappropriate agricultural practices (such as slash-and-burn) can lead to a net release of carbon from soils into the atmosphere and exacerbate greenhouse gas problems. Soil management practices that maintain stored carbon also contribute to sustainable agricultural management by improving the fertility of farmland. They most often refer restoration and sustainability of land management. Maintaining a certain level of carbon in soils often results in benefits in many areas such as erosion control, fertility maintenance and protection against extreme events. Maintaining, or even increasing soil organic carbon is therefore essential for the prevention or recovery of degraded farmland and, ultimately, for societies food security. In dry regions, it is particularly important to improve water management while avoiding losses of soil organic matter (and therefore carbon). Good water management often involves good management of organic matter.

3.2. Inclusion of soil organic carbon (SOC) model in Plan vivo project technical specifications

In the current technical specifications, only tree biomass is considered in the carbon model. To demonstrate the conservative nature of our carbon model, an estimate of the expected evolution of soil organic carbon after restoration of degraded lands in the Sahel zone will be added to the project description document (PDD). It has already been shown that rehabilitation via natural regeneration by creating "half-moon" shaped micro-watersheds with the Delphino plow of Vallerani system and direct seeding increases not only carbon sequestration in the tree biomass, but also carbon sequestration in the soil. An estimate based on a credible model and references will be added to the technical specifications but will not be claimed, i.e. not included in the official carbon estimates for now.

The update of the Project Design Document (PDD) will be done by including soil organic carbon (SOC) model in the technical specifications. The Project Document (PDD) will be updated after this audit to include any recommended adjustments.

3.3. How to measure the carbon content of a soil??

According to the National Soil Bureau (BUNASOLS), the study of soil organic carbon theoretically involves three successive phases:

- Placement and openings of pits on site;
- sample collection;
- laboratory analysis.

Placement and openings of pits on site

Two methods were used: systematic gridding and open exploration

Systematic gridding consists of opening tracks at well-defined azimuths and placing observations at regular distances. Scale: 1/10 000 and 1/5000); density of observations: 1 pit/ha and 4 pits/ha.

The open survey method is carried out at the 1:100,000 and 1:50,000 scales. It consists of making observations in units identified by photo-interpretation and on site during the survey using photo-identification. The density of observations is 1 pit/2 km2. The basic documents used are interpreted aerial photographs.

Sampling

Representative profiles of map units are sampled for laboratory analysis.

Laboratory analysis

Typical techniques: accurate but costly. There are two main types of techniques for measuring soil carbon content, both being destructive:

- wet oxidation methods (such as Walkley-Black method, the Anne method in French variant) ;
- combustion methods with determination of the CO2 produced (by infrared, titrimetry, conductimetry).

The principle of oxidation methods is the direct determination of organic carbon after oxidation of organic matter by potassium dichromate in excess, in a sulfuric medium and at 135° C. The quantity of formed chromium III+, proportional to the organic carbon content of the soil, is determined by means of colorimetry. The limits are that the oxidation can be incomplete and therefore extract only part of the organic carbon; this seems to be the case especially for tropical or carbonate-rich soils. Moreover, the handling of polluting and highly allergenic dichromates generates problems of hygiene and safety.

For several years, combustion methods have therefore been preferred. These methods determine the total soil carbon (organic and inorganic). These are element analysis methods. The most classical method, described in the NF ISO 10694 standard, consists of a micro-weighing (around 25 mg), a "flash" combustion, a chromatographic separation of molecular nitrogen and carbon dioxide, and a detection by thermal conductivity. The determination of organic carbon content requires knowing the inorganic carbon content from the beginning, otherwise the sample must be decarbonated before analysis. This very precise method is expensive (about 5 to 10 euros for a 25 mg sample) because of the analysis itself and the time needed to prepare the soil samples. Moreover, the representativeness of the measured sample is problematic due to the small masses of the analyzed soil. The samples must therefore be prepared finely by grinding (less than 250 μ m) to partially avoid these representativeness problems, but this adds to the cost of the measurement.

Newer, faster and cheaper techniques O'Rourke and Holden (2011) estimated the cost of Walkley-Black wet oxidation methods at 2.6 euros per sample and dry combustion methods at 15 euros per sample. Over the past decade, new and less expensive methods for measuring soil carbon content have been developed.

They are based on:

- Near infrared spectroscopy (NIRS) which costs about 0.5 to 1.2 euros per sample;
- Laser-Induced Breakdown Spectroscopy (LIBS);
- use of neutron probes.

Regardless of the method, skilled labor is required. These three methods allow to work directly on soil samples without prior preparation (crushing, sieving) but they require a calibration mostly made from reference databases ("soil sample library"). Currently, research seems to be focusing more intensely on the use of SPIR techniques that have been used for many years for studying plant materials and litter. Since the 1970s, SPIR study of soils has been applied to the characterization of soil organic matter. This method has been more widely used since the 1990s. These works as well as more recent ones show that it is possible to calibrate NIR spectra very satisfactorily to determine soil carbon and nitrogen contents.

3.4. Limitations and perspectives of carbon measurement

Soils in dry areas are often rich in coarse elements (stones, laterites, etc.) and carbonates. Indeed, deep sandy-clay soils are associated with gravel soils at shallow depths (40 cm) in Séno (MED, 2005) and deep sandy soils at the surface and clay soils at depth are associated with bare gravel soils in Oudalan (Dabiré, 2005). As a result, the measurement of soil density, which is essential for calculating the stocks of the various elements, is difficult.

Indeed, the first difficulty is sampling due to the presence of stones in the soils, as well as the poverty of organic carbon and its heterogeneous distribution at the sampling scale (a few milligrams). It is

therefore difficult to collect representative samples.

The second difficulty is the analysis. Indeed, most of the techniques for measuring soil carbon estimate the total carbon content of organic soil; the soil must first be decarbonated. This decarbonation step is delicate and costly.

Markets have so far focused on verifying the amount of carbon sequestered, when it would be much simpler and more auditable to directly promote practices that are recognized as "sequestering". In drylands, it would be easier (and essential) to set up a "carbon" market based on the adoption of these sequestering practices. These are more easily verifiable, and at lower cost, than the results of the practices in terms of quantity of carbon actually sequestered. This is in line with the current promotion of alternative production systems focused on optimal management of organic matter and thus soil carbon. These agricultural practices, and the necessary transformations of agriculture, constitute "an agriculture that sustainably increases productivity and resilience (adaptation), reduces/eliminates greenhouse gases (mitigation) while promoting the achievement of national food security and development goals" (FAO, 2008). Many international organizations have taken up this concept (named Climate-Smart Agriculture) such as the World Bank and the Global Environment Facility (FAO, 2013). These systems are also advocated in Africa in strategic agricultural development plans, such as the Comprehensive Africa Agriculture Development Program* adopted by the African Union’s New Partnership for Africa Development (NEPAD). Such a market could be a much more effective operational lever for changing agricultural practices and implementing soil protection in dry regions. The establishment of a market focused on practices would also recognize the central role of controlling soil degradation.

Assurance level

All plots were inventoried prior to 2018. After 2018; insecurity has slowed or even prevented some activities (such as local inventories and community meetings) at the project old sites because they are not accessible: Gorom Gorom and Markoye (Oudalan Province). The insecurity situation has greatly reduced the project field activities. Inventories could not be conducted at Bossey-Etage, Pételdaye, Tadabat and Gagara 1 sites,
Nevertheless, initiatives are being explored and developed for the ongoing collection of information on the sites. For this monitoring period, a meeting was held with the leaders of the inaccessible villages in Gorom Gorom and information has been collected through telephone calls with people who remained in the village
From the information collected through the telephone calls, it appears, especially for the sites that have received funding, that monitoring is in place at the level of ensuring land charters are adhered to. For example in Gagara I, the Village Development Council (CVD) has set up borehole management committees to ensure a better organization of the management.
Despite the insecurity, the sites are still accessible for livestock from the various villages. With the agreement of the CVD, certain populations were authorized mowing fodder to provide feed for their livestock in more secure circumstances.
The Seno province was less impacted by insecurity and REACH Italia was able to conduct the necessary process that led to the integration of 5 additional villages into the Plan Vivo project (Léré Ibaye, Bouloye, Peokoye, Soffokel and Seytenga). Forest inventories were carried out, household surveys were conducted with AKVO FLOW, Plan Vivo accounts were opened and PES contracts were signed. An overview of the different activities timewise:
An overview of the different activities timewise:

a) December 2019: REACH Italia was able to meet up with the leaders of inaccessible villages in

Gorom Gorom to discuss the new strategy regarding the continuation and monitoring of the project.

b) January 2020: information sessions where the framework of the Plan Vivo process has been explained, planning of activities, elaboration of Plan Vivos in accordance with the local land charters for the five new villages
c) March 2020: Setting up and signing of the PES agreements with the five new villages and opening of the account.
d) Feb-March-Nov 2020: Baseline household surveys was conducted for the five newly integrated villages into the Plan Vivo.
e) October-November 2020: Carrying out of the forest inventories for the new villages, located in the province of Seno.

Limits of audit work

- All the sites are practically inaccessible and the persistence of terrorist threat with kidnappings and assassinations of village leaders (Bossey Etage, Peteldaye) and the various testimonies of risks from previous attempts to visit the developed sites have not allowed the communities to take geolocalized photos and/or videos of the sites.

- No specialized external support was provided to analyze the remote sensing data with a high-resolution image to perform a tree count in randomly selected samples on the various sites. Thus, the audit on the required tree density is not conducted after 2018.

In addition, the risks associated with moving people from villages to Dori to save one of the last projects still operating meant that at the end of the interviews, groups from each village had to return to their villages together before the sun set. The individual interviews were then paired with group interviews.

The administration of the questionnaire took place in a context of traumatized state of population mind and may explain omissions and/or confusions in the statements and answers provided.

After 2028, the auditor was not able to verify the density and floristic diversity data because it was not possible to go on the fields during the verification visit. However, through the interviews with the people it would be confirmed that the trees are present, and the monitoring has being carried out.

Reasonable assurance level

A reasonable assurance has been achieved during this verification, which ensures that the auditor is able to verify the accuracy of the number of Plan Vivo credits being issued in this project verification. The level of assurance for the verification activities have been designed to provide a high but not absolute level of assurance on historical data and information.

List and description of reviewed documents

Africanews Info, 2022. Burkina: more than 10,000 dead in terrorist attacks since 2015. News of September 1, 2022. https://fr.africanews.com/2022/09/02/burkina-plus-de-10-000-morts-dans-des-attaques-terroristes-depuis-2015/

INERA, 2014. Rapports techniques d'état d'avancement du Protocole d'accord entre l'INERA et le Projet Azawak: Suivi scientifique des sites de récupération de terres dégradées réalisées par le Projet BKF/017« Azawak Ressources Pastorales » notamment dans les communes de Gorom Gorom, Markoye, Dori et Bani

Karambiri S.M., Kiéma A., Serdebéogo O., 2020. Réalisation du comptage et de l'inventaire des ligneux à partir d'images satellite très haute résolution. Projet « Récupération et valorisation des espaces pastoraux -- ReVap», BKF/024. RAPPORT PROVISOIRE Lux Dev Burkina Faso, mai 2020, 23p + annexes.

BM, 2012. Programme Sahel et Afrique de l'Ouest en appui à l'initiative de la Grande muraille verte. Pour développer la gestion durable des terres et de l'eau dans les paysages ciblés et les zones vulnérables au climat. Banque internationale pour la reconstruction et le développement/Banque mondiale, 1818 H Street NW, Washington DC 20433, 112p. https://www.thegef.org/sites/default/files/publications/SAWAP_french_Final_1.pdf

Conedera M., Bomio-Pacciorini N., Bomio-Pacciorini P., Sciacca S., Grandi L., Boureima A., Vettraino A.M., 2010. Reconstitution des écosystèmes dégradés sahéliens. Bois et Forêts des Tropiques, 304 (2) : 61-71. https://www.academia.edu/45198290/Reconstitution_des_%C3%A9cosyst%C3%A8mes_d%C3%A9grad%C3%A9s_sah%C3%A9liens

FAO, 2008. State of Food Insecurity in the World 2008: High Food Prices and Food Security–Threats and Opportunities, 2008, p 12. http://www.fao.org/docrep/fao/011/i0291e/i0291e00a.htm.

FAO, 2013. CLIMATE¬-SMART AGRICULTURE Sourcebook https://www.fao.org/4/i3325e/i3325e.pdf ISBN 978-92-5-107720-7 (print). E-ISBN 978-92-5-107721-4 (PDF)

INERA, 2014. Rapports techniques d'état d'avancement du Protocole d'accord entre l'INERA et le Projet Azawak: Suivi scientifique des sites de récupération de terres dégradées réalisées par le Projet BKF/017« Azawak Ressources Pastorales » notamment dans les communes de Gorom-Gorom, Markoye, Dori et Bani, .

Interpeace Canada, 2022. Huit mois après l'arrivée de l'arrivée au pouvoir : un bilan mitigé. Note sécuritaire trimestrielle juillet-septembre 2022, 11p. file:///C:/Users/USER/Downloads/Note%20s%C3%A9curitaire%20du%203e%20trimestre%20juillet%20septembre_2022%20FINALE.pdf

"PV-REACH Italia-001_BOSSEY ETAGE Fiche_rapportage annuel_CVD_AR2-3_VF_v1",

"PV-REACH Italia- 002_PETELDAYE Fiche_rapportage annuel_CVD_AR2-3_VF_v1",

"PV-REACH Italia-003_TADABAT Fiche_rapportage annuel_CVD_AR2- 3_VF_v1" and

"PV-REACH Italia-004_GAGARA I Fiche_rapportage annuel_CVD_AR2-3_VF_v1"

'PV_expenditure_Tadabat_AR 2-3' : meeting minutes of meeting concerning the expenditure of Plan Vivo fund for the rehabilitation of one borehole

PV_expenditure_Gagara I_AR 2-3: meeting minutes of meeting concerning the expenditure of Plan Vivo fund for the rehabilitation

REACH Italia, 2017. Rehabilitation and sustainable management by REACH Italia of degraded pastures in the Sahel region of Burkina Faso. 2015 – 2016 Plan Vivo Annual Report. Prepared by Herman Noppen, CO2logic, 24 February 2017, 9p + annexes.

