CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM FOR SMALL-SCALE AFFORESTATION AND REFORESTATION PROJECT ACTIVITIES (CDM-SSC-AR-PDD)
(Version 02)

Contents

Annexes

SECTION A. General description of the proposed small-scale A/R CDM project activity:

A.1. Title of the proposed small-scale A/R CDM project activity:

Ankeniheny-Zahamena-Mantadia Biodiversity Conservation Corridor and Restoration Project (Reforestation Component)
Version 1.0
Date: 14 September 2010

A.2. Description of the proposed small-scale A/R CDM project activity:

The project is situated in the east of Madagascar, in the peripheral zone of the National Park of Mantadia (NPM), Maromizaha Protected Area (MPA) and the Analamazaotra Special Reserve (ASR), near the town of Andasibe. This is an area of exceptionally high biodiversity on a global scale. The proposed small-scale A/R CDM **project activity** will reforest 411.3 ha of land using 120 native species so as to restore rainforest habitat and establish native forest corridors between fragmented blocks of remaining native forests. This activity will significantly increase vegetation cover and the resulting carbon sink; ultimately it will connect two isolated pockets of forest to the larger National Park of Mantadia, ensuring the continued viability of the populations inhabiting them. The project activity makes an important contribution to the conservation of biodiversity in one of highest areas of terrestrial biodiversity in the world.

The project activity will be carried out on parcels of land that were deforested by repeated cycles of slash and burn agriculture and that are presently unproductive fallows. The project directly involves 114 low-income farmers, who will establish the reforestation plots on land that they have formal tenure to. In addition to the individual farmers, local community associations will carry out the project activity on state land belonging to the Government of Madagascar. The project activity enables low-income farmers to realise value from these fallows through the sale of CERs while also carrying out natural forest restoration. As such it fulfils the **project purpose** of alleviating poverty while conserving biodiversity.

The Ankeniheny-Zahamena-Mantadia Biodiversity Conservation Corridor and Restoration Project (Reforestation Component) (referred to forthwith as "the project") contributes to sustainable development by providing farmers with alternatives to unsustainable slash–and–burn agriculture. In addition the project will assist farmers to diversify and improve their agricultural production, and to establish native forest plantations and fuel wood plantations outside of the project area. Together these measures will ensure that farmers have continued livelihoods and prevent leakage.

The project is one component of a larger, landscape-scale initiative known as the Ankeniheny-Zahamena-Mantadia Biodiversity Conservation Corridor and Restoration Project This initiative consists of three main actions:

1. the AR component, presented for validation in this PDD;

2. a REDD component, which will use carbon financing to help fund the protection of remaining natural forests in the regional-scale corridor;
3. and a livelihoods improvement component, which will implement activities to minimize leakage by diversifying agricultural practices and providing fuelwood supplies (for both the CDM A/R and REDD activities).

Only action 1 is submitted as a CDM project activity in this PDD.

Background

Subsistence farmers and local community-based associations that they represent make up the entities participating in the project. Much of the 43,266 rural inhabitants who comprise the population of the administrative district in which the project is situated are subsistence farmers.

Slash-and-burn rice cultivation – called *tavy* – is the principal form of agriculture in the project area, as it is in much of eastern Madagascar. In addition to rice, farmers grow small quantities of sweet potato, manioc, beans, maize, sugar cane, and some vegetables for self-consumption.

Tavy is the primary threat to Madagascar's remaining natural forests. Subsistence farmers practise *tavy* for several reasons, including: topographic constraints; the low labour and monetary input requirement; and traditional beliefs and customs. However, this traditional system of agriculture is not sustainable in the long-term because of its low productivity, its systematic removal of the very resource upon which it depends (namely forest, with its relatively fertile soil) and the lack of natural forest regeneration. It is driven partly by unclear, formal (*de jure*) land tenure as well as informal (*de facto*) systems that further undermine its sustainability. Food and land insecurity then lock people into unsustainable, intensive cycles of *tavy* exploitation that leaves a trail of degraded land as they move on.

Since the 1980's, *tavy* production has left vast areas of degraded land in the region of the project. *Tavy* removes much of the soil nutrients so that lands farmed under this regime are, on average, only productive for less than 5 years. With each successive slash and burn cycle increasingly longer fallow periods are necessary to enable soil recovery due to a combination of inherently poor soils, heavy rain and serious soil erosion (from the steep slopes). However, population pressure has forced many of the subsistence farmers to shorten their fallow cycles. Intensive *tavy* practice also leads to a degradation of soils and consequently to deflection in vegetative succession to pan-tropical grass-dominated fallows. Such fallows do not lead to a regeneration of soil, remain as unproductive farming land and are eventually abandoned. Due to a combination of factors such as a lack of seed dispersal, poor quality soils and soil erosion, natural regeneration does not occur. Deflected succession also can result in the dominance of invasive plants, many of which are non-woody, of minor use, or even detrimental to human activities, and are of no value to native biodiversity. Moreover they prevent the succession towards natural forest. In addition, the intense demand for land that prevails in the region prevents this from happening.

Figure 1. Example of current land use within project site. The photo shows recently burnt fallow in preparation for rice cultivation, fallow or abandoned land and natural forest remnants that occurred on hilltops. (Credit Louise Holloway).

Many of the sites selected for A/R activities have been completely transformed from their historical pre-disturbance state to abandoned grassland fallows and have suffered soil erosion. *Tavy* has led to a shredding and disconnection of native habitats to form isolated remnants within a larger landscape hostile to the movement of native species (see Figure 1). As a result of deforestation, many species found in the NPM, MPA and ASR are listed as IUCN threatened or endangered species. Furthermore the isolation of populations in the forest fragments greatly diminishes the probability of their long-term survival. By reconnecting forest fragments and restoring degraded areas, the project will play a crucial role in the successful conservation of these species.

Contribution of the project activity to sustainable development

Implementation of the project activity provides subsistence farmers with a crucial alternative to unsustainable *tavy* cultivation and so is strongly supported by the local communities. In addition to a net sequestration of carbon dioxide, the project activity will achieve wide ranging sustainable development impacts, both at local and national levels. The reforestation activities will restore ecological function on currently degraded lands, reducing soil erosion, improving soil productivity, water supply and microclimate. The restored habitats and forest corridors will provide important benefits to the threatened biodiversity of the region. Downstream benefits of the project include reduced risk of flooding, siltation of agricultural fields and improvement of hydrological regime.

Local people are employed in the project to run tree nurseries, plant trees and maintain planted areas. The project will assist farmers to formalize their land tenure and all land on which the project activities take place will belong to persons having legal title to it. Importantly the project will invest significantly in enabling farmers to intensify and diversify their agriculture practices. In doing so it will enable subsistence farmers to break out of the downward *tavy* – poverty cycle they are currently caught in.

A.3. Project participants:

Name of Party involved (*) ((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Indicate if the Party involved wishes to be considered as a project participant (Yes/No)
Government of Madagascar (Host)	Ministry of Environment and Forestry (MEF)	Yes
Government of Canada	International Bank for Reconstruction and Development as a trustee of BioCarbon Fund	Yes

Notes:

- A technical Project Manager – ANAE – is contracted by the MEF to manage the project.
- Six local associations are implementing the project activity under the management of ANAE - AGA, ECOPHI, GERP, MATE, Mitsinjo and SAF – as well as Madagascar National Parks (MNP).
- 114 individual subsistence farmers are carrying out the project activity with the guidance and supervision of the following associations: AGA, ECOPHI, GERP, MATE and SAF.
- Conservation International-Madagascar, a NGO dedicated to environmental conservation, provides technical support to the project.

