Arlomom Patako

Arbres locaux pour un monde meilleur | Local trees for a better world

Plan Vivo Project Design Document (PDD)

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Woman carrying seedlings, Senegal 2012.

Contents

Acronyms

ACRONYM	Name
ISE	Institute of Sciences and the Environment
KSD	Rural community of Keur Saloum Diané
KSG	Rural community of Keur Samba Gueye
NTFPs	Non-Timber Forest Products
PES	Payments for Ecosystem Services
UNDESERT	Understanding and combating desertification to mitigate its impact on ecosystem services
URENE	Natural Ecosystems and the Environment Unit

1 Title of project: Arlomom Patako

2 Executive summary

This Project Design Document describes the Arlomom Patako Plan Vivo project. Arlomom Patako was initiated in 2010 as an innovative component of the UNDESERT[1] program financed by the European Commission (EU-FP7 243906). The project aims to develop sustainable land management practices that combine existing and improved agricultural land uses with reforestation and agroforestry activities with native tree species.

Arlomom, a registered association in Senegal, is coordinating the project. Members of Arlomom are drawn from the Institute of Sciences and the Environment (ISE) and Natural Ecosystems and the Environment Unit (URENE), both of which are connected to the Cheikh Anta Diop University in Dakar (UCAD). The Arlomom Patako project is being developed under the auspices of the EU UNDESERT program.

This project utilises the Plan Vivo System and Standard as a framework to link the ecosystem services, generated by rural communities, to payment mechanisms and markets. Bioclimate Research & Development Ltd. (hereafter Bioclimate) provides; knowledge transfer, guides project development and assists with project planning, community engagement, technical development and Plan Vivo qualification.

The Arlomom project is located in the Patako Forest landscape, which is situated in the Saloum region of West-Central Senegal, north of Gambia. The participating communities in the project activities are from four villages: Médina Ngayène, Keur Andalla Willane, Ndiaye Counda (Nimbato) and Diankou Bodian. These communities lie within 2 km of Patako Forest.

Keur Andalla Willane, Ndiaye Counda (Nimbato) and Diankou Bodian lie within the Keur Saloum Diané (KSD) rural council area. Médina Ngayène is in the Keur Samba Guéye (KSG) rural council area.

The goal of the project is to restore deforested and highly degraded land in the Patako landscape

1 UNDESERT (EU FP7 243906), "Understanding and combating desertification to mitigate its impact on ecosystem services" is funded by the European Commission, Directorate General for Research and Innovation, Environment Programme.

by empowering local subsistence farmers and by generating finance from the sale of carbon credits. The methods for quantifying carbon stocks and carbon benefits and generating Plan Vivo Certificates were developed using an afforestation and agroforestry Plan Vivo technical specification developed by Arlomom. Project activities undertaken in the project area include: afforestation/reforestation, agroforestry, and assisted natural regeneration.

This project has a crediting period of thirty years and a payment period of ten years. Funding has been secured for the first year of activities and the first tranche of PES incentives to participants. Certificates will be issued ex-ante, after annual reporting to the Plan Vivo Foundation. After each successful monitoring period, payments will be made to participants. The certifiable carbon benefits from each activity are as follows: intercropping 36 tCO_2e/ha, boundary planting 40 tCO_2e/ha, plantation 303 tCO_2e/ha, assisted natural regeneration 303 tCO_2e/ha.

3 Aims and objectives

The overall aim of the project is to combat desertification and land degradation by improving the livelihoods of rural communities in West Africa and their capacity to generate ecosystem services.

The core objective of the Arlomom Patako project is to restore deforested and highly degraded land in the Patako landscape by empowering subsistence farmers to adopt sustainable agroforestry and forestry practices using native tree species.

The following specific objectives will contribute to the overall aims and the core objective:

1. Reduce resource and income poverty and increase social resilience in the face of climate change through participation in organised resource conservation activities that support livelihoods
2. Improve ecological sustainability and food security through more diverse and drought, pest and disease-resilient agro-ecosystems
3. Improve economic sustainability and reduce exposure to fluctuations in the prices of crops and fruits through greater product diversity

Tree planting and management will help to reduce poverty by; strengthening the local economy, reducing land degradation and promoting biodiversity. Payments for Ecosystem Services (PES) will provide local farmers with an additional revenue stream that will supplement income from afforestation and agroforestry activities as well as traditional agriculture (e.g. groundnuts, millet, and sorghum).

4 Site information, activities and carbon benefit

4.1. Project location, land type and boundaries

Project location

The Patako Forest landscape is situated in the Saloum region of West-Central Senegal, north of Gambia. Figure 1 shows the location of Patako Forest in Senegal and the initial project sites.

Figure 1: Location of the Patako Forest with locations of initial project sites

4.2 Description of the project area

The area is located in the sub-humid and seasonal tropical climate zone. Annual precipitation is approximately 770 mm and falls mainly in a four-month period from July to October. As in other parts of the Sahel, the area suffered from an extended drought when precipitation declined by 20% from 1967 to 1997 (Woomer et al., 2004; Tappan et al., 2004). Recent precipitation data shows an increasing trend in rainfall.

Soils consist mainly of Lixisols, which are potentially fertile (CR – KSD 2002) but are becoming increasingly sandy and deteriorating due to intensive farming.

The landscape around the Patako Forest was once Sudanian savanna, but has become open savannah mixed with agroecosystems (Van Noordwijk and Ong, 1999). Trees in this mixed landscape are sparsely distributed and declining in number. Much of the land is used for crops and livestock as people are reliant on farming for food and income. The main food-crop is pearl millet (*Pennisetum glaucum*), and the main commercial crop is groundnuts (*Arachis hypogea*). All crops are rain fed and cultivated using a mixture of animal drawn implements and hand tools. In the dry season, vegetables are grown in riverine areas, especially onions (*Allium cepa*). Cashew

(*Anacardium occidentale*) and mango (*Mangifera indica*) are the most common fruit trees.

The Patako Forest is an island of biodiversity and an important carbon sink (Montagnini and Nair, 2004). Figure 2 shows forest cover within the core of the forest. In contrast, tree cover in the cultivated land areas around Patako Forest is very low (around 1%, Christensen, 2010). Trees are sparsely distributed as most have been cleared. Naturally occurring trees have been cleared to for crops, firewood and timber and are still declining by 3% per annum on agricultural land.

Figure 2: Patako Forest

Figure 2: Patako Forest

In Figure 3, the photo on the left shows land denudation caused by unsustainable farming practices. This gives rise to soil erosion and loss of soil fertility. The photo on the right shows degradation of relatively dense vegetation stands in Patako Forest.

Figure 3. Landscape around Patako Forest

Soils and plant vegetation in the Patako landscape are being degraded mainly as a result of population pressure (Chikanda, 2009), a lack of capacity to improve agricultural productivity using sustainable farming methods, and a lack of livelihood alternatives beyond activities that involve overexploitation of natural resources.

Patako Forest is exposed to intensive fires and wood is harvested illegally for fuel wood. Simply enforcing existing forest protection measures in the central forest more strictly will fail to achieve the desired outcome. It is imperative to work closely with communities to develop a more comprehensive and integrated management system.

4.3. Project activities

Project activities undertaken in the project area include: afforestation/reforestation, agroforestry, and assisted natural regeneration.

Afforestation/reforestation - mixed native species plantation

Participants will create small mixed native species plantations. These plantations will produce a variety of goods and relieve some of the pressure on mature standing trees caused by demand for firewood and construction timber, as some of the fruit and nut trees can be pruned for firewood.

Agroforestry - intercropping and boundary planting

Participants will interplant native trees and crops on agricultural land. Nitrogen fixing and soil enhancing species will improve soil quality and crop yields. In addition to improving biodiversity, ecosystem resilience and functions (e.g. hydrological flows, improved soil structure and retention, nutrient recycling), agroforestry activities will improve the productivity, diversity and sustainability of cultivation activities practised by households.

Assisted natural regeneration

Participants will assist regenerating seedlings to become established and regeneration areas will be fenced with living fences ("haie vive" in French) to prevent seedlings being damaged by livestock grazing. Some seedlings will also be planted to enrich and assist natural regeneration processes and increase the establishment rate of economically important species.

Once tree planting and management activities are underway, it will be possible to engage communities in activities that directly protect and reduce degradation of the central Patako Forest. A partnership and joint management plan in which responsibilities are shared between communities and authorities from the Forest Service will be required for this project activity.

Native tree species

Planting native species will help to maintain and conserve biodiversity and will provide other benefits, including:

- Fruits, leaves, bark and roots for food and medicine for local use
- Products for sale where there is a national market in the food, cosmetics and pharmaceutical industries
- Improved soil fertility through nitrogen-fixing
- Erosion control through rooting systems that help bind soil
- Fodder for livestock
- Fuel wood that will be harvested sustainably

4.4. Description of the Plan Vivo Technical Specifications

The afforestation and agroforestry Plan Vivo technical specification is applicable to degraded land around Patako forest. Agroforestry, which includes intercropping and boundary planting, takes place on cropland. Afforestation, which is the establishment of small plantations, and assisted natural regeneration take place on degraded, neglected, or previous agricultural land (Table 1).

Table 1: Technical specification

Title	Type of activity	Objectives	Brief description
Agroforestry - Intercropping	Tree planting	Biodiversity conservation and increased soil fertility and crop yields	Nitrogen fixing tree species planted at a low density throughout an area of cultivated land. Crops continue to be grown in the area and the nitrogen fixing trees improve soil productivity
Agroforestry - Boundary planting	Tree planting	Biodiversity conservation and land demarcation, firewood, fruit, shade, improved soil fertility, protection of crops against wind	Trees planted along the perimeter of individual farms or communal lands
Afforestation - Plantation	Tree planting	Biodiversity conservation and reduction of pressure on the forest Natural fruits, berries, firewood and fodder	Forest plantations with a variety of native species
Assisted Natural Regeneration	Natural regeneration through protection and enrichment planting	Biodiversity conservation and reduction of pressure on the forest Natural fruits, berries, firewood and fodder	Assisted natural regeneration to increase the stocking of valuable species. It involves enrichment planting and managing natural regeneration by fencing off areas to prevent grazing

4.5. Duration of project activities and crediting period

This project has a crediting period of 30 years (2012-2042). The payment period is 10 years.

4.6. Carbon benefits of project activities

For each activity, the certifiable carbon benefit has been estimated using a CO2FIX model. The certifiable carbon benefit is the carbon sequestration of the activity over 30 years. The sequestration potential is treated over and above the baseline figure of 8tCO_2e per ha, and the risk buffer of 10% (Table 2) is subtracted. Please see the afforestation and agroforestry technical specification for details.

Table 2: Summary of baseline and project carbon uptake per hectare over crediting period (figures have been rounded down)

Systems	Baseline ($t CO_2$/ha)	Carbon sequestration above the baseline [*1] (t C/ha)	Carbon dioxide equivalent sequestration ($t CO_2e$/ha)	Risk buffer (10 %) ($t CO_2e$/ha) (10% x carbon dioxide equivalent sequestration)	Project scenario certifiable carbon dioxide sequestration ($t CO_2e$/ha) (Carbon dioxide equivalent minus 10% risk buffer)
Intercropping	8	11	40	4	36
Boundary planting	8	12	44	4	40
Plantation	8	92	337	34	303
Assisted Natural Regeneration	8	92	337	34	303

*1. Carbon sequestration figures are for biomass grown over and above the baseline according to the number of seedlings planted in each system.

4.7. Process and requirements for registering plan vivos

Plan vivos are land management plans which are designed to generate ecosystem services. Arlomom has worked with participants to ensure that the participants' plan vivos meet their livelihood needs and that the activities outlined in the plan vivo do not endanger food security or displace other land-uses. The plan vivos are available to the Plan Vivo Foundation and to external validation or certification agents.

Arlomom has contracts with individual participants and with women's groups (See the sample contract in Appendix D). Each women's group has both a PES contract with Arlomom and a written benefit sharing agreement that describes how the women's group will share benefits fairly amongst themselves through disbursement of payments, investments, or development of livelihood activities.

Before additional participants enter the project, additional funding must be obtained. For new participants to enter the project, they are required to demonstrate land title by registering their land with their Rural Council. Women's groups will register as associations with their Rural Council so that the group may legally hold land title.

Where the fee to register land title or an association is too much for new participants to pay as a lump sum, Bioclimate has made an advance payment to cover the cost of registration. This may be considered an advance payment of PES or a loan to the participants. In the future, the Arlomom Association will decide, on a case-by-case basis, when to extend advance funds to cover the cost of land title registration from project funds.

5 Project governance and financial structure

5.1. Project organisational structure

Arlomom

Arlomom, an association in Senegal, is coordinating the project. Arlomom (Dieuppeul I, villa n° 2176, Dakar, Sénégal) was registered as an association on 28 June 2011. Members of Arlomom are part of the Institute of Sciences and the Environment (ISE) and Natural Ecosystems and the Environment Unit (URENE), both of which are associated with Cheikh Anta Diop University in Dakar (UCAD). The Arlomom Patako project is being developed under the supervision of UNDESERT coordination. Please see Appendix A for a list of responsible staff.

Arlomom carries out the following functions:

- Management of project implementation
- Community engagement
- Technical functions
- Management of the PES trust fund and benefit sharing

Figure 4 shows the organisational structure of the Arlomom Association and how it works with communities.

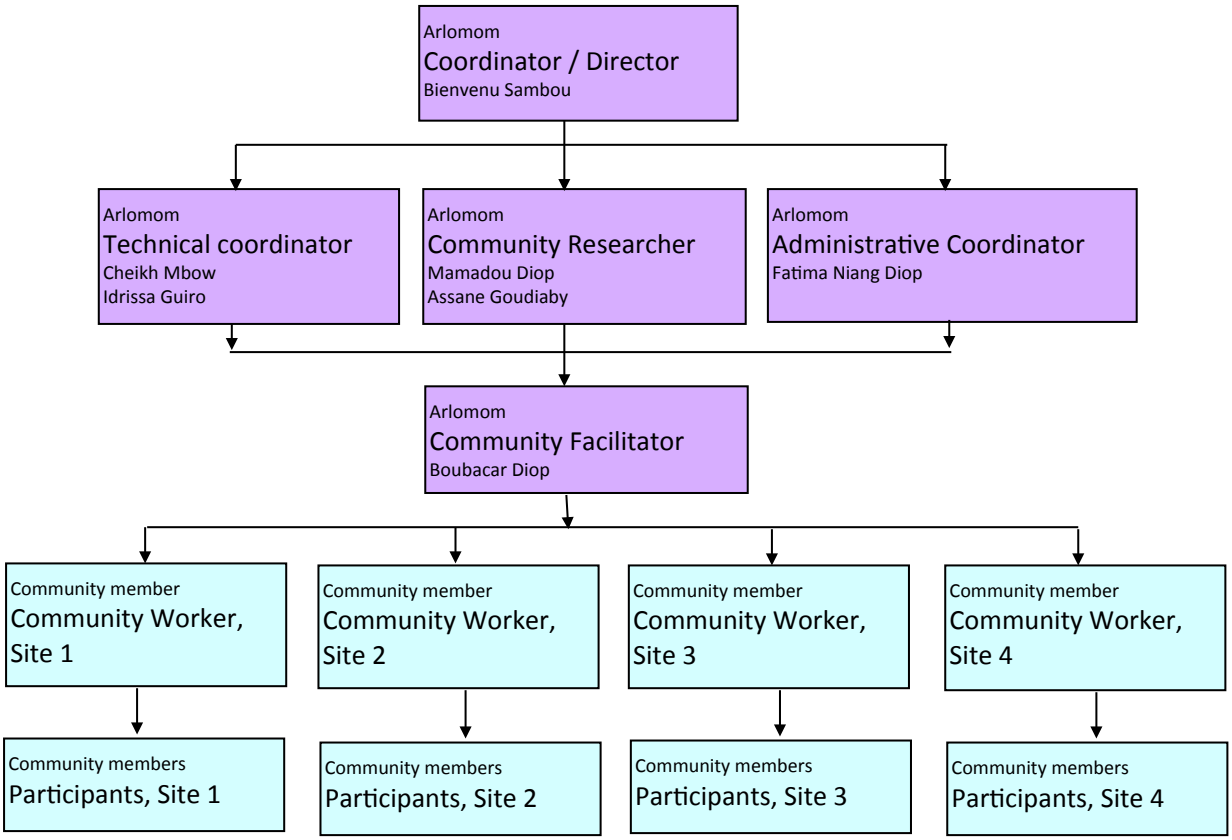

Figure 4. Arlomom organisational structure

Bioclimate Research & Development Limited

Bioclimate Research and Development Limited (Bioclimate) is a not for profit, private company, limited by guarantee, and incorporated by the Registrar of Companies for Scotland, Edinburgh, 22 February 2002, under the Companies Act of 1985. The registration number is SC228400.

Bioclimate is assisting the coordinator group in the project development process, specifically in areas such as capacity building for the coordinator group and project participants; site assessment; community engagement, planning and project design; socioeconomic assessment and the facilitation of community governance and institution building; PES technical development and the development of technical monitoring systems; facilitation of PES payment, benefit-sharing and management arrangements; and the implementation and improvement of project activities.

5.2. Relationship to national organisations

The Arlomom project will comply with all relevant national and international regulations. Government awareness and a level of support for the Arlomom project has been built through a series of meetings with officials from the central and subnational administration and forestry department, including; the DEEC Climate Change Focal Point, Regional Forest Inspector of Fatick (IREF) and his deputy, Chief of the sub-sector of Sokone, Sous-préfet of Toubacouta, and the rural

councils of Keur Samba Guèye (KSG) and Keur Saloum Diané (KSD). Meetings were held with the Regional Council of Fatick, which is the umbrella structure for decentralized local governance bodies in the area.

ISE has agreed with the National Forest Service to carry out forest research and implement a land management plan, after gaining approval from local communities (MOU signed in 2008). A management plan has been prepared and is awaiting approval. Arlomom project activities fall within current regulations and they are oriented towards community involvement in participatory forest management. The Arlomom project is aligned with the government of Senegal's National Adaptation Programme of Action (NAPA) that underlines the importance of forest activities for better livelihoods in vulnerable communities. NAPA details the country's preferred adaptation responses which include: reforestation, restoration of mangroves, dune stabilisation, physical protection against beach erosion, irrigation projects, restoration of soil fertility, water conservation, alternative agricultural cultivars, and adaptation education.

5.3. Project financial structure (sharing of benefits)

PES funds are held in an escrow account administered by Arlomom. After Arlomom reviews and approves each monitoring report, funds will be released to participants. Arlomom makes payments to the bank accounts of women's groups and directly to individuals.

As part of the UNDESERT development funding for Arlomom Patako, €30 000 was budgeted for activities that generate ecosystem services. Of this amount, €5 000 has been used to develop two large tree nurseries, €600 will be used to pay nursery activity groups, and the rest will be used as PES payments for women's groups and individual participants who have plan vivos (approximately €15500 and €8900 respectively). See figure 4, Division of PES Funds.

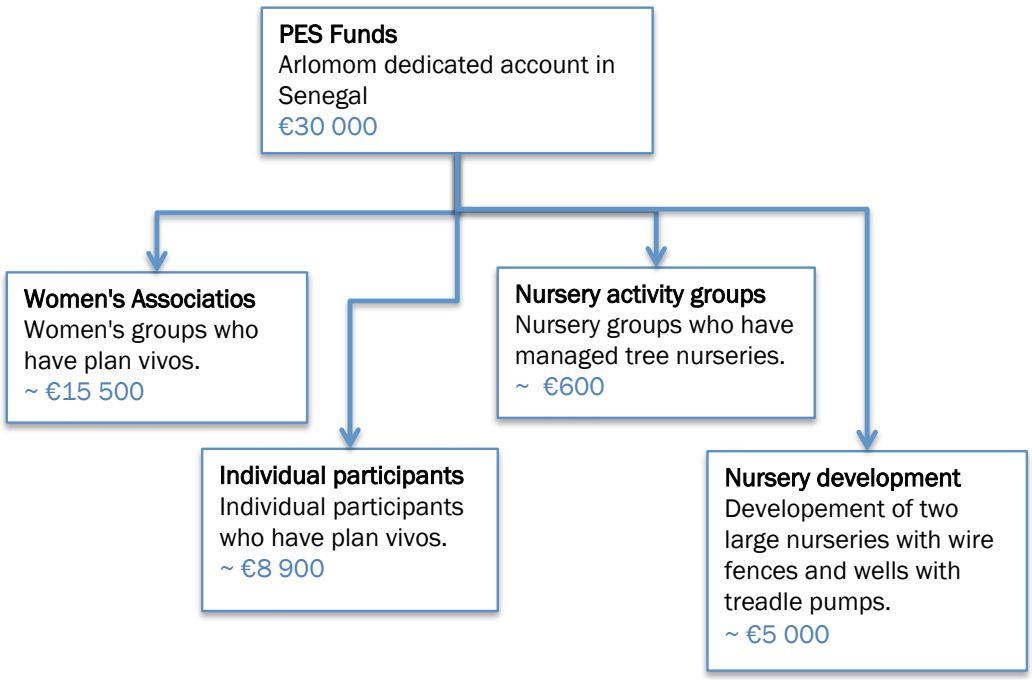

Figure 5. Division of PES Funds

During the development of the project, the operational costs of Arlomom are included as part of the UNDESERT budget. The Plan Vivo qualification fees for the project are included in Bioclimate's budget.

Once the Arlomom project has become a registered Plan Vivo project, a minimum of 60% of the funds from the sale of Plan Vivo certificates will go to participants and it is hoped that this proportion will be significantly higher. An as yet unquantified proportion will be used for Arlomom operating expenses, for the salary of the community facilitator and the certificate issuance fee for the Plan Vivo Foundation, and any costs for marketing Plan Vivo certificates.

Benefit sharing

The women's groups are experienced at fairly sharing the benefits from their group activities. Each women's group will agree how they will share the benefits from activities, and the community facilitator will make a formal, written record of the agreement, which they will then sign. The shared benefits will include: PES payments, NTFPs, and firewood from pruning trees or collecting fallen deadwood. Women's groups may distribute PES payments amongst the group members, make investments, or to develop livelihood activities.

6 Community and livelihood information

6.1. Target communities

The target communities live in poverty, both income and resource poverty, and they depend on subsistence and modest income-generating crop and livestock farming for their survival.

The communities that will participate in the project activities are from four sites: Médina Ngayène, Keur Andalla Willane, Ndiaye Counda (Niombato) and Diankou Bodian. These sites lie within 2 km of Patako Forest. Keur Andalla Willane, Ndiaye Counda (Niombato) and Diankou Bodian fall within the Keur Saloum Diané (KSD) rural council area. Médina Ngayène is in the Keur Samba Guéye (KSG) rural council area.

Description of cultural and socioeconomic context

The rural communities of Keur Saloum Diané and Keur Samba Gueye have a relatively rapid population growth (Table 3).

Table 3: Population in Keur Saloum Diane and Keur Samba Gueye (ANSD, 2008)

Year	Population
1976	14831
1988	26554
2002	48133
2008	51028
2015 Projection	*60953*

Over half the inhabitants of both rural council areas are under 15 years of age. The population density is higher than the national average, which is 58 inhabitants/km2 (ANSD, 2006), (Table 4).

Despite this high population density, the area is characterized by a population exodus due to its proximity to the Republic of The Gambia, and especially the almost complete lack of income-generating activities in the dry season. The rural community of Keur Samba Gueye is the second most impoverished rural community of Fatick (ANSD, 2005).

Table 4: Age and gender distribution and population density

Population	Keur Saloum Diane (KSD)	Keur Samba Gueye (KSG)
Under 15 years of age	54%	55%
65 years of age or older	1%	1%
Women	53%	57%
Population density	79 inhabitants/km^2	107 inhabitants/km^2

Ethnic groups in the Patako area are: Wolof, Mandigo, Sérère, Sarakholé, Fulani, Bambara, Toucouleurs, Diolas, Turki, and Laobe. The Wolof ethnic group is the biggest single ethnic group in both rural councils and constitutes over 60% of residents (65% and 60% at KSD and KSG respectively). Around 20% of the population belongs to the Mandingo ethnic group and lives mainly in the southern and eastern parts of the Patako landscape. The Sérère, mostly located in the west, are the third main ethnic group, while most other inhabitants of the area belong to the ethnic minorities of Sarakholé, Fulani, Bambara, Toucouleurs, Diolas, Turki, and Laobe. Islam is the dominant religion in the area (99%).

The enrolment of children at the 23 public schools is low[2] (23% Keur Saloum Diané and 44% Keur Samba Gueye). Only 18% of girls are enrolled at public schools. For healthcare, the two rural communities have 6 health posts and 18 health huts. Access to drinking water is limited to 18.5% of the population (DPRE, 2006).

Main sources of income

Life in these communities revolves around farming, livestock (cattle, sheep, and goats), handicrafts (wood), and trade (agricultural products, livestock, food, NTFPs). The local economy is dominated by agriculture 80%, which is intensive. Millet is the main food crop and groundnut the main cash crop. Other crops include rice, cowpea, watermelon, sunflower, cotton and tobacco (Anonyme 2007a & 2007b, Diop, 2011).

Rural poverty in Senegal is estimated to affect 65.2% of individuals, and 57.5% of households, based on an absolute poverty threshold. This threshold is defined by the income required to buy a basket of goods to provide 2400 calories per day per adult equivalent unit (AEU)[3]. Using this same threshold, 46.3% of households in the Fatick region are below the poverty line (DSRP2, 2006).