REACH Italia, 2019. Rehabilitation and sustainable management by REACH Italia of degraded pastures in the Sahel region of Burkina Faso. 2016 – 2018 Plan Vivo Annual Report. Prepared by Herman Noppen, CO2logic 30 October 2019, 19p + annexes.

REACH Italia, 2021. Rehabilitation and sustainable management by REACH Italia of degraded pastures in the Sahel region of Burkina Faso. 2018 - 2020 Plan Vivo Annual Report. Herman Noppen, CO2logic, 6 July 2021, 20p. + annexes.

REACH Italia, 2010. Fiche collecte d' information pour le rapportage annuel par Plan Vivo / CVD Projet Plan Vivo – Restauration des pâturages dégradés au Sahel Burkinabè

Stillman C., 2021. Plan Vivo Annual Report Review. Rehabilitation of the Sahel: REACH Italia | Vintage, 2018–2020, 7p.

PV Annual report 2015-2016

PV annual report 2016-2018

PV Annual report 2018-2020

Field trip itinerary (including list of sites visited and people/groups interviewed)

Given the security context and the inaccessibility of Oudalan and Séno sites, the field visit was not conducted and the interviews with beneficiaries were conducted in Dori. The list of people interviewed is recorded in the following tables 4a and 4b.

Table 4a : List of organizations met for the audit of Plan vivo projects

N°	Organization	Address	Full name	Contact	Meeting date
1	AGED	Branch Manager	Bokoum Assane	70157846	15/11/2022
2	AGED	Animator	Gadiaga Hama	70831757	15/11/2022
3	DPEEVCC/	Acting Director	Ouoba Diataga	71762575	15/11/2022

	Séno				
4	DPRAH/Séno	Acting Director, Statistics and Planning Officer	Maïga Souleymane	70685209	15/11/2022
5	REACH Italia	Animator	Cissé Abdoul Aziz	70343456	15/11/2022
6	Special delegation of Dori municipality	First Deputy	Dicko Boureima Moussa	71074953	15/11/2022
	REACH Italia	Facilitator	Diandé Amidou		15//11/2022
8	REACH Italia	Ki Barthelemy	Tractoriste		20/11//2022
9	REACH Italia	Dicko Amadou	Tractoriste		20/11/2022
10	REACH Italia	Maïga Amadou Boureima	Chef Antenne de Gorom-Gorom	65201939	18/11/2022

Table 4b. Attendance list of the village producers at NGO REACH Italia PVC audit meeting.

Date	Village	Full name	Responsibility	Sex	
				M	W
18/11/2022	Bossey Etage	Abdourame Ellassane	Youth Officer	X	
18/11/2022	Bossey Etage	Hamadalamine Ousmane	Vice-President	X	
18/11/2022	Bossey Etage	Aboubacar Alou	Treasurer	x	
18/11/2022	Bossey Etage	Aïchata Abdoulkadri			X
18/11/2022	Bossey Etage	Fatoumata Sidi			X
18/11/2022	Bossey Etage	**Sous-total**		**3**	**2**
18/11/2022	Bossey Etage	**Total**		**5**	
18/11/2022	Gagara I	Abdou Ag Inkonakane	Secretary	X	
18/11/2022	Gagara I	Sambo Ag Ibegar	VDC President	X	
18/11/2022	Gagara I	Ibrahim Ag Mohamed	COGES member	x	
18/11/2022	Gagara I	Agaichata Wellet Issa	DARFIT group Member		X
18/11/2022	Gagara I	Fatimata Wellet Ibrahim			X
18/11/2022	Gagara I	**Sous-total**		**3**	**2**
18/11/2022	Gagara I	**Total**		**5**	
18/11/2022	Tadabat	Mahmoud Ag Harouna	VDC President	X	
18/11/2022	Tadabat	Dicko Moussa Ag Akmoudou	Youth Representative	X	
18/11/2022	Tadabat	Dicko Souley Ag Alwazdek	Imam	X	
18/11/2022	Tadabat	Dicko Fadima Wellet Guissa			X
18/11/2022	Tadabat	Agaichata Wellet Azartt			X
18/11/2022	Tadabat	**Sous-total**		**3**	**2**
18/11/2022	Tadabat	**Total**		**5**	
18/11/2022	Peteldaye	Aboubacar Aliou		X	
18/11/2022	Peteldaye	Oumarou Soufiane	COGES Member	X	
18/11/2022	Peteldaye	Mahamadou Djede	Reconciler	X	

18/11/2022	Peteldaye	Aminata Mohamadou			X
18/11/2022	Peteldaye	Balkissa Aliou			X
18/11/2022	Peteldaye	**Sous-total**		**3**	**2**
18/11/2022	Peteldaye	**Total**		**5**	
18/11/2022	Soffokel	Diallo Amadou Hama	President	X	
18/11/2022	Soffokel	Oumarou Boubacar	COGES Member	X	
18/11/2022	Soffokel	Dicko Hama Oumarou	COGES member	X	
18/11/2022	Soffokel	Diallo amadou Hama	COGES member	X	
18/11/2022	Soffokel	Diallo Hama Mamoudou	COGES Member	X	
18/11/2022	Soffokel	Diallo Fadima			X
18/11/2022	Soffokel	Dcko Aminata Hamidou			X
18/11/2022	Soffokel	**Sous-total**		**5**	**2**
18/11/2022	Soffokel	**Total**		**7**	
18/11/2022	Seytenga	Diallo Hamidou	Supervisory Committee	X	
18/11/2022	Seytenga	Diallo Amadou Hamidou	Committee member	X	
18/11/2022	Seytenga	Diallo Boureima	Treasurer	X	
18/11/2022	Seytenga	Dicko Amadou	Mobilizer	X	
18/11/2022	Seytenga	Cissé Abdoulaye	Secretray	X	
18/11/2022	Seytenga	Saadogo Halimatou			X
18/11/2022	Seytenga	Bocoum Kadidia			X
18/11/2022	Seytenga	Bâ Fadima Hamidou			X
18/11/2022	Seytenga	Maïga Fati			X
18/11/2022	Seytenga	Cissé Fatimata			X
18/11/2022	Seytenga	**Sous-total**		**5**	**5**
18/11/2022	Seytenga	**Total**		**10**	
18/11/2022	Péoukoye	Dicko Boureima Hamidou	COGES President	X	
18/11/2022	Péoukoye	Dicko Oumarou Boureima	Secretray	X	
18/11/2022	Péoukoye	Thiam Oumarou Hama	Youth Representative	X	
18/11/2022	Péoukoye	Dicko Hamadou Boureima	VDC President	X	
18/11/2022	Péoukoye	Diallo Haoua Assane			X
18/11/2022	Péoukoye	Diabaté Aïssatou Hassane			X
18/11/2022	Péoukoye	Diabaté Aminata			X
18/11/2022	Péoukoye	Dicko Mariam			X
18/11/2022	Péoukoye	Dicko Aminata			X
18/11/2022	Péoukoye	**Sous-total**		**5**	**5**
18/11/2022	Péoukoye	**Total**		**10**	
18/11/2022	Bouloye	Barry Amadou Hamidou	Supervisory Committee	X	
18/11/2022	Bouloye	Dicko Hamidou	President VDC	X	
18/11/2022	Bouloye	Dicko Housseini Hama	President COGES	X	
18/11/2022	Bouloye	Dicko Amadou Mamoudou	Supervisory Committee	X	
18/11/2022	Bouloye	Dicko Hama Amadou	Seeds manager	X	

18/11/2022	Bouloye	Diallo Maïrama Amadou			X
18/11/2022	Bouloye	Dicko Aïssato Hama			X
18/11/2022	Bouloye	Dicko Fadima Boureima			X
18/11/2022	Bouloye	Dicko Hadiatou Hama			X
18/11/2022	Bouloye	Dicko Aïssatou Mamoudou			X
18/11/2022	Bouloye	Diallo Fadima Boubacar			X
18/11/2022	Bouloye	Dicko Hadjatou Hama			X
18/11/2022	Bouloye	**Sous-total**		**5**	**7**
18/11/2022	Bouloye	**Total**		**12**	
18/11/2022	Lere Ibaye	Diallo Abdoulaye Hama	Secretary	X	
18/11/2022	Lere Ibaye	Yattara Boureima Agali	Site Supervisor	X	
18/11/2022	Lere Ibaye	Alhassane Ag Roumar	VDC President	X	
18/11/2022	Lere Ibaye	Yattara Adora Nandabala	Site Supervisor	X	
18/11/2022	Lere Ibaye	Diallo Amadou Adama	Guide	X	
18/11/2022	Lere Ibaye	Yatta Fadimata Akhassane	Member of ALMOUNA group		X
18/11/2022	Lere Ibaye	Diallo Haoua Adama	Member of ALMOUNA group		X
18/11/2022	Lere Ibaye	Diallo Aissatou Ekiya	Member of DEWRAL group		X
18/11/2022	Lere Ibaye	Yattara Takya	Member of ALMOUNA group		X
18/11/2022	Lere Ibaye	Dicko Tazza	Member of ALMOUNA group		X
18/11/2022	Lere Ibaye	**Sub-total**		**5**	**5**
18/11/2022	Lere Ibaye	**Total**		**10**	
	9	**Overall total**		**37**	**32**

NB : COGES = Site Management Committee

1. The project for Rehabilitation and sustainable management by REACH Italia of degraded pastures in the Sahel region of Burkina Faso is implemented in accordance with the requirements of Plan vivo standard (V; 12/2013). The activities were conducted as planned in the project description document (PDD) and as indicated in the annual reports.

2. The approach and methodology used to quantify carbon sequestration and assess impacts are appropriate, as is the baseline scenario.

3. The restoration of degraded pastures is effective through direct seeding, reseeding and planting of native tree species adapted to the environment with 3 naturalized and non-invasive exotic species.

4. Land management is also effective with the implementation of local land charters containing rules related to the conservation of village pastures, e.g. it is forbidden to cut fresh wood, set up crop fields in the village pasture area, collect dry grasses and cut green wood on restored land for grazing, and management committees of restored sites in all Plan vivo project accredited villages.

5. PES fund management system and site monitoring are appropriate

At the end of our audit, despite the lack of data, we are able to state with a reasonable level of assurance that the Plan Vivo Certificates (PVCs) issued to the villages of the Sahel are real and can be sold, and that the PVCs have contributed to reducing carbon emissions between November 2015-October 2020

Overview of the audit:CAR		
CAR 01: ECOSYSTEM BENEFITS	**Requirement:** **The project generates some benefits for ecosystem services and maintains or enhances biodiversity**	**Category:** *Major*
Date found:	**Deadline for correction:**	
Description of the indicator (Requirement of the Plan Vivo standard***)*:** a density of 260 woody plants per hectare and a diversity of 3 specific species per hectare		
Description of the non-compliance: The density and number of specific species are not defined since 2018 due to lack of inventory because of security threats. So there are no annual inventories and density of woody plants nor defined annually.		
Evidence: Evidence received and analysis of corrections and corrective actions planned for CN closure - January 2020: information sessions where the framework of the Plan Vivo process has been explained, planning of activities, elaboration of Plan Vivos in accordance with the local land charters for the five new villages - March 2020: Setting up and signing of the PES agreements with the five new villages and opening of the account. - Feb-March-Nov 2020: Baseline household surveys was conducted for the five newly		

integrated villages into the Plan Vivo.
- October-November 2020: Carrying out of the forest inventories for the new villages, located in the province of Seno.

The counting technique by direct digitization by visual interpretation of very high resolution images and the counting technique by segmenting and classifying the very high resolution satellite image allows a faster count of woody trees from satellite images could be used for monitoring. However, this technique requires a fairly high level of knowledge in the processing of satellite images. This method allows for counting over larger areas using the raw images. Raw images offer fixed sharpness and resolutions

Documents reviewed (Reports)

2018 - 2020 Plan Vivo Annual Report. Rehabilitation and sustainable management by REACH Italia of degraded pastures in the Sahel region of Burkina Faso

Findings for Evaluation of Evidence:

Results show that on average, 72% of the half-moon cavities in the old sites have woody plants, compared to 75% in the new sites. Regeneration has a positive impact on the environment. Gagara I, Seytenga and Bouloye sites have woody vegetation rates below the respective group average of 75%. The highest and lowest rates of woody vegetation in the half-moon cavities are reported in Soffokel and Seytenga sites, respectively figure 6). An increase in woody diversity and appearance of new species are seen within the plots from 2016 to 2018 (Figures 6, 7 and tables 5, 6). A good natural vegetation cover with tree and grass species has emerged as a refuge for wild animals (hyena, rabbits, snakes, insects, wild cats, partridges, wild guinea fowl). Appearance of new woody species (*Prosopis juliflora*, *Adansonia digitata*, *Anogeissus leiocarpa*) in Touka Korno. In addition, it is reported that the "bushmen" forbade and punished those who degraded the vegetation, especially woody vegetation, of the restored areas because it served as a hiding place for them.

The security situation has considerably reduced the project's field activities. The inventories could not be carried out on the sites of Bossey-Etage, Pételdaye, Tadabat, Gagara 1 which have already benefited from the first transfers of funds and Touro, Gagara 2, Beiga, Ounaré and Gagara 1 which have not yet received Plan Vivo funds. It should be noted that the entire village of Landomaol has been displaced due to pressure from armed terrorist groups (GAT). Similarly, the village of Soffokel has been abandoned since the terrorist threats and the population has left at night to look for secured place in Dori. Their sites are no longer monitored by the surveillance committee.

In the period of 2018-2020, monitoring activities took place on 5 sites (out of 13 sites). Through the interviews with the people it would be confirmed that the trees are present, and the monitoring has being carried out on the 5 sites, so this CAR is considered closed.