A.4. Description of location and boundary of the small-scale A/R CDM project activity:

A.4.1. Location of the proposed small-scale A/R CDM project activity:

A.4.1.1. Host Party(ies):

Madagascar

The Government of Madagascar is a signatory to the United Nations Framework Convention on Climate Change (UNFCCC), ratified the Kyoto Protocol on September 23, 2003, and is therefore eligible to participate in the CDM

A.4.1.2. Region/State/Province etc.:

Alaotra Mangoro Region

A.4.1.3. City/Town/Community etc:

The project is located within the communes of Andasibe and Ambatovola, within the District of Moramanga.

A.4.2. Detail of geographical location and project boundary, including information allowing the unique identification(s) of the proposed small-scale A/R CDM project activity:

The project lies in the vicinity of the Analamazaotra Special Reserve (ASR), the National Park of Mantadia, Vohimana forest concession, Maromizaha Protected Area, Analamazaotra Forest Station and Torotorofotsy Ramsar site (see Figure 2). The project area is roughly centred on the town of Andasibe in Eastern Madagascar and will ultimately serve to restore areas between the Andasibe-Mantadia National Park, the Analamazaotra Special Reserve and Maromizaha Protected Area.

At a larger landscape-level the establishment of these linkages will contribute to the formation of the Ankeniheny-Zahamena Corridor - a continuous corridor at the center of Madagascar's eastern slope rainforests that links the Réserve Naturelle Intégrale of Zahamena in the north, to the Andasibe-Mantadia National Park and the Maromizaha Protected Area in the south.

The project falls within the communes of Andasibe (347.0 ha of project area) and Ambatovola (64.4 ha of project area), both within the district of Moramanga. The fokontany[1] implicated in the project are: Fanovana, Vohibazaha and Volove (within the commune of Ambatovala); and Andasibe, Andasifahatelo, Anevoka, Falierana, Morafeno and Soarano (within the commune of Andasibe).

[1] The Fokontany is the lowest level of governmental administration and consists of one or several villages within the boundaries of a commune. Each Fokontany has a President and often has various committees responsible for specific aspects of village life including health and environment.

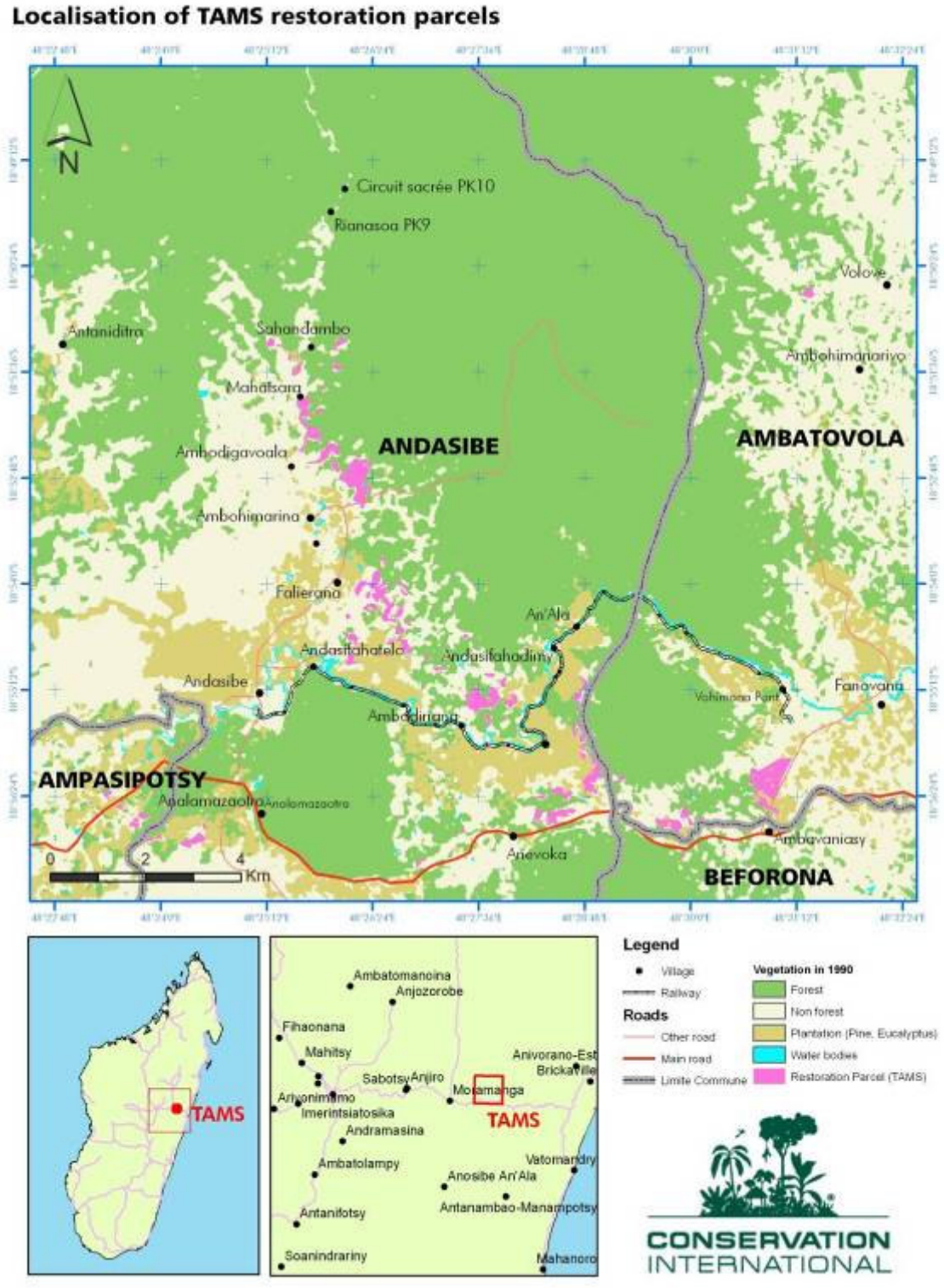

Figure 2. Project location in eastern Madagascar

206 plots of land totalling 411.3 ha, will be reforested. The geographical coordinates of the boundaries of each plot included in the proposed activity have been recorded with a GPS by the project and each respective landowner. Each plot is assigned a unique ID number. The coordinates of the plot boundaries on which the small-scale A/R CDM project activity will take place are presented in full in Annex 5, with an example of this information shown in Table 1. Figure 3 illustrates an overview of the discrete plots to be reforested.