The majority of households are engaged in livestock rearing, while fishing, artisanal activities and small scale commerce also provide income. Many villagers around Patako live in income poverty due to the combination of poor productivity from agricultural land, and an over-reliance on

[2] National rates are 81.8% for the gross enrolment rate and 82.2% for girls' schooling (ANSD, 2006).

[3] The poverty threshold referred to in this case was designed by CREA (Centre de recherches économiques appliquées de l'Université Cheikh Anta Diop de Dakar). It is an absolute poverty level which uses a daily income (production ad cash income) below which an individual or household is considered poor. The calculation of the daily income is based upon the price of a 'basket of goods' which permits consumption levels of 2400 calories per adult equivalent unit (AEU) and a small amount for non-food purchases. The income was calculated at 392CFA/day/AEU (0.59Euros), or 143,080CFA/AEU/year (Diagne et al 2003).

peanuts in an unpredictable global market. Poverty on an individual level is exacerbated by intra-community power relations that prevent women from owning and controlling land and from participating in decision-making about issues that affect their lives.

Relevant local governance structures

Several community structures and organizations operate in the communities. Village associations provide a framework for discussion at the village level and include all residents. Development and cultural objectives have spawned various development associations and interest groups, management committees and sporting and cultural associations. Women's Advancement Groups (GPF) and male Economic Interest Groups (GIE) have been established to capture funding and carry out income generating activities.

Management committees have been created to manage funds and/or infrastructure. These include; health committees that are responsible for decisions on the use of financial resources, associations for education that ensure the smooth functioning of schools with the support of school directors, committees that manage the maintenance of boreholes, farmers and breeders cooperatives, and sports clubs and cultural activities (ASC) for young people. The sport associations often provide a platform for social mobilization.

6.2. Ownership of carbon benefits

Ownership of the land around Patako Forest follows a traditional system whereby someone who clears the land becomes the de facto land 'owner', and this is how land may come to be in the hands of a family of newcomers to an area. Fences may be used to demarcate land holdings. Tree products on privately owned land belong to the person, who plants the trees, provided they are the landowner. Guidance from the national level would appear to indicate that carbon sequestered by trees on private land also belongs to the landowner.

To participate in the project, the landowner must demonstrate that he, she, or the group holds title to the land. Formal land title documents are provided by the rural council.

Arlomom's approach to land tenure security

The Plan Vivo Standard states that for an area of land to be validated under the Plan Vivo System it must be one of the following tenure types: 1) smallholder owner or leased farmland; 2) community owned land; 3) land for which communities have agreed use rights with the owner (Plan Vivo Standard, pg. 15). In the Arlomom project, the tenure mechanism used was based on the perceived needs of communities. These needs were improved soil fertility (to improve crop yields) and increased access to firewood. In the Patako land tenure context (described above), using smallholder owned farmland was the most obvious choice in the first instance, as this type of land tenure can easily be registered with the rural councils. This registration would assure that customary tenure, which is locally legitimate in the eyes of community members, was reinforced by the State's legal mechanism, therefore securing land owner's rights to carbon sales in the long term.

However, women in Senegal rarely own land, and often access land through their husbands (USAID 2010). Around Patako, registering customary land alone would have simply reinforced existing social and power relations to the disadvantage of women in these communities. Women around Patako rely on income from vegetable farming from land that is often not theirs (Arlomom socioeconomic report, 2012). In order to empower women, and ensure that they benefit directly from the Arlomom project, local women's groups were engaged in discussions about Plan Vivo at an early stage in the project. Most of these women's groups already existed in the communities, albeit mostly informally (only one was previously registered as a women's group). Some had savings and loans functions, and many conducted joint livelihood activities together. These self-formed groups have a high degree of mutual trust and social capital, and were motivated by the idea of Plan Vivo.

Therefore, in addition to working directly with men, women's groups became an integral part of the Arlomom project. However, as opposed to men who have customary land claims, women would have to gain rights to areas of land. To achieve this required discussions with the village chiefs in each of the eight villages concerned in order to gain their buy-in to the concept. Granting women in the village an area of land (a minimum of 1.0 hectares per village) was a condition of participation of the village in the Arlomom project. In most cases this was relatively easy to achieve, however, in others there was resistance from the village committee. However, having overcome local barriers to this process, in addition, for women to register land in Senegal as a group, they have to be formally registered. The project therefore facilitated the formation of the GPFs (*groupements de promotion féminine*), a common legal mechanism to register women's groups in Senegal. To date, all nine women's associations have been registered as GPFs, and all nine have received a land title. The average GPF land holding is 1 hectare, and the average man's land holding under a plan vivo land management plan is 1 hectare (see the PDD for more information on activities and carbon sequestration on these holdings).

It is worthy of note for future project activities that this process of registration of land (men and women) and registration of groups (GPFs) requires two different processes. For the first, land titles are registered with the rural council (*commune rurale*), which requires participants to submit their identification cards, the description of the land areas, and an administration fee of 10,000cfa (15.2 euros). This process can take anywhere between two weeks and two months, and was delayed in this case due to administrative changes during the Senegalese election (January-April 2012). The registration of women's groups requires women's groups documents (identification card of the president, and a copy of the verbal proceedings of the groups' general assembly) to pass by the rural council, the sub-division (arrondissement – passing by the office of the *sous-préfet*), the department (the office of the *préfet*) and the Fatick region (the office of the governor), which took several weeks to complete.

6.3. Socio-economic context and anticipated impacts

Arlomom project activities are designed to protect the Classified Forest of Patako by improving the livelihoods of local people. Over time, the vegetation in the area is anticipated to develop through plan vivo activities which in turn, it is hoped, will reduce population pressure on riparian forest.

The native species selected will provide a number of benefits, including:

- Fruits, leaves, bark and roots for food and medicine for local use
- Products for sale where there is a national market in the food, cosmetics and pharmaceutical industries
- Improved soil fertility through nitrogen-fixing
- Erosion control through rooting systems that help bind soil
- Fodder for livestock
- Fuel wood that will be harvested sustainably

Table 5 shows the selected native tree species and their main functions. These species are robust and adapted to survive in the harsh ecological conditions of the Soudan-Sahelian zone.

Table 5: Trees species selected for activities and their main functions

	Tree species	**Functions**
1	*Adansonia digitata*	Fruits, bark, leaves
2	*Cola cordifolia*	Fruits
3	*Cordyla pinnata*	Fruits, leaves, bark, fertilizer
4	*Daniellia oliveri*	Bark
5	*Detarium microcarpum*	Fruits, bark, roots
6	*Detarium senegalense*	Fruits, bark
7	*Faidherbia albida*	Fertilizer, fruits, fodder
8	*Khaya senegalensis*	Bark
9	*Neocarya macrophylla*	Fruits, bark
10	*Parkia biglobosa*	Fruits, bark
11	*Pterocarpus erinaceus*	Wood, fodder, bark
12	*Saba senegalensis*	Fruits
13	*Combretum glutisonum*	Wood
14	*Terminallia macroptera*	Wood
15	*Prosopis Africana*	Wood
16	*Ziziphus mauritiana*	Fruits

6.4. Community-led design and livelihood benefits

The Arlomom project has been developed through a participatory and inclusive approach. Through local meetings, local people have been involved in decision-making. They had decided which tree species to plant and have steered the design of the land management systems. The sharing sessions and awareness helped local people to get involved in making decisions and to be responsible for the selection of sites, participants, species and systems (agroforestry, boundary planting, plantations, and assisted natural regeneration). Participants chose native trees species taking into account their livelihood needs, preferences, and concerns about the declining resources of the Patako Forest.

The initial pilot sites and participants were selected based on a number of criteria; the communities' willingness to allocate land to women's groups to have their own plan vivos, the motivation of the individuals to participate in the activities, the availability of land and water, and proximity to the Patako Forest.

During the community consultation exercises and the early phase of project development four key issues arose; species selection, land tenure security, nursery establishment and tree planting.

The selection of native tree species, and management practices, for restoring forest in the Patako area was guided by meetings with the local communities and with other local stakeholders, such as the Forest Service and rural councils. Nine community meetings took place within local villages to discuss the choice of tree species; species that that would meet local livelihood needs and would improve aspects of the local ecosystems; such as improving soil fertility, providing shade and retention of soil moisture.

At each of the eight participating villages, individual interviews were conducted with potential project participants and, once a draft tree species list was compiled, the list was discussed with forest technicians, scientists and the wider population, to agree the definitive list of tree species. A list of sixteen tree species was finalised, according to the species suitability, the livelihoods benefits (fodder, fruit, medicinal value, etc.) and for their ecosystem functions (soil structure and fertility improvement, production of leaf litter, etc.).

The local nurseries were established in partnership with the communities and in close collaboration with forest technicians. Women have been intimately involved in the process of establishing the nurseries and the tending and maintenance of the trees; they have been trained in seed collection, seed potting, seed sowing and plant management and plant survey.

Continuing activities

The Arlomom Association is responsible for project coordination. With support from the Forestry Department, Arlomom will provide assistance to local communities, including organization, training, land tenure security, production of seedlings, and development of income-generating

activities and the sharing of benefits from the PES.

Monitoring and evaluation activities will be planned by the team in close collaboration with the Department of Water Affairs and Forestry. The support team will also focus on the management of the forest of Patako and development of NTFPs.

6.5. Capacity building and training

Arlomom has initiated a number of outreach and training sessions to strengthen the capacity of local people. In each of the pilot villages, an awareness session was organized for the benefit of the community to give them a better understanding of the Plan Vivo system and the Arlomom project.

Training sessions in seed collection techniques and production nurseries were organized with the technical support of the National Project on Forest Seeds (PRONASEF) and officials of the National Nursery of Senegal. These sessions focused on seed prospecting techniques and identifying seed sources, harvesting techniques, processing and packaging of seeds. The sessions also covered nursery management, focusing on: substrate, potting, seeding, planting, protection and the maintenance of seedlings.

A training session was provided to women to assist them to improve the management within their women's groups (GPFs). The session focused on organizing women in Group Women's Advancement (GPF), the mechanisms for effective management of production activities, management of funds, and profit sharing.

In August 2012, Arlomom demonstrated tree planting for land management systems to participants. Following the demonstrations, participants planted trees on their land for afforestation, agroforestry and assisted natural regeneration.

6.6. Monitoring livelihood and socio-economic impacts

Household and asset income survey

Arlomom has carried out several household surveys. The sampling strategy included 30 households where there is a male participant and a control group of 30 households where there are no male participants. People were invited to participate in the surveys based on a process of random selection from a list of households provided by the Rural Council. Each house visited during the survey has been mapped, and the GPS coordinates recorded.

During household questionnaires, respondents provided information about the household and its members, housing, livestock, land, farm equipment, agricultural production, income and household expenses (food, health, education, etc.).

Seven socio-economic indicators will be monitored over the course of the project to estimate impacts on livelihoods. The categories of the socioeconomic indicators are:

1. Housing materials
2. Type and number of livestock
3. Area of land used for crops and gardens
4. Type and number of agricultural tools
5. Agricultural production of groundnuts and millet
6. Household income
7. Expenses for health and education

Annual group discussions

Annual meetings will be held between Arlomom and community focus groups as part of the socioeconomic monitoring. Changes observed during the year will be discussed to understand the context and the implications of any changes to socioeconomic conditions.

7 Ecosystem impacts and monitoring

The community areas lie within 2 km of the Patako Forest. The forest is a diverse ecosystem with different vegetation types. These include woody savanna and shrub savanna. The dominant vegetation type is woody savanna which belongs to the Sudanian Zone of West Africa. There is relatively high biodiversity in the forest, with are approximately 200 tree species (8 of which are associates of the Guinean domain) and 125 species of birds, which is approximately 20% of the recorded species in Senegal. The bird population includes; endangered species - *Necrosyrtes monachus, Gyps africanus and Gyps rueppellii* - one vulnerable species - (*Torgus tracheliotus*), and two near-threatened species - *Circus macrourus* and *Falco vespertinus* - (IUCN Red Data Book vers. 3.1. 2001). It is home to a number of mammalian and reptilian species including the Western Red Colobus (*Procolobus badius*), classified as endangered (EN) by the IUCN Red List of Threatened Species (2012).

Agroforestry activities should increase biodiversity around rural communities with trees functioning as habitat islands in an otherwise intensively used landscape. Afforestation and assisted regeneration is designed to abut the Patako Forest, thus extending the forest area and creating habitat network corridors.

As tree cover increases it is anticipated that the ecosystem services of soil conservation and water availability will be enhanced (Table 6).

Table 6. Summary of expected impacts of project activities on key environmental services

Title of technical specification	Biodiversity impacts	Water availability/watershed impacts	Soil productivity/conservation impacts
Agroforesty – Intercropping and boundary planting	Increase biodiversity around the communities	Protection of watersheds	Prevention of soil erosion Improve soil structure and fertility
Afforestation - plantation	Improve the biodiversity around Patako Forest and prevent the degradation inside the Forest	Protection of watersheds	Prevention of soil erosion Improve soil structure and fertility
Assisted natural regeneration	Improve the biodiversity around Patako Forest and prevent the degradation inside the Forest	Protection of watersheds	Prevention of soil erosion Improve soil structure and fertility

8 Additionality of project and project activities

There is a need to work with smallholder farmers across the Patako landscape to develop sustainable land management plans that integrate more trees into farming activities and increase tree cover in the landscape. As much of the land in the area is cultivated, putting more trees into the landscape may, in the estimation of local communities, compromise existing economic and livelihood activities, such as farming. Therefore the benefits of tree planting need to compare with the proportional loss of value of cropland; or enhance the productivity of cropland.

Unfortunately tree seedling availability is limited and few local inhabitants can afford them. A greater obstacle to the successful planting and maintenance of trees is a lack of fencing to prevent livestock from eating and damaging seedlings and young trees.

Despite these barriers, local people express a strong interest in planting and managing trees. Community surveys have found that smallholders are willing to allocate an average of as much as 20% of their land to trees (Chistensen, 2010 *in prep*). However, there is a need for financial incentives and other resources, technical assistance and capacity strengthening measures, and a supportive institutional framework to enable local inhabitants to plant and maintain trees.

Table 7 below summarises the Additionality tests of regulatory surplus, common practice, and barriers to implementation.

Table 7. Additionality test

Additionality Test	Initial scenario	Action
Regulatory surplus	Patako Forest is a national forest (Foret Classée) and is controlled by the forest administration. The Forest service is developing a management plan for the Patako Forest, but the forest is still under pressure as people use forest resources unsustainably. Agroforestry activities are allowed in the area surrounding the Patako Forest	Reduce pressure on the Patako forest through tree planting and assisted regeneration activities and incentives through PES
Common practice	Non-sustainable agricultural practices	Manage land sustainably. Implement afforestation/reforestation (mixed native species plantation), agroforestry (intercropping and boundary planting), and restoration (assisted natural regeneration) activities
Implementation barriers		
Financial	No money to develop project. No system currently in place for financing ecosystem service payments	Funding secured to cover project development costs and make a modest initial tranche of ecosystem service payments in order to test project processes
Technical	Project coordination team requires staffing complement and capacity building to implement and manage project. Communities without awareness and skills to initiate project activities and management processes	Recruitment and training of project staff with emphasis on the transfer of coordination, administration, technical, financial and data management skills. Develop and implement of project activities
Institutional	Organisational, cultural, social barriers	Facilitation and training to guide and strengthen community groups and structures to organise and implement project activities. Awareness to alter current land and ecosystem management practices

9 Monitoring, technical support and payment plan

Monitoring of performance indicators

The facilitator will carry out regular monitoring to determine the performance of project activities. The indicators are seedling survival and protection from livestock (Table 8). The indicators are part of the template contract between Arlomom and participants in Appendix D.

Table 8. Monitoring indicators

Year	Indicator
1 month, Sep	Plot establishment
6 month, Jan	Seedling survival and protection from livestock and fire
1 year, Oct	Seedling survival
2 years, Oct	Seedling survival
5 years, Oct	Seedling survival
7 years, Oct	Seedling survival
10 years, Oct	Survival

After each monitoring period, the facilitator will summarise the data and submit a monitoring report to Arlomom. Annually, the monitoring results are aggregated and formally submitted to the Plan Vivo Foundation.

Payment plan

Payments are made to participants, based on performance thresholds (Table 9). The thresholds are part of the template contract between Arlomom and participants in Appendix D.

Table 9. Payment thresholds for seedling survival

Survival (%)	Payment amount (%)
80 to 100	100
60 to 79	80
40 to 59	60
20 to 39	40
10 to 19	20
< 10	0

The schedule of PES payments to be made over 10 years is shown in Table 10.

Table 10. Reporting and payment schedule

Year	Percentage payment (%)	Date of monitoring and validation of report	Date of payment (conditional on monitoring)
1 Month (2012)	15%	Sept/2012	Feb/2013
6 Months (2013)	15%	Mar/2013	April/2013
1 Year (2013)	15%	Oct/2013	Nov/2013
2 Years (2014)	10%	Oct/2014	Nov/2014
5 Years (2017)	15%	Oct/2017	Nov/2017
7 Years (2019)	15%	Oct/2019	Nov/2019
10 Years (2022)	15%	Oct/2022	Nov/2022

Technical support

Arlomom members will provide technical support for the project. The community worker will provide support to nursery activity groups and to participants to plant and manage their Plan Vivos. The administrative coordinator is a biologist, and she will advise on nurseries and agroforestry activities. The socioeconomic coordinator will provide technical support and assistance to carry out socio-economic surveys and analysis. Two PhD students have worked with Arlomom group to produce the technical specifications for the project. As the project is linked with the UNDESERT program staff work closely with doctoral and postdoctoral students.

Where possible and appropriate, Arlomom Senegal will draw on technical support from the Forest Service to help to ensure participants are able to carry out project activities.

10 Compliance with the law

Arlomom project activities are aligned with current government regulations on community involvement in participatory forest management. Further, the project conforms with and underpins Senegal's National Adaptation Plan; this underlines the importance of forest activities for better livelihoods in vulnerable communities. The project will comply with relevant national and international regulations. Plan vivo land management plans and PES contracts correspond with the national forest management guidelines.

11 Certification or evaluation to other standards

This project is a certified Plan Vivo project. It is not certified or evaluated under any other standards.

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13 Appendicies

Appendix A: List of responsible staff and contact information

Table 11. Arlomom Patako Community PES Project coordination team

Name	Expertise	Institutions
Bienvenu Sambou	Botany, forest resource assessment and management	Arlomom president and ISE-URENE (Researcher, Director)
Assane Goudiaby	Biogeography, rural appraisal	Arlomom General secretary and ISE-URENE (Researcher)
Cheikh Mbow	Geography, forest modelling, remote sensing, GIS.	Arlomom Deputy general secretary
Fatimata Niang Diop	Botany, ecosystem dynamics and species assessment	Arlomom Vice president and URENE/ISE (Researcher)
Mamadou Diop	Sociology, decentralization and local development	Arlomom Auditor and URENE/ISE (Researcher)
Idrissa Guiro	Geography, remote sensing, GIS.	Arlomom Assistant treasurer and ISE-CAREX (Researcher)
Boubacar Diop	Rural development and forestry	Arlomom member and Community worker

Table 12. Bioclimate project development support roles

Role	Name
Development coordination and support	Rob Harley
Development coordination and support	Willie McGhee
Technical development support	Wendelin Aubrey
Technical development support	Ezra Neale
Socioeconomic and governance support	Mike Riddell

Appendix B: Funding

As part of the UNDESERT development funding for Arlomom Patako, €30 000 was budgeted for activities that generate ecosystem services. Before additional participants may enter the project, additional funding must be obtained.

Appendix C: Technical specifications

The technical specification for this project is afforestation and agroforestry and has been provided as an attached document.

Appendix D: Community PES contracts

Arlomom has signed PES contracts with the individuals and women's groups who establish plan vivos. Each PES contact includes a monitoring plan and a PES disbursement plan.

Separately, the women's groups have created benefit-sharing agreements amongst themselves. Arlomom keeps copies of these benefit-sharing agreements on file.

Appendix E: Database template

Each year, the project will submit monitoring results to the Plan Vivo Foundation before certificate issuance. The information will be presented according to the Plan Vivo reporting guidelines:

Plan Vivo Annual Report – Template Requirements 2011

Appendix F: Permits and legal documentation

All individuals and women's groups hold legal land title for the land where they have established their plan vivos. Arlomom holds a copy of the land title for each participant with a copy of their PES contract and plan vivo land management map.

Appendix G: Evidence of community participation e.g. Meeting minutes

Communities have been intimately` involved in designing activities. Trip reports document community involvement in participatory activities:

Appendix H: Support of national organisations

ISE has agreed with the National Forest Service to carry out research and implement a land management plan upon acceptance and approval of local populations (MOU signed in 2008). A management plan has been prepared and is awaiting approval. Arlomom project activities are aligned with current regulations oriented towards community involvement in participatory forest management. The Arlomom project will also support the National Adaptation Plan that underlines the importance of forest activities for better livelihoods in vulnerable communities. Please see the first Bioclimate field report for further information on meetings with stakeholders.

Appendix I: Annual reports

Annual reports will follow the Plan Vivo reporting guidelines.

Appendix J: Verification reports

A validation report will become available when Arlomom Patako becomes a registered Plan Vivo project.

Association Arlomom

Arbres **lo**caux pour un **mo**nde **m**eilleur

CONTRAT

entre

l'association ARLOMOM et

le Groupement de Promotion Féminine de Keur Andalla Willane

INTRODUCTION

Le projet Arlomom Patako a obtenu un financement de la Direction générale de la recherche et de l'innovation du Programme Environnement de la Commission Européenne. Ce projet s'inscrit dans le cadre du programme UNDESERT (Understanding and combating Desertification to mitigate its impact on ecosystem services) et a pour objectif de favoriser la reconstitution du couvert végétal pour contribuer à la séquestration du carbone et à l'amélioration des conditions de subsistance des populations rurales par le paiement des services écosystémiques issus des arbres plantés.

Ce contrat décrit les rôles et les responsabilités de l'Association Arlomom et le GPF de Keur Andalla pour la mise en œuvre du projet autour de la forêt de Patako située dans la région de Fatick (Centre-Ouest du Sénégal). Il décrit également les termes et conditions régissant la production de services écosystémiques et le paiement pour ces services liés aux activités de plantation et de régénération naturelle assistée.

Les services écosystémiques générés sont payés en accord avec les normes de la Fondation Plan Vivo.

ARTICLE 1. PARTIES AU CONTRAT

Ce contrat est entre l'Association Arlomom dont le siège se situe à Dieuppeul I, villa n° 2176, Dakar, Sénégal et le GPF de Keur Andalla enregistré sous le récipissé numéro……dont le siége se situe dans le village de Keur Andalla Willane dans la communauté rurale de Keur Saloum Diané (Région de Fatick).

ARTICLE 2. RÔLES DU GPF DANS LA MISE EN ŒUVRE DU PROJET ARLOMOM

Le GPF de Keur Andalla est maître d'œuvre de son « plan vivo » en annexe D qui lui appartient comme signalé à l'annexe E. Le « plan vivo » est un plan d'aménagement et de gestion des terres pour générer des services écosystémiques.

Pour mettre en œuvre son plan vivo, le GPF s'engage à :

- protéger individuellement ou de par une clôture les arbres plantés dans le plan vivo
- assurer le suivi et l'entretien des arbres de leur plan vivo
- informer Arlomom de tout problème encouru lors de la mise en œuvre de son plan vivo
- mettre en œuvre les actions correctives assignées par Arlomom pour une meilleure survie des
- organiser et bien gérer le partage des bénéfices issus des services écosystémiques générés par les arbres plantés comme :
- la récompense issue des PSE

- les produits non ligneux tirés des arbres sans les endommager
- le bois issus de l'élagage des branches ou du ramassage

ARTICLE 3. RÔLES DE L'ASSOCIATION ARLOMOM

Arlomom est le coordonnateur du projet et est responsable de la planification et de la mise en œuvre des activités du projet. Il doit :

- Planifier et coordonner les activités d'aménagement et de suivi
- assurer un suivi des impacts socio-économiques du projet
- assurer le paiement des services écosystémiques en conformité avec le plan de paiement basé sur les résultats du suivi (tableaux 2, 3, et 4). Dans le cas où le GPF de Keur Andalla n'a pas obtenu de résultat appréciable, ARLOMOM ne doit pas procéder au paiement mais, Arlomom doit assigner une mesure corrective au groupement de femmes pour l'obtention de meilleurs résultats.

ARTICLE 4. SUIVI DES PLANTATIONS ET SYSTÈME DE PAIEMENT

La méthode et les activités de suivi des plantations sont indiquées en annexe B. Des indicateurs de suivi basés sur le taux de survie, les actions de protection contre les feux et le bétail seront utilisés.

Le plan de suivi et le système de paiement sont annexés à ce contrat (annexes B et C). Le suivi est basé sur des indicateurs simples. En cas de réussite, une récompense est donnée et le système de paiement est lié aux taux de réussite. Par contre, en cas de non réussite, la mesure corrective proposée par Arlomom doit être appliquée par le GPF. Après l'application de cette mesure, s'il y a une réussite, une récompense sera donnée sur la base du taux de réussite.

ARTICLE 5. RESOLUTION DE CONFLIT

En cas de difficulté qui naitrait de l'exécution du contrat entre Arlomom et le GPF, les parties s'engagent à la résoudre à l'amiable et se réservent le droit de mettre fin au présent contrat en cas de force majeure.

ARTICLE 6. DISPOSITIONS GENERALES

L'association ARLOMOM décline toute responsabilité pour ce qui a trait à l'assurance-vie, l'assurance-maladie, l'assurance-accident, l'assurance-voyage ou protection contre tout autre risque.