Status:
CLOSED

CAR 02: QUANTIFICATION AND MONITORING OF ECOSYSTEM SERVICES	**Requirement:**	**Category:** *Minor*
Date found:	**Deadline for correction:**	
Description of the indicator (Requirement of the Plan Vivo standard*):* The respect of the charter has probably avoided any conflict related to the exploitation of natural resources in most villages.		
Description of the non-compliance: The concept of conflict should be better defined and monitored. Given the lack of pastoral resources, tensions over access to pastures should not be considered conflicts. Rather, conflicts should be considered violations of the rules set out in the local land charters that are part of Plan Vivo. It is better to speak of tensions or violations.		
Evidence: Evidence received and analysis of corrections and corrective actions planned for CN closure Instead, conflicts should be considered as violations of the rules described in the local land charters that are part of Plan Vivo. It is better to talk about tensions or infringements. **Documents reviewed**		
Status: CLOSED		

OBSERVATIONS : PES AGREEMENT AND BENEFIT SHARING	**Requirement: The project is managed with transparency and accountability, with the involvement of relevant stakeholders and in compliance with host country regulations**	**Category:** *Minor*
Date found:	**Deadline for correction:**	
Description of the indicator (Requirement of the Plan Vivo standard*):* The project is managed with transparency and accountability, with the involvement of relevant stakeholders and in compliance with host country regulations		
Description of the non-compliance: **OBS 1**: The rate of regeneration of woody plants induced by the restoration of degraded soils can be improved by innovative technologies resulting from scientific research. This can increase the survival and growth rate of regenerated trees **Evidence: Evidence received and analysis of corrections and corrective actions planned for CN closure** Work by Fofana et al, (2020) showed that after 14 months of cultivation, plant growth parameters such as collar height and diameter and survival rate in the field showed that		

inoculation has improved the growth and survival rate of *Vachellia seyal* (syn. Acacia senegal) plants in the fields at Djibo. Double inoculation with native rhizobial complex cells and arbuscular mycorrhizal fungus *Rizophagus irregularis* (Ri) was more effective than single inoculation with rhizobium and mychorizal fungus. The soil used for the development of the Rizophagus irregularis cell came from Dori (Fofana et al, 2020). This work is being conducted as part of the Great Green Wall restoration program in Burkina Faso. With these promising results, we recommend a wider use of inoculation of indigenous microorganisms to boost and improve plant resilience for a better success of restoration plantations in semi-arid lands of the Sahel area (Fofana et al, 2020).

Draw inspiration from these actions to improve the process of restoration and management of developed sites and the drafting of activity reports. Collaboration with Resarch center to improve sites restoration in case of nursery cultivation and plantation.

Documents reviewed (Reports)

Fofana B., Moctar Sacande M., Blagna F., Dibloni T.O., Compaoré E., Sanon K.B., Maïga I. et Ouattara A.S., 2020. Boosting land restoration success in the Great Green Wall through the use of symbiotic microorganisms for propagated tree seedlings. Int. J. Biol. Chem. Sci. 14(1): 110-125, January 2020 ISSN 1997-342X (Online), ISSN 1991-8631 (Print)
Original Paper http://ajol.info/index.php/ijbcs http://indexmedicus.afro.who.int

OBS 2. In view of the context of insecurity, it was not possible to measure socio- economic impacts using focus group technique on community changes and solutions to mitigate the negative impacts of the project. It was not yet possible to measure impacts on biodiversity in terms of the number of tree species and the number of herbaceous species on recovered sites and the number of mammal species during the past year on the recovered pastures sites. However, there is no doubt that biodiversity indicators are being met.

OBS 3. Corrections are needed in the annual reports of Plan vivo projects.
In the 2016 report, the species *Leptadenia hastata* was considered a woody plant and a plant named Leptadenia a single word probably Leptadenia pyrotechnica (confirmed by photo) was classified as a herbaceous plant in Appendix 5 of the annual report.
The spelling and syntax of the scientific names of plants do not conform to international standards. Thus, Tribulus terrestris and not Tribulis, Ziziphus mauritiana and not Zizyphus Mauritiana, Acacia seyal and not Acaca seyel, ect.
A plant designated Perriatum in the table of the 2016-2018 activities report and not using a photo does not allow to identify the plant, nor to certify on its existence in the Sahel. Furthermore, no Perriatum genus has been identified in the country's flora. The Plan Vivo 2016-2018 annual report of Rehabilitation and sustainable management of degraded pastures by AGED in the Sahel region of Burkina Faso is incomplete.

Status: ClOSED

Table 1. Summary of major and minor Corrective Actions

Theme	Major CARs	Minor CARs	FAR/Observations	Status
Project's Eligibility	0	0	0	Compliant
Ecosystem Benefits	1	0	0	Compliant -
Project Coordination and Management	0	0	0	Compliant -
Participatory design and develoment of Plan Vivo	0	0	0	Compliant -
Quantifying and Monitoring Ecosystem Services	1	0	0	Compliant -
Risk Management	0	0	0	Compliant -
Livelihoods Impacts	0	0	-	Compliant.
PES Agreement	0	0	3	Compliant

Table 2 - Report Conformance (Delete Yes/No as appropriate)

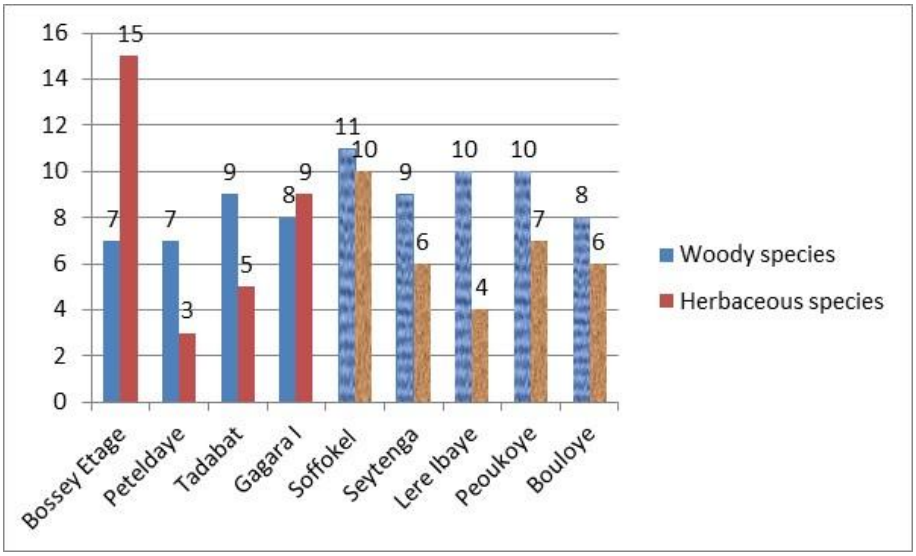
Theme	Conformance of Draft Report	Conformance of Final Report
Project's Eligibility	Yes	Yes
Ecosystem Benefits	No	Yes
Project Coordination and Management	Yes	Yes
Participatory design	Yes	Yes
Quantifying and Monitoring Ecosystem Services	No	Yes
Risk Management	Yes	Yes
Livelihoods impacts	Yes	Yes
PES Agreement	No	Yes

Detailed Verification Report

PROJECT' S ELIGIBILITY	
Requirement: Project directly engage and benefit community groups	
Verification Question: 1 and 2	
1.1. Project interventions continue to use lands where smallholders and/or community groups have clear land tenure 1.2. Lands not owned or not subject to use rights have been included in the project area because:: • This represents less than one-third of the project areas at any given time • No portion of the area has been acquired by a third party from smallholders or community groups for inclusion in the project • These inclusions will have clear benefits for the project by creating ecosystem benefits at landscape level, such as biodiversity corridors. There is a signed agreement between the owners/managers of these lands and participants for the management of the area in accordance with these requirements.	
A. Findings (describe)	1.1. Project interventions continue to use lands where smallholders and/or community groups have established land tenure All villages included in the degraded pasture restoration project are involved in the implementation of local land charters. These local land charters, based on the new rural land law (Law No. 034/2009), allow communities to sustainably manage the restored pastures. These local land charters are created at village level in a participatory manner that includes a representative group of stakeholders (including women, forest users, breeders and youth). These land charters, which are local conventions based on customs and land use, contain rules for the conservation of shared natural resources. In addition, all rehabilitation and development sites certified by Plan vivo were defined by local populations, attended by rural development technical services (agriculture, livestock, environment) and representatives of the host municipality. At the beginning, the populations were skeptical and reluctant to take part in the restoration of their land. 1.2. Lands not owned or subject to use rights were included in the project area because: • This represents less than one third of the project areas at any given time • No portion of the area has been acquired by a third party from smallholders or community groups for inclusion in the project • These inclusions will have clear benefits for the project by

	creating ecosystem benefits at landscape level, such as biodiversity corridors. There is a signed agreement between the owners/managers of these lands and participants for the management of the area in accordance with these requirements. The majority of the proposed areas are located in the Sahel Nature Reserve in northern Burkina Faso, known as the "Sahel Silvopastoral and Partial Wildlife Reserve". The reserve covers an area of 1,600,000 hectares and was created by Order No. 70/302/PRES/AGRI-EL of December 9, 1970. In the reserve, pastoral activities are conducted on natural pastures and hunting activities are allowed. The sites were selected by the project coordinator based on a number of criteria, such as: (i) identification of the potential of the area with local technical services (deconcentrated services in charge of environment, animal resources and agriculture and the municipality); (ii) soil quality (e.g., the presence of rock in the soil); (iii) land tenure analysis (e.g., land disputes); and (iv) pastoral land use. During the community consultation with the VDC, the final sites were selected according to the priorities of beneficiary community. The restored grazing sites are managed by the Village Development Committee (VDC) through the local land charter. The local land charter process has been finalized in the municipalities of Djibo and Arbinda in Soum province, Gorom-Gorom and Markoye in Oudalan province, and Bani in Séno province. Through these local land charters, the land use rights of the restored sites as well as the carbon rights are owed by local communities. Cattle and wildlife paths are defined. There is a signed agreement between the owners/managers of these lands and participants regarding the management of the area as required.		
B. Conformance	Yes [x]	No [ ]	N/A [ ]
C. Corrective Actions (describe)	*None*		
D. Ouattara Allamadogo **Response**	*(To be filled out by the Project Coordinator)*		
E. Status	*CLOSED*		

ECOYSTEMIC BENEFITS

requirements : The project generates benefits for ecosystem services and maintains or enhances biodiversity	
Verification Questions: 1, 3 and 5	
2.1 Project interventions maintain or enhance biodiversity (2.2) 2.2 Project interventions did not have a negative impact on the environment (2.3) 2.3 All trees planted to generate ecosystem services are native or naturalized species and are not invasive (2.4)	
Constations (décrire)	2.1 Project interventions maintain or enhance biodiversity (2.2) Figure 5 below shows an average of 8 woody species on the old sites compared to 10 woody species on the new sites and 8 and 7 herbaceous species respectively on the old and new sites, 2 years after development. In general, there is a greater herbaceous diversity on the old sites and a higher woody diversity on the new sites.  **Figure 5. Woody and herbaceous floristic diversity of developed sites** New species have appeared in the developed sites. Producers report, for example, the appearance of *Grewia bicolor*, which had long disappeared from Peoukoye area, and *Boscia salicifolia* (tiregue), whose leaves are used for forage and whose ripe fruits are edible, in Soffokel. 2.2 Project interventions did not have a negative impact on the environment (2.3) On average, 72% of the half-moon cavities in the old sites have woody plants, compared to 75% in the new sites. Regeneration has a positive impact on the environment. Gagara I, Seytenga and Bouloye sites have woody vegetation rates below the respective group average of 75%. The highest and lowest rates of woody vegetation in the half-moon cavities are reported in Soffokel and

Seytenga sites, respectively figure 6).

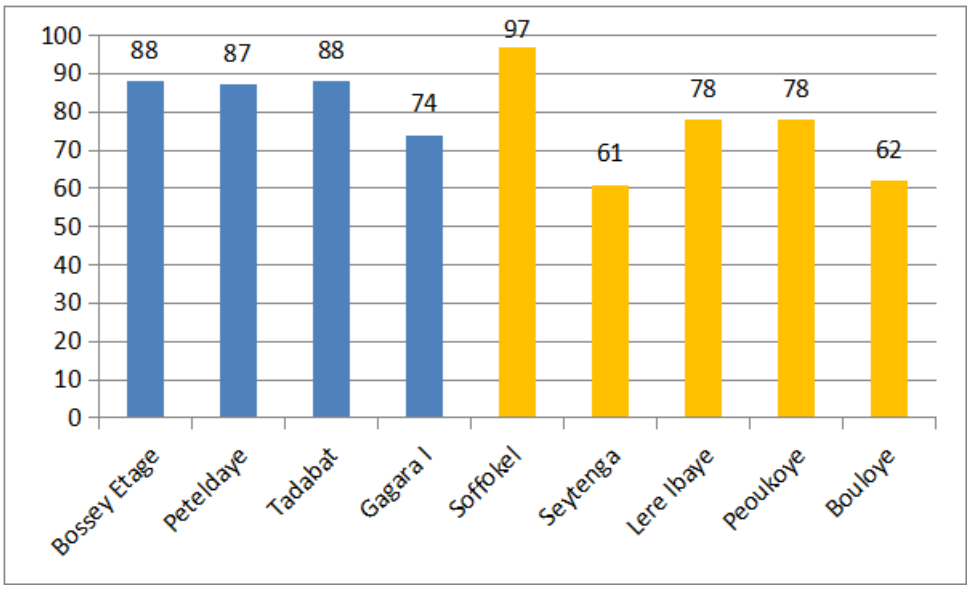


Figure 6. Percentage of half-moon cavities at sites bearing woody plants in 2016 and 2018

Woody densities and the number of specific species, i.e., at densities greater than 5 feet/ha, are all above the Plan vivo standard at all old and new developed sites (Figure 7). However, there is variation in woody density between sites: the highest density is obtained at Bouloye (1,491 feet/ha) and the lowest at Bossey Etage (461 feet/ha).