Table 1. Examples of discrete parcels of land comprising the project area (complete information is presented in Annex 5)

FA	Code	Location	Area (ha)	X	Y
AGA	RJC	Andranolava	1.82	863613.18	7904956.73
				863612.37	7904907.46
				863669.96	7904863.25
				863748.23	7904877.85
				863749.25	7904902.99
				863778.04	7904902.18
				863777.23	7904882.72
				863869.70	7904899.14
				863892.41	7904915.57
				863893.01	7904926.92
				863907.41	7904926.52
				863920.19	7904935.24
				863892.81	7904955.51
				863837.05	7904957.34
				863836.03	7904928.75
				863807.44	7904930.17
				863808.25	7904958.35
				863780.07	7904959.16
				863779.87	7904960.99
				863756.55	7904944.77
				863722.28	7904939.29
				863722.28	7904932.40
				863693.48	7904933.82
				863693.89	7904938.68
AGA	S JC JP	Ampasimadinika	4.3	862352.11	7906782.13
				862177.24	7906779.20
				862073.71	7906572.14
				862133.71	7906448.12
				862193.70	7906546.90
				862237.60	7906594.09
				862236.51	7906646.77
				862298.70	7906685.18

FA	Code	Location	Area (ha)	X	Y
				862329.06	7906734.20

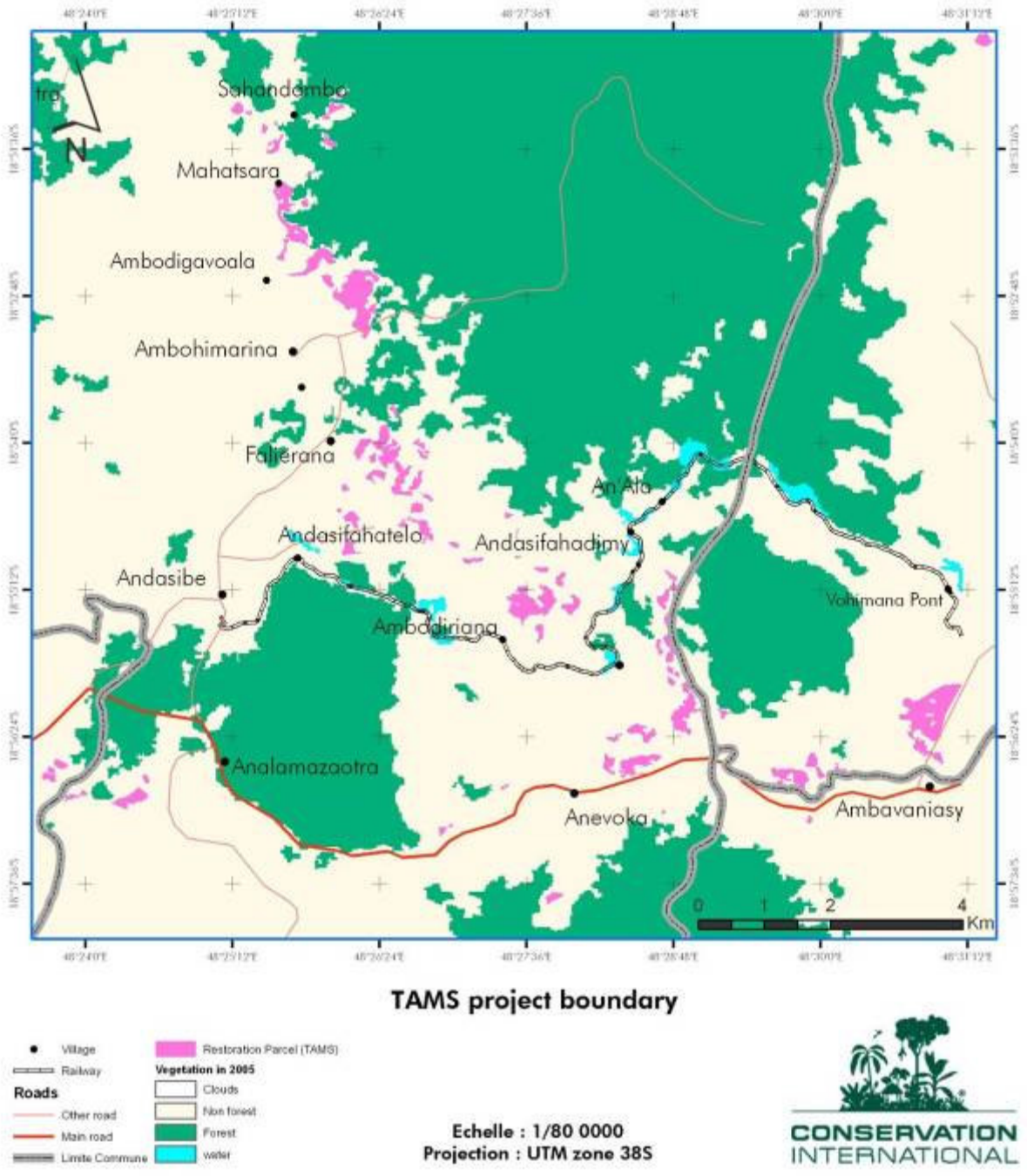

Figure 3. Overview of the project area and the discrete plots of land to be reforested

Figure 4 shows an example of a map detailing individual plots with their ID numbers. The relevant maps of land parcels will be made available to the DOE at the time of validation.

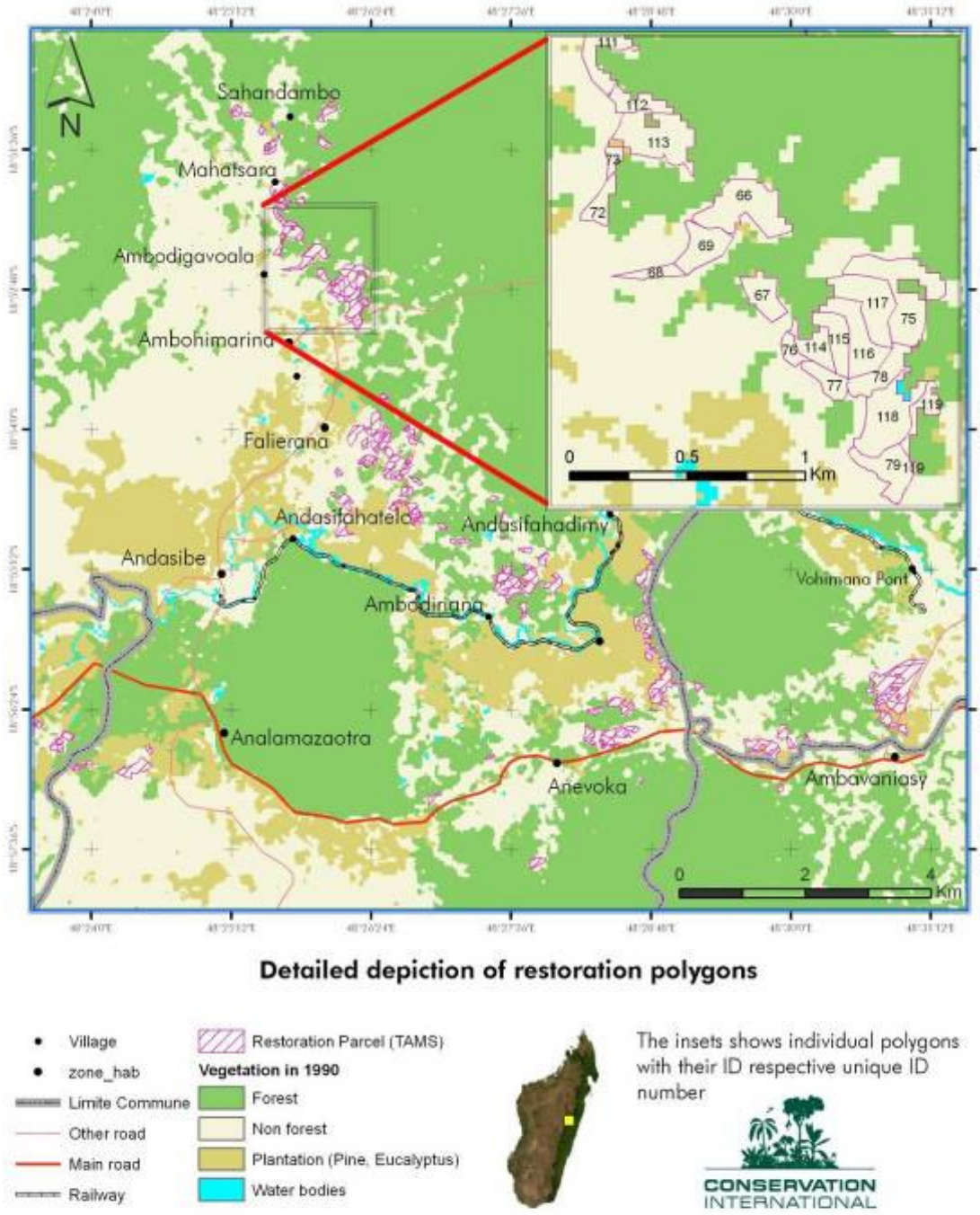

Figure 4. Map showing an example of individual plots to be reforested with their unique IDs