ARTICLE 7. DUREE DU CONTRAT

L e contrat prend effet à partir de la date de sa signature et dure dix (10) ans. En cas d'application

de mesure corrective et de retenue de récompense dans la dixième année, il est prévu d'allonger d'une année maximale la durée du contrat.

Les parties ont compris et sont tombés d'accord sur les termes de ce contrat et leurs annexes.

Association Arlomom :	**Groupement de Promotion Féminine:**
Nom du Président : Bienvenu Sambou	Nom de la présidente du GPF :
Signature:	Signature:
---	---
Date:	Date:
---	---

ANNEXE A: DÉTAILS DU CONTRAT

Table 1: Détails du contrat

1	Groupement de Promotion Féminine (GPF)	
2	Présidente du GPF	
3	Adresse	
4	Système d'aménagment	
5	Superficie (ha)	
7	Date de plantation (MMM/YYYY)	Août 2012
8	Durée du contrat	10 ans
9	Bénéfice total de carbone (tCO_2e)	
10	Marge de sécurité du carbone (10%) (tCO_2e)	
11	Carbone total certifiable (tCO_2e) (Bénéfice total de carbone – Carbone total certifiable)	
12	Bailleur et Acheteur	UNDESERT (EU FP7 243906), "Understanding and combating desertification to mitigate its impact on ecosystem services" est financé par la Direction Générale de la Recherche et de l'innovation, Programme Environnement de la Commission Européenne.
13	Prix (Euros/ tCO_2e)	
14	PSE (Euros) Carbone total certifiable (tCO_2e) x Prix (Euros/ tCO_2e)	

ANNEXE B: SUIVI

1. la parcelle sera suivie pour évaluer le taux de survie et la protection.
2. Le paiement se fera en fonction des résultats du suivi bases sur des indicateurs définis aux tableaux 2 et 3.

Tableau 2: Indicateurs de suivi

Date de suivi	Indicateur
1 mois, Sep	plantation
6 mois, Jan	Survie et protection contre le feu et le bétail
1 an, Oct	Survie
2 ans, Oct	Survie
5 ans, Oct	Survie
7 ans, Oct	Survie
10 ans, Oct	Survie

Tableau 3: Suivi et taux de réussite

Taux de survie (%)	Montant du paiement (%)
80 à 100	100
60 à 79	80
40 à 59	60
20 à 39	40
10 à 19	20
< 10	0

ANNEXE C: CALENDRIER DE PAIEMENT

Tableau 4. Calendrier de paiement

Année	Montant du paiement (%)	Paiement total (Euros)	80% Paiement partiel (Euros)	60% Paiement partiel (Euros)	40% Paiement partiel (Euros)	20% Paiement partiel (Euros)	Date de suivi et de validation du rapport (MMM/YYYY)	Date de paiement (conditional on monitoring) (MMM/YYYY)
1 Month							Sept/2012	
6 Months	15%						Jan/2013	Feb/2013
1 Year	15%						Oct/2013	Nov/2013
2 Years	20%						Oct/2014	Nov/2014
5 Years	20%						Oct/2017	Nov/2017
7 Years	15%						Oct/2019	Nov/2019
10 Years	15%						Oct/2022	Nov/2022
Total	100%							

ANNEXE D: PLAN D'AMÉNAGEMENT (PLAN VIVO)

ANNEXE E: TITRE FONCIER

Arlomom Patako | UNDESERT WP 5.4

Report on Plan Vivo project development visit 1
Senegal | 7 - 16 November 2010

Authors: Wendy Aubrey, Rob Harley
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Contents

1 Executive summary

In November 2010, staff of BioClimate, the Plan Vivo Foundation and the University of Aarhus visited Senegal and spent nine days together with the coordinator group from Cheikh Anta Diop University (UCAD) in Dakar. This included five days in the field, visiting stakeholders and communities in the project area surrounding the Patako Forest. The purpose of the visit was to progress the design and development of the Plan Vivo project under the umbrella of the overarching UNDESERT project.

For ease, representatives of the above named organisations are referred to in this report as the “project team”. It should be stressed, however, that Plan Vivo staff participated in the visit primarily to observe the project development process and to assist with some of the training of the coordinator group staff.

The name chosen for the Plan Vivo Senegal project is *Arlomom Patako*, and for the project coordinator group, *Arlomom Senegal*.

Outcomes of the visit were:

1. Communication opened with government
2. Four pilot project sites selected
3. Agreed working modalities for the coordinator group (structure and roles still to be formalised)
4. Work plan for the initial phase of project development

Stakeholder engagement

Sections of the government (central and subnational administration and forestry officials) and a number of other key stakeholders have been made aware of the Arlomom Patako project. Meetings have been held with Madeleine Sarr (DECC) Climate Change Focal Point, the Deputy inspector of Fatick (IREF), Chief of the sub-sector of Sokone, Sous-préfet of Toubacouta, and the rural councils of Keur Samba Guèye (KSG) and Keur Saloum Diané (KSD).

During the meetings, a number of tree planting and other natural resource use management (NRM)

initiatives operating in the Patako area were identified. The next steps are to:

1. Maintain communication and continue building support for the Plan vivo project
2. Find and follow through on ways to cooperate with other initiatives and stakeholders operating in the area

Site selection and project participation

The project team visited 14 potential Plan Vivo sites (villages or village clusters) in the landscape around the Patako Forest. Four pilot sites were selected for project activities:

1. Santhiou Bodian (KSD)
2. Keur Andala (KSD)
3. Ndiaye Kounda (KSD)
4. Médina Ngayène (KSG)

The funding available for payments for ecosystem services (PES) will determine the scale of participation. It is expected that the number of initial participants from each of the selected sites will be relatively small. The initial participants will be those who submit land management plans (plan vivos) first.

Tasks and actions

A task list has been drawn up for the period from November 2010 to end-June 2011. A responsible person (champion) and support persons have been agreed for each task, and the activities required to complete the task have been described and timetabled in a work plan.

One of the early tasks of the coordinator group is/has been to meet with all the villages visited and inform them of our site selection decision and the reasoning behind it. Those villages not selected for pilot Plan Vivo activities need to be informed that there may be an opportunity to participate in the future as the project grows, although this is obviously dependent on our ability to source further funding for PES.

2 Introduction

In November 2010, staff of BioClimate, the Plan Vivo Foundation, and the University of Aarhus visited the Plan Vivo project coordinator group in Senegal. Members of the coordinator group are part of the Institute of Sciences of Environment (ISE) Natural Ecosystems and the Environment Unit (URENE), both of which are associated with the Cheikh Anta Diop University in Dakar (UCAD).

During the visit, the Plan Vivo project was named the *Arlomom Patako* project. This is a short form of the expression "Aar loo moom" in the local Wolof language, meaning "people look after that which belongs to them", and also short for the French "Arbres locaux pour un monde meilleur", meaning "local trees for a better world". The project coordinator group is referred to as *Arlomom Senegal*.

2.1 Objectives

The objectives of the visit were as follows:

1. Agree organisational structure, arrangements and support processes for coordination team
2. Further strengthen the capacity of the coordinator group to develop and implement Plan Vivo project
3. Agree site selection considerations, visit and assess candidate sites
4. Select pilot sites and communities
5. Carry out community capacity building, awareness raising, expectation management
6. Meet with Climate Change Focal Point
7. Agree approach to site coordination activity
8. Work planning with roles, responsibilities, and timing for activities and tasks following the visit

2.2 Outcomes

1. Communication opened with government
2. Four pilot project sites selected
3. Agreed working modalities for the coordinator group (structure and roles still to be formalised)
4. Work plan for the initial phase of project development

2.3 Itinerary

Prior to the visit, the coordinator group exchanged some information with BioClimate about potential project sites. During the visit BioClimate and Plan Vivo Foundation provided training on the Plan Vivo system and key project concepts and components.

Table 1: Itinerary

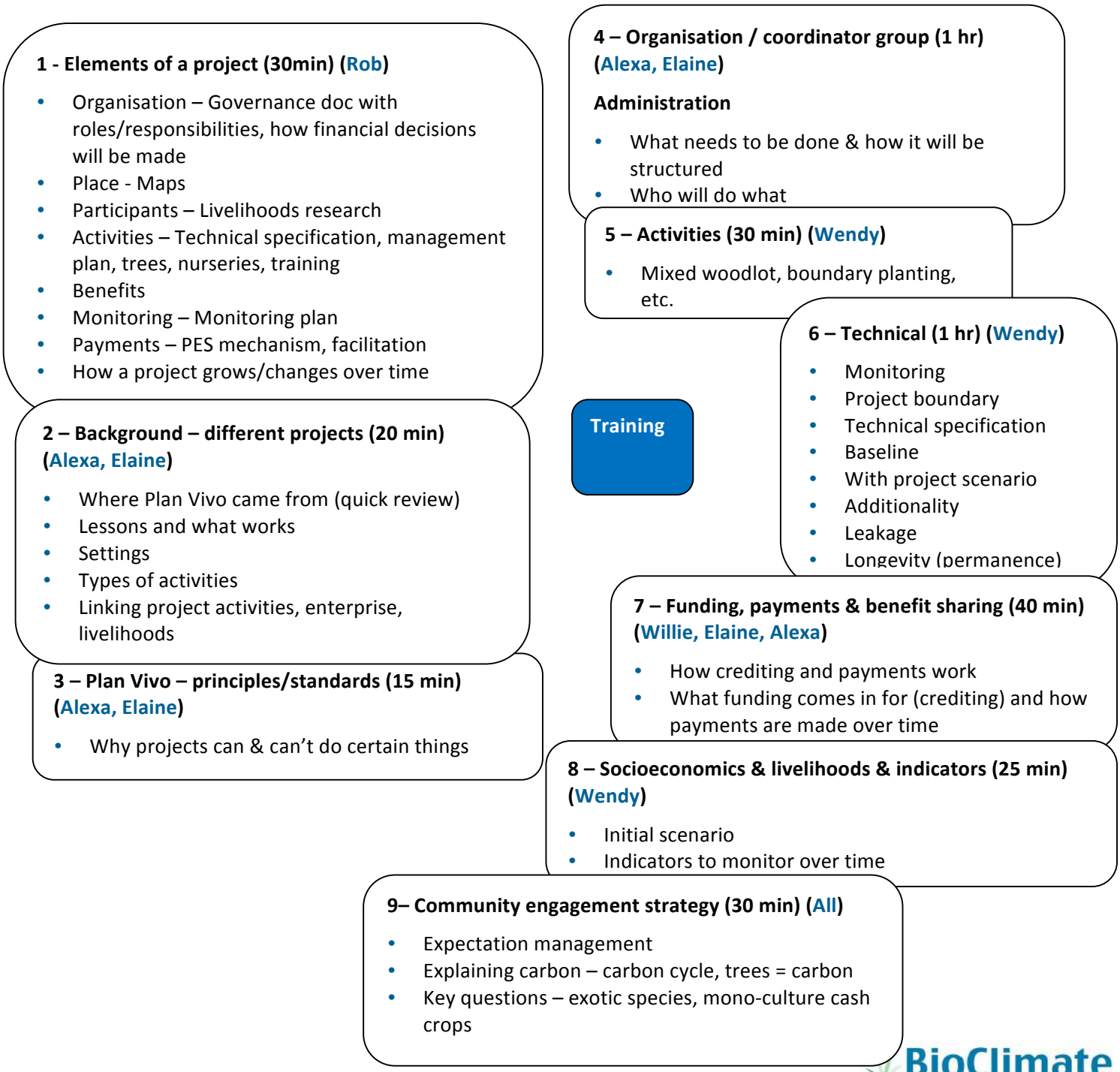
Date Nov 2010	Activity	Location	Participants
Wed 3 Nov	Travel from Denmark to Senegal	Travel	Anne Mette Lykke (AL), Redmond Sweeny (RS)
Sun 7 Nov	Travel from UK to Senegal Travel from Denmark to Senegal	Travel	Rob Harley (RH), Willie McGhee (WM), Wendelin Aubrey (WA) from BioClimate Alexa Morrison (AM), Elaine Muir (EM) from Plan Vivo Foundation
Mon 8 Nov	Assess progress against work plan and status of information availability and information sharing Discuss sites &community groupings, site selection considerations Organisation (structure, issues, taking stock) Plan for week Meet with climate change focal point (Madeleine Sarr), afternoon	Dakar	RH, WM, WA, AM, EM Assane Goudiaby (AG), Cheikh Mbow (CM), Fatima Niang Diop (FD), Idrissa Guiro (IG), Bienvenu Sambou (BS), Mamadou Diop (MD)
Tue 9 Nov	Capacity building – training for trainers Expectation setting and awareness raising with communities	Dakar	RH, WM, WA, AM, EM AL, AG, BS, CM, FD, IG, MD
Wed 10 Nov	Travel to potential communities (1/2 day) Field visit & community meetings (1/2 day) Meet with regional forest inspector of Fatick Meet with Chief of the Sokone sub-sector	Patako area	RH, WM, WA, AM, EM AL, AG, BS, CM, FD, IG, MD
Thu 11 Nov	Field visit & community meetings Evening: Discuss roles, responsibilities Meet with Sous-préfet of Toubacouta Meet with rural councils of Keur Saloum Diané and Keur Samba Guéye	Patako area	RH, WM, WA, AM, EM AL, AG, BS, CM, FD, IG, MD
Fri 12 Nov	Field visit & community meetings Evening: Discuss roles, responsibilities	Patako area	RH, WM, WA, AM, EM AL, AG, BS, CM, FD, IG, MD
Sat 13 Nov	Field visit & community meetings Evening: Work planning	Patako area	RH, WM, WA, AM, EM AL, AG, BS, CM, FD, IG, MD
Sun 14 Nov	Field visit & community meetings (1/2 day) Travel to Dakar (1/2 day)	Patako area	RH, WM, WA, AM, EM AL, AG, BS, CM, FD, IG, MD
Mon 15 Nov	Assess outcomes & implications of field visit, final decision on sites Roles, responsibilities, work programming, Defining priorities for the upcoming 4 months	Dakar	RH, WM, WA, AM, EM AG, BS, CM, IG, MD

Date Nov 2010	Activity	Location	Participants
	AL and RS depart in the evening		
Tue 16 Nov	Roles, responsibilities, work programming BioClimate & Plan Vivo Foundation depart late in the evening	Dakar	RH, WM, WA, AM, EM AG, BS, CM, FD, IG, MD

2.4 Training for coordinator group

Staff from BioClimate and the Plan Vivo Foundation led training with staff from the coordinator group, following the content structure in Figure 1. Electronic versions of presentations – and in some cases explanatory papers – for the different content areas have been made available to the team separately.

Figure 1: Plan Vivo project development training



3 Background on land use, rights, governance

Until roughly 20 years ago, all forest in Senegal was under the control of the forest administration. Although all national parks are still overseen by the forest administration, local people can gain approval to manage forest areas outside of national parks. These are known as community natural reserves, (Naturel Communautaire) and require management plans. Approximately 30% of forests are classified as community land.

Patako forest is a national forest (Foret Classée) and is controlled by the forest administration. Local communities control the area around Patako forest. Although local communities make agreements with the forest administration to collect products from Patako forest, they often view the foresters as a policing force because forest officers sometimes charge fines when local people remove fuel wood from the forest. Tensions between local communities and officials from the forest administration stem mainly from different priorities: the primary objective of the forest administration is forest conservation while for communities the use of forest resources forms a vital part of their livelihood strategy.

During dry spells and periods of drought, local people use the forest to graze cattle. Although cattle grazing is a threat to forest cover, fire is a larger driver of deforestation. Fires are often started when grass is burned by wild honey collectors trying to smoke out bees (a traditional land management practice) and by smugglers from Gambia trying to evade authorities by hiding in the forest.

Central and subnational forest and general administration in Senegal

The Sous-préfet coordinates all administrative tasks for the district (arrondissement), including the technical team, CADL (Le Centre d'Appui au Développement Local). The CADL team is led by a planner and includes technicians from forestry, agriculture, livestock, fisheries, and family economy. Table 2 shows the administrative structure in Senegal.

Table 2: Central and subnational forest and general administrative structure

State	Central administration	Forest administration
Region	Government	Inspector – forest resource management Chef de secteur
Department	Sous-secteur	Chef de Sous-secteur
District (Arrondissement)	Sous-préfet	Chef de Brigade Chef de Triage (supports Chef de Brigade in areas in areas of intensive exploitation)
Community	n/a	n/a

Land tenure and use rights

Land ownership follows a traditional system whereby someone who clears the land becomes the *de facto* land 'owner', and this is how land may come to be in the hands of a family or newcomers to an area. Fences may be used to demarcate land holdings.

Produce from trees on privately owned land belongs to the person who plants the trees, provided they are the land 'owner'; people who rent land are by right not actually entitled to the products from trees and are therefore discouraged or not inclined to plant trees.

Disputes

Disputes and competition over agricultural and pastoral land uses are first addressed within the family, then by the Chief of the village, and finally by the Sous-préfet, if necessary.

Partnerships

There is a memorandum of understanding between the forest administration and the Cheikh Anta Diop University in Dakar (UCAD) that establishes a convention and facility for local people manage an area of forest.

4 Stakeholder engagement

Government awareness and some level of support for the Arlomom Patako project has been built through a series of meetings with officials from the central and subnational administration and forestry department, including Madeleine Sarr (DECC) Climate Change Focal Point, Regional Forest Inspector of Fatick (IREF) and his deputy, Chief of the sub-sector of Sokone, Sous-préfetof Toubacouta, and the rural councils of Keur Samba Guèye (KSG) and Keur Saloum Diané (KSD).

During the meetings, a number of natural resource use management (NRM) initiatives operating in the area were mentioned and discussed. The next steps are to:

1. Maintain communication and continue building support for the Plan Vivo project
2. Find and follow through on ways to cooperate with other initiatives and stakeholders operating in the area

The coordinator group is responsible for carrying out the following detailed specific actions in relation to stakeholders.

Actions with stakeholders

1. Periodic communication with Madeleine Sarr, Climate Change Focal Point, to maintain support for the Arlomom Patako project
2. Maintain contact with the Sous-préfet of Toubacouta and work together where possible
3. Open communication with the World Food Organisation about projects operating in the area
4. Contact ICS about the PGS programme to understand contradictory or similar goals and ways to cooperate and share information
5. Contact GTZ about projects operating in the area and understand contradictory or similar goals and ways to cooperate and share information
6. Contact IUCN to understand any opportunities to cooperate and share information
7. Contact Oceanu about the mangrove project and share information
8. Continue communication with the Chief of the Sokone sub-sector and identify opportunities for joint field trips
9. Maintain contact with the Regional Forest Inspector of Fatick (IREF) and his deputy as partners for working with communities
10. Maintain communication with the rural councils of Keur Saloum Diané and Keur Samba Guéye as the project progresses and community participation builds

4.1 Climate Change Focal Point

On 8 November, staff from ISE, BioClimate, and the Plan Vivo Foundation met with Madeline Sarr (DECC) and contact for the Climate Change Focal Point of Senegal. She is now aware of the Arlomom Patako project and has expressed her support for the project idea.

4.2 Regional Forest Inspector of Fatick

On 10 November, the entire project team (ISE, Aarhus University, BioClimate, Plan Vivo Foundation) met

with the Regional Forest Inspector of Fatick (IREF) and his deputy.

The Inspector emphasised that the communities only have limited user rights in the forest. The team responded to this point by explaining that focus of the Arlomom Patako project is on the landscape surrounding the forest. The Inspector supports the idea of working with communities to reduce pressure on the forests and would like to promote competencies in local communities.

Other natural resource management initiatives operating in the area that were highlighted include PGS, a national ecosystem programme run by the NGO ICE, and projects by IUCN.

4.3 Chief of the Sokone sub-sector

On 10 November, the project team met with Mr. Sane, the Chief of the Sokone sub-sector (Sokone Sous-secteur chef).

Mr. Sane informed the team that the sub-sector is linked to the national forest department. The state views the workers of the sub-sector as agents of development, and the communities view them as carrying out state policy.

The Chief of the sub-sector supports the idea of emphasising poverty reduction because the key to keeping value in the forests is to make them economically valuable. Partnership and collaboration will be useful to avoid duplication of efforts to reduce poverty.

Forest officers struggle with a lack of transportation to gain access to the forest area, and with so few agents, it is difficult for forest officers to fulfil their role as managers of the forest. They would like to work with the Arlomom Patako project by carrying out joint field trips and working with communities.

4.4 Sous-préfet of Toubacouta

On 11 November, the project team visited the Sous-préfet of Toubacouta, who is the president of the local development committee. State development functions are administered at the level of the Sous-préfet.

The Sous-préfet is ready to mobilise all staff and team (CADL) to assist the project, and needs to be informed about project progress to provide support to overcome barriers. He suggested the forest service will provide technical assistance, seedlings and support.

Other natural resource management initiatives in the area were discussed:

1. The World Food Organisation is running a food-for-trees initiative through which food supplies are made available as a payment-in-kind for planting of trees
2. ICS is running the PGS programme which integrates forest management and ecosystem services
3. GTZ support for the establishment of smallholder anacardium (cashew) and mango plantations
4. IUCN projects
5. Oceanu is operating a mangrove project

4.5 Rural council of Keur Saloum Diané

On 11 November, the project team met with the rural council of Keur Saloum Diané (KSD). The rural council has been working with the forest service to protect Patako forest.

The rural council has been working with forest service to:

1. Protect Patako Forest. Permission to extract deadwood must first be granted by the rural council
2. Implement measures to avoid and control fires
3. Develop woodlots with the local community, for which additional support is needed
4. Prevent soil degradation by trying to maintain forest cover

The rural council of KSD is working with the rural council of Fatick to gain permission to create community forest areas (forêt communautaire), which would accord them greater control over forests.

Local people have experience with tree planting and natural resource management. The biggest has been the GTZ anacardium and mango planting smallholder programme, while some people have also been involved in the World Food Programme food-for-trees initiative.

4.6 Rural council of Keur Samba Guéye

On 11 November, the project team met with the rural council of Keur Samba Guéye (KSG). The council is interested in the Arlomom Patako project because it signals a shift in focus on the part of the ISE staff from pure research to practical action.

As in the case of Keur Saloum Diané, local people have had experience planting trees (mainly anacardium) and participating in natural resource management projects.

The main messages communicated to the rural council of Keur Samba Guéye are that the project will be concentrating initially on tree planting in the landscape around the Patako forest and that an essential criterion for selection of participants will be their interest and willingness to participate in activities.

5 Community visits

The project team visited 14 potential Plan Vivo sites (villages or village clusters) in the areas under the jurisdiction of the KSD and KSG rural councils (Table 3 and

Table 4). The potential sites all fall within a 2 km radius of the Patako Forest (Figure 2). At each community meeting, a presentation was made about Plan Vivo, the envisaged tree planting activities, and the opportunity to link these with payments for ecosystem services as part of the project. Communities were asked to identify the challenges they foresee. Where possible, discussions and question and answer sessions were held with men and women in separate groups in order to encourage broad participation.