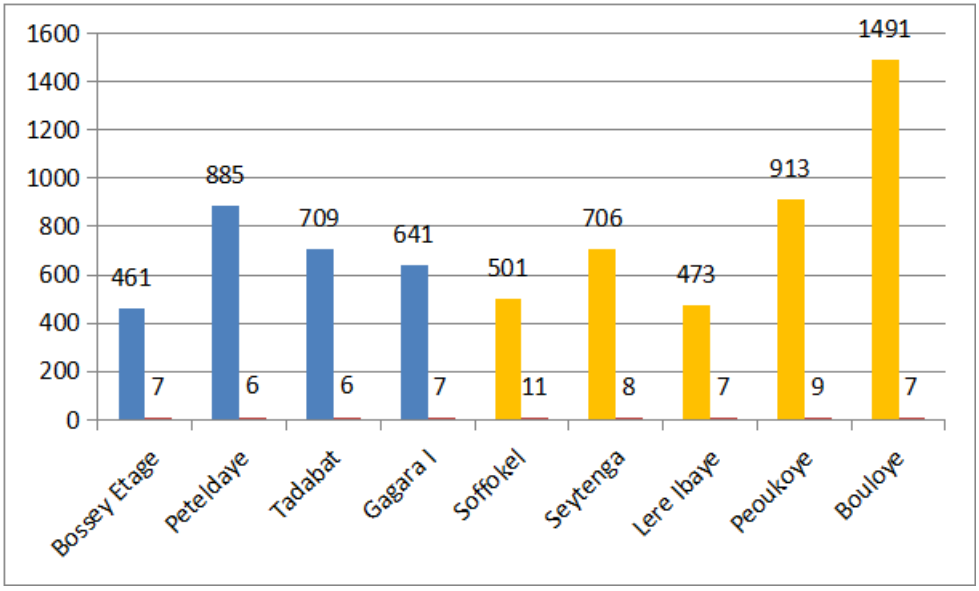


Figure 7. Density and number of specific woody species on old and new sites

In addition, discussions with beneficiary communities showed the relevance of Plan vivo projects in solving problems related to soil degradation, lack of pastures for animals, and onset of barren areas.

At Lere Ibaye, for example, producers report that the space used to be empty

and now the increase in wood density makes it impossible to see a person inside the plants, hence the name "Assalamalek" given to the site. One could get lost inside the site which has become a "forest" .

Producers in the various villages report the presence of formerly extinct animals such as wild guinea fowl, hares, rats and the passage of hyenas in Bouloye.

The profits for beneficiaries are capacity building of actors (communities), knowledge of tree maintenance, social cohesion between surrounding village communities and better knowledge of the importance and proper management of natural resources.

The perceptions of beneficiaries: regeneration of woody and herbaceous species, creating a high density on the sites serving as sources of food for animals and their refuges, increase of shade for people and animals, creation of shelter for defecation needs of people in the neighbourhood and even passers-by, and improvement of soil fertility (Table 5).

A good natural vegetation cover with tree and grass species has emerged as a refuge for wild animals (hyena, rabbits, snakes, insects, wild cats, partridges, wild guinea fowl).

Table 5. People perception on natural regeneration species in old REACH Italia sites

Nom français	Nom scientifique	Bossey Etage	Petel Daye	Gagara I	Tadabat
Patouki	*Acacia laeta/senegal*		x	x	x
Gaoudi	*Acacia nilotica*		x	x	x
Tchilouki	*Acacia tortilis*		xx	xx	xx
Bokki	*Adansonia digitata*				x
Tani	*Balanites aegyptiaca*		x		
Tchaiki	*Faidherbia albida*				
Gaoudel haoussa	*Prosopis juliflora*		x	x	x
Djabi	*Ziziphus mauritiana*		x	x	x
Barkehi	*Piliostigma reticulatum*		x	x	x
Nommadi	*Bauhinia rufescens*		x		
Boundia	*Alysicarpus ovalifolius*	x	x	x	x
Denguere	*Zornia glochidiata*		x	X	x
Paggouri	*Panicum laetum*		x	X	x
Guakkabé	*Cenchrus biflorus*		x	x	x

Producers also report a decrease in temperature in the vicinity of the site, thanks

to the microclimate created by the site (high density on the site through trees and grasses), a reduction in wind and water erosion, and the availability of water for animals at a particular time of the year on sites.

2.3 All trees planted to generate ecosystem services are native or naturalized species and are not invasive (2.4)

The woody species planted on the developed sites (regenerated, reseeded and planted species) are native species with the exception of neem (*Azadirachta indica*) and prosospis (*Prosopis juliflora*), which are naturalized exotic species, and moringa (*Moringa oleifera*), a nutritious plant (Table 6).

Table 6. List of plant species from Plan vivo projects developed plots

Scientific name	Synonym	French name	Name in fulfulé	Origin
Acacia laeta	*Senegalia laeta*	Gommier blanc	Patuki	Native woody
Acacia nilotica	*Vachellia nilotica*	Nèb-nèb	Ngawdi	Native woody
Acacia senegal	*Senegalia senegal*	Gommier blanc	Patuki	Native woody
Acacia seyal	*Vachellia seyal*	Mimosa épineux	Bulbe	Native woody
Acacia sieberiana	*Vachellia sieberiana*		Allouki, Djelouki	Woody native
Acacia tortilis	*Acacia tortilis subsp. raddiana, Accacia raddiana, Vachellia tortilis*	Acacia faux-gommier, Acacia de Raddi	Chiluki, Kiluki	Native woody
Adansonia digitata		Baobab	Bokki	Native woody
Alysicarpus ovalifolius			Bundiya	Native Herbaceous
Andropogon ascinodis			Bogodolo	Native Herbaceous
Andropogon gayanus		Andropogon	Mognootou	Native Herbaceous
Anogeissus leiocarpa		Bouleau d'Afrique	Kodjoli	Native woody
Azadirachta indica		Neem	Demilan, nim	Naturalised woody

Balanites aegyptiaca		Dattier du désert, Dattier sauvage ou Myrobolan d'Egypte	Tanni	Woody native
Bauhinia rufescens			Nammadi, Nammaro	Native woody
Boscia salicifolia			Tirehi	Native woody
Cadaba farinosa			Bagahi	Native woody
Calotropis procera		Arbre à soie ou Pomme de Sodome	Bamamdi	Native woody
Cassia obtusifolia	*Cassia tora, Senna obtusifolia*		Oulo	Native Herbaceous
Cenchrus biflorus		Cram-cram	Gukkabe	Native Herbaceous
Cleome gynandra			Hisso	Native Herbaceous
Combretum glutinosum			Dooki	Native woody
Corchorus olitorius			Fako	Native Herbaceous
Corchorus tridens			Fako	Native Herbaceous
Diospyros mespiliformis		Faux ébenier, Ebénier africain	Ganahi	Native woody
Eragrostis tremula			Hudo-honndorde	Native Herbaceous
Faidherbia albida	*Acacia albida*	Kad	Kaiki	Native woody
Grewia bicolor			Keli	Native woody
Guiera senegalensis			Gelohi	Native woody
Hibiscus sabadarifa		Oseille	Lammoude	Native Herbaceous
Hyphaene thebaica		Palmier doum	Balihi	Native woody
Leptadenia hastata			Ndoulegui	Native woody
Leptadenia pyrotechnica			Pibeteki	Woody native
Maerua crassifolia			Tirehi	Native woody

	Mitragyna inermis			Kooli	Native woody
	Mollugo nudicaulis				Native Herbaceous
	Moringa oleifera		Moringa		Introduced woody
	Panicum laetum		Fonio sauvage	Paguri	Native Herbaceous
	Piliostigma reticulatum			Barkehi	Native woody
	Prosopis juliflora		Prosopis	Gaoudel haoussa	Naturalised woody
	Pterocarpus lucens		Ptérocarpe luisant	Tchiami, Kiami	Native woody
	Schoenefeldia gracilis			Gnombre	Native Herbaceous
	Sclerocarya birrea		Prunier	Eydi	Native woody
	Tamarindus indica		Tamarinier	Guétèbé	Native woody
	Ziziphus mauritiana		Jujubier	Ndjabi	Native woody
	Zornia glochidiata			Denguere	Native Herbaceous

A. Conformance	Yes ☐	No X	N/A ☐
B. Corrective Actions (describe)	CAR 01. The density and number of specific species are not defined since 2018 due to lack of inventory because of security threats. So there are no annual inventories and density of woody plants nor defined annually.		
C. Ouattara Allamadogo Response	The security situation has considerably reduced the project's field activities. The inventories could not be carried out on the sites of Bossey-Etage, Pételdaye, Tadabat, Gagara 1 which have already benefited from the first transfers of funds and Touro, Gagara 2, Beiga, Ounaré and Gagara 1 which have not yet received Plan Vivo funds. This situation should be follow up. The insecurity situation has greatly reduced the project field activities. All plots were inventoried prior to 2018 and represented in the graphs. In view of the high level of insecurity in some villages from 2018, the project had to modify the method of monitoring the plots. The plots are monitored by the producers who report verbally or who take photos that are sent to the project. Meetings are frequently organized Meetings are frequently organized outside the sites in the cities of Gorom, Gorom for the old sites and Dori for the new sites, with the		

	producers' managers to assess the situation of the trees in the plots. Therefore, the monitoring of the plots is permanent but measurements cannot be carried out on the density and diversity of the trees. The producers confirmed during interviews the sustainability of the regenerated trees, which are also protected by armed men. Indeed, they take advantage of it to hide and have no interest in cutting them down or letting them cut down these trees by anyone. After the sale of carbon credits, REACH Italia retains 40% of the amounts and distributes the 60% among villages according to the certificates obtained (table 13). After 2018, inventories could not be conducted at Bossey-Etage, Pételdaye, Tadabat and Gagara 1 sites, which have already received the first transfers of funds, and Touro, Gagara 2, Beiga, Ounaré and Gagara 1, which have not yet received Plan Vivo funds. This situation is blocking the delivery of carbon credits.
D. Status	*CAR closed*

PROJECT COORDINATION AND MANAGEMENT	
Requirement: The project is managed with transparency and accountability, with the involvement of relevant stakeholders and in compliance with host country regulations	
Verification Questions: 1, 2 and 6	
3.1 The project coordinator always has the capacity to support participants in designing project interventions, selecting appropriate participants to include in the project, and developing effective participatory relationships, including providing ongoing support to the project (3.4) 3.2 The project coordinator always has the legal and administrative capacity to conclude PES agreements with participants and to manage the disbursement of payments for ecosystem services (3.5) 3.3 Transparency: the mechanism and procedures for receiving, holding, and disbursing PES funds are followed, with funds for PES allocated and managed through an account established for this sole purpose, separate from the operational finances of the project coordinator (3.9) **3.4** The project coordinator has accurately described the progress, achievements and problems faced by the project in the annual reports. The annual reports provide a transparent account of sales figures and demonstrate the allocation of resources for target groups **(3.10; 3.11)** **3.5**	
A. Constats (describe)	The project coordinator always has the capacity to support participants in designing project interventions, selecting appropriate participants to include in the project, and developing effective participatory relationships, including providing ongoing support to the project (3.4) The project coordinator is controlled by the NGO governing bodies recognized by Order 2020- 000383 MATDC / SG/DGLPAP/DOASOC renewing Order 2003 -133 MATD/SG/DGPAP/DOASOC. It has developed

	resilience initiatives for the continuation of activities despite the insecurity. Despite the threats of insecurity, in December 2019, REACH Italia was able to meet leaders of inaccessible villages of Gorom-Gorom to discuss the new strategy regarding the continuation and monitoring of the project. For example, a meeting of VDC members and supervisors of Bossey Etage was held on September 05, 2020, to plan the activities to be conducted on the restored sites. This meeting was attended by thirteen (13) people including two (02) women. In this village, there have been many problems related to insecurity. A village councilor was assassinated by terrorists and the second councilor took refuge in Ouagadougou. The following activities were decided during this meeting: - Renewal of the Village Savings Account signatories, - The reuse of available funds for income-generating activities (IGA) for 30 women in the village. Another meeting focused on the organization and strengthening of site monitoring. In January 2020, information sessions where the framework of Plan Vivo process was explained, planning of activities, elaboration of Plan Vivo in compliance with the local land charters for the five new villages were conducted. REACH Italia was thus able to conduct the necessary process that led to the integration of 5 additional villages in Plan Vivo project (Léré Ibaye, Bouloye, Peokoye, Soffokel and Seytenga). Plan Vivo accounts were opened and PES contracts were signed in March 2020. In February-March-November 2020, baseline household surveys were conducted for the five villages newly integrated into Plan Vivo. Then in October-November 2020, forest inventories were conducted for the new villages, located in Séno province, which is less affected by insecurity. The project coordinator has accurately described the progress, achievements and problems faced by the project in the annual reports. The annual reports provide a transparent account of sales figures and demonstrate the allocation of resources for the benefit of the target groups (3.10; 3.11) The progress, achievements and problems faced are well described in the annual reports. For the progress The density of trees has increased and especially plant growth with the return of wildlife (hyenas, bustards, migratory birds, guinea fowl, snake lizards) which were lost. There are breeding nests of birds in the sites

ensuring animal diversity.

There is also a return of certain plant species: 2 to 5 species or even 30 species such as Cassia obtusifoila, Alysicarpus ovalifolius, Cenchrus biflorus, Corchorus tridens and Eragrostis tremula, whose dry leaves, grains or steam are sold at the market, as well as seccos from the stems of Cassia obtusifolia and Panicum laetum or wild fonio, whose grains are also sold.

There is also a high production of Acacia nilotica fruit and Acacia senegal gum arabic, which are sold. Balanites aegyptiaca and Ziziphus mauritiana fruits are also sold as well as feeding the herders in the developed pastures.

The Tamachecks of Gargara I say that with the influx of livestock, there is cow dung to fire pottery and fertilize the fields.

Overall, the sites look good; the shrubs have grown well. There is also natural regrowth and a lot of grass. There are many species such as: Acacia tortilis, Acacia nilotica, Balanites aegyptiaca, Ziziphus mauritiana, Leptadenia pyrotechnica etc. These developed sites also host wildlife species such as partridges, wild guinea fowl, hares and jackals.

Given the increasing insecurity in the project areas, especially in the province of Oudalan, the coordinator has chosen to focus on areas where we can still work without too much risk; so we plan to integrate sites from Fetoumbaga, Peokoye (new site villages), Bouloye, Kryollo and Taaka, restored in 2019 and 2020 (920 ha).

The following table 7 summarizes the other sites that already have or are waiting for Plan vivo certificates.