A.5. Technical description of the small-scale A/R CDM project activity:

A.5.1. Type(s) of small-scale A/R CDM project activity:

(b) Cropland to forested land

A.5.2. A concise description of present environmental conditions of the area, which include information on climate, soils, main watershed, ecosystems, and the possible presence of rare or endangered species and their habitats:

Climate

The bioclimate of the region is perhumid tropical montane rainforest and mid-elevation rainforest, with the average temperature ranging from 21 to 23°C (see Figure 5). The cyclone season from December to April brings a significant portion of the 2,000 mm annual rainfall, with a relatively dry season from the end of September to mid-November. The region of Moramanga (within which the project area is located) has an elevation of 500 – 1300 m; the project site encompasses a mid-range of approximately 700 – 1000 m and has a slope range of 0 – 60 degrees. The sites selected for the project activity are within the slope range of 20 – 45 degrees.

The region of Moramanga is in proximity to the east coast of Madagascar and experienced 12 cyclones between 1966 and 2000,[2] together with the heavy rainfall and strong winds these bring. The project activity is carried out on plots located on hillside slopes that do not experience flooding as a result of cyclones.

The area does not experience frost, nor does it experience other extreme events that would be detrimental to the project.

[2] Indicateurs et Donnees de Toamasina, page 28

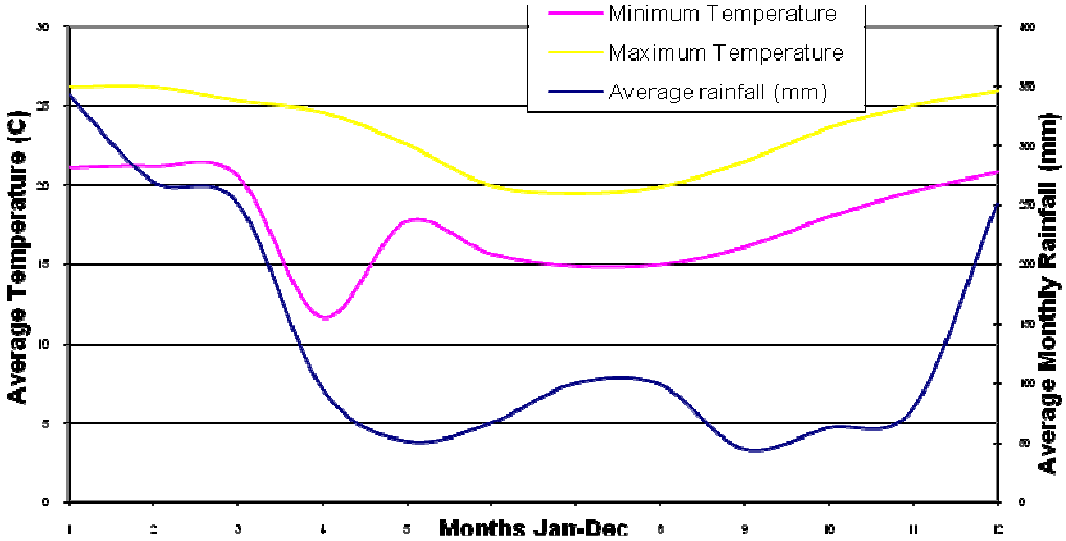

Figure 5. Annual temperature and rainfall for the Andasibe Region

Hydrology

A dense network of streams and small rivers comprise the catchment that encompasses the project area. Smaller rivers flow into the Sahatandra River, then the Vohitra to the north before draining eastward into the Indian Ocean. The hydrology is generally conducive to human habitation of the area; but can be problematic, particularly after cyclonic downpours, when flooding becomes a threat. Land use has an important impact on this, with flooding becoming more frequent and destructive as a result of converting forests to other uses. Results from the hydrological experiments in these watersheds indicate that flooding (storm flow volume) is three-fold greater for a *savoka* (previously cultivated land, left to fallow) catchment than for a same sized mature forest catchment. Year-to-year variation is substantial but, on average, catchments dominated by *tavy* agriculture (slash and burn hill rice cultivation) produced approximately one to five times greater storm flow than *savoka* catchments. Combining this information, land conversion from forests to *tavy* is likely to result in as much as four to five times more stormflow.[3]

Soils

Geology is fairly uniform in the whole region, comprising pre-Cambrian metamorphic and igneous rocks. This is a broad category including all crystalline rocks such as granites, magmatites and schists. They are dated to being from 3000 million to 550 million years old. A thick blanket of lateritic clay covers large area of these rocks. Although the full geology map indicates various categories of granites and magmatites, it seems improbable that these different rock categories will greatly affect the forest cover they support (Du Puy & Moat, 1996).

The feralitic soils that dominate the project area are: acidic (pH 4-5), low in phosphate and nitrogen, stable physical structure, weak nutrient holding capacity (for P, K, Ca and Mg), highly erodible, and rich

[3] Kramer, R. A., D. D. Richter, et al. (1997). "Ecological and Economic Analysis of Watershed Protection in Eastern Madagascar." Journal of Environmental Management 49(277 – 295).

in organic material under natural forest. Soils under natural rainforest in the area tend to be sandy, open to infiltration of water and overlain by a humic horizon. These soils are easily leached and physically degraded. After forest clearance for *tavy* and subsequent *savoka*, the humic horizon is rapidly lost, leading to soil erosion. The physical and chemical properties of the soils remain broadly intact, but the soil quality degrades with repeated burning.