The main challenges and obstacles to tree planting and management identified by the communities can be summarised as follows:

- Producing seedlings
- Enclosing areas to protect trees from livestock grazing
- Protecting trees from termites
- High seedling mortality
- Soil type and quality
- Water shortages, salinisation and contamination

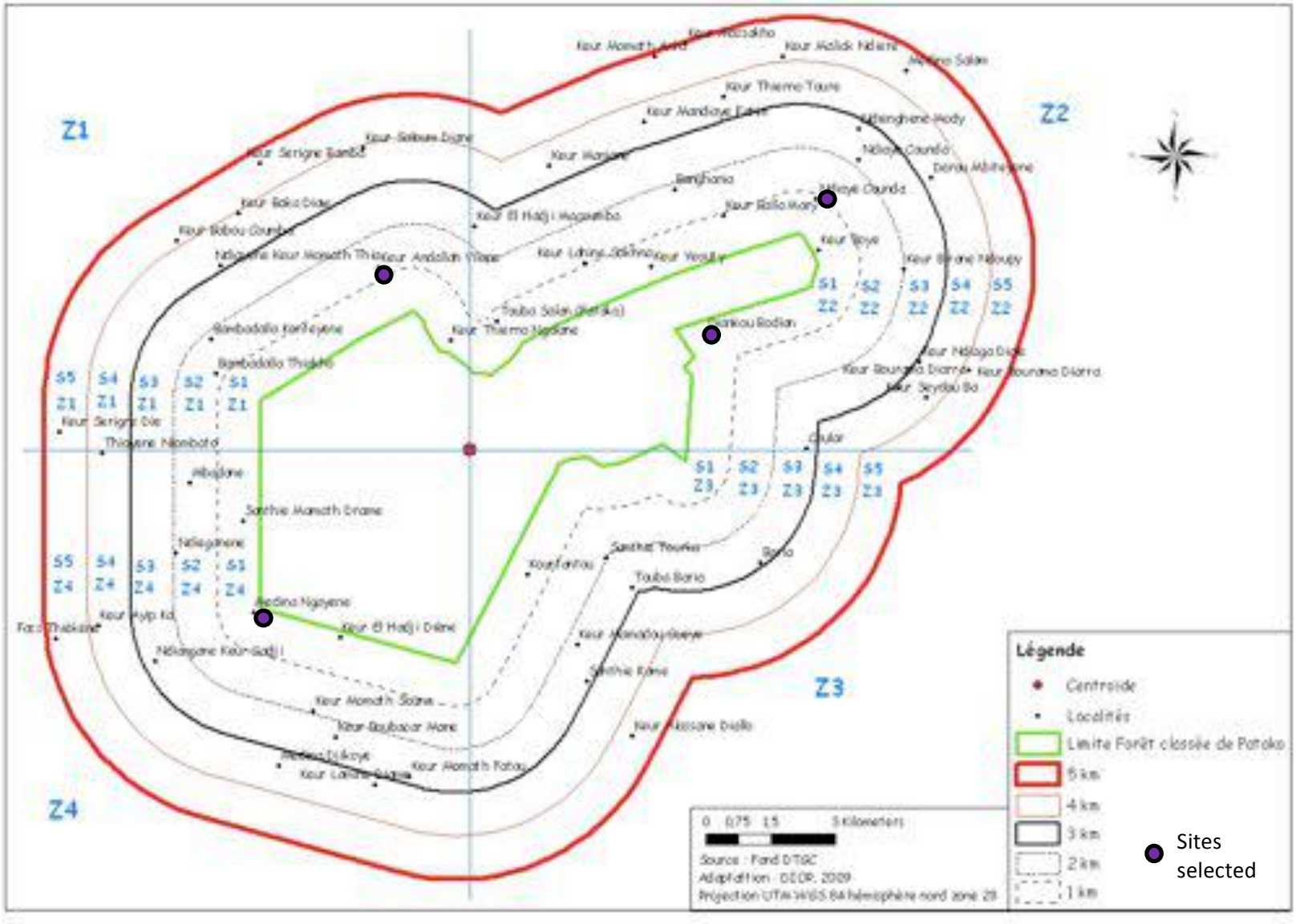
Table 3: Rural councils

Rural Council	Village	Concession	Household	Male	Female	Population
Keur Samba Guéye (KSG)	45	1940	2515	13722	13958	27680
Keur Saloum Diané (KSD)	47	1067	1802	9653	10800	20453

Table 4: Potential Plan Vivo sites

	Village	Concessions	Households	Male	Female	Population	Main ethnic groups	Rural council
1	Keur Boy	24	30	149	146	295	Fulani Bambara	KSD
2	Ndiaye Kounda Niombato	23	40	187	221	408	Wolof Fulani	KSD
3	Ndiaye Kounda Walo	21	29	138	136	274	Wolof Sarakholé	KSD
4	Keur Yeuwty	9	10	40	50	90	Fulani	KSD
5	Santhie Bodian	17	27	99	87	186	Mandingo Wolof	KSD
6	Keur Lahine Sokhna	26	45	261	301	562	Wolof Mandigo	KSD
7	Keur Thierno Ngallane	14	21	98	82	180	Wolof Turka Bambara	KSD
8	Fatako	3	3	20	15	35	Wolof Sérère	KSD
9	Keur Andala Wilane	44	53	252	318	570	Wolof Fulani	KSD
10	Keur Boubacar Mané					87	Wolof Turka Sérère	KSG
11	Keur Momanth Souna	22	32	170	205	375	Wolof Mandingo	KSG
12	Médina Ngayène	32	32	195	181	376	Wolof Fulani Sérère	KSG
13	Santhiou Momath Dramé	8	9	91	82	173	Wolof Fulani	KSD
14	Bambadalla Thiakho	27	59	392	406	798	Wolof Fulani Bambara	KSD

Figure 2: Patako Forest and surrounding villages (pilot sites are indicated by purple-centred dots)



6 Site selection

The project team discussed important considerations for site selection. The coordinator group then identified essential characteristics for the pilot sites, after which it assessed and ranked each of the 14 sites visited in light of the characteristics identified using a point rating system (Table 5):

- Availability of land for tree-planting (10 points)
- Availability and accessibility of water (10 points)
- Proximity to Patako Classified Forest (5 points)
- Willingness to engage in Plan Vivo activities (10 points)
- Existence of a women's organisation (5 points)
- Local experience of tree-planting (8 points)
- Local constraints (-5 points)

Table 5: Site assessment

Villages	Availability of land (10 points)	Availability of water (10 points)	Proximity to Patako Classified Forest (5 points)	Willingness to engage in activities (10 points)	Willingness to make land available to women (10 points)	Existence of a women's organisation (5 points)	Local experience (8 points)	Constraints (-5 points)		Score	Rank
Santhiou Bodian	10	8	5	10	10	4	8	Enclosures for seedlings Production of seedlings	-2	53	1
Keur Andala	8	10	4	10	9.5	4	8	Termites Enclosures for seedlings Production of seedlings	-3	50.5	2
Ndiaye Kounda	8	9	2.5	10	9	4	8	Enclosures for seedlings Production of seedlings	-2	48.5	3
Bambadalla Thiako	8	7	2	10	8.5	4	7	Enclosures for seedlings Production of seedlings	-2	44.5	4
Keur Yewti	9	6	5	10	9	4	0	Enclosures for seedlings Production of seedlings	-2	41	5
Keur Thierno Ngalane	8	9	4	5	8	5	0	Enclosures for seedlings Production of seedlings	-2	37	6
Keur Momat Souna	7	5	1	10	7	4	7	Termites Soil type and quality Water quality Protection for seedlings Enclosures for seedlings	-5	36	7

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								Production of seedlings			
Médina Ngayène	8	5	4	9	9	4	0	High seedling mortality Enclosures for seedlings Production of seedlings	-3	36	7
Keur Lahine Sokhna	8	4	2.5	10	9	4	0	Enclosures for seedlings Production of seedlings	-2	35.5	9
Santhiou Momat Dramé	8	0	4	9	9	3	5	Enclosures for seedlings Production of seedlings High seedling mortality	-3	35	10

After the initial site scoring and ranking, the project team discussed additional considerations:

- Tree nurseries and the availability of clean water to sustain nursery activities
- Ethnic inclusivity
- Rural council inclusivity – pilot sites should extend to both rural councils (KSD and KSG)
- Location in relation to Patako Forest – pilot sites should not be too concentrated and should ideally be located on different sides of Patako Forest

The team decided to select the three highest-scoring sites (KSD) as well as Médina Ngayène (KSG) in order to satisfy the additional considerations. Thus, the following four pilot sites were selected.

Pilot sites selected

1. Santhiou Bodian (KSD)
2. Keur Andala (KSD)
3. Ndiaye Kounda (KSD)
4. Médina Ngayène (KSG)

7 Project participation

Many sites visited have good potential to become Plan Vivo project sites, as evidenced by the bunching of scores in the ranking process. But the funding available for PES will always determine the scale of project participation. So narrowing the selection of pilot sites is necessary to ensure that the available PES funding can be allocated decisively and effectively.

It is expected that the number of initial participants from each of the selected sites will be relatively small. The initial participants will be those who submit land management plans (plan vivos) first. After Plan Vivo activities have been initiated at the pilot sites, our ability to broaden participation to other sites will of course depend on our ability to source further PES funding.

One of the early tasks of the coordinator group is/ has been to meet with all the villages visited and inform them of our site selection decision and the reasoning behind it. The villages not selected for pilot activities need to be informed that there may be an opportunity to participate in the future as the project grows.

8 Tasks and actions

The project team drew up a task list for period from November 2010 to end-June 2011, and agreed a champion and supporting persons for each task. Table 6 shows the task champion in bold and supporting persons. The task champion is responsible for leading and coordinating the task activities, monitoring progress and raising any issues or calling on the broader project team for support and assistance if needed.

Table 6: Project tasks and responsible persons, November 2010 to end-June 2011

	Tasks	Responsible	Start	Finish
1	Contact with local stakeholders	**Mamadou Diop**/Idrissa Guiro/Bienvenu	Nov-10	---
2	Community sensitisation & awareness raising	**Mamadou Diop**/ Team	Nov-10	---
3	Recruit initial project participants	**Mamadou Diop**/ Assane Goudiaby	Dec-10	Feb-11
4	Define project activities	**Fatima Niang Diop**/ BioClimate (Wendy)/Goudiaby/Anne Mette	Nov-10	Feb-11
5	Identify land areas & draw up plan vivos	**Assane Goudiaby**/Idrissa Guiro/Simon Sambou/Bienvenu Sambou/Fatima	Jan-11	Feb-11
6	Write Project Idea Note (PIN)	**Cheikh Mbow**/Anne Mette Lykke/Wendy	Nov-10	Jan-11
7	Technical development	**Anne Mette Lykke**/**Cheikh Mbow**/Simon Sambou/Redmond	Nov-10	Apr-11
8	Establish coordinator group/organisation	**Bienvenu Sambou**/Assane Goudiaby/Fatima Niang Diop/Rob, Willy	Nov-10	Apr-11
9	Organise livelihoods data & choose indicators	**Assane Goudiaby**/Mamadou Diop/ Anne Mette Lykke/Wendy/Fatima	Nov-10	Jan-11
10	Quantify income from other activities	**Assane**/Bienvenu/BioClimate/Fatima	Nov-10	Jan-11
11	Nursery plan	**Mamadou Diop**, Idrissa Guiro/Papa Demba Sow/Simon Sambou/Fatima	Nov-10	Feb-11
12	Fencing plan	**Assane Goudiaby**/Mamadou Diop/Idrissa Guiro/Papa Demba Sow	Nov-10	Mar-11
13	Establish payments system	**Bienvenu Sambou**/BioClimate/Fatima	Nov-10	Apr-11
14	Draft Project Design Document (PDD)	**Cheikh Mbow**, BioClimate/Fatima/Anne Mette Lykke	Nov-10	Jun-11
15	Get additional funds	**BioClimate**/Bienvenu Sambou/Assane Goudiaby	Nov-10	---
16	Supporting activities	All	Nov-10	---

A single work plan detailing the required actions and timeframes for each task is provided separately in Excel format. And on the subsequent pages of this report you can also see the tasks broken down separately with the required actions and time frames.

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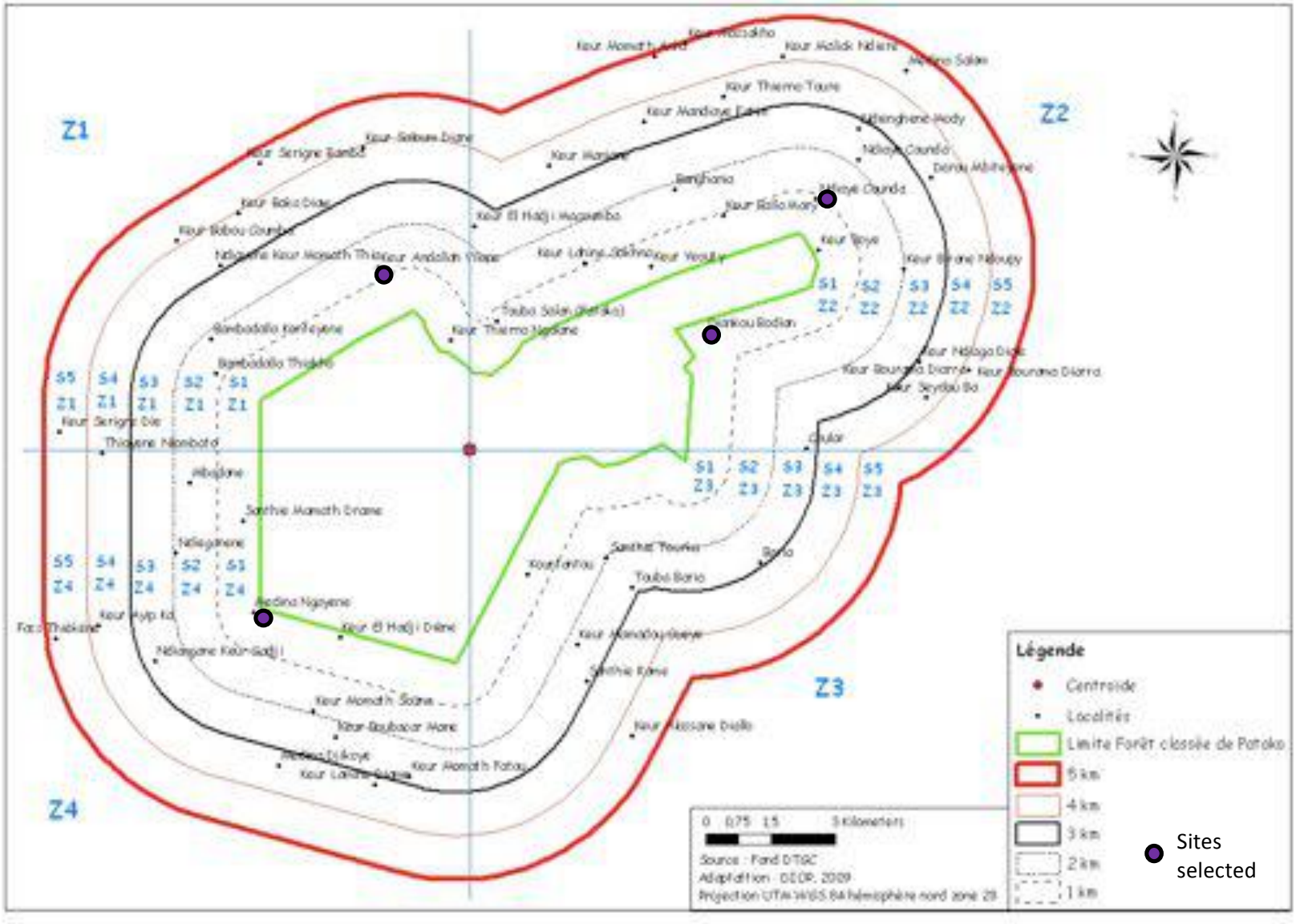

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3	Recruit initial project participants	**Mamadou Diop**/ Assane Goudiaby	Dec-10	Feb-11
4	Define project activities	**Fatima Niang Diop**/ BioClimate (Wendy)/Goudiaby/Anne Mette	Nov-10	Feb-11
5	Identify land areas & draw up plan vivos	**Assane Goudiaby**/Idrissa Guiro/Simon Sambou/Bienvenu Sambou/Fatima	Jan-11	Feb-11
6	Write Project Idea Note (PIN)	**Cheikh Mbow**/Anne Mette Lykke/Wendy	Nov-10	Jan-11
7	Technical development	**Anne Mette Lykke**/**Cheikh Mbow**/Simon Sambou/Redmond	Nov-10	Apr-11
8	Establish coordinator group/organisation	**Bienvenu Sambou**/Assane Goudiaby/Fatima Niang Diop/Rob, Willy	Nov-10	Apr-11
9	Organise livelihoods data & choose indicators	**Assane Goudiaby**/Mamadou Diop/ Anne Mette Lykke/Wendy/Fatima	Nov-10	Jan-11
10	Quantify income from other activities	**Assane**/Bienvenu/BioClimate/Fatima	Nov-10	Jan-11
11	Nursery plan	**Mamadou Diop**, Idrissa Guiro/Papa Demba Sow/Simon Sambou/Fatima	Nov-10	Feb-11
12	Fencing plan	**Assane Goudiaby**/Mamadou Diop/Idrissa Guiro/Papa Demba Sow	Nov-10	Mar-11
13	Establish payments system	**Bienvenu Sambou**/BioClimate/Fatima	Nov-10	Apr-11
14	Draft Project Design Document (PDD)	**Cheikh Mbow**, BioClimate/Fatima/Anne Mette Lykke	Nov-10	Jun-11
15	Get additional funds	**BioClimate**/Bienvenu Sambou/Assane Goudiaby	Nov-10	---
16	Supporting activities	All	Nov-10	---

A single work plan detailing the required actions and timeframes for each task is provided separately in Excel format. And on the subsequent pages of this report you can also see the tasks broken down separately with the required actions and time frames.

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UNDESERT Arlomom Patako

Project field mission November 2011

May 2012

Girls going to collect peanuts in Patako area of Fatick Region in south-western Senegal
Wendy Aubrey, Bioclimate 2011

Contents

Acronyms

ACRONYM	Name
NTFPs	Non-timber forest products
ISE	Institute of Sciences of Environment
PES	Payments for ecosystem services
PWA	Participatory wealth assessment
UCAD	Cheikh Anta Diop University in Dakar
URENE	Natural Ecosystems and the Environment Unit

1 Executive summary

In November 2011, Bioclimate, the University of Aarhus, and Arlomom Senegal[1] undertook a field mission to Patako Forest in the Saloum region of west central Senegal. At Bioclimate's invitation, experts Robin Nielsen, specialising in land tenurial arrangements, and Christoph Jacoby, specialising in commodity supply chains, joined the project team. The project team divided into three task teams: Plan Vivo activities, socioeconomics, and NTFPs.

The field mission objectives were to:

(1) Reinforce the Plan Vivo system with participants
(2) Agree the level of Arlomom's presence in the communities
(3) Define details of land management systems
(4) Agree the basis for socioeconomic monitoring
(5) Identify land tenure issues
(6) Investigate current NTFP and potential NTFP activities
(7) Form task teams

Arlomom Senegal has made limited progress since the last field mission in November 2010. They appointed Boubacar Diop as a community worker to lead activities in the communities and they established four tree nurseries: two large nurseries at Keur Andalla and Ndiaye Counda, and two smaller village-level nursery inside Keur Andalla and Ndiaye Counda. Participants have raised over ten thousand native species seedlings, approximately 6,600 at Keur Andalla, and 4,700 at Ndiaye Counda. Native tree species growing at the nurseries include: *Zizuphus mauritiana, Cordyla pinnata, Parkia biglobosa, Pterocarpus erinaceus, Faidherbia albida, Cassia sieberiana, Detarium microcarpum*, *Cola cordifolia*, *Saba senegalensis*, *Khaya senegalensis*, *Tamarindus indica*, *Detarium senegalense* and *Adansonia digitata*.

The Keur Andalla and Ndiaye Counda nurseries are large and centralised with wire fences, pumps, and concrete water holding tanks. The cost of the nurseries was some 5,000 euros and this money has come from the PES funding which was intended for community payments. The third nursery at Keur Andalla was small, located inside a private field with a well. It was constructed of local materials and had a degree of shade from surrounding trees. It is recommended that nurseries be created in this style and manner, at the village level close to a source of water. It is also recommended that the land title for the nursery at Keur Andalla be transferred to the women's group as a community asset.

During the field mission, the team agreed the tree species and planting densities for land management systems based on community preferences. Eight women's groups will establish native tree plantations for firewood and fruit. These will be close to the forest edge, and the women's groups will use assisted natural regeneration techniques by managing regenerating trees and doing enrichment planting. 30 individual male participants will establish intercropping or boundary planting agroforestry systems.

For the land management systems to be successful, seedlings must be protected from grazing livestock. To achieve this, participants have agreed to establish living fences of *Ziziphus mauritiana* or

[1] Members of the Arlomom Senegal coordinator group are part of the Institute of Sciences of Environment (ISE) Natural Ecosystems and the Environment Unit (URENE), both of which are associated with the Cheikh Anta Diop University in Dakar (UCAD).

Euphorbia species around plantations and regeneration areas and to use tree guards to protect individual agroforestry trees.

Separately, the socioeconomic task team constructed a participatory wealth assessment (PWA) and a household questionnaire for socioeconomic monitoring. For the household questionnaire, the proposed sampling strategy is to include 40 male participant households and a control group of 40 households outside the project.

Land tenure issues identified included the need to transfer nursery land ownership to the Keur Andalla community, and the need to register women's associations in order for them to obtain formal land title.

Independently, the NTFP task team investigated NTFP opportunities in the area. It will be some time before the native trees planted as part of the project yield fruit and other products, but there are NTFPs available in the area including cashews, mangoes, baobab, ditax, hibiscus, and fonio. Communities already have experience in collecting, processing, and selling these NTFPs.

At the end of the field mission, the project team formed new task teams for project work. The concept of forming smaller teams was to devolve decision-making and budgets in such a manner that would allow more rapid progress with fieldwork. Decisions will be made by the smaller task teams and communicated to the larger group.

The task teams are: a) land and governance, b) socioeconomics, c) activities, d) technical, e) products, and f) progress and Plan Vivo qualification. Between November 2011 and July 2012, the task teams will prepare for the first planting season (late July to early August). By the planting season, they will have trained participants, facilitated documentation of land ownership, prepared plan vivos and terms of agreement, determined the carbon benefits, finalised the schedule of payments for participants, and collected data for the socioeconomic baseline. Bioclimate's next field mission will be to support Arlomom Senegal's preparations for the planting season.

2 Field mission overview

In November 2011, staff of Bioclimate, the University of Aarhus and Arlomom Senegal undertook a field mission to the Arlomom Patako project site. The project team included two guests invited by Bioclimate: Robin Nielsen, an international legal expert in land tenurial arrangements in developing countries, and Christoph Jacoby, an experienced commodity trader and expert in building commodity supply chains. The field mission included a series of community meetings, project team meetings, and planning activities.

During the field mission, the project team divided into task teams to focus on three themes: Plan Vivo activities, socioeconomics and NTFPs. The Plan Vivo activity task team worked with participants to reinforce Plan Vivo concepts and to agree the details of land management systems including tree species and seedling protection. The socioeconomic task team carried out key informant interviews, tested the socioeconomic questionnaire, and agreed the basis for the socioeconomic baseline and monitoring. The NTFP task team carried out key informant interviews to understand local uses, cash values, collection and marketing challenges, and commercialisation potential of different products.

Collectively the task teams visited all of the project sites and participating villages: Site 1: Médina Ngayène and Ndiéganène, Site 2: Keur Andalla Willane and Keur Thierno Ngalane, Site 3: Ndiaye Counda (Niombato) and Keur Boye, and Site 4: Diankou Bodian and Keur Yewty.

2.1 Objectives

The field mission objectives were to:

(1) Reinforce Plan Vivo with participants
(2) Agree how to sustain Arlomom's presence in the communities
(3) Define details of land management systems
(4) Agree the basis for socioeconomic monitoring
(5) Identify land tenure issues
(6) Investigate current NTFP and potential NTFP activities
(7) Form task teams

2.2 Schedule of activities

Date	Activity and location	Participants
Fri 18 Nov	Christoph arrives in Dakar Product & NTFP meetings arranged	Christoph Jacoby (CJ)
Sun 20 Nov	Robin arrives in Dakar	Robin Nielsen (RN)
Mon 21 Nov	Bioclimate arrives in Dakar Anne-Mette arrives in Dakar	Willie McGhee (WM), Rob Harley (RH), Mike Riddell (MR), Wendy Aubrey (WA), Anne-Mette Lykke (AML)
Tue 22 Nov	Arlomom progress update Plan for the field visit	Fatima Niang Diop (FD), Mamadou Diop (MD), Cheikh Mbow (CM), Idrissa Guiro (IG), Bienvenu Sambou (BS), Assane Goudiaby (AG), Boubacar Diop (BD), Sara Dieng (SD), Simon Sambou (SS), Carolina Bonache Regidor (CBR), WM, RH, MR, WA, AML, RN, CJ
Wed 23 Nov	Travel to community	FD, MD, CM, IG, BS, AG, BD, SD, SS, CBR WM, RH, MR, WA, AML, RN, CJ
Wed 23 Nov – Wed 30 Nov	Field visit and community meetings Community activities and engagement Demonstration project activities Socioeconomic monitoring activities	FD, MD, CM, IG, BS, AG, BD, SD, SS, CBR WM, RH, MR, WA, AML, RN, [CJ (23 & 24 Nov)]
Fri 25 Nov – Wed 30 Nov	Christoph returns to Dakar Meetings to discuss NTFP products	CJ
Wed 30 Nov	Travel to Dakar Robin departs Dakar	FD, MD, CM, IG, BS, AG, BD, SD, SS, CBR WM, RH, MR, WA, AML, RN departs
Thu 1 Dec	Arlomom-led work planning Present Plan Vivo to University group	FD, MD, CM, IG, BS, AG, BD, SD, SS, CBR WM, RH, MR, WA, AML
Fri 2 Dec	Anne-Mette Lykke departs	FD, MD, CM, IG, BS, AG, BD, SD, SS, CBR WM, RH, MR, WA, AML
Sat 3 Dec	Bioclimate departs	WM, RH, MR, WA

2.3 Progress update

Arlomom Senegal appointed a community worker just prior to the visit and since the visit has become a recognised association.

Arlomom Senegal has established four tree nurseries: two large nurseries at Keur Andalla and Ndiaye Counda and two smaller village-level nursery inside Keur Andalla and Ndiaye Counda. Arlomom has the

support of the Water and Forest service of Senegal through a signed protocol with ISE, and the forest service is providing advice about seed collection, tree planting, and management.

Documentation for the project is progressing slowly. The Plan Vivo Project Idea Note (PIN) has been accepted by the Plan Vivo Foundation and is available for download on the Plan Vivo website at: http://www.planvivo.org/projects/project-pipeline/ (February, 2012).

3 Tree nurseries

Arlomom has established two large nurseries at Keur Andalla and Ndiaye Counda. There are also two smaller village-level nurseries inside Keur Andalla and Ndiaye Counda.

At the three nurseries, participants have raised over ten thousand native species seedlings. Species growing at the nurseries include: *Zizuphus mauritiana, Cordyla pinnata, Parkia biglobosa, Pterocarpus erinaceus, Faidherbia albidam, Cassia sieberiana, Detarium microcarpum, Cola cordifolia, Saba senegalensis, Khaya senegalensis, Tamarindus indica, Detarium senegalense* and *Adansonia digitata* (Table 1).

Table 1: Seedlings at the Keur Andalla and Ndiaye Counda nurseries

Species	Keur Andalla	Ndiaye Counda
Zizuphus mauritiana	1824	1575
Cordyla pinnata	707	580
Parkia biglobosa	500	356
Pterocarpus erinaceus	497	120
Faidherbia albida	561	384
Cassia sieberiana	77	60
Detarium microcarpum	968	864
Cola cordifolia	220	240
Saba senegalensis	275	132
Khaya senegalensis	228	146
Tamarindus indica	440	120
Adansonia digitata	336	156
Detarium microcarpum	200	
Total	6833	4733

The large Keur Andalla nursery and the Ndiaye Counda nursery are large with tall diamond-linked fences. The large Keur Andalla nursery has a treadle pump and two concrete rectangular holding tanks for water. At Ndiaye Counda, a treadle pump has not yet been installed and women participating in the project carry heavy buckets of water from the village well to the holding tank. The nurseries are far larger than currently required, seedling roots are growing into the ground and they lack shade, which is an essential requirement in a nursery in semi arid zones.