Table 7 : Potential REACH Italia Plan vivo project sites

Province	Municipalities	Villages	Areas in ha	# sites	Rehabilitation year
Oudalan	Gorom-Gorom	Touro	75		
Oudalan	Gorom-Gorom	Ounaré	146		
Oudalan	Gorom-Gorom	Beiga	231		
Oudalan	Gorom-Gorom	Gagara II	89		
Oudalan		Fetoumbaga	100	1	2020
Séno	Dori	Peoukoye	50	1	2020
Séno	Dori	Bouloye	100	2	2020
Séno	Dori	Kryollo	470	2	2020
Séno	Dori	Taaka	200	2	2020

Oudalan	Gorom Gorom	Kelguief	132		
Oudalan	Gorom Gorom	Bossey Barabé	50		
Oudalan	Gorom Gorom	Bossey Dogabé	42		
Oudalan	Gorom Gorom	Belagaoudi	140		
Oudalan	Gorom Gorom	Kirohari	80		
Séno	Bani	Wendignébé	61		
Séno	Bani	Séno Sofaré	105		
Séno	Sampelga	Sampelga	88		
Séno	Sampelga	Damdégou	117		
Séno	Seytenga	Soffokel	318		
Séno	Seytenga	Ouro Daka with	110		
Séno	Seytenga	Bandiédaga Gourmantché	85		

Achievements in the former sites are:
Rehabilitation of 04 boreholes in Gagara, 02 boreholes in Tadabat, 04 boreholes in Peteldaye. Purchase of a new cart and small equipment for community work in Peteldaye.

Concerning new sites, the following achievements have been made. In Lere Ibaye a subsoiling, harvesting of forest seeds and seeding on the site were done in 2017; a grant of animals and livestock feed, acquisition of small equipment for planning and cooking, and an inventory of woody and herbaceous.

Furthermore, the harvesting of forest seeds on the sites, inventory of woody and herbaceous plants, production and supply of organic manure, and reseeding were done on the site in 2022 in the villages of Bouloye, Lere Ibaye, Peoukoye, Seytenga, and Soffokel.

In Lere Ibaye, in addition to reseeding with Pterocarpus lucens, they planted Andropogon gayanus and Panicum laetum (wild fonio).

The reseeding activities organized in 2010-17 through the VDCs for the 4 old villages are:

PV-REACH Italia-001-Bossey Etage: collection of 200 kg of desert date palm (Balanites aegyptiaca) seeds and 1,500 kg of Acacia tortilis seeds and 500 kg of organic manure; 213 people participated in reseeding activities;

PV-REACH Italia-002-Peteldaye: 900 kg of desert date palm seeds, 500 kg

	of jujube seeds (Ziziphus mauritiana) collected and 1,000 kg of organic manure; 101 people participated in reseeding activities; PV-REACH Italia-003-Tadabat: collection of 600 kg of desert date palm seeds, 1300 kg of jujube seeds (Ziziphus mauritiana) and 800 kg of organic manure; PV-REACH Italia-004-Gagara I: collection of 200 kg of desert date palm seeds, 100 kg of jujube seeds (Ziziphus mauritiana) and 500 kg of organic manure. The problems are site management and insecurity. The VDC President of Bossey Etage was assassinated and the second one went into exile. The VDC President of Peteldaye was also assassinated. The "bush people" are looking for leaders in the villages who work with the administration. This has an impact on the management of sites and PES accounts. The difficulties in managing plots on the old sites are: -lack of water and difficulties in monitoring sites due to insecurity in Bossey Etage; - lack of water and insufficient materials for site maintenance in Peteldaye - lack of water and inability to regularly monitor the sites due to insecurity in Gagara I - security challenges: it is impossible for a man to go and monitor the plots currently in Tadabat. In difficulties in the new sites relate to: - lack of water, and inability to monitor and care for the plots due to terrorism in Soffokel; - transportation means issue because the site is very far from the village, lack of plant maintenance equipment, inability to ensure permanent surveillance of the areas in view of the security context in Seytenga; - The difficulties in enforcing the management rules in Bouloye; - lack of water, security issues that prevent us from regularly monitoring the areas in Lere Ibaye; - security issues that limit the regular monitoring of sites in Péoukoye. The reports note that in 2018, insecurity has slowed or even prevented some activities (such as local inventories and community meetings) at the project old sites because they are not accessible, located in the municipalities of Gorom Gorom and Markoye (Oudalan Province). The insecurity situation has greatly reduced the project field activities. All plots were inventoried prior to 2018 and represented in the graphs. In

	view of the high level of insecurity in some villages from 2018, the project had to modify the method of monitoring the plots. The plots are monitored by the producers who report verbally or who take photos that are sent to the project. Meetings are frequently organized Meetings are frequently organized outside the sites in the cities of Gorom, Gorom for the old sites and Dori for the new sites, with the producers' managers to assess the situation of the trees in the plots. Therefore, the monitoring of the plots is permanent but measurements cannot be carried out on the density and diversity of the trees. The producers confirmed during interviews the sustainability of the regenerated trees, which are also protected by armed men. Indeed, they take advantage of it to hide and have no interest in cutting them down or letting them cut down these trees by anyone		
B. Conformance	Yes [x]	No [ ]	N/A [ ]
C. Corrective Actions (describe)	*None*		
D. (Insert Project Coordinator's Name) Response	*(To be filled out by the Project Coordinator)*		
E. Status	*CLOSED*		

PARTICIPATORY DESIGN AND DEVELOPMENT OF PLAN VIVO	
Exigence: the project demonstrated community ownership: communities are actively involved in the design and implementation of plan vivo that addresses local needs and priorities.	
Verification Questions: 1, 2 and 6	
4.1 A voluntary, participatory planning that addresses local needs and informs the development of technical specifications is underway (4.1; 4.6; 7.1.). Barriers to participation are identified and steps are taken to encourage participation (4.3) 4.2 Smallholders or communities are not excluded from participation in the project on the basis of gender, age, income or social status, ethnicity or religion, or any other discriminatory basis **(4.2)** 4.3 The project does not compromise livelihood needs and priorities or reduce the food security of participants **(4.7; 7.1; 7.5)** 4.4 There is a system to accurately record and verify the location, boundaries, and size of each Plan Vivo (4.8). Participants have access to their Plan vivo in an appropriate language and format **(4.9)** 4.5 Participants have a forum to periodically discuss the design and progress of the project with other participants and raise any questions or concerns with the project coordinator. **(4.12)**. A strong complaint resolution system is in place **(4.14)**	
A. Constats (describe)	○ 4.1. A voluntary and participatory planning that addresses local needs and informs the development of technical specifications is ongoing. (4.1; 4.6; 7.1.). Les obstacles à la participation sont identifiés et des mesures sont prises pour encourager la participation (4.3)

According to the community meeting minutes, the communities represented by the Village Development Councils (VDCs) are playing an active role in the project. For existing plans VIVO, local meetings have been held to manage seed collection and reseeding activities at sites that could be more successful. Monitoring committees for restored sites held several meetings to discuss the application of land management rules. Other meetings were organized by the VDC to discuss what could be done with the income from the sale of Plan Vivo certificates.

As new villages were included in the Plan Vivo project, several meetings were held on the Plan Vivo recruitment process. Through local meetings, all community members were involved in the decision-making process regarding the determination of performance indicators, the benefit-sharing mechanism, and land use management. The communities decided how the sites should be managed based on local land charters. The sharing and sensitization sessions helped local communities to understand the objectives of rehabilitating degraded pastures, and to get involved in decision making and be responsible for species selection and management of these sites.

For example, between 2016 and 2018, Tadabat organized one (01) general assembly (GA) for the collection of seeds and organic manure, one (01) meeting for information on the funds received and their management and two (02) field trips of the populations for reseeding.

Producers in all villages say that there are no obstacles to the participation of vulnerable groups.
Measures to encourage participation are defined and adopted through the organization of community meals during works.

Table 8 below provides a general overview of the various barriers to the implementation of the activities contained in the Project Description Document (PDD).

Table 8: Summary of Anticipated Barriers to Carbon Projects and Measures Taken to Mitigate Risk

Risk Factor	Mitigation Strategy	Nature of experienced
Land ownership / tenure		
Land tenure	The local land charter based on the new Rural Land Law formalizes local conventions based on custom and land use. The criteria for site selection are: absence of known land conflicts and absence of mining sites in the vicinity of selected sites.	No obstacle

	Disputes caused by project/goal/activity conflicts with local communities/organizations	Participatory planning and continued consultation with stakeholders over the project lifetime. The local land charter provides procedures for managing land conflicts.	No obstacle
	Financial		
	Project financial plan	The initial costs of restoring degraded pastures are already covered by the BKF/ 017 program. Monitoring costs are expected to be covered by the sale of Plan Vivo certificates.	No obstacles Ongoing replacement of BKF017 by BKF/024 and PRISMA
	Technical		
	Coordinator's capacity	The project coordinator already has extensive experience in assisting local communities in the restoration process of degraded pastures.	No obstacle
	Management		
	Management of non-implemented activities	The project coordinator has close monitoring and constant support for communities to ensure effective management (e.g. reseeding campaigns).	No obstacle
	Poor record keeping	Strong procedures and close monitoring.	No obstacle
	Staff with relevant skills and expertise	The commitment and quality of REACH Italia staff and CO2Logic assistance are trustworthy	No obstacle Good preparation of interviews using producers
	Damage to trees due to grazing	No specific protection of trees and plants is needed, as no-till limits plant damage after grazing.	No obstacle
	Economic		
	Financial failure due to poor or fluctuating carbon prices or inability to attract buyers	The Lux Dev cooperation has presented itself as an interested buyer. CO2logic, the consulting partner for the project, assists the project coordinator in selling the certificates if necessary.	No obstacle
	Political		

External pressure to engage in unsustainable practices	Restoring degraded pastures is vital for these communities as livestock is one of the main activities in the area. Transhumance is organized by the local land charter. The monitoring of sites is effective in all villages despite the security risks and the HANI contribute to the protection of restored sites according to the local land charters.	No obstacle
Social		
Community disputes over land tenure	Local land charters provide for procedures to manage land conflicts. The few conflicts are managed by the monitoring committees and DDCs	No obstacle
Disputes arising from a conflict between the project objective or activities and local communities and organizations	Participatory planning and continued consultation with stakeholders over the project's lifetime. Consultation meetings are organized in all villages	No obstacles Conflicts managed in Bouloye, Seytenga and Peoukoye
Impact of forest fire	Not so relevant in the project area but with the insecurity, the few cases are controlled by the populations	Minor obstacle
Extreme weather events during particular droughts	Droughts are not unknown in the Sahel, but all the species used are native to the Sahel and therefore very drought resistant.	No obstacle
Pests and diseases	Not so significant in the Sahelian zone	No obstacle

- 4.2. Smallholders or communities are not excluded from participation in the project based on gender, age, income or social status, ethnicity or religion, or any other discriminatory basis **(4.2)**

The selection of participants for the project actions is made during the village general assemblies where volunteers for the tasks are asked. Other criteria: be accepted in the village, reside in the village, be accepted by the village VDC office, be a volunteer and/or committed producer .

Women participate in the activities in villages according to the number and criteria defined in the following table 9.

Table 9: Representation and selection criteria of women in REACH Italia carbon

projects

N°	Village	Number of women involved in the activities	Criteria for selecting women to participate in activities
	Old sites		
01	Bossey Etage	No exact number, but the whole of the village women participate	The whole of the village women were considered
02	Gagara 1		All women are invited to the works
03	Peteldaye		The whole of the village women were considered
04	Tadabat	40	The women were selected by neighbourhood
	New sites		
05	Bouloye	No exact number	All women in the village
06	Lére Ibaye	No exact number	All women in the village
07	Péoukoye	No exact number	All available women from various neighbourhoods are invited
08	Seytenga	25	Choice made per district
09	Soffokel	40	Choice made in the different districts of the village
	Total		

The number of meetings organized by women is estimated at an average of 13 meetings per year. In Peteldaye there are meetings once a week, i.e. 52 meetings per year according to the women, 12 meetings per year, i.e. one a month in Bossey Etage, 2 meetings per year in Gagara I and 12 meetings per year in Tadabat. In the new sites, there are 24 meetings per year, i.e. 2 per month in Soffokel, 12 meetings, i.e. 1 meeting per month in Seytenga, 2 meetings per year in Bouloye, 5 meetings per year in Lere Ibaye and 3 meetings per year in Peoukoye.

- 4.3. The project does not compromise livelihood needs and priorities or reduce the food security of participants. **(4.7; 7.1; 7.5)**

The impact of biodiversity induced by the project on the living conditions of the populations are:

- The contribution of food supplements through the collection of non-timber forest products (ntfp),
- Forage production for animals and humans
- Shade for people and animals

- Softening of mild climate,
- Supply of traditional pharmacopoeia products (tableau 10).