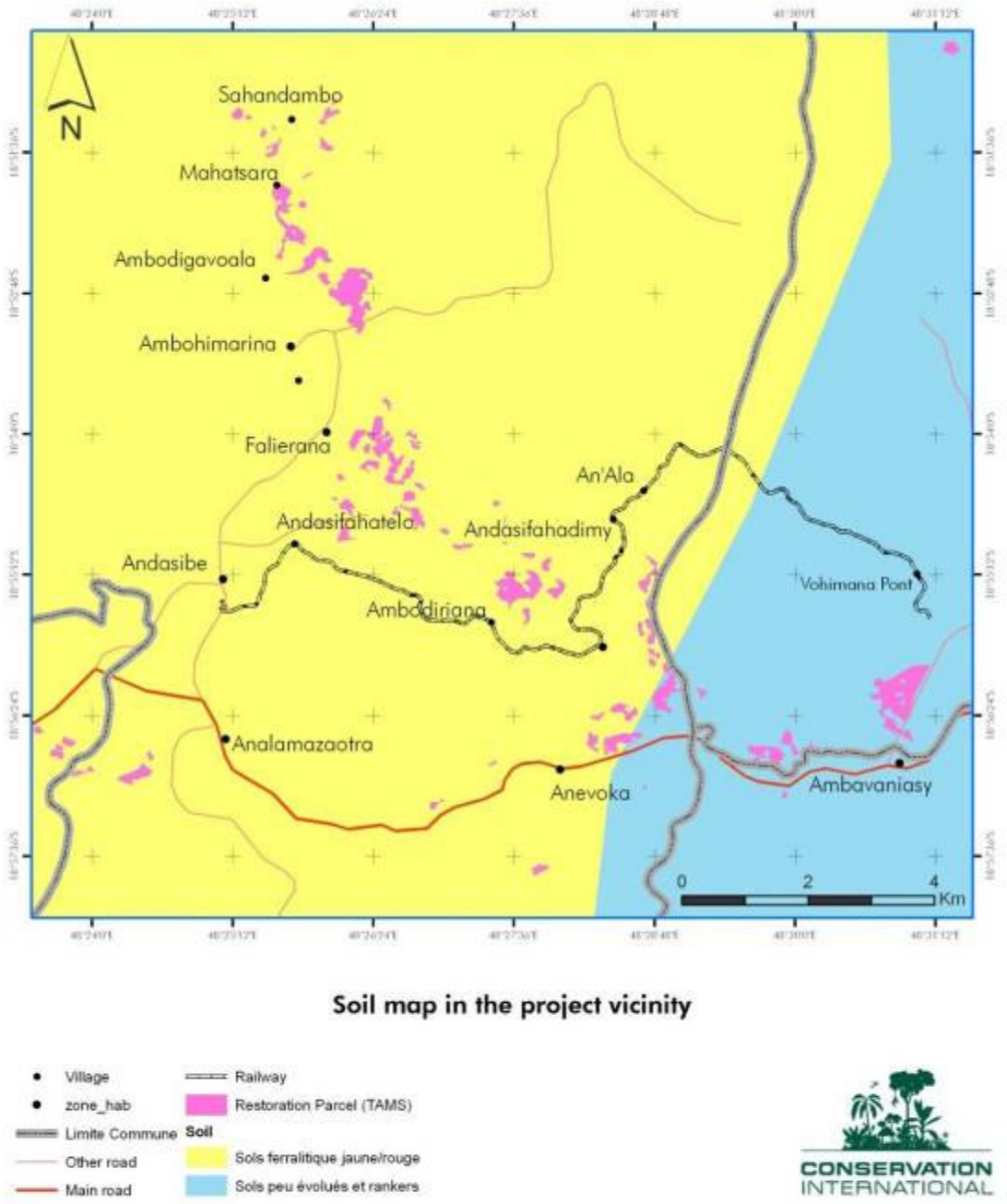

Figure 6. Soil map of the area within which the project falls ("sols ferralitique jaune / rouge" = yellow / red feralitic soils; "sols peu evolues et rankers")

Ecosystem

The project activity takes place on unproductive fallows formed by slash-and-burn rice cultivation – *tavy*. The practice of *tavy* is the dominant form of agriculture within the project area and leads to a succession of vegetation types depending on the number of cycles and the length between burning. The current regime of tavy, where the average cycle is 3 years and the project area has already experienced a minimum of 5 – 7 cycles, leads to a deflection of normal ecological succession and makes forest re-growth impossible. Fallow vegetation is dominated by shrubs (*Psiadia altissima*, *Rubus moluccanus*, *Lantana camara*), but particularly by pan-tropical grasses (such as *Imperata cylindrical*, *Aristida sp*.) and ferns. The frequent use of fire favours exotic, aggressive species over native species. The soils of these soils are too deprived of nutrients to allow further productive farming.

At a landscape-level the project area falls into the classification of humid forest (Moat & Smith, 2007 in Atlas of the vegetation of Madagascar, Kew Publishing, Royal Botanic Gardens, Kew). However, the biological diversity of the ecosystem immediately adjacent to the project area is largely depleted and invasive species such as *Aframomun* spp., *Lantana camara*. and the pan-tropical grass *Imperata cylindrica* have spread widely.

The main natural ecosystem surrounding the project area is humid evergreen forest with canopy taller than 25 m at lower altitudes (although forest strata are rather indistinct). There are small herbaceous wetlands on the valley floors. Characteristic canopy genera include *Weinmannia, Tambourissa, Symphonia, Dalbergia, Ravensara,* and *Vernonia*. The dense understory comprises *smilax, cyathea*, etc. with a high diversity of epiphytes, particularly orchids.

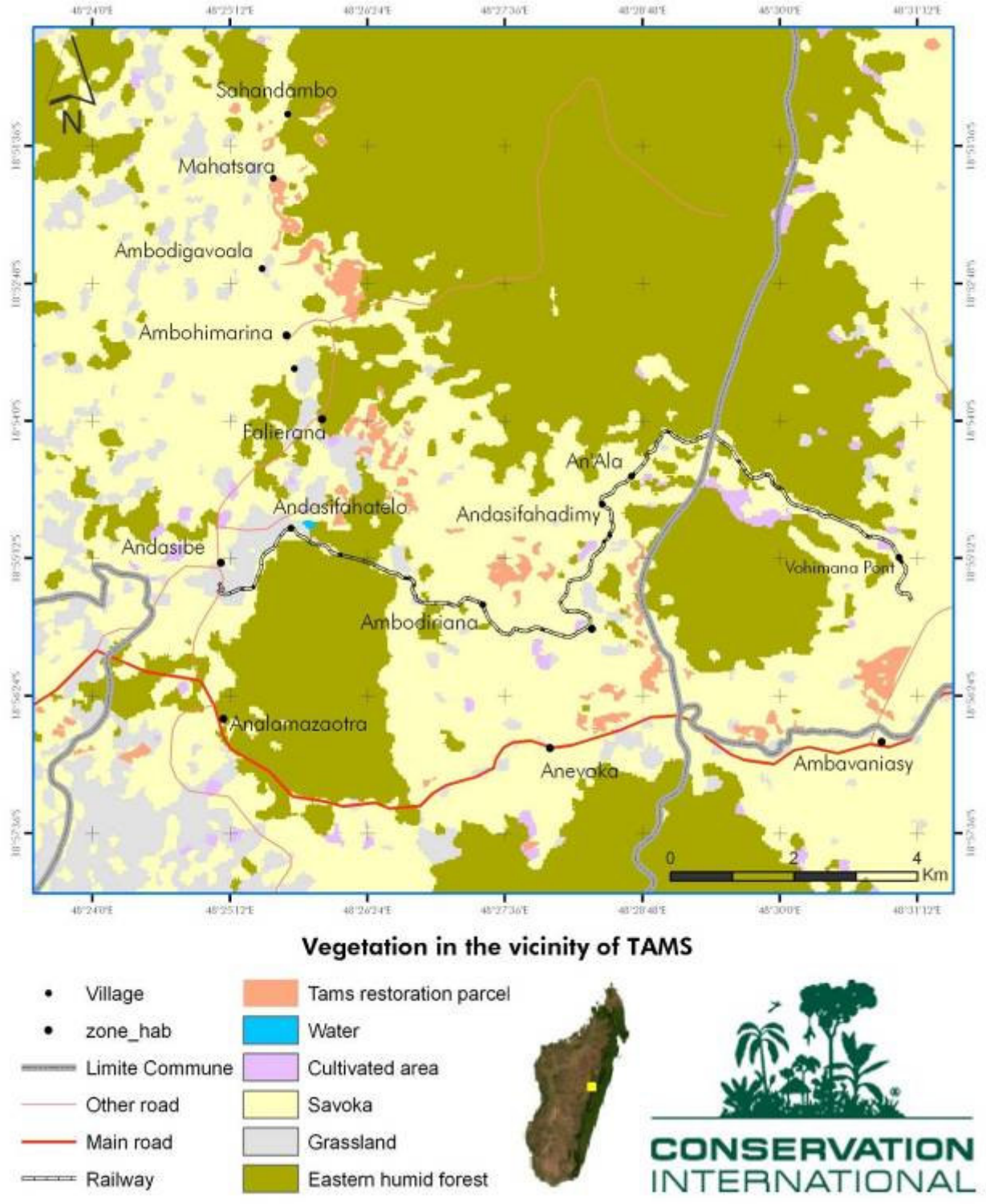

Figure 7. Vegetation map of the region within which the project falls (from Smith and Moat, 2008)

Presence of endangered species

In the area surrounding the project boundary, the natural rainforests of the Andasibe-Mantadia region harbour a number of endangered amphibians, birds, and mammals. Three of these are classified as critically endangered and sixteen are endangered (IUCN listings). A variety of endangered plant species are also found within these forests. The rainforests of the Andasibe-Mantadia area are also considered to be among the richest in the world in terms of primate diversity with as many as fourteen lemur species, including Madagascar's largest lemur species *Indri indri*, the endangered *Allocebus trichotis, Varecia variegata, Propithecus diadema*, *Daubentonia madagascariensis* and the newly discovered population of giant bamboo lemurs, *Prolemur simus* (Dolch, 2004 and 2008).