At the smaller village nursery at Keur Andalla, seedling bays filled the nursery. The nursery is conveniently in a private field with a well, and participants can make short trips to carry water for the seedlings. Fences to protect seedlings from livestock are made from rice sacs attached to wooden posts. Seedlings were not shaded and the roots had grown through the bags into the ground.

3.1 Recommended measures

Seedling care

We recommend three simple measures to care for the seedlings at the nurseries. Firstly, provide shade for the seedlings to retain moisture. Secondly, avoid shocking the seedlings when transferring them out of the nursery by soaking the earth and then gently pulling up the taproots. Thirdly, prevent roots of new seedlings from growing into the ground by shifting them regularly or by keeping them off the ground. When seedling bags are not in direct contact with the earth, the roots stop growing when they break through the bag. This is called “air pruning”.

Village nurseries

The small-scale village nursery at Keur Andalla is a good, replicable example of a community-centred nursery. We recommend that devolved nurseries be established in each village next to a water supply with shade (Appendix B). In addition to the village nurseries, we also recommend that participants keep household nurseries where they can conveniently water and care for the seedlings.

Centralised nurseries

Arlomom established centralised nurseries following the rational that it is too soon to create devolved nurseries. These nurseries have been designed as a sustainable aspect of the project with secure land, water and fencing. They serve as spaces to grow seedlings for the project as well as seedlings and vegetables for sale. At the large nurseries, participants are learning work as organised groups and to manage native trees species.

The nurseries have sent a positive message that project activities are happening. However, there are a number of issues presented by the centralised nurseries at Keur Andalla and Ndiaye Counda. These issues involve the participation of communities in decision-making, land ownership, replicability, expense and location.

Communities have the right to consultation and negotiation in decision-making processes that affect them. This is called Free, Prior, and Informed Consent (FPIC). FPIC is recognised as good practice in development projects because it can reduce conflicts. Before establishing a large nursery, Arlomom should ask the communities if they prefer benefits in the form of large nurseries or payments.

Land ownership is an issue. Land title for the Keur Andalla nursery should be transferred to the women’s group. By drawing up an agreement of transfer, the title for this land can be given to the women’s group of Keur Andalla after they have formally registered as an association.

Replicability is an issue with the large nurseries. They are not replicable because they have not been made with local materials. There is envy amongst the communities because it is not possible to construct a similar nursery for each community. After observing nurseries with fences made with wire and cement, participants assumed the project should provide them with wire fences to protect the trees on their land. As a result, the Plan Vivo task team found it difficult to persuade participants to consider using live fences. Future nurseries should be smaller and built with local materials.

Expense is also an issue with the large nurseries. Building large nurseries with water pumps, concrete holding-tanks for water, and wire and concrete fences is expensive. Currently, there is one budget line for nurseries and payments for participants. When more money is spent on nurseries, less money is available for participants. The objective is to have as many resources as possible reach the participants.

Location is another issue. The nurseries are located outside the villages. Transporting the seedlings from the nurseries to planting locations will be challenging. Future nurseries should be closer to a source of water and the areas where the seedlings will be planted.

4 Plan Vivo activities

Plan Vivo concepts were reinforced at community meetings at each of the four sites. Following the meetings, small groups of participants visited their fields with the Plan Vivo task team to discuss seedling protection and to sketch plan vivo land management plans.

At the outset of the project, funds for PES are limited, so activities with higher carbon and higher PES per hectare should be limited to women's groups. Women's groups will establish plantations or assisted natural regeneration on communally owned land. Individual men will establish either intercropping or boundary planting agroforestry systems on privately owned land.

4.1 Seedling protection

For this project to succeed, seedlings must be protected from grazing livestock. Women's groups will plant living fences with *Ziziphus mauritiana* or *Euphorbia* to protect their plantations, and individual male participants will use tree guards made from local materials to protect seedlings in their agroforestry systems.

Living hedges require many seedlings to be an effective barrier against grazing livestock (e.g. 80 seedlings with 5cm spacing). It is possible to buy bags of *Ziziphus mauritiana* seeds and to plant them along the perimeter of a field using a peanut-planting machine. For areas with many cattle and goats, *Ziziphus mauritiana* can be grown in the nursery and then planted out.

When tree guards are made to protect seedlings, it is important that participants do not use timber from the forest. A potential source of sustainable material is *Combretum* cleared from agricultural fields.

4.2 Plantation

Plantations are useful for producing firewood and fruit. The species for this land management system are: *Pterocarpus erinauceus, Khaya senegalense, Parkia biglobosa, Detarium microcarpum, Detarium senegalense, Daniella oliveri,* and *Neocarya macrophylla.* Seedlings will be planted densely with 5m between each tree (400 trees/ha). Living fences will be planted to protect the seedlings from grazing livestock, and a ten-meter wide firebreak will be cleared around the land (Please see appendix A for details).

4.3 Agroforestry

Intercropping and boundary planting are the two agroforestry systems planned. As trees are planted less densely than in plantations, tree guards will be used to protect individual trees from grazing livestock.

Intercropping species are nitrogen-fixing or produce fruit. To allow sufficient light for crops, seedlings will be planted with a 15m spacing (36 trees/ha). Large fruit trees will be planted near the boundary to avoid shading the crop. The species chosen for intercropping are: *Faidherbia albida, Cordylla pinnata, Tamarindus indica, Detarium senegalense,* and *Detarium microcarpum* (Please see appendix A for details).

For boundary planting, firewood and fruit producing species will be planted. The species used for boundary planting are: *Cola cordifolia, Pterocarpus erinaceus, Khaya senegalense, Tamarindus indica,* and *Adansonia digitata*. The spacing between trees is 10m (40 trees/1ha boundary) (Please see appendix A for details).

4.4 Assisted natural regeneration

For assisted natural regeneration, a living fence will be planted to protect the area from grazing livestock. Enrichment planting will be carried out using species useful for timber, firewood and fruit (100 trees/ha). Enrichment planting will be done with *Detarium microcarpum, Neocarya macrophylla, Cordylla pinnata, Saba senegalensis,* and *Detarium senegalense*. Trees regenerating in the area will be managed by thinning. The species expected to regenerate are: *Combretum, Ziziphus mauritiana, Terminallia, Pterocarpus erinaceus, Prosopis Africana,* and *Daniella oliveri* (Please see appendix A for details).

5 Socioeconomics

The objective of the socioeconomic task team was to decide on a sampling strategy for monitoring the socioeconomic impacts of Plan Vivo activities, and to trial a household questionnaire. This required understanding household and family structure through visits to several concessions[2] in project communities. During these visits discussions were held about labour and resource sharing within and between households, and the team practiced creating household lists for each concession. The household has been defined as a married man, his wife (or wives), and their dependents[3].

During trials of the household questionnaire, respondents were able and willing to provide information on wellbeing indicators, household composition, income streams, and assets. However, households were not able to provide accurate information for small commerce activities due to the infrequency and variability of purchases and sales. The information from this pilot was taken into account in the design of the final questionnaire.

Socioeconomic baseline

The socioeconomic baseline for the project will use two methods: a participatory wealth assessment (PWA) and a household questionnaire.

[2] A concession is an area where one or more households live. It is formed by one or more houses or constructions and is normally surrounded by an enclosure. People living in a concession typically include the father of the family (normally head of the concession), his sons, and some of his nephews and their families.

[3] In cases of polygamy, all of a husband's wives were included in the household definition. In Wolof society, particularly around Patako, wives cook for their husband and all household dependents in rotation. All wives also live in the same compound, work with the husband on economic activities, and receive a share of agricultural harvest (such as peanut harvest). As wives of a polygamous husband also have their own independent economic activities (such as market gardening), the socioeconomic questionnaire was disaggregated for gender.

In the PWA, households will not be ranked using the generated indicators due to the sensitivities of discussing wellbeing and vulnerability.

For the household questionnaire, the proposed sampling strategy is to include 40 male participant households from project communities, and a control group of 40 households from outside the project.

The control group households will be randomly selected from household lists available from the Rural Council. The location of the households will be identified on Google Earth images and their locations confirmed during a field visit. The number of households surveyed and whether or not a control group will be used will depend on the size of the team completing the socioeconomic baseline.

6 Land tenure

During the field mission, the task team with Robin Nielsen, asked a series of questions about land tenure. In the Patako area, land ownership is recognised through both customary law and formal law. An informal land market exists in the area, especially on the north side of Patako. However, sales of land are still relatively rare compared to the urban area of Toubakouta. Women access land through their husbands, and rarely own land[4]. The team identified the need to register the women's groups formally as associations in order that these groups can obtain formal land title. As of May 2012 this still had not occurred and highlights a major deficiency in the Arlomom team. As a stimulus to association formation and land transfer, it is suggested that no payments will be made to any participant until the women's groups are registered and have taken ownership of land.

Generations-old native tree species are viewed as a community resource. Community members may collect fruit and leaves from the tree, but only the landowner may fell the tree. However, if the landowner wishes to fell a native tree, they must first ask permission from the Water and Forest service, although in practice permission is rarely asked.

Landowners in the Patako area do not have much experience planting native tree species on their land; however, when a landowner plants exotic tree species such as mango on their land, it is clear that they have rights to the fruit and wood of the tree. There is an understanding between the participants and the Water and Forest Service that the participants have the rights to biomass, carbon, fruit, firewood, and timber from the trees they plant on their land.

To sign a Plan Vivo PES contract, each participant must produce a document showing that they have a customary right to the land or have land ownership. Without documentation of land rights or ownership, money cannot be transferred to a participant for project activities.

7 NTFPs

The NTFP task team, led by Christoph Jacoby, visited: farmers near the Patako forest, women's groups, entrepreneurs who make jam, juice, and cereals in Dakar, and the Institute of Food Technology (Institue

[4] Cases of women owning land did exist, but were rare. In those cases, land was not inherited, but accessed through a different mechanism. For example, in one case, an outsider who had received land from the village chief then gifted the land to a woman (with formal land title) when he left the village.

de technology Alimentaire).

Produce from species exotic to Senegal grown around Patako includes peanuts, cashews, and mangos. Local species such as Ditax (Detarium senegalense), Baobab (Adansonia digitata) and Mad (Saba senegalensis) grow in the countryside and protected forest. Fruit from local species is used in the Senegalese market for making juice, jam, and syrup. Hibiscus (Hibiscus sabdariffa L.), Millet, and Fonia are grown and sold in local or regional markets.

Although it will be a few years before fruit is available from the trees planted as part of the Arlomom Patako project, participants can strengthen their organisational capacity now by cooperating in groups to process and sell NTFPs. NTFPs in the area include mangos, cashew apples, Ditax fruit, Baobab, hibiscus, and Fonio. During the rainy season from July to October, farmers are busy working in their fields. Outside the rainy season, farmers may wish to explore opportunities with NTFPs.

Mangoes and cashews

In March, mangoes are in season. They are harvested and sold at local markets. Later in March and in April, cashews are ready for harvest. When the harvest of cashew nuts begins, the harvest of mangoes slows or stops because the cashews are more valuable. There is an opportunity to collect mangoes that would otherwise be left to rot and to process them to make dried fruit or a juice. A similar approach could be taken for the cashew apple. Currently, only the nut is collected, but the cashew apple could also be used to make a product.

It is possible to dry mangos. Mango drying has been done in Burkina Faso with support from GEBANA (a Swiss fair trade organization). For information about mango drying processes, refer to information from The International Union of Food Science and Technology (IUFoST)
http://www.iufost.org/publications/books/documents/Mercer_1.pdf

Potential buyers of mangoes are in the Fédération des Professionnels de l'Agro-Alimentaire, s/c ADEPME 9, Fenètre Mermoz, Dakar, Tel. 33 869 70 70/33 827 39 75, email: fp2aa@yahoo.fr, created in November 2005 with about 40 members in 2011.

Ditax

Ditax is used to make a popular fruit juice in Senegal. It may be possible for local farmers to work with the Forest Service to gain permission to collect ditax fruit in the Patako forest. In the long term, a variety of ditax which yields fruit quickly (i.e. in 5 years instead of 17) ought to be included in Plan Vivo tree planting activities.

Baobab

There is a high demand for baobab powder for local juice and for export for yoghurt in Italy and for drinks in Japan. The production process for baobab is well established (see Appendix C). The powder can be sold; locally, in Dakar to juice producers, or to companies handling export.

Hibiscus (Bissap)

Hibiscus can be grown in fields or between trees in agroforestry. It is often grown to mark boundaries. The blossoms are dried by local women's groups and sold to domestic juice producers or sold for export. The hibiscus market is fully developed and easily accessible.

Cereals

Fonio, similar to millet, is becoming more popular in West Africa and for export in Europe and the US. There is a shortage in the supply of Fonio, so the price is fairly high.

Support

Technical support is available free of charge from the Institute Technologie Alimentaire (ITA) for small enterprises in rural areas. To receive this support, an organisation must be established and registered, there must be a suitable space where the production process will take place. The ITA provides advice about production techniques and handling processes.

There are groups that provide financial support to organisations starting NTFP processing projects. Examples are Enda Graf Shahel, Dakar (www.enda.sn), and Peracod, Kaolak (www.peracod.sn). A business plan must be written by the organisation starting the project, and the groups providing financial support often cover the investment in machinery. An application can be to be sent to the Institute de Technologie Alimentaire, Route des Pères Maristes – Hann, Dakar with copy to Mr. Oumar Dieme, Chef de l'atelier fruits et legumes.

8 Tasks and actions

At the beginning of the project, decisions were made as a collective. Now, plans ought to be devolved to small task teams. The task teams will communicate their progress to the monitoring and communication task team for the benefit of the larger project team.

Each task team has members from Arlomom, Bioclimate, Aahus University, and independent persons. All task teams have at least one member to provide guidance and council. Decisions will be made by smaller task teams and communicated to the larger project team. The task teams are: a) land and governance, b) socioeconomics, c) activities, d) technical, e) products, and f) progress and Plan Vivo qualification (Figure 1).

The first planting season, which is late July to early August, is a key time for the project. In the lead-up to the planting season, each task team needs to complete preparatory work (Figure 2).

As the community worker, Boubacar Diop is a key team member who will maintain Arlomom Senegal's presence at the project sites. Drawing on his background in forestry, he will provide guidance and training to participants. Boubacar will be organising plan vivo PES contracts with participants, and as a legal association, Arlomom Senegal is now able to enter into contracts but still needs to guide and assist the women's groups through to legal registry.

Boubacar Diop will coordinate community activities. He will ensure that the nurseries have shade and that the root systems of the seedlings can be moved for planting without damaging the seedlings; and will assist and support communities to make live fences. To ensure that participants know how to manage their plan vivo land management systems, he will train the communities in tree planting and management with the help of the Forest Service. When the work of planting begins, he will coordinate work to move the seedlings to the participating villages as needed. He will also facilitate the singing of plan vivo land management plans and the terms of agreement (PES contracts) with each participant before planting begins.

PES contracts will be prepared before the planting season begins. Wendy Aubrey will collect information from the task teams to draft the PES contracts and Fatima Diop will coordinate the creation of a French version for participants.

To be eligible to sign PES contracts, participants need to demonstrate that they have rights or title to

land. Boubacar will facilitate arranging recognised land title for participants. He will facilitate registering eight women's groups with rural councils and the regional department of Fatick (the ninth women's group is already registered). Once the women's groups are registered, he will facilitate their applications for land title.

For the transfer of PES to be traceable and transparent, Arlomom Senegal needs a bank account for PES. Mamadou Diop will set up a bank account for Arlomom for PES.

For the technical work, Idrissa is taking the lead on the carbon benefit calculations. Carbon benefits for each land management system will be reconciled with money for each participant. Idrissa and Fatima will work together to ensure that the figures reconcile.

The activity calendar for each land management system explains what needs to be done and when. Carolina Bonache is taking the lead on drafting the activity calendars.

Socioeonomic work will be lead by Mamadou with support from Mike to establish the socioeconomic baseline for the project. Mamdou will coordinate the collection of the socioeconomic data for the socioeconomic baseline report in May.

The title for community land should remain with the community. Mamadou will facilitate the transfer of the title for nursery land from Arlomom to women's groups.

Work with NTFP products by the NTFP task team will be on-hold until after the first planting season. The focus between November 2011 and September 2012 is project activities.

After the planting season, technical, governance, and socioeconomic information will be drafted into the Project Design Document (PDD) and Technical Specification (TS). Fatima and Wendy will draft the PDD, and Idrissa and Wendy will draft the TS.

Summer 2012 Bioclimate field mission

The next Bioclimate field mission will be in July-August 2012 before and during the planting season. Now that Boubacar Diop is working with Arlomom Senegal as the community worker, the next Bioclimate field will be smaller and much of the work will be done with Boubacar.

Figure 1: Task teams

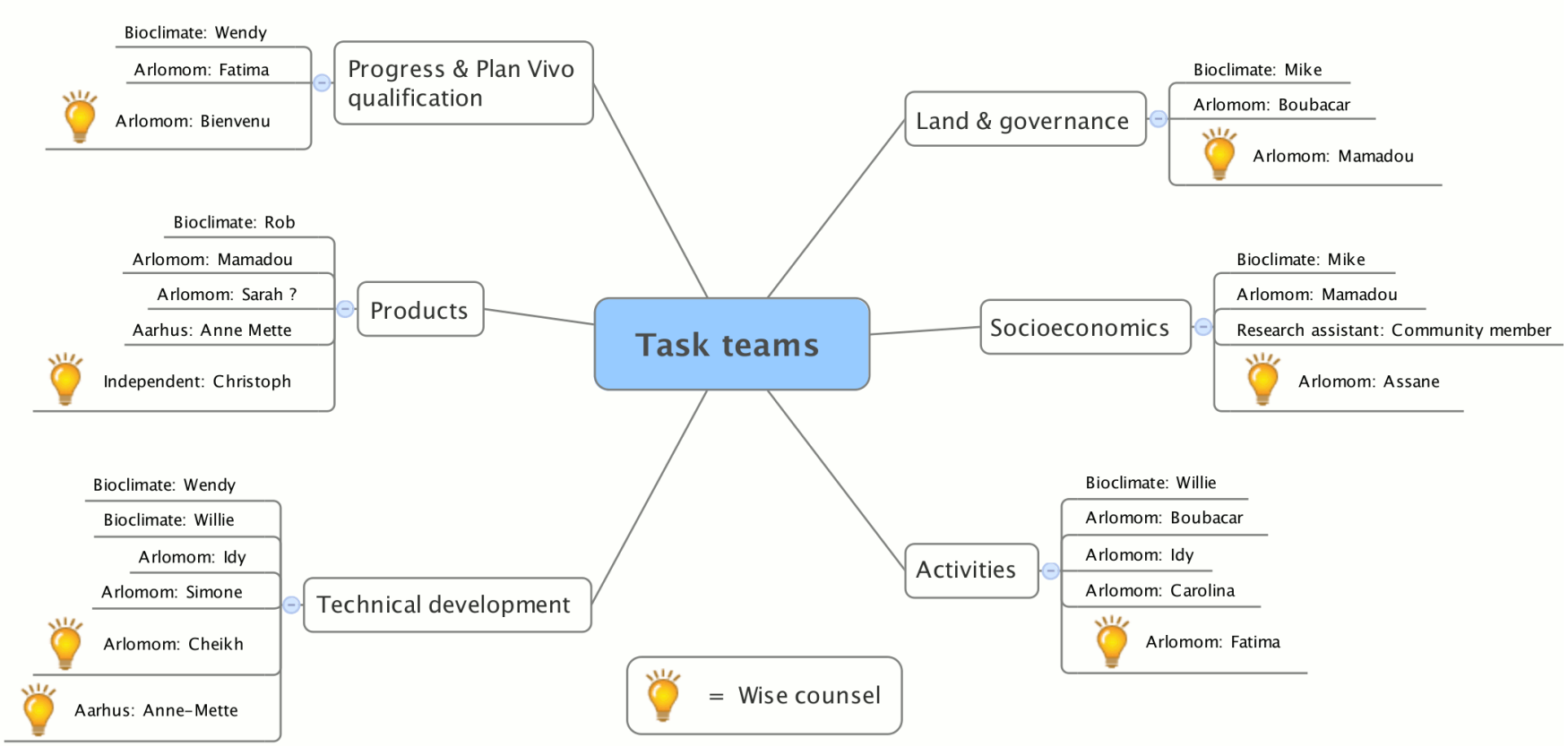
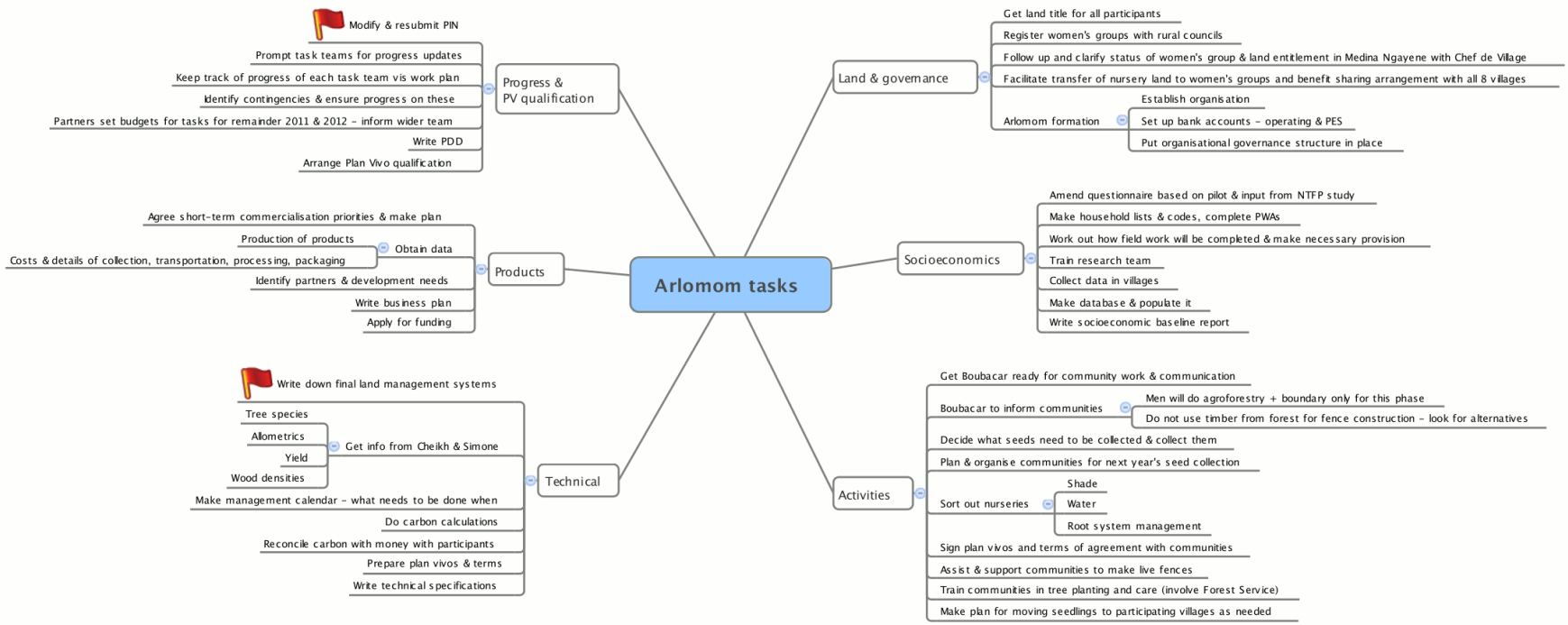


Figure 2: Arlomom tasks



Appendix A – Land management systems

The land management systems are: plantations, intercropping, boundary planting, and assisted natural regeneration. Live fencing is used to protect plantations and assisted natural regeneration. Individual tree guards are used to protect seedlings in intercropping and boundary planting. Land management systems are not combined.

8.1 Live fencing

Species planted for living fences are *Ziziphus mauritiana* or *Euphorbia*.