Table 10. Women's perception of the usefulness of plants in plots of the former REACH Italia sites

French name	Scientific name	Bossey Etage	Petel Daye	Gagara I	Tadabat
Patuki	*Acacia laeta/senegal*		Consumption of gum, and use of leaves for livestock feed.		
Gaudi	*Acacia nilotica*	Fruits and leaves are used for leather tanning, the fruits are also used for healt care		Use of fruits for leather tanning, use of fried fruits and leaves for health care.	Fruits are used for leather tanning and healt care, we also enjoy the shade
Tchiluki	*Acacia tortilis*	Leaves and fruits are used for livestock feed	Use of leaves for livestock feed	Fruits are used to feed livestock.	Fruits are used to feed livestock, we enjoy the shade too.
Bokki	*Adansoinia digtata*		Use of sheets for feeding		
Demelian	*Azadirachta indica*		Use of leaves for health care		
Demelian	*Azadirachta indica*			Use for health care	
Tani	*Balanites aegyptiaca*	Used for household and livestock	Consumption of fruits by households	Consumption of fruits	Fruits are used for households and

		feed	and livestock, use of leaves for health care		livestock feed, leaves are used for health care, we also enjoy the shade
Ulo	*Cassia obtusifolia*	Leaves are used for household feed		Use for food	
Fako	*Corchorus tridens*	Leaves are used for sauce			
Tchaiki	*Faidherbia albida*	Leaves and fruits are used for livestock feed.			
Lammunde	*Hibiscus sabdariffa*	Leaves are used for the sauce			
Barkehi	*Piliostigma reticulatum*			Leaves are used for the sauce	
Gaudel haoussa	*Prosopis juliflora*	Use for health care	Use of the leaves for health care		Leaves are used for health care, we also enjoy the shade
Djatabe	*Tamarindus indica*		Consumption of fruits		Fruits are used to make porridge, we also enjoy the shade
Djabi	*Ziziphus mauritiana*	Used for household and livestock feed	Consumption of fruits, leaves used for livestock feed	Use of fruits for household and livestock feeding	

	In Gagara I, for example, the sites provide food supplements through the harvesting of Balanites fruits. 05 bags of 100 kg of Balanites sold between 100 to 150 F/ can of tomato, 15 bags of jujube sold between 250 to 400 F/ big can of tomato, 135 bags of 50kg of *Acacia tortilis* sold at 2500 F/bag were harvested this year. In Tadabat, 45 bags of 100 kg, 200 to 300 F/ can of tomato, 125 bags of 100 kg of jujube sold at 150 to 350 F/ can of tomato), 450 bags of 50 kg of *Acacia tortilis* sold at 1500 F/bag) were harvested: the VDC authorizes the collection of fruits; the collection is open to all interested persons. ○ 4.4. There is a system to accurately record and verify the location, boundaries, and size of each Plan Vivo (4.8). Participants have access to their Plan vivos in an appropriate language and format **(4.9)** GPS demarcation coordinates are recorded for all restored pasture sites. Each village specifies its Plan Vivo by drawing a hand-drawn map with the location of the restored pasture sites, specifying the tree and grass species and land use rules of the restored pasture sites. ○ 4.5. Participants have a forum to periodically discuss the design and progress of the project with other participants and raise any questions or concerns with the project coordinator **(4.12)**. A strong complaint resolution system is in place **(4.14)** Village general assemblies and site management committee meetings are organized by the VDC to raise any concerns with the coordinator and allow for consultation among producers. The VDC meetings are quarterly in the villages of the 4 old sites (Bossey Etage, Gagara I, Tadabat and Peteldaye), i.e. 4 meetings per year. In the new sites the meetings are also quarterly except in Bouloye where there are 6 meetings as needed. The site management committee meetings are recorded in the following Figure 8.

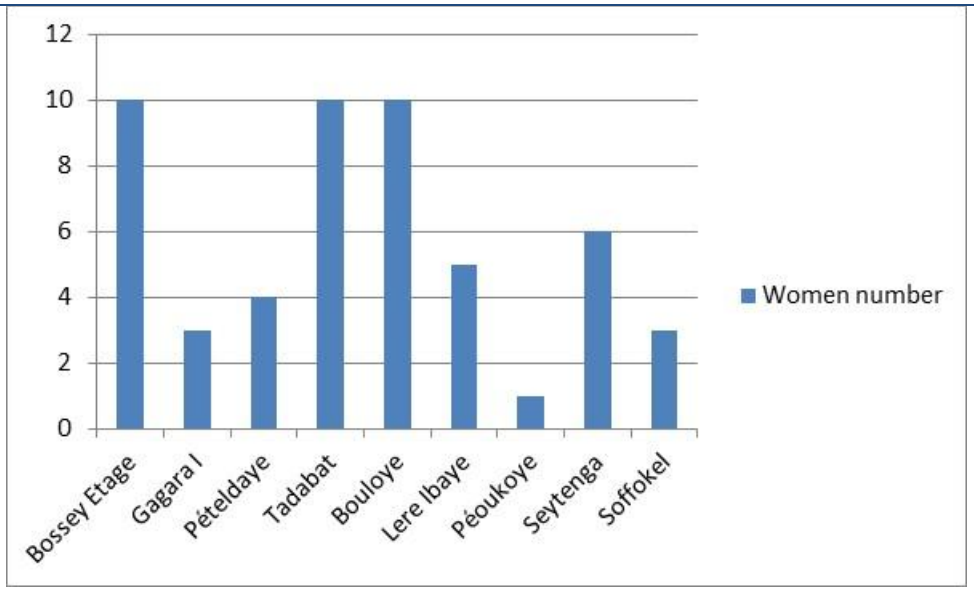


Figure 8. Number of site management committee meetings

Women's meetings are also organized in the villages for the women with an average of 13 meetings per year. (figure 9).

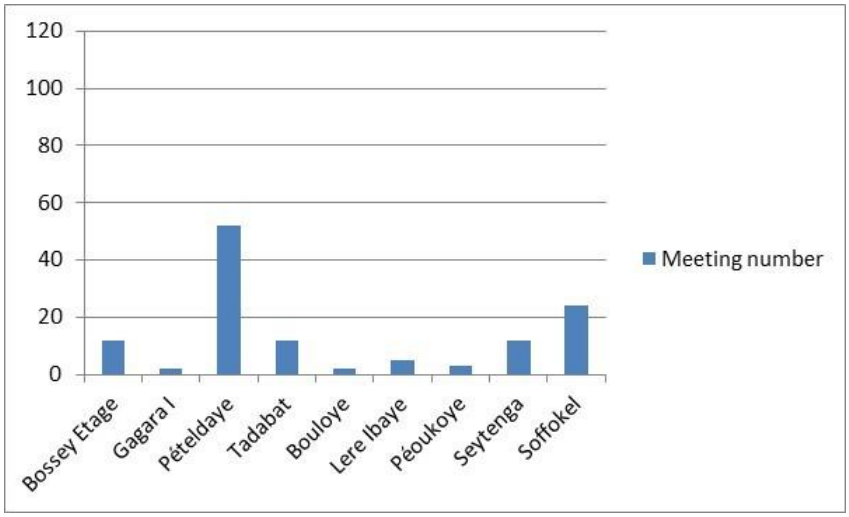


Figure 9. Number of women's meetings in villages

B. Conformance	Yes [x]	No [ ]	N/A [ ]
C. Corrective Actions (describe)	*None*		
D. (Insert Project	*(To be filled out by the Project Coordinator)*		

Coordinator's Name) Response	
E. Status	*CLOSED*

QUANTIFICATION AND MONITORING OF ECOSYSTEM SERVICES.	
Requirement: the project generates real and additional ecosystem service benefits demonstrated through credible quantification and monitoring	
Verification Questions: 2, 3 and 4	
5.1 The data sources used to quantify ecosystem services, including all assumptions and default factors, have been specified and updated to the extent possible, with a reason why they are appropriate **(5.1; 5.2)** 5.2 The project coordinator conducted ground accuracy activities to collect actual data and field measurements from the project sites that have been or will be used to update the PDD and project technical specifications, including quantification of climate benefits **(5.3)** 5.3 A clear and consistent standard operating procedure (SOP), or equivalent, for remote sensing analysis has been developed by the project coordinator. The ecosystem services that form the basis of the Plan Vivo project are still additional **(5.4).** 5.4 To avoid double counting of ecosystem services, project interventions are not used for any other project or initiative **(5.14)** 5.5 A monitoring plan has been properly implemented and a system is in place to verify its soundness, where **(5.9; 7.2.; 7.3)** : • Corrective actions and contingency plans are described when performance targets have not been met • The validity and assumptions of the technical specifications have been properly tested. • Communities have been actively involved in monitoring activities • Monitoring was regularly shared and discussed with participants **(5.9; 7.2.; 7.3):**	
A. Findings (describe)	5.1. The data sources used to quantify ecosystem services, including all assumptions and default factors, have been specified and updated to the extent possible, with a reason for why they are appropriate **(5.1; 5.2)** According to the technical specifications, a minimum tree density of 260 woody plants/ha and a specific species diversity of 3 (min. 5 woody plants per species/ha) will generate at least 61 tCO2e after 30 years. Carbon sequestration through restoration of degraded pastures is estimated at 61 tCO2/ha for a 30-year crediting period with a 20% risk margin. The total number of hectares that have adhered to the performance indicators defined in the PES agreements is 1,181 ha for the old sites for example.

	Carbon benefits were modeled using CO2FIX v3.2. The dCO2FIX simulation model was used to calculate carbon sequestration in above- and belowground biomass in one-year time steps over the 30-year accounting period. The basic inputs were wood density, aboveground volume, and root allocation. Carbon stocks of living biomass are calculated using the following variables: growth and mortality. The carbon sequestration of the baseline scenario, as well as the expected leakage losses are assumed to be 0 tCO2 per hectare, while the risk buffer is 20%. The net carbon benefit over the 30-year accounting period is estimated at 59 tCO2. 5.2. The project coordinator conducted ground accuracy activities to collect actual data and field measurements from the project sites that have been or will be used to update the PDD and project technical specifications, including quantification of climate benefits **(5.3)** The field measurements are performed by the REACH Italia technicians with the support of the producers of the sites for the collection of biological (forest inventory) and socio-economic (household surveys) data. The data collected is then treated by CO2Logic as a scientific support for the calculation of technical features (wood density and biodiversity, sequestered carbon rate,⋯). Forest inventory techniques and socio-economic surveys have considered the recommendations made in the evaluation report (Appendix 1). Initiatives are underway to have producers conduct forest inventories themselves. However, the forestry and socio-economic inventory databases are not held by the project, which has ensured their collection in the field in relation to the beneficiary communities and the support of CO2Logic for treatment. 5.3. A clear and consistent standard operating procedure (SOP), or equivalent, for remote sensing analysis has been developed by the project coordinator. The ecosystem services that form the basis of the Plan Vivo project are still additional **(5.4).** Severe droughts (in the 1970s and 1980s) have greatly reduced the tree population. Nowadays, very few trees can be seen in this region. This baseline is the result of testimonies from local people, people from the NGO. In addition, remote sensing (satellite images and Google Earth) and tree counts on monitoring plots show a very small difference in the number of trees (<10 trees however biodiversity cannot be recognized. Ecosystem services would not have existed

	without the project. 5.4. To avoid double counting of ecosystem services, project interventions are not used for any other project or initiative **(5.14)** Project sites, which are degraded pasture sites, have not been adversely altered (e.g., cleared of other vegetation or deforested), prior to the start of project activities in order to increase payments for ecosystem services that participants or VDCs may claim. The project coordinator is monitoring the risk of double counting in this project, specifically determining if any of Vivo Plans in this project are counted in another project or initiative. At present, to the knowledge of the project coordinator, there are no other Plan Vivo projects or other registered GHG reduction projects in Burkina Faso claiming the carbon benefits of the Plan Vivos included in this project. The project coordinator is aware of other Plan Vivo projects in Burkina Faso Sahel seeking registration with the Plan Vivo Foundation, but is making every effort, in close collaboration with the other project coordinators (AGED Italia, A2N) to ensure that there is no overlapping. REACH Italia has no relations with other structures responsible for the assessment of sequestered carbon stock and the sale on the carbon market. 5.5. A monitoring plan has been properly implemented and a system is in place to verify its soundness, where (5.9; 7.2; 7.3): • Corrective actions and contingency plans are described when performance targets have not been met • The validity and assumptions of the technical specifications were properly tested • Communities were actively involved in monitoring activities Monitoring was regularly shared and discussed with participants **(5.9; 7.2.; 7.3):** The respect of the charter has probably avoided any conflict related to the exploitation of natural resources in most villages. For the beneficiary communities, the measures to mitigate these risks are support for the improvement of the functioning of the monitoring committees and the sensitization of the transhumant herdsmen who roam the developed plots. The participation methods for monitoring ecosystem services are: site management committee and the facilitator ensure regular monitoring

	of sites with the support of the environmental service on harvesting techniques and forest management and seeding techniques; environmental service conducts random monitoring trips. The forum for periodically discussing the design and progress of the project with other participants and raising any questions or concerns with the project coordinator is the village general assembly. The General Assembly is organized by the Village Development Council (VDC). It is an opportunity to review (i) the monitoring of sites and perspectives, to exchange on how well the Project activities are going, the elaboration and follow-up of management rules enforcement, which define the prohibitions and sanctions to be considered in case of offenses. Monitoring of ecosystem services (i.e., species density and diversity) was not conducted in the old plan vivo due to insecurity. A pilot study was conducted to assess density through the use of satellite images, but it did not have the expected results, and it is still difficult to integrate the monitoring of biodiversity indicators. From the phone calls that REACH Italia was able to have with the various village's inhabitants, some information could be collected. In Peteldaye, a resident (Haman Hamidou known as Biga) mentioned having noticed an increase in natural regrowth and a return of small fauna. The village chief of Touro (Guira Ag Agali, vice president of the VDC), mentioned that this year, there is especially a lot of grass and natural regrowth, and that wild animals such as hares, partridges, and even jackals have been observed on sites. The village chief of Gagara II stated that the sites look good, that shrubs have grown well and there is a lot of grass. He also noted the presence of many species such as *Acacia tortilis*, *Acacia nilotica*, *Balanites aegyptiaca*, *Ziziphus mauritiana* and *Leptadenia pyrotechnica*. The management of developed plots, described by the producers in the old sites, is as follows. In Soffokel, producers created several groups that take turn for the monitoring and maintenance of developed sites. Seytenga set up a committee that organizes groups for maintenance and monitoring. Two groups were identified for the management of developed sites (the first group monitors the plants, and the second group monitors the anarchic occupation of pastures by farmers in Bouloye). In Lere Ibaye, the entire village participates in the management of developed plots with the support of the management committee. Finally, Péoukoye set up a management committee, but the entire village also participates. In the new sites, the management is as follows. The surveillance of the

	developed areas is done on a weekly basis, and we formed groups of men and women who take turns in doing so. However, the management is the responsibility of the whole village with the establishment of a committee in Mamassiol. For Landamaol, plots are managed by a management committee with the support of the entire village. In Tialel, management of plots is entrusted to the various groups in the neighborhoods. Producers in the villages of Bossey, Gagara I, Peteldaye and Tadabat say that the plots are managed by the entire village, under the supervision of a management committee. In Peteldaye, for example, after sowing plants, we appoint two women to oversee the spaces until germination. After this stage, the other members take over the monitoring and watering, and report to the VDC. Communities participated in areas monitoring activities through the Village Development Councils (VDCs), which are representatives of local authorities at village level. Monitoring has been regularly shared and discussed with participants. Management committee meetings are regularly held in the villages for exchange. Women participate in the management of sites based on the numbers defined in Figure 8.		
B. Conformance	Yes [x]	No [ ]	N/A [ ]
C. Corrective Actions (describe)	CAR 02. The concept of conflict should be better defined and monitored. Given the lack of pastoral resources, tensions over access to pastures should not be considered conflicts. Rather, conflicts should be considered violations of the rules set out in the local land charters that are part of Plan Vivo. It is better to speak of tensions or violations		
D. Ouattara Allamadogo Response	The PDD should be updated.		
E. Status	*CLOSED.*		