Natural forests in the region surrounding the project area are of "critical priority" for Malagasy avifauna, with 113 bird species known to occur in the Andasibe forests, of which 68 are endemic to Madagascar. These include particularly rare species such as the endangered *Tyto soumagnei* and the critically endangered *Eutriorchis astur*.

Forests in the Andasibe area are dissected by an intricate network of watercourses, swamps and small lakes. It is thought to be one of the richest places in the world for herpetofauna, with ~70 species of. reptiles and more than 100 species of amphibians (Dolch 2003, Glaw & Vences 2007).

Madagascar's invertebrate fauna is still poorly known. Biodiversity is phenomenally rich in certain groups (e.g. Coleoptera) and relatively poor in others (e.g. Lepidoptera). Endemism is extraordinarily high in almost all invertebrate orders, being probably at its lowest (50%-60%) in certain families within the Lepidoptera. For the majority of invertebrate groups, endemism is between 85% and 95%. The project area has been identified as a biodiversity "hotspot" for forest dwelling satyrine butterflies of the sub-tribe Mycalesina and for Hesperiidae (amongst other butterfly families with pronounced rainforest radiations). It is probably the lack of knowledge of other groups that explains their exclusion from recognition within this region (Dolch, 2003).

The forests of Andasibe contain at least 177 species of trees and more than 200 species of orchids associated with them (Dolch, 2003). At least 283 plant species were recorded within 251 genera and 95 families in the Mantadia survey site.

Since the plots to be reforested are degraded former agricultural land, none of the endangered species described above will occur within the project boundary in the absence of the project activities. On the other hand, since rich natural forests occur in the same region as the project area, it is expected and hoped that over time species will re-colonise restored habitat within the project area. One of the goals of the project is to connect existing forest fragments with native tree species so as to improve natural habitat connectivity. As part of the reforestation plan, the project is planting locally rare, disappearing or endangered tree species, including such species as *Dalbergia monticola*.

A.5.3. Species and varieties selected:

Species selection

One of the specific objectives of the project is to restore connectivity between natural rainforest remnants. To do this reforestation must mimic natural species composition and distribution. Thus only native species have been selected for the project reforestation activities. In the natural forests of eastern Madagascar, scientists have identified over 10,000 plant species occurring naturally. The project endeavours to reforest degraded areas using as many of the native tree species as can be successfully propagated and planted. To date, the project has identified and successfully propagated more than 120 such species.

Species were selected based on whether they possessed one or more of the following characteristics:

- a known or likely capacity to establish readily outside forest (fast growing pioneer species) or are species readily available in quantity;
- are locally scarce due to over-exploitation;
- are valued by people for their sustainable, non-destructive use (*e.g.* flowers strongly favoured by bees and therefore good for apiculture);
- are naturally rare and threatened by habitat loss;
- are globally threatened (species are listed as threatened or endangered);
- and are preferred by lemurs and other seed dispersers.

For purposes of estimating the carbon sequestration of the project over time, it is impracticable to model the growth of 120 tree species individually. Therefore the project has grouped them into three categories according to common characteristics.

In reforesting, the project activity plants all sites using the same ratio of individuals from Category 1, Category 2, and Category 3. In all sites, 40% of the individuals planted are from Category 1; 30% are from Category 2; and 30% are from Category 3.

The characteristics relevant to reforestation activities of the tree species making up each category are summarized in Table 2; the species that make up Category 1, 2 and 3 are listed in Table 3, Table 4 and Table 5 respectively.

Table 2. Summary of the species characteristics of each of the three tree categories.

Category 1	Category 2	Category 3
Pioneer species, the first to colonize areas after disturbance	Species found after others have colonized disturbed areas	Species found after others have colonized disturbed areas
Fast growth rate	Medium growth rate	Slow growth rate
Large dispersal range if conditions are favourable	Limited dispersal capacity	Restricted dispersal capacity
Largely heliotropic	Shade tolerant	Shade tolerant
Fairly abundant and easy to reproduce in a nursery in large numbers	Mostly abundant species; seeds need treatment in order to ensure successful reproduction	Rare species, often threatened by extinction; usually difficult to reproduce in nurseries

Table 3. Species of Category 1. (Common names are given in Malagasy only; existing English names are noted in parenthesis.)

No.	Vernacular name	Family	Scientific name	IUCN Status
1	Harongana	Clusiaceae	*Harungana madagascariensis*	
2	Vakoka	Celtideaceae	*Trema orientalis*	
3	Molanga	Euphorbiaceae	*Croton mongue*	
4	Samata	Euphorbiaceae	*Euphorbia tetraptera*	LC
5	Fandramanana	Aphloiaceae	*Aphloia theaeformis*	
6	Mokaranana be ravina	Euphorbiaceae	*Macaranga cuspidate*	
7	Mokaranana lava ravina	Euphorbiaceae	*Macaranga alnifolia*	
8	Mokaranana boribory ravina	Euphorbiaceae	*Macaranga sp*	
9	Bedoda	Arecaceae	*Dypsis nodifera*	LC
10	Hafotra sp	Malvaceae	*Dombeya sp*	
11	Pitsikahitra madini-dravina	Rubiaceae	*Canthium medium*	
12	Pitsikahi-bato	Rubiaceae	*Canthium sp*	
13	Hasina sp	Liliaceae	*Dracaena reflexa*	
14	Voaranto	Ericaceae	*Vaccinium madagascariensis*	
15	Radoka	Apocynaceae	*Rauvolfia sp*	

Table 4. Species of Category 2. (Common names are given in Malagasy only; existing English names are noted in parenthesis.)