Notes:
(1) Living fences are barrier hedges that will protect areas from livestock (i.e. goats and cattle)
(2) Seeds or seedlings are planted close together
(3) There is no carbon calculation for living fence

8.2 Plantation

Species	Seed collection	Proportion (%)	Trees on 1 ha
Pterocarpus erinauceus	JUN-JUL	20	80
Khaya senegalense	MAY-JUN	10	40
Parkia biglobosa	MAY-JUN	30	120
Detarium microcarpum	MAY-JUL	10	40
Detarium senegalense	OCT-DEC	10	40
Daniellia oliveri	NOV-FEB	5	20
Neocarya macrophylla	MAY-JUN	15	60
TOTAL		**100**	**400**

Notes:
(1) Live fencing is planted to protect plantation seedlings from grazing livestock
(2) Spacing between trees: 5m
(3) Do not combine plantation with boundary planting
(4) It is possible to change the proportions of the trees planted
(5) Protect the plantation with a living fence

8.3 Intercropping

Species	Seed collection	Proportion (%)	Trees on 1 ha
Faidherbia albida	APR-JUN	30	11
Cordylla pinnata	JUN-AUG	30	11
Tamarindus indica	JUL-AUG	10	4
Detarium senegalense	OCT-DEC	15	5
Detarium microcarpum	MAY-JUL	15	5
TOTAL		**100**	**36**

Notes:
(1) Seedlings are protected with individual tree guards
(2) Intercropping, spacing between trees: 15 m
(3) Do not combine intercropping with boundary planting
(4) Plant large trees (Detarium senegalence or Detarium microcarpum) near the boundary
(5) It is possible to change the proportions of the trees planted; however, the number of Faidherbia albida and Cordylla pinnata should not be decreased

8.4 Boundary planting

Species	Seed collection	Proportion (%)	Trees on 1 ha (400m boundary)
Cola cordifolia	JUN-JUL	20	8
Pterocarpus erinauceus	JUN-JUL	25	10
Khaya senegalense	MAY-JUN	25	10
Tamarindus indica	JUL-AUG	20	8
Adansonia digitata	DEC-FEB	10	4
TOTAL		**100**	**40**

Notes:

(1) Seedlings are protected with individual tree guards
(2) Spacing between trees: 10m
(3) Do not combine boundary planting with intercropping or plantation
(4) It is possible to change the proportions of the trees planted; however, the number of Adansonia digitata should not be increased

8.5 Assisted natural regeneration

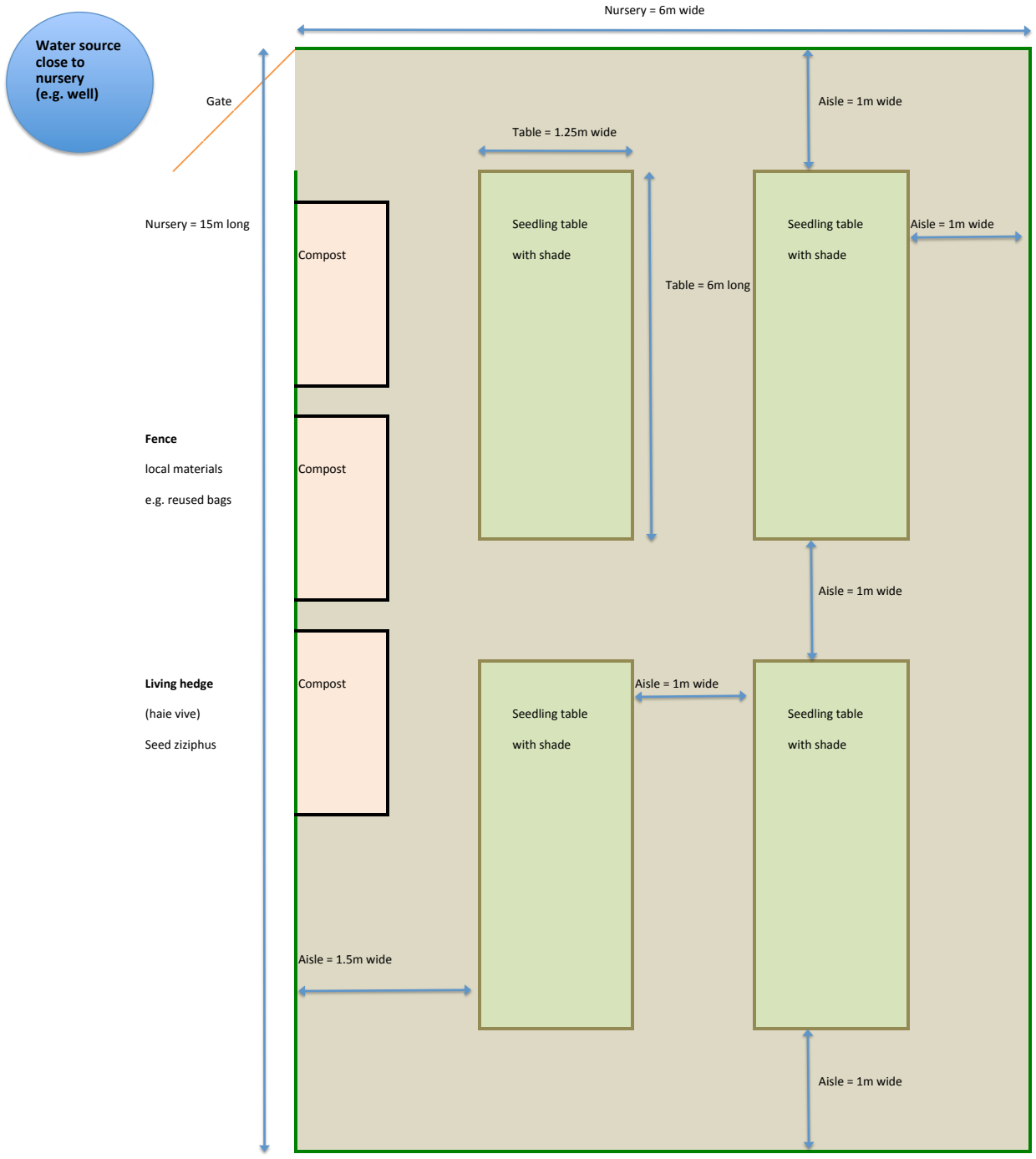
Species	Seed collection	Trees on 1 ha
Detaririum microcarpum	MAY-JUL	20
Neocarya macrophylla	MAY-JUN	20
Cordylla pinnata	JUN-AUG	20
Saba senegalensis		20
Detarium senegalense	OCT-DEC	20
Subtotal		**100**
Species expected		
Combretum	Rainy season	
Ziziphus mauritiana	Rainy season	
Terminallia	Rainy season	
Pterocarpus erinauceus	Rainy season	
Prosopis africana	Rainy season	
Daniellia oliveri	Rainy season	
Subtotal		0
TOTAL		**100**

Notes:

(1) Live fencing is planted to protect plantation seedlings from grazing livestock
(2) Seeds are allowed to grow in the rainy season
(3) Enrichment planting is also done
(4) Do not combine assisted natural regeneration with boundary planting

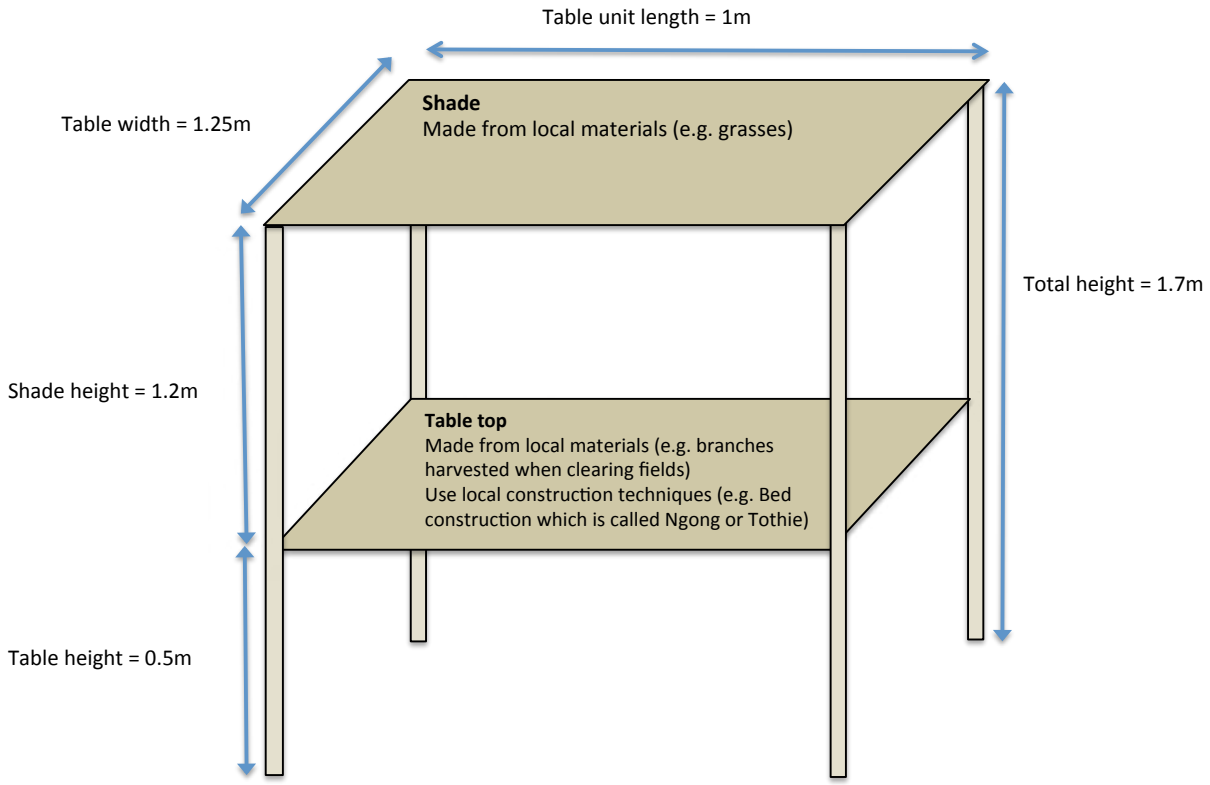
Appendix B – Village nursery design

- The nursery is located close to a source of water (e.g. close to a well)
- Seedling bags are not in contact with the earth to prevent roots from growing into the ground (i.e. seedling bags are placed on a table) OR bags are moved regularly and roots trimmed OR seedlings are soaked prior to removal for planting
- Seedlings are shaded (i.e. not in direct sun)
- The nursery is protected from livestock with a fence made of local materials
- A living hedge of Ziziphus is seeded around the perimeter of the nursery
- This nursery design has 30 square meters of space for seedling bags (4 tables x 1.25m x 6m). If the seedling bags have a diameter of 20cm, this nursery could contain up to 750 seedling bags
- There are three compost heaps. One compost heap is new compost, one compost heap is in the process of composting, and one compost heap is ready to use (rotational compost plan)


Water source close to nursery (e.g. well)
Nursery = 6m wide
Gate
Aisle = 1m wide
Table = 1.25m wide
Nursery = 15m long
Compost
Seedling table with shade
Seedling table with shade
Aisle = 1m wide
Table = 6m long
Fence
local materials
e.g. reused bags
Compost
Aisle = 1m wide
Living hedge
(haie vive)
Seed ziziphus
Compost
Aisle = 1m wide
Seedling table with shade
Seedling table with shade
Aisle = 1.5m wide
Aisle = 1m wide

Nursery Table Design

- Nursery tables keep seedling bags off the ground, preventing roots from growing into the ground
- Nursery tables provide shade to the seedlings, protecting them from direct sunlight
- The nursery tables can be made as modules. Each table can be 1.25m wide by 1m long. To make a 6m table, put 6 table modules together
- Use local materials and local construction techniques to make the tables



Appendix C – NTFPs

La Fédération des GIE des femmes de Diossong

La Fédération des GIE des femmes de Diossong started in 2007. It is a fully established registered federation of women's groups located 40 kilometers south of Kaolak, close to Sokone. It buys and sells fruit at its own risk. 98 villages are involved, and the members are 877 women from 3 regional groups (east, center and west). Currently, the federation buys baobab fruit from 57 parks of baobab trees with an annual potential of 102 tons of fruit. The founding of the organization and funding of the equipment was supported by PERACOD (Promotion of rural electrification and sustainable supply of domestic Fuels) and GIZ (German Agency for International Cooperation).

La Fédération des GIE des femmes de Diossong is active in following locations:

Town	Region
Kélimane	Nganda
Birkilane	Birkliane
Thiomby	Thiomby
Niassène	Diossong
Keus Ngor/Samboudé	Keur Baka
Daklav Post	Médinatul Salam III/Nganda
Mbouloum	Diossong

Contact: Sécretary/President: Mme Amy Ndiaye, Tel. 77 418 29 06

PERACOD

PERACOD have about 70 women's groups interested in cooperating and enlarging their activities. Lack of resources on PERACOD's side does not allow them to develop and support further structures even though the interest is very high.

Bioclimate

Tower Mains Studios
18B Liberton Brae
Edinburgh EH16 6AE
Scotland

UNDESERT Arlomom Patako

Project field mission August 2012

September 2012

Women's group planting a boundary at Ndiaye Counda, Senegal 2012
Picture by Wendy Aubrey, Bioclimate Research and Development

Contents

Acronyms

ACRONYM	Name
ISE	Institute of Sciences of Environment
PES	Payments for ecosystem services
UCAD	Cheikh Anta Diop University in Dakar
URENE	Natural Ecosystems and the Environment Unit

1 Executive summary

In August 2012, Arlomom and Bioclimate carried out a field mission to Patako Forest in the Saloum region of west central Senegal.

The field mission objectives were to:
(1) Reinforce Plan Vivo with Arlomom and participants
(2) Do tree planting with participants
(3) Agree how to register women's associations and land title registration for individuals and women's groups
(4) Draft contracts to sign with participants
(5) Agree how and when to complete carbon benefit calculation
(6) Make a work plan
(7) Make a budget

Arlomom has made some progress since the last field mission in November 2011. Between the field missions, Boubacar continued to work with participants to manage the nurseries in preparation for the planting season. Simon Sambou created initial carbon models using CO2Fix to estimate the carbon benefits of project activities. Mamadou Diop finished the data collection and data entry from the socioeconomic survey.

Over a period of two weeks, Arlomom worked with participants to plant seedlings for their plan vivo activities. By the end of the mission to Patako, 29 individual participants had intercropping and boundary planting plan vivos planted, and 7 women's groups had afforestation plan vivos planted, and 2 women's groups have natural regeneration plan vivos planted.

Although the planting was done, land tenure is still an outstanding issue. Normally, land title is registered, PES contracts are signed with participants, and only then is the planting done. Planting was done before land title was registered and PES contracts were signed for the practical reason that the planting season is in August.

During an Arlomom meeting, the issue of land tenure was again recognised as a blockage in the project. The Arlomom team presented the recommendation to the president, Bienvenu Sambou, that Arlomom could pay the registration fees for land title and associations for women's groups. Bienvenu agreed, but movement on the issue was slow because the money was not immediately released. Willie McGhee of Bioclimate sent a transfer of funds for the registration of land title and associations for women's groups. Boubacar Diop is in charge of making the registration payments for land title and women's associations.

With Arlomom's input, Fatima Niang and Wendy Aubrey drafted a PES contract between Arlomom and participants. This contract includes the roles and responsibilities of Arlomom and participants, monitoring indicators, monitoring schedule, and a payment schedule with performance thresholds.

A component of PES contracts between Arlomom and participants is the carbon benefit. Simon Sambou, supported by Idrissa Guiro, will use species-specific densities in CO2Fix models to calculate the carbon benefits of activities. This work will be done in September.

By the end of the August field mission, Arlomom developed a work plan prioritising seedling protection and a preliminary budget for the next year. Arlomom expects to produce carbon certificates by April 2013.

The next Bioclimate visit will coincide with the field mission to ensure seedling protection in October or

November 2013.

2 Field mission overview

In August 2012, Arlomom and Bioclimate carried out a field mission to Patako Forest in the Saloum region of west central Senegal. Over a period of two weeks, Arlomom worked with participants to plant seedlings for their plan vivo activities. By the end of the mission to Patako, 29 individual participants had intercropping and boundary planting plan vivos planted, and 7 women's groups had afforestation plan vivos planted, and 2 women's groups have natural regeneration plan vivos planted.

Collectively the task teams visited all of the project sites and participating villages: Site 1: Médina Ngayène and Ndiéganène, Site 2: Keur Andalla Willane and Keur Thierno Ngalane, Site 3: Ndiaye Counda (Niombato) and Keur Boye, and Site 4: Diankou Bodian and Keur Yewty.

2.1 Objectives

The field mission objectives were to:

(1) Reinforce Plan Vivo with Arlomom and participants
(2) Do tree planting with participants
(3) Agree how to register women's associations and land title registration
(4) Draft contracts to sign with participants
(5) Agree how and when to complete carbon benefit calculation
(6) Make a work plan
(7) Make a budget

2.2 Schedule of activities

Date	Activity and location	Participants
Mon 30 Jul	Wendy arrives in Dakar (20:00)	Wendy Aubrey (WA)
Tue 31 Jul	Arlomom progress update Planning & preparation for field visit	Fatima Niang Diop (FD), Mamadou Diop (MD), Wendy Aubrey (WA)
Wed 01 Aug	Travel to community	Fatima Niang Diop (FD), Boubacar Diop (BD), Mamadou Diop (MD), Idrissa Guiro (IG), Sara Dieng (SD), Simon Sambou (SS), Wendy Aubrey (WA)
Thurs 2 to 14 Aug	Field visit and tree planting Community activities and engagement Visit tree nurseries	Fatima Niang Diop (FD), Boubacar Diop (BD), Mamadou Diop (MD), Idrissa Guiro (IG), Sara Dieng (SD), Simon Sambou (SS), Wendy Aubrey (WA), Carolina Bonache (CB) joins field visit 10 Aug
Wed 15 Aug	Travel to Dakar	Fatima Niang Diop (FD), Boubacar Diop (BD), Mamadou Diop (MD), Idrissa Guiro (IG), Sara Dieng (SD), Simon Sambou (SS), Carolina Bonache (CB), Wendy Aubrey (WA)
Thur 16 Aug	Rest day	
Fri 17 Aug	Draft contract in English	Fatima Niang Diop (FD) , Wendy Aubrey (WA)
Sat 18 Aug	Arlomom meeting	Bienvenu Sambo (BS), Assane Goudiaby (AG), Fatima Niang Diop (FD), Idrissa Guiro (IG), Wendy Aubrey (WA)

Date	Activity and location	Participants
Sun 19 to 21 Aug	Days off due to Korité	
Wed.22 Aug	Technical specification (TS)	Idrissa Guiro (IG), Simon Sambou (SS), Wendy Aubrey (WA)
Thr 23 Aug	Arlomom-led work planning	Fatima Niang Diop (FD), Boubacar Diop (BD), Carolina Bonache (CB), Wendy Aubrey (WA)
Fri 24 Aug	Training in Excel pivot tables for analysis of socioeconomic data Propose a budget for Arlomom Project design document (PDD)	Mamadou Diop (MD), Wendy Aubrey (WA) Fatima Niang Diop (FD), Wendy Aubrey (WA)
Sat 25 Aug	Draft contract in French	Fatima Niang Diop (FD), Wendy Aubrey (WA)
Sun 26 Aug	Wendy departs from Dakar (22:55)	Wendy Aubrey (WA)

2.1 Progress update

Arlomom has made some progress since the last field mission in November 2011. Between the field missions, Boubacar continued to work with participants to manage the nurseries in preparation for the planting season. Simon Sambou created initial carbon models using CO2Fix to estimate the carbon benefits of project activities. Mamadou Diop finished the data collection and data entry for the socioeconomic survey.

3 Arlomom organisation

Arlomom, a registered association, has a hierarchical structure. Individuals working on the Arlomom project in Dakar discuss issues and then decide by consensus which recommendations to make to the president, Bienvenu. Bienvenu then reviews the recommendations and then either approves or rejects the recommendations. Bienvenu is the only individual who has the authority to sign for the release of funds for project activities.

To enable the Arlomom Association to act quickly and effectively, we recommend that decision making and financial responsibilities be shared with the vice president, Fatima Niang Diop, or another individual within Arlomom.

The roles within Arlomom are:
President: Bienvenu Sambou
Vice president: Fatima Niang Diop
General secretary: Assane Goudiaby
Deputy general secretary: Cheikh Mbow
Treasurer: Ousseynou Ndiaye
Assistant treasurer: Idrissa Guiro
Auditor: Mamadou Diop

Bank account

Expenses associated with Arlomom Patako are currently handled through the ISE bank account. Arlomom does not yet have a bank account.

Arlomom Senegal has agreed to open a bank account to hold the 25 000 Euros of PES funds for participants. Opening this bank account is a priority. In a meeting on Sat 18 Aug, Bienvenu agreed that a bank account would be opened in August 2012.

4 Tree planting at Patako

During the field mission, from August 3rd to August 14th, Arlomom planted all of the plan vivos with participants. The plan vivos included 29 individual plan vivos with intercropping and boundary planting as well as 8 plan vivos for women's groups. Of the plan vivos for women's groups, 6 were afforestation, and 2 were assisted natural regeneration.

Tree nurseries

Before planting the seedlings in plan vivos, we counted the number of seedings available in the nurseries (Table 1).

Table 1: Seedlings in nurseries

Species	Keur Andalla	Keur Andalla	Ndiaye Counda	Ndiaye Counda	Botanical garden	Total per species
	Abdoulaye Sall's nursery	Large nursery	Large nursery	Mamodou Doumbouya's nursery	Carolina Bonache's experiment	
Adansonia digitata	90		91	102	85	**368**
Cassia sieberiana	54		24			**78**
Cola cordifolia	160		260	45		**465**
Cordyla pinnata	252	11	280	172		**715**
Daniella oliveri						**0**
Detarium microcarpum	120	143	258			**521**
Detarium senegalense	73	278				**351**
Faidherbia albida	249		93	28		**370**
Khaya senegalense	74		6	35		**115**
Neocarya macrophylla						**0**
Parkia biglobosa	200		24	85	57	**366**
Pterocarpus erinaceus	201	4	47	136		**388**
Saba senegalense			57			**57**
Tamarindus indica	351		190			**541**
Zizuphus mauritiana	794	44	1111		10	**1959**

Species	Keur Andalla	Keur Andalla	Ndiaye Counda	Ndiaye Counda	Botanical garden	Total per species
Total per nursery	**2618**	**480**	**2441**	**603**	**152**	**6294**

Planting

There were enough seedlings for the intercropping activity (36 seedlings per hectare), most of the seedlings needed for boundary planting (35 of 40 seedlings per hectare), all of the seedlings needed for assisted natural regeneration (60 seedlings per hectare), and roughly one third of the seedlings needed for afforestation (130 of 400 seedlings per hectare).

For boundary planting, 35 of 40 seedlings were planted this year. Next year, the remaining 5 seedlings will be planted.

For afforestation, 130 of 400 seedlings were planted this year. Next year, the remaining 270 seedlings will be planted.

Protection

Seedling protection is a priority in the project. Without seedling protection, the seedlings will become fodder for grazing livestock during the dry season when forage is scarce.

Women's groups planted *Zizuphus mauritiana* seedlings around their plan vivos that will grow into living fences. For plan vivos further from areas with a high risk of grazing, seeds of *Zizuphus mauritiana* were sown directly into the ground. This year, the seedlings are too small to provide protection from livestock. We recommend that the trees be protected with individual tree guards.

Individuals who have plan vivos with intercropping and boundary planting will protect their seedlings during September to October. Boubacar Diop will be leading demonstrations in tree protection and organising groups to go out and protect the trees in the project area

5 Land tenure and women's associations

At the beginning of the field mission, the registration of land title and women's associations had stalled. The rural council of Keur Samba Guéye (KSG) was able to waive the fee to register land title for participants; however, the other rural council, Keur Saloum Diané (KDS) was awaiting payment before proceeding.

During an Arlomom meeting on the 18th of August, Bienvenu agreed that registration fees for land title and women's associations could be paid as an advance payment from participant's PES. However, Bienvenu then travelled for work before he could be provided with a list of the fees and sign for the release of money.

To speed up the process, Willie McGhee sent an electronic money transfer of 480.214 euros (1 EUR = 655.957 XOF) to pay for the registration of women's groups and land title on 23 August. The

cost to register a women's association is 25 000 CFA, and the cost to register land title is 10 000 CFA.

Table 2: Costs to register associations and land title

Registration fees	Cost (CFA)	Number	Total (CFA)
Women's association	25000	9	225000
Women's land title	10000	6	60000
Men's land title	10000	21	210000
Total			**495000**

Fatima Diop submitted a formal request to the treasurer, Ousseynou Ndiaye, to make an advance payment of the money for the registration of women's associations and land title as well as men's land title. Fatima was only able to include the amount for the registration of men's land title because Bienvenu had already given his verbal agreement for the payment and was only awaiting his signature. Boubacar Diop received the money on August 24th and will make the payments to the rural councils as soon as possible.

6 Contracts

Fatima Niang and Wendy Aubrey drafted a sample contract between Arlomom and a women's group based on input from the Arlomom team. It contains monitoring indicators, thresholds, and a schedule for monitoring and payment (Table 3, Table 4, Table 5). The draft contract can be completed when the carbon benefit calculations become available in September.

For benefit sharing within the women's groups, separate agreements will need to be drafted. These documents will describe the decisions of the women's groups about how they will share their benefits. Boubacar Diop will facilitate meetings with the women's groups and record their decision.

Table 3: Monitoring indicators

Time of monitoring (years after initial planting)	Indicator
1 Month, Sep	Plot establishment
6 Months, March	Survival and protection from fire and grazing
1 Year, Oct	Survival
2 Years, Oct	Survival
5 Years, Oct	Survival
7 Years, Oct	Survival
10 Years, Oct	Survival

Table 4: Monitoring thresholds for survival

Survival	Payment
80 to 100%	100%
60 to 79%	80%
40 to 59%	60%
20 to 39%	40%
10 to 19%	20%
< 10%	0%

Table 5: Payment schedule

Year	PES (%)	Full PES (Euros)	80% Partial PES (Euros)	60% Partial PES (Euros)	40% Partial PES (Euros)	20% Partial PES (Euros)	Date monitoring report approved (MMM/YYYY)	Date of payment (conditional on monitoring) (MMM/YYYY)
1 Month							Sep/2012	
6 Month	15%						Mar/2013	Feb/2013
1 Year	15%						Oct/2013	Nov/2013
2 Years	20%						Oct/2014	Nov/2014
5 Years	20%						Oct/2017	Nov/2017
7 Years	15%						Oct/2019	Nov/2019
10 Years	15%						Oct/2022	Nov/2022
Total	100%							

7 Carbon calculations

Before the August field mission, Simon Sambou completed the first draft of the carbon calculations using CO2Fix.