RISK MANAGEMENT
Requirement: The project effectively manages risk throughout its design and implementation
Verification Questions: 2 and 4

6.1 Where leakage is likely to be significant, i.e., likely to reduce climate services by more than 5%, an approved approach has been used to monitor it and subtract actual leakage from the claimed climate services, or at a minimum, a conservative estimate of likely leakage has been made and subsequently deducted from the claimed climate services (6.1; 6.2) 6.2 The level of risk buffer that has been determined using an approved approach is adequate and is a minimum of 10% of expected climate services (6.3) 6.3 Does the project maintain a buffer account and is the cumulative total of credits deposited in the account equal to the total reported in the last annual report? (6.3)	
A. Findings (describe)	6.1. Where leakage is likely to be significant, i.e., likely to reduce climate services by more than 5%, an approved approach was used to monitor it and subtract actual leakage from the claimed climate services, or at a minimum, a conservative estimate of likely leakage was made and subsequently deducted from the claimed climate services (6.1; 6.2) The risks of leakage in the area are firewood collection and livestock grazing. But the fact is that these risks are minimized because, after more than a decade of field work, it has been observed that communities do not collect wood from reclaimed land. In the baseline scenario, no timber was collected from degraded sites and the recovery of these degraded sites will not increase pressure in adjacent areas. The implementation of local land charters will allow local communities to better manage their natural resources. To manage uncertainty, a conservative approach was used at many points.: - Tree growth rate; - Density of trees per hectare; - Exclusion of soil carbon. 6.2. The level of risk buffer that has been determined using an approved approach is adequate and is a minimum of 10% of the expected climate services (6.3) The risk buffer is a portion of the climate services provided to protect the project from unexpected reductions in carbon stocks or increases in emissions. A buffer of 20% has been applied and is subtracted from the total certificates issued 6.3. Does the project maintain a buffer account and is the cumulative total of credits deposited in the account equal to the total reported in the last annual report? (6.3) The project maintains a buffer account and the cumulative total of

	credits deposited in the account is equal to the total reported in the last annual report.		
B. Conformance	Yes [x]	No [ ]	N/A [ ]
C. Corrective Actions (describe)	*None*		
D. (Insert Project Coordinator's Name) Response	*(To be filled out by the Project Coordinator)*		
E. Status	*CLOSED*		

PES AGREEMENT AND BENEFIT SHARING	
Requirement: the project fairly shares benefits and manages the benefits of ecosystem services through clear PES agreements with performance-based incentives.	
Audit Questions: 1, 2 and 6	
7.1. Procedures for reaching agreement on PES with participants are properly implemented (8.2) 7.2. Participants enter into PES agreement voluntarily and in accordance with the principle of free, prior and informed consent, in appropriate language and format (8.3) PES agreements do not remove, diminish or threaten the land tenure of Participants (8.4) 7.3. A fair and equitable benefit-sharing mechanism is in place and has been agreed upon with the participation of affected communities, determine how the funding for PES will be distributed among participants (8,8; 8,9; 8,10) **7.4.** The project is committed to deliver at least 60% on average of the proceeds from Plan Vivo certificate sales. When less than 60% was delivered, the project provided a reason (8.12**)**	
A. Findings (describe)	7.1. Procedures for reaching agreement on PES with participants are properly implemented (8.2) REACH Italia manages the project implementation and community engagement, the technical functions of ecological monitoring in partnership, the marketing and sale of Plan Vivo certificates and the management of PES funds and benefit sharing. PES contracts between REACH Italia and the Village Development Councils (VDCs) are correctly applied in compliance with the monitoring indicators based on density and specific diversity. 7.2. Participants enter into PES agreement voluntarily and in accordance with the principle of free, prior and informed consent, in appropriate language and format (8.3) PES agreements do not remove, diminish or threaten the land tenure of Participants (8.4) REACH Italia concluded PES agreement contracts with villages/VDCs, which

are contracts providing the basis for the transaction of climate services and specifying the rights and responsibilities of parties during the contract period. The voluntary PES agreement signed by VDCs specifies, among others, the quantity of climate services negotiated based on technical specifications and the performance-based milestone transactions. The PES agreements have no impact on land tenure systems of developed sites, which remain community pastures.

7.3. A fair and equitable benefit-sharing mechanism is in place and has been agreed upon with the participation of affected communities, determining how the funding for the PES will be distributed among participants (8,8; 8,9; 8,10)

Through local meetings, all community members have been involved in the decision-making process regarding the determination of performance indicators, the benefit-sharing mechanism and land-use management. The benefits will be paid into the accounts they open under the management of the village development council (2 members) and a member of the NGO.

The successive payment of the 9 Plan vivo of REACH Italia villages is made in 2018 and 2020, respecting the amounts based on the developed areas (table 11).

Table 11. Distribution and declaration of Plan Vivo REACH Italia funds

N°	Village	Amount allocated in 2018	Amount allocated in 2022	Expenses incurred	Account references
01	Bossey Etage	865 151	-	0	?
02	Peteldaye	779 903	-	0	?
03	Gagara 1	419 034	-	334 000	?
04	Tadabat	227 566	-	200 000	?
05	Bouloye	-	423 537		N° 892 UCEC /Sahel/Dori
06	Léré Ibaye	-	624 159		N° 830 UCEC /Sahel/Dori
07	Seytenga	-	209 507		N° 1645 CP de Seytenga (N° 3186B002208 nouveau)
08	Soffokel	-	1 230 486		N° 1650 CP de Seytenga
09	Péoukoye	-	472 578		N° 828 UCEC /Sahel/Dori
	TOTAL	**2**	**2 960**	**534 000**	

		291 654	**267**		

The cash books for the deposit of PES funds are held by in Gorom-Gorom by the NGO's regional office in Gorom-Gorom. A summary of the PES funds uses is provided in the following table 12.

Table 12. Summary of the PES funds use by village communities in REACH Italia's plan vivo projects

N order	Village	PES funds uses made
01	Bossey Etage	In the initial program it was planned to build a borehole for the village, but the funds received could not do this, so the village decided to wait in order to seek additional funds. After a general assembly, it was decided to support 30 women in the implementation of IGAs. With the prevailing security situation in the area, the leaders left the village (1 councilor was assassinated and the other left the village as well as the VDC). Therefore, the funds are still in the account. The funds are used for the rehabilitation of boreholes, according to the women
02	Peteldaye	The VDC President was assassinated and the other leaders became internally displaced persons (IDPs) For the moment, no investment has been made because it was planned to build a borehole but the funds are not sufficient for this; but the amount is available in the account of the VDC. In view of the difficult food situation, the VDC plans with the agreement of the population, to purchase cereals for feed in the village because the crops were not good in 2021. - Rehabilitation of 04 wells - Purchase of a new cart - Purchase of small materials for community work
03	Gagara 1	The funds were spent to repair two (02) boreholes, one at the school and one in the village neighborhood
04	Tadabat	Expenditures were made to repair a village well
05	Bouloye	Rehabilitation of wells; purchase of forest seeds collected in the village, community meals
06	Léré Ibaye	Funds spent on the rehabilitation of 02 boreholes and the construction of a grain mill for women

07	Seytenga	Funds spent on the purchase of seeds, seedlings, small equipment, community meals for men The funds were used to finance the fattening of small ruminants for women
08	Soffokel	Purchase of forest seeds and seedlings for men and management of those who work on plots set up for women
09	Péoukoye	Repair of 5 boreholes, purchase of seeds (plants) and support for people in charge of areas monitoring

Women benefit from payments for ecosystem services in the village with the support to very poor households for healthcare, funding for women's small businesses in Landamaol and investments that have been made in rice farming in Tialel.

To improve the management of funds, the women propose to finance
- fattening of small ruminants for the village and construction of a bouli for market gardening in Mamassiol,
- fattening of small ruminants and schooling of children in Landamaol,
- financing of fattening of small ruminants and income generating activities in Tialel.

7.4. The project committed to deliver at least 60% on average of the proceeds from Plan Vivo certificate sales. Where less than 60% was delivered, the project justified why this was not possible (8.12**)**

After the sale of carbon credits, REACH Italia retains 40% of the amounts and distributes the 60% among villages according to the certificates obtained (table 13). After 2018, inventories could not be conducted at Bossey-Etage, Pételdaye, Tadabat and Gagara 1 sites, which have already received the first transfers of funds, and Touro, Gagara 2, Beiga, Ounaré and Gagara 1, which have not yet received Plan Vivo funds. This situation is blocking the delivery of carbon credits.

Table 13. Total REACH Italia Plan vivo carbon sales in Fcfa

Year	**2018**
Total sales	3 819 423
REACH amount	1 527 769
Amount Villages	2 291 654

B. Conformance	Yes [x]	No [ ]	N/A [ ]
C. Corrective Actions (describe)	OBS 01. The rate of regeneration of woody plants induced by the restoration of degraded soils can be improved by innovative technologies resulting from scientific research. This can increase the survival and growth rate of regenerated trees OBS 02.Given the context of insecurity, it was not possible to measure socio-economic impacts using the focus group technique on community changes and solutions to the negative impacts of the project, or to measure impacts on biodiversity in terms of the number of tree species and the number of herbaceous species present on the recovered pasture sites, or the number of mammal species present during the past year on the recovered pasture sites. However, there is no doubt that the biodiversity indicators are being met. OBS 03. Corrections are needed in the annual reports of Plan vivo projects. In 2016 report, the *Leptadenia hastata* species was considered a woody plant and a plant named just Leptadenia probably *Leptadenia pyrotechnica* (confirmed by photo) was classified as a herbaceous plant in Appendix 5 of the annual report. The spelling and syntax of plants scientific names do not conform to international standards. Thus, *Tribulus terrestris* and not Tribulis, *Ziziphus mauritiana* and not Zizyphus Mauritiana, *Acacia seyal* and not Acaca seyel, ect. A plant called Perriatum in the table of 2016-2018 activity report with the absence of a photo does not allow to identify the plant, nor to comment on its existence in the Sahel. Furthermore, no Perriatum genus has been identified in the country's flora. Plan Vivo 2018-2019 annual report of Rehabilitation and sustainable management by REACH Italia for degraded pastures in the Sahel region of Burkina Faso is incomplete. However, the few recent photos available and the testimonies of producers attest to the high density and sometimes impenetrable "forest" evolution of the restored sites to the extent to constitute hiding places for HANI and carnivorous animals. The handing over of PSE payment account books held by REACH Italia to VDCs of old sites villages in Oudalan would be greatly appreciated by them,		

	as would those of the new villages in Séno.
D. Ouattara Allamadogo Response	*(To be filled out by the Project Coordinator)*
E. Status	*(CLOSED*

Audit Plan

Timetable for the verification of Carbon Credit projects coordinated by the NGOs AGED and REACH Italia

N	Description	Days	November 22				December 22				November 25				December 25				January 25			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	Communication/Negotiation with the Plan Vivo Foundation	1																				
2	Elaboration of the technical and financial offer	1																				
3	Exploitation of documentation	4																				
4	Collection of information in the field	7																				
5	Analysis of the information collected	7																				
6	Drafting of provisional reports (AGED and REACH Italia)	6																				
7	Restitution to the Plan Vivo Foundation Restitution to NGOs and Project BKF/024	1																				
8	Restitution to the Plan Vivo	1																				
9	Finalization of reports (AGED and REACH Italia)	35																				
	Total days	**63**																				

ANNEX 1

The Verifier: GANABA SIOULEYMANE, SENIOR RESEARCHER, INERA/CNRST

Signature: 

Verification Final Report Date: 14th February 2025

APPENDIX

Appendix 1 Status of Implementation of Evaluation Recommendations

Table 14 Major and minor corrective actions resulting from the validation for REACH Italia

Theme	Mojors CAR	Monor CAR	Observations	Action to implemented
Gouvernance		Conduct annual project monitoring and third-party auditing to ensure ongoing compliance with Plan Vivo standard	Projects are subject to biennial reviews and third-party audits to ensure ongoing compliance with Plan Vivo standard	Annual monitoring of projects
		Defined with modes and places for keeping of PSE funds cash books		
Carbon	Define the densities and specific woody species as well as the spontaneous nature of planted species for the sites developed to deliver Plan vivo certificates (PVC)		Density, number of specific species and nature of plants are key requirements for certification regarding payments for ecosystem services	Conduct a plant inventory to define the references for the woody and herbaceous species of new sites for a follow-up
Livelihoods	Define indicators of relevant socio-economic surveillance	Projet negative impacts: return of wild carnivorous animals, injury of animals on sites	Improvement indicators: number of animals per type, livestock calving rate, number of emigration, number of GRN conflicts Return of wild carnivores (jackals, hyenas) may reduce livestock numbers Number of animals	Improvement indicators: number of animals per type, livestock calving rate, number of emigration, number of NRM conflicts

			injured/year in new sites developed at the beginning of rainy season	

Appendix 2. Photographs

Photo 4. Overview of the introductory presentation to the PVC delegates at REACH Italia regional headquarters in Dori.

Photo 5. PVC men delegation of Bossey Etage village.

Photo 6. PVC women delegation of Bossey Etage village

Photo 7. PVC men delegation of Gagara I village

Photo 8. PVC women delegation of Gagara I

Photo 9. PVC women delegation of Tadabat

Photo 10. PVC men delegation of Lere Ibaye village

Photo 11. PVC women delegation of Lere Ibaye village

Photo 12. PVC men delegation of Bouloye village

Photo 13. Part of the PVC women delegation of Bouloye village

Photo 14. PVC men delegation of Peoukoye village

Photo 15. PVC men delegation of Seytenga village

Photo 16. PVC men delegation of Soffokel village

Photo 17. Part of the PVC women delegation of Soffokel village

Year 3. interview sheets Sheet 1. Discussions with beneficiary communities

Village name: BOSSEY ETAGE

Translator's name: BARRY Hamidou

Meeting place: REACH ITALIA meeting room

The questionnaire sent to the beneficiary communities of Plan Vivo project deals respectively with the following points

1. Understanding, awareness, commitment and perceptions of Plan Vivo project beneficiaries.
2. Cross-check the information received from the communities with the annual reports of the projects implementing NGOs (AGED and REACH).
3. Perceptions of beneficiary communities on climate benefit, condition changes (plant density) and biodiversity at sites.
4. Community perception on the impact of plant regeneration and biodiversity on their living conditions.
5. Verification of PES agreements validity, the effectiveness of PES funds payments to communities, and how these funds were used by communities.