No.	Vernacular name	Family	Scientific name	IUCN Status
1	Fanjavala	Euphorbiaceae	*Blotia oblongifolia*	
2	Karambito	Sapindaceae	*Neotina izoniera*	
3	Voapaka be ravina	Euphorbiaceae	*Uapaca louvelii*	
4	Voapaka madini-dravina	Euphorbiaceae	*Uapaca densifolia*	
5	Hazombary	Pittosporaceae	*Pittosporum verticilatum*	
6	Volomborona	Fabaceae	*Albizia gumifera*	
7	Kijysarondrana	Clusiaceae	*Symphonia vericoza*	
8	Kijy vanana	Clusiaceae	*Symphonia thouvenautii*	
9	Kijy bonaka	Clusiaceae	*Symphonia faciculata*	
10	Kijim-boalavo	Clusiaceae	*Symphonia louvelii*	
11	Varongy fotsy	Lauraceae	*Ocotea laevis*	
12	Varongy mavo	Lauraceae	*Ocotea madagascariensis*	
13	Varongy mainty	Lauraceae	*Ocotea simosa*	
14	Tavolom-pinaingo	Lauraceae	*Cryptocarya crassifolia*	
15	Tavolo pina	Lauraceae	*Cryptocarya eliptica*	
16	Tavolo malama	Lauraceae	*Cryptocarya accuminata*	
17	Tavolo sary	Lauraceae	*Beilschmiedia oppositifolia*	

18	Harina	Euphorbiaceae	*Bridelia tulasneana*	
19	Elatrangidina	Sapindaceae	*Filicium decipiens*	
20	Hazondomoina	Anacardiaceae	*Lautembergia multiplicata*	
21	Hazoambo	Annonaceae	*Xylopia buxifolia*	
22	Ramaindafa	Sapindaceae	*Tina densicarpa*	
23	Rotra be ravina	Myrtaceae	*Eugenia vacciniaefolia*	
24	Rotra mena	Myrtaceae	*Eugenia imernensis*	
25	Rotra fotsy	Myrtaceae	*Eugenia sp*	
26	Ropandolotra	Myrtaceae	*Eugenia sp*	
27	Robary	Myrtaceae	*Syzygium imernensis*	
28	ditimena lava ravina	Anacardiaceae	*Abrahamia sp*	
29	Ditimena boribory ravina	Anacardiaceae	*Abrahamia ditimena*	
30	Ditimena be ravina	Anacardiaceae	*Abrahamia microphila*	
31	Menahihy	Erythroxylaceae	*Erythroxylum corrembozum*	
32	Kafeala	Rubiaceae	*Coffea sp*	
33	Ambora sp	Moniminaceae	*Tambourissa religiosa*	
34	Malambovony	Ochnaceae	*Ochna sp*	
35	Pitsikahitra boribory ravina	Rubiaceae	*Canthium sp*	
36	Lalona	Cunoniaceae	*Weinmannia bojeri*	
37	Ritsika	Cunoniaceae	*Weinmannia ruthembergii*	
38	Dipaty	Moraceae	*Streblus dimepate*	
39	Tsintsoroka	Rubiaceae	*Ixora sp*	
40	Kafemboaiza	Rubiaceae	*Caseria nigrescense*	
41	Belavenona	Melastomataceae	*Dichaetantera cordifolia*	
42	Ramitsiaka	Myrsinaceae	*Oncostemum sp*	
43	Ravinala	Strelitziaceae	*Ravenala madagascariensis*	
44	Fagnamo	Fabaceae	*Mendulia sp*	
45	Hazombarorana	Anacardiaceae	*Rhus thouarsii*	
46	Atamba	Verbenaceae	*Clerodendron occubifolium*	
47	Hoditrovy	Euphorbiaceae	*Antidesma madagascariense*	
48	Hazompasika	Myrtaceae	*Syzygium sp*	
49	Amalomanta	Rubiaceae	*Psychotria billata*	
50	Vakoana	Pandanaceae	*Pandanus sp*	
51	Vognona	Malvaceae	*Hildegardia sp*	

Table 5. Species of Category 3. (Common names are given in Malagasy only; existing English names are noted in parenthesis.)

No.	Vernacular name	Family	Scientific name	IUCN Status
1	Tavolo manitra	Lauraceae	*Cryptocarya louvelii*	
2	Voamboana	Fabaceae	*Dalbergia monticola*	
3	Hazomainty	Ebenaceae	*Diospyros aplostylis*	

4	Fotona	Sarcolaenaceae	*Rodolaena sp*	
5	Volanary	Sapindaceae	*Plagiocyphus jumelii*	
6	Voantsilana	Araliaceae	*Schefflera capuroniana*	
7	Vanana (Vanaka)	Elaeocarpaceae	*Sloanea rondata*	
8	Anjananjana	Sarcolaenaceae	*Leptolaena multiflora*	EN
9	Tsimahamasantsokina	Melastomataceae	*Memecylon sp*	
10	Vazanomby	Oleaceae	*Olea lancea*	
11	Ampody	Rutaceae	*Vepris pilosa*	
12	Vivaona	Proteaceae	*Dilobeia thouarsii*	
13	Tsilaitra sp	Oleaceae	*Noronhia sp*	
14	Famelona	Sapotaceae	*Chrysophyllum boiviniana*	
15	Vitanona	Clusiaceae	*Calophyllum milivum*	
16	Hazombato	Salicaceae	*Homallium sp*	
17	Zahana	Bignoniaceae	*Phyllarthron madagascariensis*	
18	Sevalahy	Fabaceae	*Entada louvelii*	
19	Gavoala	Myrtaceae	*Eugenia lokoensis*	
20	Sakarivohazo	Canellaceae	*Cinnamosma fragrans*	
21	Molompangady	Rubiaceae	*Breonia sp*	
22	Manoka	Asteropeiaceae	*Asteropeia micraster*	
23	Etatra	Podocarpaceae	*Podocarpus madagascariensis*	LR/lc
24	Vongo	Clusiaceae	*Mammea bongo*	
25	Tsofanala	Poaceae	*Dinela trichetra Dineba*	
26	Menavahatra sp	Salicaceae	*Ludia ludioaepholia*	
27	Ampaliala	Moraceae	*Ampalus sp*	
28	Salehy	Euphorbiaceae	*Omphalea oppositifolia*	
29	Lendemy be ravina	Gentianaceae	*Antocleista grandifolia*	
30	Lendemilahy	Gentianaceae	*Antocleista madagascariensis*	
31	Nanto mena	Sapotaceae	*Faucherea glitimosa*	
32	Longotra	Lauraceae	*Cryptocaria sentilence*	
33	Nonoka madini-dravina	Moraceae	*Ficus sp*	
34	Nonoka be ravina	Moraceae	*Ficus litensens*	
35	Hazomby	Sapindaceae	*Doratoxylon sp*	
36	Alakamisy	Menispermaceae	*Burrasea madagascariensis*	
37	Maroala	Arecaceae	*Beccariophoenix*	
38	Ramy mena	Burseraceae	*Canarium boivinii*	
39	Voatsimatra	Oleaceae	*Noronhia sp*	
40	Hazomboahangy	Euphorbiaceae	*Suregada lorina*	
41	Merana	Asteraceae	*Brachylaena meranoides*	
42	Merampamelona	Asteraceae	*Oliganthes sp.*	
43	Tsianiamposa	Zanthoxylaceae	*Zanthoxylum madagascariensis*	

44	Akondro hazo	Bignoniaceae	*Collea sp*	
45	Tambintsy	Clusiaceae	*Psorospermum sp*	
46	Antafanala	Combretaceae	*Terminalia sp*	
47	Valanirana	Buddlejaceae	*Nuxia capitata*	
48	Voretra	Anacardiaceae	*Rhus tarantana*	
49	Hazondrano	Aquifoliaceae	*Ilex mitis*	
50	Tavia	Rhopalocarpaceae	*Rhopalocarpus thouarsianus*	
51	Faralaotra		*Colubrina faralaotra*	
52	Maintso ririnina	Olacaceae	*Olax emirnensis*	
53	Antavaratra	Lauraceae	*Potamea obovata*	
54	Tsiramiramy	Anacardiaceae	*Micronychia tsiramiramy*	
55	Manitra anefitra			
56	Hazomamy	Rubiaceae	*Craterospermum sp*	
57	Vanga aty	Meliaceae	*Astrotrichilia sp*	
58	Voara rano	Moraceae	*Ficus baronii*	
59	Palmier (lehibe)	Arecaceae	*Ravenea sp*	
60	Vandrika	Apocynaceae	*Craspidospermum verticilatum*	
61	Voamasondro	Celastraceae	*Salacia*	

A.5.4. Technology to be employed by the proposed small-scale A/R CDM project activity:

The main technology to be employed is reforestation through direct planting of native tree species on degraded lands.