Table 6: Initial carbon estimate

Systems	Potential tC/ha	Potential tCO2/ha	Number of ha	Total CO2 in project
Agroforestry or intercropping	8,2	30,07	30	902,08
Boundary planting	8,72	31,98	30	959,29
Afforestation / Reforestation	64,52	236,59	9,8	2318,63
Assisted Natural Regeneration	64,52	236,59	1,2	283,91
Total	145,96	535,24	-	4463,91

Now, Simon has researched species-specific wood density data for almost all of the native species in the project. Using this information, he will update the carbon calculations in CO2Fix.

During the field visit, we agreed that a risk buffer of 10% is appropriate for the project. We arrived at the 10% estimate by listing the risks to the project in terms of longevity and assigning a probability and significance to each risk.

Simon is away teaching a course from 27th of August to the 20th of September. Idrissa Guiro may be able to assist Simon with the carbon calculations in his absence.

8 Work planning

Arlomom has produced a work plan for September 2012 to April 2013. The priorities for the project are the registration of land title and women's associations and seedling protection. If tasks are completed on time, carbon certificates are expected in April 2013 (Appendix A).

The main tasks in the Arlomom work plan are to:

- Protect seedlings. Seedlings have been planted, but they must be protected before the dry season begins at the beginning of November. During the dry season, the unprotected seedlings are at risk from grazing livestock.
- Continue work in tree nurseries. Grow seedlings to replace seedlings that do not surive the first seedlings as well as seedlings for next year's participants.
- Establish a system of payments for participants. Participants may receive cash payments at their village from Arlomom or they may receive payments into bank accounts in the case of women's groups.
- Write the technical specification (TS) and project design document (PDD)
- Summarise the socioeconomic indicators and data. The socioeconomic indicators can be used to describe the socioeconomic situation at the outset of the project.

- Apply to funding opportunities. Apply to programmes and grants.
- Search for funders. Begin contacting potential funders and produce a brochure to promote the project.

Boubacar Diop has created work plan with the Arlomom team for his role as the community field worker. He has a list of priority activities for September and a longer work plan for September 2012 to April 2013 (Appendix A). His priority activities include: making payment for registration of land title and women's associations to rural council, confirm that the living fence has been planted for the women's group at Keur Andalla, confirm that the seeds for the living fence have been planted for the women's group at Keur Thierno, check the plan vivos for all participants, demonstrate and organise seedling protection, organise seed collection, and collect seeds for *Cordyla pinnata*.

9 Budget

Provisional budget

During the field mission, the Arlomom team drafted a provisional budget from September 2012 to July 2013 before next season's planting (Appendix B).

Arlomom forsees the need to make five field missions over the year (6,533 Euros) to support Boubacar Diop's work in the field. The field missions will include: seed collection, benefit sharing in women's groups, seedling protection, first payment to participants, and a validation visit.

PES

Of the 25 000 Euros for PES, approximately 600 Euros can be kept aside for participants who worked in the nurseries this year. The rest can be apportioned to individuals and women's groups according to the proportion of carbon estimated for the activities.

Appendix A: Work planning

The due dates for deliverables within UNDESERT have been updated (Table 7). Carbon certificates will be produced in April 2013.

Table 7: Deliverables within UNDESERT

	2012					2013												2014	
Tasks/Deliverables	**A**	**S**	**O**	**N**	**D**	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	**J**	**F**
DL 5.1.1 Best practices and performant species for restoration																			
Contribute to a guide for species selection for forest restoration and agroforestry																			
DL 5.2.1 Plantations for carbon sequestration established based on local species																			
Trees planted with first year participants																			
First monitoring of planted trees																			
Second monitoring of planted trees																			
Third monitoring of planted trees																			
Plant trees with second year participants																			
DL 5.3.1 Carbon sequestration model																			
Establish sequestration model																			
Finish carbon calculation for native species																			
DL 5.4.1 One restoration site certificated for carbon credit																			
Finalise participant contrats																			
Monitor plan vivo systems on participants land																			
Agree benefit sharing for women's group																			
Write the Technical specifications and Project Design Document																			
Submit the PDD and the technical specifications to the Plan Vivo Foundation																			
Propose an independant reviewer to carry out the validation visit																			
Validation visit																			
Plan Vivo project registration																			
Annual report to the Plan Vivo Foundation																			
Carbon certificats issuance																			

Arlomom's work plan lists the tasks in more detail than the work plan for UNDESERT deliverables (Table 8). It includes writing the technical specifications, creating a budget, analysing the socioeconomic data, working with the tree nurseries, establishing a system of payment for participants, monitoring the plan vivos, going through the Plan Vivo qualification process, looking for funders, and applying for additional funds.

Table 8: Arlomom work plan Aug 2012 to April 2012

Tâches	Actions	Responsables	2012 Aout	2012 Sept	2012 Oct	2012 Nov	2012 Dec	2013 Janv	2013 Fev	2013 Mars	2013 Avril
Specifications techniques	Faire une cartographie des plans vivos pour chaque participant	Idrissa Guiro		■							
	Finir le calcul du carbone	Simon Sambou		■							
	Ecrire les spécifications techniques	Idrissa Guiro			■						
ARLOMOM budget	Etablir un budget opérationnel de ARLOMOM	Fatimata Niang	■								
Organisation des données socio-économiques	Choix final d'indicateurs socio-économiques	Mamadou Diop	■								
	Elaborer un rapport sur les données socio-économiques	Mamadou Diop	■	■							
Pépinières	Assurer une collecte continue de semences	Boubacar Diop	■	■	■	■	■	■	■	■	■
	Assurer une promotion des pépinières individuelles	Boubacar Diop		■	■	■	■	■	■	■	■
Etablir un système de paiement	Finaliser les contrats	Fatima & Wendy		■							
	Définir le montant du paiement	Bienvenu Sambou		■							
	Définir comment les paiements retenus seront attribués	Wendy et Fatima	■								
	Etablir un système de partage des bénéfices pour les GPF	Boubacar Diop		■							
	Définir les options pour le transfert des paiements	Boubacar Diop		■							
	Ouvrir un compte bancaire pour le PES	Bienvenu Sambou	■								
	Définir la procédure de gestion des PES (signature,..)	Bienvenu Sambou	■								
Suivi des plantations et paiement	Assurer la protection des abres plantés	Boubacar Diop	■	■	■						
	Faire le premier suivi des plantations	Boubacar Diop		■							
	Faire le second suivi des plantations	Boubacar Diop								■	
	faire le premier paiement	Boubacar Diop									■
Draft Project Design Document (PDD)	Ecrire le PDD	Fatima et Wendy	■	■	■						
Qualification plan vivo	Soumettre le PDD et les spécifications techniques	Fatima Niang				■					
	Trouver un evaluateur independant	Wendy Aubrey	■	■	■						
	Visite de validation	Wendy Aubrey						■			
	Enregistrement du projet à la Fondation Plan Vivo	Fatima Niang							■		
	Rapport annuel sur le suivi et les PES	Fatima Niang							■		
	Reception de certificats de carbone	Fatima Niang									■
Rechercher un acquéreur	Concevoir un projet (brochure)	Wendy Aubrey							■		
	Mise en réseau	Carolina Bonache							■	■	■
	Trouver un revendeur	Wendy Aubrey							■	■	■
Chercher des fonds additionnels	Préparer une proposition	Carolina et Fatima	■	■							

Boubacar Diop's work plan has two parts. The first part shows his priorities for September (Table 9) and the second part shows the work plan for activities on the ground from August 2012 to April 2013 (Table 10).

Table 9: Priorities for Boubacar Diop's work plan

Priorités	Aout 04	Sep-01	Sep-02	Sep-03	Sep-04
Finaliser l'obtention des délibérations					
Déposer les dossiers de formalisation des GPF					
Verifier les boundary de Keur Andalla					
Verifier les semis de Zizuphus mauritiana à Keur Thierno					
Vérifier les plants dans la parcelle des femmes de Keur Thierno					
Valiider les plans vivos de tous les participants					
Assurer la protection des plantations					
Faire le point sur la disponibilité des semences					
Effectuer de nouveaux semis de Cordyla pinnata					

Table 10: Boubacar Diop's work plan

Tâches	Actions	2012 Aout	2012 Sept	2012 Oct	2012 Nov	2012 Dec	2013 Janv	2013 Fev	2013 Mars	2013 Avril
Pépinières	Assurer une collecte continue de semences. Organiser les participants pour ramasser les semences.									
	Commencer à semer pour la prochaine campagne									
	Assurer que les plants ont l'ombre. Construire l'ombre avec les participants.									
	Compostage (on peut utiliser les restes des plantes maraîchères et du fumier du bétail)									
	Suivre les pompes à pédales au niveau des pépinières communautaires									
	Assurer que les racine ne pouse pas dans le sol (Faire le cernage)									
	Suivre régulièrement l'état des pépinières et impliquer les populations									
	Identifier les possibles attaques et maladies des plantes et chercher une solution									
	Envoyer des rapports sur l'état des pépinières une fois par mois et les activités de suivi									
Plan vivos	Élaborer un «Plan Vivo» pour chaque participant									
	Appuyer les participants dans l'entretien et le suivi des plants									
Protection	Travailler avec les participants pour la protection des plantes. Confectionner les gapillons pour la protection individuelle et les haies vives pour les parcelles d'afforestation et regeneration.									
	Organiser les GPF à faire la protection individuelle pour les arbres (80 sont planter dans la premiere anné).									
Etablir un système de paiement	Expliquer les contracts aux participants									
	Expliquer aux participants que Arlomom peut fair un avance pour le foncier et les association si un participant ou GPF ne peut pas payer									
	Discuter sur le système de partage des bénéfices pour les GPF et écrire un rapport									
	Définir les options pour le transfert des paiements									
Suivi des plantations et paiement	Faire le premier suivi des plantations									
	Faire le second suivi des plantations									
	Faire le premier paiement									

Appendix B: Budget

Past expenses

From September 2010 to Aug 2012, there were approximately 22 field missions to Patako to do practical project work. Field missions will be reduced in the next calendar year because Boubacar Diop is now working locally in Patako.

Table 11: Past expenses Sep 2010 to Aug 2012

Expenses	Description	Cost (CFA)	Cost (Euros)
Per diems	25 000 CFA/person/day for accommodation and restaurant	4543750	6,937
Travel	Fuel	1000520	1,528
Materials for tree nurseries	2 wells with pumps, concrete water holding tanks, fences, plastic sacs	3569720	5,450
Capacity building	Training from forestry technicians in seed collection and nurseries and local expert in composting.	1539800	2,351
Field worker	Boubacar Diop 210 000 CFA/month (9 months)	1533000	2,340
Other	Vehicle maintenance and insurance	251813	384
Total		12438603	18,990

Provisional budget

The provisional budget for Arlomom Senegal includes 5 field missions, the salary and transportation of the community field worker, simple materials for the tree nurseries, and payments for the participants. This budget has not yet been approved by Bienvenu and may be modified before approval (Table 12).

Table 12: Arlomom provisional budget

Dépenses	Unité	Nombre de personnes	Nombre de jours	Coût unitaire CFA	Nombre	Carburant CFA	Imprévus	Coût total CFA	Coût total en Euro	Notes
Missions de terrain								**4,279,000.00**	**6,532.82**	
Mission sur les semences	Prise en charge	5	4	€ 25,000		80000	58000	638,000.00	974.05	Le nombre de personnes est augmenté de1 pour prendre en compte le chauffeur. Date de la mission prévue en avril-mai 2013
Mission sur les groupements de femmes	Prise en charge	3	7	€ 25,000		90000	61500	676,500.00	1,032.82	Le nombre de personnes est augmenté de1 pour prendre en compte le chauffeur. Date de la mission prévue en novembre 2013
Mission sur la protection des arbres	Prise en charge	6	10	€ 25,000		225000	172500	1,897,500.00	2,896.95	le nombre de personnes est augmenté de2 pour prendre en compte deux chauffeurs. Date de la mission prévue en novembre 2013
Mission sur le premier paiement	Prise en charge	4	5	€ 25,000		90000	59000	649,000.00	990.84	Le nombre de personnes est augmenté de1 pour prendre en compte le chauffeur. Date de la mission prévue en avril 2013
Mission sur la validation	Prise en charge	3	4	€ 25,000		80000	38000	418,000.00	638.17	Le nombre de personnes est augmenté de1 pour prendre en compte le chauffeur. Date de la mission prévue en janvier 2013
Animateur								**2,940,000.00**	**4,488.55**	
Animateur	per month			€ 210,000	12			2,520,000.00	3,847.33	
Carburant	per month			€ 20,000	12			240,000.00	366.41	
Communication	per month			€ 5,000	12			60,000.00	91.60	
Entretien, assurance et autres	per month			€ 10,000	12			120,000.00	183.21	
Pépinières								**165,000.00**	**251.91**	
Achat de gaines				€ 25,000	3			75,000.00	114.50	
Achat de produits phytosanitaires				€ 10,000	3			30,000.00	45.80	
Entretien des mini forages				€ 10,000	6			60,000.00	91.60	
Les paiments pour les services ecosystem								**16,375,000.00**	**25,000.00**	
Individuelles et groupements de femmes				€ 15,982,000	1			15,982,000.00	24,400.00	Le paiement concerne les participants enregistrés dans la première année
Les participants qui travaille dans les pépinières				€ 393,000	1			393,000.00	600.00	Le paiement concerne les participants enregistrés dans la première année
Total								**23,759,000.00**	**36,273.28**	

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UNDESERT Arlomom Patako

Project field mission November 2012

Jan 2013

Fatima Niang Diop facilitating a women's group benefit sharing meeting, in Keur Andalla village, in Patako area of south-western Senegal
Picture by Wendy Aubrey, Bioclimate, 2012

Contents

Acronyms

ACRONYM	Name
ISE	Institute of Sciences of Environment
PES	Payments for Ecosystem Services
UCAD	Cheikh Anata Diop University in Dakar
URENE	Natural Ecosystems and the Environment Unit

1 Executive summary

In November 2012, Arlomom[1] undertook a field mission with Wendy Aubrey from Bioclimate to Patako Forest in the Saloum region of west central Senegal.

The field mission objectives were to:

(1) Sign PES contracts with participants
(2) Facilitate benefit sharing agreements with women's groups
(3) Evaluate seedling protection for plan vivos and to encourage participants to protect their seedlings
(4) Survey regeneration plots in the Patako forest
(5) Make a work plan for the next 4 months

Progress update

The Project Design Document (PDD) and Technical Specification (TS) were submitted to the Plan Vivo Foundation on the 24th of September 2012. The documents are still under review as on of the 9th of January 2013.

Arlomom is unsatisfied with the performance of the community worker, Boubacar Diop. Arlomom will provide a written summary to Boubacar of his job performance and write a job description to use while searching for alternative candidates for the position.

PES contracts

Arlomom has now signed PES contracts with all participants. There are 30 individual male participants and 9 women's groups who have signed contracts. Individual participants have agroforestry plan vivos with intercropping and boundary planting, each 1 ha large. Women's groups have either afforestation (7 groups) or assisted natural regeneration (2 groups) plan vivos, which are between 1 ha and 1.5ha in size.

Benefit sharing agreements

Arlomom facilitated benefit-sharing meetings with the women's groups in each of the nine participating communities. Two of the women's groups asked to receive their benefits in the form of a grain mill while the other seven groups decided to start credit and savings groups.

[1] Members of the Arlomom coordinator group are part of the Institute of Sciences of Environment (ISE) Natural Ecosystems and the Environment Unit (URENE), both of which are associated with the Cheikh Anta Diop University in Dakar (UCAD).

Seedling protection

Seedling protection is integral to the success of this project. 8 plan vivos were evaluated as part of the November field mission, four belonging to individuals, and 4 belonging to women's groups. In the individual's plan vivos, none of the seedlings had been protected. In the women's group's plan vivos, between 40% and 80% of the seedlings were protected. The womens' groups had concrete plans to protect more of the seedlings in the coming months.

Regeneration survey

The group carried out monitoring at 12 regeneration plots inside the Patako forest. Initial results showed that local species are regenerating from seeds and as shoots from existing plants.

Workplan

At the end of the field mission, the project team planned the tasks for the next four months. These tasks involve searching for alternative candidates for the community worker role, protecting seedlings, completing the benefit sharing agreements, and searching for additional funding.

2 Field mission overview

During the November field mission to Patako the group worked as two teams.

For the first 5 days, each morning one team discussed the PES contracts and seedling protection with individuals while the other team facilitated discussions with women's groups. In the afternoons, each team facilitated a benefit sharing discussion with a women's group.

For the remaining 4 days, the entire group carried out monitoring for 12 assisted natural regeneration plots inside the Patako forest.

2.1 Objectives

The field mission objectives were to:

(1) Sign PES contracts with participants
(2) Facilitate benefit sharing agreements with women's groups
(3) Evaluate seedling protection for plan vivos and to encourage participants to protect their seedlings
(4) Survey regeneration plots in the Patako forest
(5) Make a work plan for the next 4 months

2.2 Schedule of activities

Date	Activity and location	Participants
Thur Nov 1	Wendy arrives in Dakar (20:00)	Wendy Aubrey (WA)
Fri Nov 2	Arlomom progress update	Fatima Niang Diop (FD), Mamadou Diop (MD), Idrissa Guiro (IG), Sara Dieng (SD), Simon Sambou (SS), Carolina Bonache (CB), Cisse Laminets (CS), Wendy Aubrey (WA)
Fri Nov 2	Prepare PES contracts to be signed by participants	FD, WA
Mon Nov 5	Confirm field mission plan Discussion of PES payment schedule	Bienvenu Sambou (BS), Fatima Niang Diop Mamadou Diop (MD), Idrissa Guiro (IG), Sara Dieng (SD), Simon Sambou (SS), Carolina Bonache (CB), Wendy Aubrey (WA)
Tue Nov 6	Prepare Arlomom fact sheet Discuss technical specification (TS)	FD, WA SS, WA
Wed Nov 7	Plan details of field mission	FD, MD, IG, SD, CB, WA
Thu Nov 8	Prepare PES contracts	FD, MD, CB, WA
Fri Nov 9	Finalise PES payment plan	FD, MD, CB, WA
Mon 12 Nov	Travel to Patako Area	FD, MD, IG, SD, CB, WA
13 Nov to 21 Nov	Field mission • Evaluation of plan vivos for seedling survival and protection • Make payments to people who worked in nurseries • Sign PES contracts with participants • Facilitate benefit sharing meetings for women's associations • Research - inventory in natural regeneration plots in Patako forest	FD, MD, IG, SD, CB, WA, Boubacar Diop (BD)
Thr 22 Nov	Travel to Dakar	FD, MD, IG, SD, CB, WA
Fri 23 Nov to Wed Nov 29th	Summarise results of the field mission • Payments to participants who worked in nurseries • Seedling survival and protection monitoring results • Ground nut questionnaire findings • Ensure that the set of contracts is complete	FD, MD, IG, SD, CB, WA
Fri Nov 30	Wrap-up meeting and Arlomom-led work planning Wendy departs from Dakar (23:35)	FD, BD, AG, MD, IG, SS, CB, WA

For a detailed agenda of the field mission to Patako, please see Appendix A.

2.3 Progress update

The Project Design Document (PDD) and Technical Specification (TS) were submitted to the Plan Vivo Foundation on the 24th of September 2012. The documents are still under review as on of the 9th of January 2013.

Arlomom is unsatisfied with the performance of the community worker, Boubacar Diop. Firstly, the seedling nurseries have been neglected. Secondly, for the most part, seedlings in Plan Vivos have not

been protected. And thirdly, the results of the September monitoring of plan vivos carried out by Boubacar often do not correspond with the results found by Arlomom during the November field mission. For example, no seedlings were replanted, so the number of seedlings in intercropping and boundary planting should not have increased between September and November.

2.4 PES money

Of the initial 30 000 Euros in the UNDESERT budget for PES, 5 000 Euros was used to establish the nurseries. 25 000 Euros remains for PES, and it is included in the UCAD budget. The money is currently held by the European Commission and will be transferred to UCAD in instalments over the 5-year life of the UNDESERT project.

Bank account

Arlomom will open a bank account to hold the PES money for participants. A minimum deposit of 500000 CFA is required to open an account. Bienvenu Sambou (president) and Ousseynou Ndiaye (treasurer) will be signatories on the account.

2.5 PES contracts

Arlomom has now signed PES contracts with all participants. There are 30 individual male participants and 9 women's groups who have signed contracts. Individual participants have agroforestry plan vivos with intercropping and boundary planting, each 1 ha large. Women's groups have either afforestation (7 groups) or assisted natural regeneration (2 groups) plan vivos, which are between 1 ha and 1.5ha in size.

Directly before the November field mission to Patako, the PES schedule and amounts were finalised. Participants will receive 8 Euros/tCO2 for ecosystem services. In the UNDESERT budget, there is 25000 Euros available for PES. This will cover 59% of the total carbon benefit provided by the plan vivos of the first-year participants as well as a token payment to participants who worked in the nurseries. Arlomom needs to make arrangements to fund the remaining 41% of the carbon benefit from other sources (see Appendix B).

Although signing PES contracts with participants was a significant milestone, the order of events could have been better. Arlomom assisted participants to plant their plan vivos four months before they signed the contracts. Seedlings needed to be planted during the August rainy season, even though the results of the carbon benefit calculations were not yet available to write the PES contracts. Arlomom facilitated the planting with the understanding that participants would benefit primarily from the products of the trees planted, and that the financial incentive would be regarded as a bonus. However, when participants were first presented with the PES amounts and schedule of payments in November, some participants were concerned that the incentives were not high enough to make participating in the project worthwhile. At Keur Andalla, Fatima Diop facilitated an extra session with participants to persuade them to continue with the project. By the end of the field mission, the participants at Keur Andalla agreed to continue participating in the project.

During the field mission, Arlomom made payments to individuals and groups who worked in the tree nurseries. A total of 580 Euros (380 000 CFA) was paid to participants. Recipients were glad to see a direct benefit from the project after months of work (see Appendix D).

2.6 Benefit sharing agreements

Arlomom facilitated benefit-sharing meetings with the women's groups in each of the nine participating communities. Two of the women's groups asked to receive their benefits in the form of a grain mill while the other seven groups decided to start credit and savings groups (Table 1).

Grain mills are labour-saving machines that take the place of manual, mortar and pestle style grinders. A community can use a mill not only to mill their own grain, but can charge a fee to others who come to use the mill. Having a mill allows a group to run a small enterprise that may cover the cost of the fuel and maintenance for the mill, depending on how many customers there are.

Credit and savings groups are common in Senegal. Community members deposit savings with the group, and they lend money to members who undertake activities to generate income. Members who borrow money return the capital and interest to the group. In some cases, the interest is paid in kind. For example, interest on a loan may be repaid in kind as a proportion of a harvest.

Table 1. Women's groups' benefit sharing plans

	Village	Proposal	Terms
1	Keur Andalla	Grain mill	To be discussed
2	Dankou Bodian	Grain mill	To be discussed
3	Keur Thierno	Saving and credit group	Interest rate: 10%/month
4	Keur Yewti	Saving and credit group	Interest rate: 10%/month
5	Ndiaye Kounda Nimbato	Saving and credit group	Interest rate: 20%/month for first 4 months, then 10%/month for each additional month
6	Keur Boye	Saving and credit group	Interest rate: 10%/month
7	Ndieganene	Saving and credit group	Interest rate: 40%/6 months
8	Ndiaye Kounda Walo	Saving and credit group	To be discussed
9	Medina Gayene	Saving and credit group	To be discussed

The payment schedules for Keur Andalla and Dankou Bodian have been adjusted to allow them to purchase mills up-front. They will receive roughly 50% of their PES in the first payment periods. Benefit sharing agreements will include a plan for the maintenance of the mills.

2.7 Seedling protection and plan vivo monitoring

Seedling protection is integral to the success of this project. 8 plan vivos were evaluated as part of the November field mission, four belonging to individuals, and 4 belonging to women's groups. In the individual's plan vivos, none of the seedlings had been protected. In the women's group's plan vivos,

between 40% and 80% of the seedlings were protected. The womens' groups had concrete plans to protect more of the seedlings in the coming months.

Individuals explained that they had not protected their seedlings because they had concentrated all of their efforts up until November on the harvest, and the livestock would not be released to graze until mid-January. To reinforce that seedling protection is required for the project to succeed, the facilitators emphasised that seedling protection is part of the PES contract and that payments are linked to seedling survival.

During the November field visit, we created a monitoring database in Excel. The first monitoring results are shown in Appendix C. The full monitoring results from September showed that the survival rate in individuals' plan vivos was 65% on average for intercropping and 72% on average for boundary planting (for 30 plan vivos). In November, an evaluation of four plan vivos showed an average survival rate of 39% for intercropping and 59% for boundary planting. Monitoring results for women's groups in September showed a seedling survival rate of 85% on average (for nine plan vivos), while November results showed a rate of 63% on average (for four plan vivos).

The evaluation of plan vivos during the November field mission brought some additional issues to light. In some plan vivos, there was a high seedling mortality rate for intercropping because seedlings were uprooted when the peanut crop was harvested. Other problems affecting seedling survival are termites and livestock grazing.

Arlomom is working to support participants to carry out corrective actions for the problems of seedling protection during harvest, termites, and livestock grazing. It is possible that the family members who harvested peanuts in plan vivos uprooted the seedlings because they were not aware of their value. Boubacar will meet with participants and their families to ensure that all family members who work in the fields are aware that the seedlings should not be uprooted during harvest. Boubacar will also continue to work with participants to show them how to reduce termite attacks and to support participants to protect the seedlings from grazing livestock.