1. Understanding, awareness, commitment and perceptions of Plan Vivo project beneficiaries

- 1.1. What is Plan Vivo project beneficiaries understanding (problems to be solved by the actions)?
  - Degradation of pastoral lands
- 1.2. What is the awareness (experience gained through the implementation of actions) of beneficiaries?
  - Actors (communities) capacity building
  - Knowledge of tree care,
  - Meetings between the various project beneficiaries (local villages, project agents)
- 1.3. Participation of beneficiary community actors
- a. What are the awareness promoting participation in the project actions?
  - Information on climate change
  - The benefits of restoring degraded lands

- b. How are the participants selected for the project actions?
  - during General Assemblies, conditions for participation in the Project actions are given (honesty, less travel outside the village)

c. How barriers to participation of vulnerable groups are identified?
- no barriers to the participation of vulnerable groups

d. How are measures to encourage participation defined and taken?
- good participation in the work: verbal encouragement

e. What is the level of community involvement?
- total involvement of the community, especially women
- Sharing information with communities,

f. Is there a forum to periodically discuss the design and progress of the project with other participants and raise any questions or concerns with the project coordinator?
Nature of the meeting:
- Site management through the development and monitoring rules enforcement
- Site visit

Composition:
- Village community

Frequency:
- quarterly

Number of meetings held (year)? 04

g. Is there a complaint resolution system in place? yes /_/ no /**X**_/
Number of cases (year)?

- 1.4. What are the perceptions (how are the project effects felt) of beneficiaries?
  - strengthening of Social Cohesion
  - improvement of incomes
  - regeneration of woody and herbaceous plants on site slows down the transhumance of the herders

2. Cross-check the information received from the communities with the annual reports of the projects implementing NGOs (AGED and REACH).

2.1 Cross-checking the information received from communities with the annual reports of the projects implementing NGOs (AGED and REACH)
What activities has the project completed per year?
- Subsoiling (2015),
- Forest seed collection and seeding on site (2015)
- Regular monitoring

How do you participate in the project actions?
- Physical participation,
- material supply

How to monitor the evolution of developed resources?

- The Management Committee (COGES) is in charge of monitoring the evolution of managed resources through regular and random visits
- The realization of the plants and herbaceous inventory

What are the measures to protect the resources generated by the developments?
- Prohibition of straw collection,
- Prohibition of tree cutting,
- Prohibition to live in the area

3. Perceptions of beneficiary communities on climate benefit, changes in condition (plant density) and biodiversity on sites.

- 3.1. What are the perceptions of beneficiary communities on the project climate benefits?
  - Diversification of practices to adapt to high climate variability (CES/DRS)
  - Heat reduction due to the micro climate created by the site (high density on site through trees and grasses),
  - Increased agricultural yields due to CES/DRS techniques performed on agricultural land

- 3.2. What are the beneficiary communities' perceptions on the changes in condition (plant density) induced by the project?
  - Very high density on sites

- 3.3. What are the beneficiary communities' perceptions regarding the biodiversity on sites induced by the project?
  - Good natural vegetation cover with tree and grass species
  - Provision of habitat for insects and other animals on sites (snakes)

Is there a system in place to accurately record and verify the location, boundaries, and size of each plan vivo plot? Yes / **X**__/ No /__/

Explain:

4. Community perception the impact of plant regeneration and biodiversity on their living conditions.

4.1. What is the communities' perception regarding the impact of project-induced plant regeneration on their living conditions?

Nature of regenerated species?
- Herbaceous grass species (boudia---)

Survival:

Growth :

- 4.2. What is the communities' perception regarding the impact of biodiversity induced by the project on their living conditions?

- Importance (uses) of planted species
- Food complements from the collection of wild fruits and leaves
- Forage production
- Pharmacopoeia

Importance (uses) of regenerated species

- Food supplements from wild fruit and leaf collection
- Forage production
- Pharmacopoeia

- What is the communities' perception regarding the impact on livelihood needs priorities?
  Nature of needs met:
  - Abundance of many tree and grass species
  - Reduction of the harmful effects of climate change
  - Protection and restoration of the environment
  - Creation of income (collection of balanite fruits by women and children: 15 bags of 50 kg at 125 to 150 F / box of milk, 45 bags of 50 kg at 2500 to 3000 F / bag)

Nature of unmet need: not enough site to meet everyone's needs

- What is the community's perception on the impact on food security?
- Food needs solved by site development:
  - Slowing down of youth migration and therefore labor for field work
  - Sales of fruits to purchase foodstuffs
  - Animals feed in stabilization providing income to purchase foodstuffs

  Needs Improvement: Site expansion

- Methods of participation in ecosystem services monitoring (sharing and discussion with participants) ?

How ecosystem services are measured :

- At village general assemblies:

Beneficiary populations participation forms:

- Village communities, Project agents, Environment

Nature of sharing and discussion meetings

- Organization of reviews and follow-up of activities

5. Verification of PES agreements validity, the effectiveness of PES funds payments to communities, and how these funds were used by communities

5.1. Verification of PES agreements validity,

What are the sales numbers?

Year	Quantity	Sale price	Community share	Observations
2016				
2017				
2018				
2019				
2020				
2021				
2022				

How resources are allocated on behalf of target groups?

- 5.2. Verification of the effectiveness of PES funds payments to communities
  Evidence:
  Participants do not have an account book
- 5.3. Verification of how these funds were used by communities

Evidence:
- No available source of verification

Project: AGED /__/ or RICH Italia: /_**X**_/

Date /18/11/2022/ and time: /08H25 to 09 H 30 /

Number of participants: total number of men /_03__/ and women /_00__/

Criteria for participants selection:

- Choice of the village

Concerned village: BOSSEY ETAGE

Number of participants: Men /03 / Women /00/ Group interview /**X**_/ Individual interview /_/

List of participants in the discussion:

Order	**Full name**	**Phone**	**Title**
1.	Abdourame Ellassane	74.42.36.21	Youth representative
2.	Hamadalamine Ousmane	66.45.69.35	Vice-President
3.	Aboubacar Alou	07.22.94.79	Treasurer

- Facilitator's notes on the quality of the method and the meeting

- The village is in an insecure area

List of meeting outcomes (deliverables):

Sheet 2. Discussions with women from beneficiary communities

Village name : SOFFOKEL

Name of facilitator/note taker : CISSE ABDOUL MOUMOUNI

1. Place and date of meeting: DORI on 19/11/2022
2. Level of women's involvement

How many women in the village participate in the carbon project activities?

*40 women

How is the selection of participating women in the activities made done?

* the choice was made in the various districts of the village

How many sharing and discussion meetings do women attend per year?

*24 meetings per year that is 2 per month

Which ethnic groups do not participate in the project activities in the village?

*All ethnic groups participate in the activities

2. Community women's perception of the impact of plant regeneration and biodiversity on their living conditions.

- 4.1. What is the women's perception on the impact of sites developments on village pastures?

  * the developments have had a positive impact on pastures
- What plants have you planted or seeded in the developed plots?
- *DJABI
  *TANI
  *PATOUDE
  *GUELEDJE
  *GAOUDI
  *NAMARO
  *BARKEDJE
  *TCHAIKI
  *BAOBAB
  *NIMIER
  *TANI

*PATOUDE
*NAMARO
*BARKEDJE
*NIMIER

- Which plants are most resistant to drought?

*TANI
*PATOUDE
*TCHAIKI

- Which plants are more resistant to winter flooding?

*GUELEDJE
*GAOUDI
*NAMARO
*BARKEDJE
*BAOBAB
*NIMIER

- What are the impacts of project-induced plant regeneration on your living conditions?

* Plants have improved our diet and that of our livestock

- Which plants regenerate naturally in the plots ?

-TANI
-BARKEDJE
-GAOUDI
-GAOUDEL HAOUSSA

- How does the management of developed plots work?

*We created several groups that take turn to monitor and maintain the sites.

- Are there women in the management committees of the developed plots? If no why ?

* Yes, 3 women

- What are the difficulties of managing parcels?

* lack of water
* the impossibility of monitoring and caring for the plots due to terrorism

- Which plants in the developed plots are useful to you? Specify their roles

*DJABI (we eat the fruits)
*TANI (we eat the fruits)
*PATOUDE (we eat the gum; the fruits are used to feed catle)
*GUELEDJE (we eat the fruits)

*GAOUDI (we use the leaves and fruits for healthcare)
*NAMARO (we use the leaves for healthcare)
*BARKEDJE (we eat the fruits)
*TCHAIKI (we use the fruits for livestock feed)
*BAOBAB (we eat the leaves)
*NIMIER (we use the leaves for healthcare)

3. Community women's perception on ecosystem services payment funds.

- Are you aware of the funds paid by the project to the village?
  *yes
- How are you involved in the management of paid funds?

* we meet with men to decide how to spend the money.

- What are the funds from carbon sales used for?
  * to manage those who work on the developed plots.

  How do women benefit from payments for ecosystem services in the village?
  * those who worked received money for their expenses.

- What suggestions do you have for improving the management of funds?

  * the construction of a well for the whole village
  *building a school
  *build mills
  *development of gardening areas

    - What is the perception of the communities women regarding the impact on livelihood needs priorities?

  What are the needs met by the carbon project?
  *restoration of our degraded lands
  *Improvement of household and livestock feed

  What needs are not met by the carbon project?
  *schooling for our children
  *water needs

- What is the perception of community's women regarding the impact on food security?

* the project had a positive impact on food security

What food needs have been met by site development?

* food needs in leaves for the household and livestock

4. Community women's perception of the governance of the carbon project

How de women participate in ecosystem service measurements (inventory):

* maintenance of plots

* Monitoring the plots

What are the benefits of implementing management rules for managed plots?

* the rules put in place allowed plants to grow well

What are the disadvantages of setting up management rules for developed plots?

*there are no disadvantages

What are the challenges in applying plots management rules?

* no difficulties

How do women participate in conflict resolution related to plot management ?

What is the relationship with the neighboring villages and transhumant herders since the establishment of the developed plots??

* in case of conflicts, the men invite us and we find a solution together

* we are in good terms with neighbouring villages and transhumants

How can we improve these relationships?

* awareness sessions are needed in order to show why we must preserve managed plots

Other elements.

- currently the whole village has moved because of terrorist groups.

List of participants

N°	NAME	FIRST NAMES	FUNCTION	TEL
01	DIALLO	FADIMA		64041996
02	DICKO	AMINATA HAMIDOU		54262253

Sheet 3: Identification and characterization of the project leader

Name of organization	REACH Italia	Status	NGO
Date of creation	1993		
Operating budget amount (in 2022 in CFA francs)	8 000 000		
Locating and identifying of accounts	BOA et ECOBANK		
Signatories of accounts	LONG Allain Yonli Olivier		For Plan Vivo sub-account in Dori, signatories are OUATTARA Allamadogo Mrs. TRAORE Haoua / DIAO
Taxpayer identification number (IFU)	00008344k		
Workforce 2016	Total number of employees	46	
	Local National staff	18	(Nationals from host region)
	Non-local National staff	27	(Nationals other than from host the region)
	Number of non-nationals	1	
Authorization for creation	Order/ Decree	Address/contact	Region/Municipality
	Order 2020- 000383 MATDC / SG/DGLPAP/DOASOC renewing Order 2003-133 MATD/SG/DGPAP/DOASOC	REACH Afrique 06 BP 9904 06 25361520/76618686 reachbf@fasonet.bf	East, Sahel, Center North, North, Boucle du Mouhoun, Central Plateau, Center.

	Identification	Address/contact	Qualification
Name of Director/Coordinator	LONG Allain	REACH Afrique	Director

		06 BP 9904 06 25361520/76618686 reachbf@fasonet.bf	
Name of auditor / PCA			
Were 2021 financial statements audited?)	YES		(If yes, please attach the financial and accounting audit report for 2016 and/or prior years) If not, please consider previous periods
Is there a Board of Directors or Management Board (yes/no)	Yes in Italy.		(If yes, please attach the minutes of the last session and/or previous sessions)
Producer groups or associations in the project's intervention villages (Indicate creation receipts)	The VDCs of intervention villages. The association of the Seytenga breeders		The VDCs are set up by state decree and are therefore recognized
Partner state structures implementing the project (name)	The environmental services of Gorom assisted us in the inventories for the first sites. But with the support of CO2logique we are doing the inventories ourselves.	Partner private structures in the project implementation (name)	
Participatory methods and tools for producer involvement	Programming and animations in villages for plan development. Consultation meetings of VDCs and site management committees. Village assemblies for activities to be conducted with		

	received funds. Inventories on the sites carried out with the producers		
Project implementation communication plan			
Project-based conflict resolution system	The conflict resolution system is based on the land charters that regulate site management. For, when the plan is drawn up, all the prohibitions and possibilities are defined on the basis of the charter, and it is on its basis that the management committees and the VDCs make decisions.		
Number of meetings and training workshops for producers	28		
Number and dates of meetings with specific target groups (youth, women, socially disadvantaged groups) since the project set up.	Youth Given the security situation in the area, meetings are held in the head town of the commune, Gorom. It is in Dori that meetings were held in villages to add them to Vivo plan (see annex reports).	Men	women
Monitoring system developed by the project (against wood cutting, bush fires)	At each site a management committeeis set up to manage the site. This committee includes site supervisors		

Is there a management plan for the developed area?	No. Apart from arrangements made during ploughing

People with roles and responsibilities in the project (names, roles/responsibilities, contact):

-OUATTARA Allamadogo : project coordinator 65201930

- Maiga Amadou Boureima : animator in Gorom) 65201939

-Cisse Abdoul Azize : animator in Dori : 65 20 19 41

-Conseiga Raouda : animator in Dori : 76190521

-

Certification by the Reporting Entity Management

I, the undersigned, for and on behalf of the reporting entity, certify that the information contained in the attached declaration is accurate and reliable.

Name : OUATTARA Allamadogo

Title : project coordinator