During monitoring of the plan vivos, Arlomom gathers information about why seedling mortality occurs, and assigns corrective actions for each problem identified. Some problems such as livestock grazing and fire have been foreseen. To deal with foreseen problems, good management practices such as seedling protection and firebreaks are part of the plan vivo management plans. However, not all problems have been foreseen – seedlings being uprooted during the peanut harvest, for example. As new problems arise, Arlomom will assign corrective actions from them. This is an opportunity to learn through experience, by identifying problems, to testing corrective actions, and to discovering solutions.

2.8 Survey of regeneration plots

The group carried out monitoring at 12 regeneration plots inside the Patako forest. Initial results showed that local species were regenerating from seeds and as shoots from existing plants.

2.9 Work planning

Arlomom carried out a work planning session at the end of the field mission for the next four months. See appendix E for the meeting minutes and task descriptions and appendix F for the work plan.

Community worker

Arlomom is unsatisfied with the performance of the community worker, Boubacar Diop. Arlomom will provide Boubacar with a written summary rating his job performance.

Arlomom will write a job advertisement for the community worker post. A search for alternative candidates for the community worker role will be carried out starting in December 2012.

Seedling protection

Now that there are initial monitoring results for seedling survival, Arlomom needs to make a plan to deal with the problems that have been identified and encourage participants to continue to manage their plan vivos.

Seedling protection is one of the most important tasks. This includes communicating to the families of the participants about the value of the seedlings, providing training to participants to reduce termite attacks on seedlings, and encouraging and supporting participants to protect their seedlings. During each monitoring period, Arlomom will advise participants how they can improve the survival of their seedlings.

Benefit sharing agreements

Benefit sharing agreements will be completed in January. During the November field mission, women's groups indicated what they would like to do with their benefits, and Arlomom continues to work with the women's groups to facilitate discussions about the details of the benefit sharing agreements. Two groups have requested grain mills, and the other seven groups will start savings and credit groups.

Technical specification

Simon Sambou has done the carbon modelling for the project using species—specific wood densities and default IPCC values for annual growth using CO2Fix software. He is now working with Cheikh Mbow and Anne Mette Lykke to compare the results of this model with the local data collected by Bienvenu Sambou, Anne Mette Lykke, and Cheikh Mbow.

Validation visit

The Project Design Document (PDD) and Technical Specification (TS) are still under review by the Plan Vivo Foundation (PVF). PVF received the documents on the 24th of September. Once the review of the documents is finished and the annual report is prepared with the monitoring results, the validation visit can be carried out.

We have one candidate in mind to carry out the validation visit – Moustapha Njayou, an agroforester who has experience working on the Cameroon Community PES project. We would like to find one or two

other candidates to find the best match for the project.

The validation visit could take place in February 2013 if the Plan Vivo review of the documentation is finished in time.

Money

Participants who signed up in the first year will receive roughly 60% of their PES from the UNDESERT project. Arlomom needs to find a way to fund the remaining 40%. It is time to start contacting registered resellers and promoting the project to potential funders. Arlomom also needs to find funding for participants who sign up after the first year.

Socioeconomics

The next socioeconomic task is to create simple socioeconomic data collection forms for annual monitoring and for new participants.

Record keeping

There is a shared folder on DropBox for Arlomom Patako PES and monitoring records:

https://www.dropbox.com/home/UNDESERT%20-%20carbon%2C%20PES%2C%20ethno/Arlomom%20Plan%20Vivo

There is now a database with monitoring data, and a file needs to be created to keep track of PES payments and sales of Plan Vivo certificates.

Appendix A – Patako field mission schedule of activities

Planning des activités de la mission du 12 au 22 Novembre 2012

Lieu	Date	Période	Activité	Objet	Groupe
BRGM	Lundi 12	Matin	Départ pour Toubacouta		Grand groupe
Site 1 (Keur Andalla et Keur Thierno)	Mardi 13	Matin	Rencontre avec le groupe des PI	- Protection - Contrat	G1 (Mamadou, Idrissa, Boubacar)
			Rencontre avec les 2 GPF	- Protection - Contrat	G2 (Fatima, Wendelin, Carolina)
			Evaluation des Parcelles des participants	- Evaluer le taux de survie des plants	G3 (Carolina, Cissé, Idrissa)
		Soir	Rencontre avec le GPF de Keur Andalla	- Partage des bénéfices	G1' (Fatima, Boubacar, Carolina, Cissé)
			Rencontre avec le GPF de Keur Thierno	- Partage des bénéfices	G2' (Wendelin, Mamadou, Idrissa)
Site 2 (Diankou Bodian et Keur Yewti)	Mercredi 14	Matin	Rencontre avec le groupe des PI	- Protection - Contrat	G1 (Mamadou, Idrissa, Boubacar)
			Rencontre avec les 2 GPF	- Protection - Contrat	G2 (Fatima, Wendelin, Carolina)
			Evaluation des Parcelles des participants	- Evaluer le taux de survie des plants	G3 (Carolina, Cissé, Idrissa)
		Soir	Rencontre avec le GPF de Diankou Bodian	- Partage des bénéfices	G1' (Fatima, Boubacar, Carolina, Cissé)
			Rencontre avec le GPF de Keur Yewty	- Partage des bénéfices	G2' (Wendelin, Mamadou, Idrissa)
Site 3 (Keur Boye, Ndiaye Kounda Niomato et Ndiaye Kounda Walo)	Jeudi 15	Matin	Rencontre avec le groupe des PI	- Protection - Contrat	G1 (Mamadou, Idrissa, Boubacar)
			Rencontre avec les 2 GPF	- Protection - Contrat	G2 (Fatima, Wendelin, Carolina)
			Evaluation des Parcelles des participants	- Evaluer le taux de survie des plants	G3 (Carolina, Cissé, Idrissa)
		Soir	Rencontre avec le GPF de Ndiaye Kounda Niombato	- Partage des bénéfices	G1' (Fatima, Boubacar, Carolina, Cissé)
			Rencontre avec le GPF de Keur Boye	- Partage des bénéfices	G2' (Wendelin, Mamadou, Idrissa)
			Rencontre avec le GPF de Ndiaye Kounda Walo	- Partage des bénéfices	G1' (Fatima, Boubacar, Carolina, Cissé)
Site 4 (Médina Ngayène et	Vendredi 16	Matin	Rencontre avec le groupe des PI	- Protection - Contrat	G1 (Mamadou, Idrissa, Boubacar)

Lieu	Date	Période	Activité	Objet	Groupe
Ndiéganène)			Rencontre avec les 2 GPF	- Protection - Contrat	G2 (Fatima, Wendelin, Carolina)
			Evaluation des Parcelles des participants	- Evaluer le taux de survie des plants	G3 (Carolina, Cissé, Idrissa)
		Soir	Rencontre avec le GPF de Médina Ngayène	- Partage des bénéfices	G1' (Fatima, Boubacar, Carolina, Cissé)
			Rencontre avec le GPF de Ndiéganène	- Partage des bénéfices	G2' (Wendelin, Mamadou, Idrissa)
Keur Thierno	Samedi 17	Matin et soir	Inventiare de la flore et de la végétaition	Parcelle de Regeneration de Keur Thierno	Grand groupe
Patako	Dimanche 18	Matin et soir	Inventiare de la flore et de la végétaition	Patako: 2 parcelles S-1	Grand groupe
Patako	Lundi 19	Matin et soir	Inventiare de la flore et de la végétaition	Patako: 2 parcelles S-1	Grand groupe
Patako	Mardi 20	Matin et soir	Inventiare de la flore et de la végétaition	Patako: 2 parcelles S-2	Grand groupe
Patako	Jeudi 21	Matin et soir	Inventiare de la flore et de la végétaition	Suite inventaire	Grand groupe
Toubacouta	Mercredi 22	Matin	Départ pour Dakar		Grand groupe

Appendix B – PES apportionment

Carbon certificate price	8	**Euros/tCO2**
Carbon credit sold	3053	
Percentage sold	59.93%	

A percentage of the carbon is sold to the EC using the 25 000 Euros, and the rest can be sold to other buyers.

Carbon certificate price 8 **Euros/tCO2** Pourcentage: 59.93%

Source: TS_Arlomom_2012-09-26FINAL

Systems	Total trees/ha or linear trees	Carbon sequestration ($t CO_2$/ha)	Total area planted (ha)	Risk buffer ($t CO_2e$) 10%	Total carbon credit ($t CO_2e$)	Carbon credit sold ($t CO_2e$)	PES (Euros)
Agroforestry - intercropping	36	40	29.0	116	1044	626	5005
Boundary planting	40	44	28.0	123	1109	664	5316
Plantation	400	337	7.0	236	2123	1272	10179
Assisted natural regeneration	400	337	2.7	91	819	491	3926
Total	-	-	-	**566**	**5095**	**3053**	**24426**

Appendix C – Plan vivo monitoring results

Table 2. Average performance of individuals' plan vivos by village

	Taux de survie	Survival rate	Taux de survie	Survival rate
	Agroforesterie	**Boundary**	**Agroforesterie**	**Boundary**
Diankou Bodian	77%	69%	92%	91%
Keur Andalla Willane	85%	95%	33%	94%
Keur Boye	40%	59%		
Keur Thierno Ngalene	56%	69%	25%	28%
Keur Yewty	65%	94%		
Médina Ngayène	78%	79%		
Ndiéganène	34%	50%		
Ndiaye Kounda	66%	66%	7%	24%
Ndiaye Kounda Walo	46%	55%		

Table 3. Performance of individuals' plan vivos

				Septembre		Novembre		Septembre/Novembre		
	Code (Village, Nom)	Village	Nom	Taux de survie	Survival rate	Taux de survie	Survival rate	Problems		
				Agroforesterie / intercropping	Boundary	Agroforesterie / intercropping	Boundary	Insects	Recolte des arachides	pâturag
1	DB_MD	Diankou Bodian	Mamadou Diakhaté	83%	65%	92%	91%			
2	DB_MN	Diankou Bodian	Mamadou Ndiaye	86%	63%					
3	DB_OB	Diankou Bodian	Oumar Bodian	63%	78%					
4	KA_AS	Keur Andalla Willane	Abdoulaye Sall	100%	97%					
5	KA_AS1	Keur Andalla Willane	Andalla Sy	94%	100%					
6	KA_BS	Keur Andalla Willane	Boubacar Sy	61%	94%					
7	KA_SC	Keur Andalla Willane	Saliou Cissé	86%	88%	33%	94%	x	x	
8	KB_EHD	Keur Boye	El Hadji Diallo	71%	91%					
9	KB_MC	Keur Boye	Momadou Cissokho	8%	26%					
10	KT_AN	Keur Thierno Ngalene	Aly Ngalane	33%	28%	25%	28%		x	

11	KT_GD	Keur Thierno Ngalene	Guèdji Diouf	72%	89%					
12	KT_MD	Keur Thierno Ngalene	Mbaye Dramé	61%	91%					
13	KY_MD	Keur Yewty	Mboro Diakité	83%	89%					
14	KY_WB	Keur Yewty	Waly Bâ	47%	100%					
15	MN_AG	Médina Ngayène	Abdoulaye Gaye	67%	74%					
16	MN_ENG	Médina Ngayène	Elhadij Ndiouga Gaye	73%	59%					
17	MN_MLG	Médina Ngayène	Mamadou Lamine Guèye	78%	84%					
20	MN_MT	Médina Ngayène	Moustapha Touré	83%	87%					
18	MN_SD	Médina Ngayène	Seydou Diallo	89%	91%					
19	N_BG	Ndiéganène	Babou Gaye	16%	40%					
21	N_ON	Ndiéganène	Ousmane Ndiégane	53%	59%				x	
22	NK_AN	Ndiaye Kounda	Ass Niang	67%	67%					
23	NK_ANM	Ndiaye Kounda	Amadou Ngom	75%	85%					
24	NK_CD	Ndiaye Kounda	Cheikhou Diawara	78%	59%					
25	NK_EHD	Ndiaye Kounda	El Hadji Diop	50%	42%				x	
26	NK_MD	Ndiaye Kounda	Médoune Diallo	75%	78%					
27	NK_SN	Ndiaye Kounda	Samba Ndiaye	37%	41%	7%	24%		x	

28	NK_TC	Ndiaye Kounda	Tidiane Cissé	81%	88%					
29	NKW_BD	Ndiaye Kounda Walo	Birane Diallo	47%	75%					
30	NKW_MD	Ndiaye Kounda Walo	Mamadou Gueye (Mouhamadou Doumbouya)	46%	35%				x	

Table 4. Performance of women's groups' plan vivos

	Code (Village, Nom)	Village	Nom de la Presidente de GPF	Taux de survie		Problems			
				Septembre	Novembre	Protection	Insects	Recolte des arachides	pâturage
1	DB_GPF	Diankou Bodian	Sira Ndiaye	101%					
2	KA_GPF	Keur Andalla Willane	Satou Diop	82%		80%			
3	KB_GPF	Keur Boye	Awa Diarra	86%			Termites		
4	KT_GPF	Keur Thierno Ngalene	Aïda Sall	87%	61%	60%			
5	KY_GPF	Keur Yewty	Coumba Fall	87%	61%	40%			x
6	MN_GPF	Médina Ngayène	Khady Touré	89%	91%		Termites		
7	N_GPF	Ndiéganène	Khady Ndiaye	64%					x
8	NK_GPF	Ndiaye Kounda (Nimbato)	Dado Niang	73%				x	
9	NKW_GPF	Ndiaye Kounda (Walo)	Aissatou Sarr	93%	40%				

Appendix D – Payments to participants who worked in nurseries

Table 5. Payments made to individuals for work in the seedling nurseries between 2011 and 2012

Liste des personnes qui ont payé pour travaillé au niveau des pépinières entre 2011 and 2012

	Prénom	Nom	Rôle*	Site	Date du payment	Montant (CFA)	
1	Aissatou	Diop	Présidente du GPF	Keur Andalla Wilane	15/11/2012	100,000	
2	Saliou	Cisse	Individuel	Keur Andalla Wilane	19/11/2012	20,000	
3	Abdoulaye	Sall	Individuel	Keur Andalla Wilane	19/11/2012	20,000	
4	Abdou	Cisse	Individuel	Keur Andalla Wilane	19/11/2012	5,000	
5	Andalla	Sy	Individuel	Keur Andalla Wilane	19/11/2012	5,000	
6	Sadio	Barry	Individuel	Keur Andalla Wilane	19/11/2012	5,000	
7	Awa	Diarra	Présidente du GPF	Keur Boye	15/11/2012	30,000	
8	Aissatou	Sarr	Présidente du GPF	Ndiaye Kounda Walo	15/11/2012	40,000	
9	Mamadou	Gueye	Individuel	Ndiaye Kounda Walo	15/11/2012	20,000	
10	Dado	Niang	Présidente du GPF	Ndiaye Kounda Nimbato	15/11/2012	80,000	
11	Samba	Ndiaye	Individuel	Ndiaye Kounda Nimbato	15/11/2012	20,000	
12	Coumba	Fall	Présidente du GPF	Keur Yewty	15/11/2012	15,000	
13	Sirah	Ndiaye	Présidente du GPF	Diankou Bodian	20/11/2012	15,000	
14	Omar	Bodian	Individuel	Diankou Bodian	20/11/2012	5,000	
	Total					380,000	CFA
					Environ	580	Euros

Rôle*. Les Présidentes des GPFs ont recu un paiment pour toutes les femmes du GPF. Elles vont partager le montant entre elles.

Appendix E – Wrap-up meeting minutes

Réunion / Meeting 30 Nov 2012, Dakar

Procès-verbaux / Meeting minutes

Assisté par/ Attended by: Bienvenu Sambou, Assane Goudiaby, Fatimata Niang Diop, Cisse Laminets, Idrissa Guiro, Carolina Bonache, Sara Dieng, Mamadou Diop, Wendy Aubrey

Français	Anglais	Responsables – Responsible people
PSE - plan de paiement Si les paiements sont refusés en raison d'un faible taux de survie des semis, ces paiements peuvent être libérés aux participants quand le taux de survie des semis atteint 100%.	**PES – payment plan** If payments are withheld due to a low seedling survival rate, these payments can be released to participants when the seedling survival rate reaches 100%.	Fatima & Wendy
Arlomom devrait créer des cahiers pour les particpants qu'ils peuvent utiliser pour se référer à leur dossier de paiement. Chaque fois qu'un paiement est effectué, le montant et la date doit être inscrite à l'intérieur. Les brochures devraient avoir des couvercles en plastique et le logo Arlomom sur eux.	Arlomom should make booklets for participants that they can use to refer to their payment record. Each time a payment is made, the amount and the date should be written inside. The booklets should have plastic covers and the Arlomom logo on them.	Fatima & Wendy
Plan Vivos Formilise les plans de management Plan Vivo.	**Plan VIvos** Formilise the Plan Vivo land management plans.	Guiro
Finaliser les contracts.	Finalise the contracts.	Mamadou

Français	Anglais	Responsables – Responsible people
Compte bancaire Arlomom Bienvenu Sambou et Ousseynou Ndiaye seront signataires pour le compte de banque Arlomom.	**Arlomom bank account** Bienvenu Sambou and Ousseynou Ndiaye will be signatories for the Arlomom bank account.	Bienvenu Sambou, Ousseynou Ndiaye
Créer un site web pour Arlomom Le but du site est de promouvoir le projet Arlomom Patako. Téléchargez les pièces justificatives sur le site, y compris la fiche d'information et des présentations. Inclure un lien vers le site Plan Vivo et un lien vers le site UNDESERT. Lorsque les certificats sont disponibles, inclure un lien vers un site Web où les acheteurs peuvent acheter des certificats Plan Vivo du projet.	**Make a website for Arlomom** The purpose of the website is to promote the Arlomom Patako project. Upload supporting materials to the website including the factsheet and presentations. Include a link to the Plan Vivo website and the UNDESERT website. When certificates are available, include a link to a website where buyers can purchase Plan Vivo certificates from the project.	Carolina
Le matériel promotionnel Imprimer la fiche Arlomom et conserver des copies au bureau ISE.	**Promotional material** Print the Arlomom factsheet and keep copies in the ISE office.	Fatima
DropBox Utilise DropBox à partager des données (e.g. Suivi, PSE, rapport annuel et d'autres documents de Plan Vivo).	**DropBox** Use DropBox for data sharing (e.g. Monitoring, PES, annual report, and other Plan Vivo documents).	Toute l'équipe Entire team
Finaliser formulaire de suivi Combien de jeunes plants ont été replantés?	**Finalise monitoring form** How many seedlings have been replanted?	Fatima, Carolina

Français	Anglais	Responsables – Responsible people
Quel type de plante est cultivée? Quels sont les problèmes de la survie des semis? (Sécheresse, les incendies, les insectes, etc) Identifier la survie d'espèces (où les espèces de survie influences, et non d'autres facteurs tels que les insectes et les pâturages).	What type of crop is grown? What are the problems for seedling survival? (dryness, fire, insects, etc.) Identify survival by species (where species influences survival, not other factors such as insects and grazing).	
Suivi Au cours de la mission sur le terrain en Novembre, plus de 10% des plans de management ont été évaluées. Comparez cette information contre des données dans le suivi en Septembre par Boubacar. Vérifier la cohérence. Sont les essences les mêmes? Sont les nombres des plants modifiés dans une manière crédible (les semis n'ont pas été replanté entre Septembre et Novembre, donc les chiffres ne devraient pas augmenter entre Septembre et Novembre). Si l'évaluation montre que la surveillance Septembre n'a pas été correctement fait, décider ce qui doit être fait avec le rôle animateur.	During the November field mission, just over 10% of the land management plans were evaluated. Compare this information against the monitoring data Boubacar collected in September. Check for consistency. Are the tree species the same? Have the numbers of seedlings changed in a believable way (seedlings have not been replanted between September and November, so the numbers should not increase between September and November). If the evaluation shows that the September monitoring was not correctly done, decide what should be done with the animator role.	Fatima, Assane
Animateur Rédiger une description de travail officielle pour le rôle animateur.	**Community worker** Write a formal job description for the community worker role.	Assane, Bienvenu
Identifier les candidats appropriés pour le rôle d'animateur dans le domaine Patako.	Identify suitable candidates for the community worker role in the Patako area.	Assane

Français	Anglais	Responsables – Responsible people
Le rôle de l'animateur est d'aider les participants à atteindre un bon taux de surive des semis. Il doit travailler avec les participants à arroser les plantes, protéger les jeunes plants contre le pâturage, de créer des coupe-feu, et de traiter les jeunes plants contre les termites. Le rôle de l'animateur est d'identifier les problèmes et demander des conseils pour résoudre les problèmes du reste de l'équipe. Examiner le rôle de l'animateur avec Boubacar. Soutien Boubacar si des problèmes surgissent sur le terrain.	The role of the animator is to help participants to acheive a good seedling survival rate. He should work with participants to water plants, protect seedlings from livestock, create firebreaks, and treat seedlings against termites. The role of the animator is to identify problems and ask for advice to solve the problems from the rest of the team. Review the role of the animator with Boubacar. Support Boubacar if any problems arise in the field.	Assane
Définir des actions correctives Organiser une réunion pour décider des actions correctives. Problèmes: • la mortalité des semis à la récolte des cultures • les termites • feu • sécheresse • pasturage • sabotage Décider quelles sont les actions correctives. Notez les actions correctives pour chaque problème et de communiquer les informations à l'animateur.	**Define corrective actions** Arrange a meeting to decide corrective actions. Problems: • seedling mortality during crop harvest • termites • fire • drought • grazing • sabotage Write down the corrective actions for each problem and communicate the information to the animator.	Fatima
Groupements des Femmes	**Women's groups**	Mamadou,

Français	Anglais	Responsables – Responsible people
Travailler avec les groupes de femmes. Compléter les accords de partage des bénéfices avec les neuf groupes de femmes.	Work with the women's groups. Complete the benefit sharing agreements with all nine women's groups.	Boubacar
Notez les critères de sélection pour les groupes admissibles à recevoir un moulin comme leur profit de ce projet. Par exemple: • distance entre les autres villages • taux de survie des jeunes plants • nombre d'usines dans les villages voisins • entretien de moulin	Write down the selection criteria for groups eligible to receive a mill as their benefit from the project. For example: • distance from other villages • survival rate of seedlings • number of mills in the neighbouring villages • Mill maintenance	Fatima, Mamadou
Recherches sur le coût d'un moulin approprié pour un groupe de femmes.	Research the cost of a mill appropriate for a women's group.	Guiro
Les groupes de femmes auront besoin de formation pour les usines. Découvrez qui peut offrir de la formation.	The women's groups will require training for the mills. Find out who can provide training.	Mamadou

Appendix F – Work plan

Table 6. Work plan from Aug 2012 to 2013

Tâches	Actions	Responsables	Aout 2012	Sept 2012	Oct 2012	Nov 2012	Dec 2012	Janv 2013	Fev 2013	Mars 2013	Avril 2013
	Faire une cartographie des plans vivos pour chaque participant	Idrissa Guiro					■	■			
Specifications techniques	Finir le calcul du carbone	Simon Sambou		■			■	■			
	Ecrire les spécifications techniques	Idrissa Guiro	■	■	■						
ARLOMOM budget	Etablir un budget opérationnel de ARLOMOM	Fatimata Niang	■					■	■		
Organisation des données socio-économiques	Choix final d'indicateurs socio-économiques	Mamadou Diop	■								
	Elaborer un rapport sur les données socio-économiques	Mamadou Diop	■	■							
Pépinières	Assurer une collecte continue de semences	Boubacar Diop & Sara Danièle Dieng	■	■	■	■	■	■	■	■	■
	Assurer une promotion des pépinières individuelles	Boubacar Diop		■	■	■	■	■	■	■	■
Etablir un système de paiement	Finaliser les contrats	Fatima&Wendy		■		■					
	Définir le montant du paiement	Bienvenu Sambou		■		■					
	Définir comment les paiements retenus seront attribués	Wendy et Fatima	■			■					
	Etablir un système de partage des bénéfices pour les GPF	Boubacar Diop		■	■	■	■	■			
	Finaliser une base de données pour les suivis, les paiements, et les benefices du carbonne					■	■	■	■	■	
	Définir les options pour le transfert des paiements	Boubacar Diop		■							
	Ouvrir un compte bancaire pour le PES	Bienvenu Sambou							■		

Tâches	Actions	Responsables	Aout	Sept	Oct	Nov	Dec	Janv	Fev	Mars	Avril
	Définir la procédure de gestion des PES (décaissement, signature,..)	Bienvenu Sambou									
Suivi des plantations et paiement	Assurer la protection des abres plantés	Boubacar Diop									
	Faire le premier suivi des plantations	Boubacar Diop									
	Faire le second suivi des plantations	Boubacar Diop									
	faire le premier paiement	Boubacar Diop									
Draft Project Design Document (PDD)	Ecrire le PDD	Fatima et Wendy									
Qualification plan vivo	Soumettre le PDD et les spécifications techniques	Fatima									
	Trouver un évaluateur indépendant	Wendy									
	Visite de validation	Wendy									
	Enregistrement du projet à la Fondation Plan Vivo	Fatima									
	Rapport annuel sur le suivi et les PES	Fatima									
	Reception de certificats de carbone	Fatima									
Rechercher un acquéreur	Concevoir un projet (brochure)	Wendy & Fatima									
	Partenariat et mise en réseau	Carolina & Assane Goudiaby									
	Trouver des intermédiaires	Wendy									
Chercher des fonds additionnels	Préparer une proposition	Carolina et Fatima									
Organisation et gestion des données	Organisation et gestion des données	Fatima									
Finalisation des contrats	Finalisation des contrats	Mamadou Diop									
Réalisation d'un site web	Réalisation d'un site web	Carolina									