Seed Guide

Missouri Botanical Garden developed The Seed Guide of Madagascar's native rainforest (and recently updated it) for the purpose of project. They did this in conjunction with local experts and community members who had experience in forestry techniques and restoration of degraded ecosystems. The guide constitutes a complete practical reference for project staff. It enables them to:

- identify the seeds or seedlings of the tree species used in the project nurseries;
- identify trees that are good sources of seeds, seed collection, storage and propagation techniques;
- carry out specific treatments that permit efficient multiplication of the species in nurseries;
- and provides information about the ecological requirements of the species as well as the various phenology stages and related periods for each species.

The guide is available on request.

Seed collection and treatment

Restoration will involve growing native trees from seeds or from wildlings and clippings if appropriate. Project personnel collect seeds within the remaining forests in the region according to the Seed Guide. Seeds are mostly collected from December to April – months that coincide with the period of natural seed production. For more than half the species used, seeds and seedlings must be collected over a period of two months. Nursery staff switch to the use of more wildlings in the months of September and October when there are almost no seeds. Clipping is only possible for 10 species. From November to August, there is more use of seeds, which are abundant. For most of the native species the project had to develop specific seed treatments for these to be successfully propagated in the nurseries.

Nurseries

Seeds are propagated in 32 separate nurseries within the project area. The nurseries are located throughout the project implementation area in order to reduce the distance between seed collection and propagation sites, and to reduce the need to transport seedlings over long distances to the planting sites.

Seeds are planted in seedbeds for between 6 and 9 months, then inoculated with Vessicular Arbuscular Mycorrhizae (VAM) before transfer to individual seedling bags of 50-80 cm filled with soil mix made of 1/3 forest soil, 1/3 sand and 1/3 of the local lateritic soil (see Figure 8). Plants are then grown under partial shade until they are vigorous enough to be planted. This condition is met when plants of category 1 are taller than 30 cm and when plants of category 2 or 3 reach 15 cm of height or when plants have been kept for 6-9 months in the nursery. Nursery workers maintain the seedlings through regular weeding and watering.

Seedlings are carried to the field for planting by hand.

Figure 8. Example of individually bagged seedlings in a nursery.

Site preparation

Site preparation has minimal environmental impact and leads to no significant loss of existing plant biomass or additional emissions of GHGs:

- The preparation of land for all project activities is done without the use of mechanized tools; site preparation is manual, as is tree-planting.
- There is no cutting or burning of woody vegetation for site preparation, only the slashing with machetes of exotic herbs in the immediate vicinity of planted trees to serve as mulch for planted seedlings and to protect the soil. None of the cut plant debris is removed from the plot being planted.
- No artificial inputs, such as synthetic fertilizers or pesticides, are used in the project reforestation.
- There is no need for access roads as the nursery stock is transported using local means along existing tracks or trails.

Planting

Participant farmers will plant trees on their own plots, in locations and on reforestation plots that they themselves have decided, with the proviso that plots are a minimum area of 1 ha. Trees are consistently planted within an area of one hectare so as to obtain a density of 1000 trees / ha.

Planting follows the following process:

- Preliminary identification of eligible restoration lands based on CDM criteria through analysis of Landsat imagery and participatory appraisal of land-use;
- Establishment of the historical land-use of the area involving local elders and the identification of areas that are heavily degraded fallows regarded as unproductive;
- Consultation with individual farmers as to their proposed reforestation areas;
- Drawing up of a planting plan that shows location and the distribution of the seedlings by tree categories;
- Preparation of the planting site, including:
  - Weeds are slashed and uprooted when necessary from the immediate vicinity of the seedlings; any native species are left in place. No biomass is removed from the reforestation plot. The newly planted trees will ensure the early closing of the canopy which, in turn, will prevent the sun-seeking weeds from growing;
  - Staking points where the trees are to be planted;
  - Digging pits of 40 cm x 40 cm x 40 cm for planting;
  - Soil is put back into the hole with top soil first then the rest.
- Actual planting of the tree in accordance with the planting plan, paying attention to the distribution of the various categories of trees. Seedlings are uniformly planted to obtain a planting density of 1000 trees / ha.

Directed planting occurred over 3 years and is summarised in Table 6, with a total of 290 plots constituting a total reforestation of 411.3 ha.

Table 6. Areas replanted through the project activity

Planting period	# plots	Total area (ha)
December 2007	15	32.3
August – December 08	29	74.7
January – August 09	162	304.4

Replanting

Seedling survival is monitored through one to two field surveys at each site within one month to a year of planting and subsequently again for the first three years after planting. The table below presents the mortality rate, according to the Facilitating Agent responsible for planting. Trees that do not survive are replanted in the same year of planting, with replanting for trees that die between October and November being done after the rainy season.

Table 7. Seedling moratlity rate presented according to the Facilitating Agent responsible for planting

FAs	Mortality rate, 2009 (%)	Mortality rate, 2010 (%)
AGA	15	23
ECOPHI	31	21
GERP	21	16
MATE	23	21
MITSINJO	12	11
PNAM	28	20
SAF/FJKM	11	8
Average	**20**	**17**

Maintenance

The aim of project activities is to achieve quick canopy closure, thereby disfavouring the light-demanding, exotic herbaceous plants. Until this cover is achieved, the exotic herbs that may smother juvenile trees will be manually slashed in the immediate area around the juveniles for the first two to four years, with the debris left in place as mulch. This technique has been successfully employed in a rainforest restoration project in Masoala in NE Madagascar (L Holloway, unpublished reports). Beyond the fourth year, clearing of invasive plants around the juvenile trees will take place once a year where necessary.

Monitoring of project activities

Every month, and during two to three days preceding the monthly coordination meeting day, the project team (ANAE, UCFB, CI and the local associations) carries out monitoring of the reforested areas and nurseries. The project team splits into two or more groups. Each group evaluates the progress of both nursery and reforestation activities that have taken place over the previous month. Comments/remarks are then compiled and recommendations are announced to local associations during the coordination meeting that ends that monthly monitoring period. Follow-up visits to the same sites are done in the following month or later to check that recommendations are implemented.

A.5.5. Transfer of technology/know-how, if applicable:

Little precedent exists for the restoration natural rainforest in Madagascar and particularly within the region encompassing the project. Furthermore the farmers participating in the project lacked the technical know-how and capacity to successfully implement the project. As such the project has necessitated a significant amount of research and development, as well as transfer of technology.

The technical know-how and local capacity necessary to the project achieving its objectives has been built in several areas, including: the propagation of native tree species, nursery management and the establishment and maintenance of forest plantations.

Examples of the training provided to the local communities and the Facilitating Agents through formal training sessions by different organizations is summarized below:

- Introduction to forestry carbon offset projects, Moramanga (Conservation International)
- Introduction to forestry carbon offset projects, Andasibe (Conservation International)
- The role of forest restoration, the health of forest ecosystem and its link to human well-being (Conservation International)
- Forest restoration and production of reforestation plan (Conservation International)
- Nursery management (Conservation International)
- Production and propagation of VAM (Conservation International)
- Use of a GPS (Conservation International)
- Measurement and monitoring of carbon stock change (Winrock International)
- Reforestation and arboriculture (external consultant)
- Retraining of Facilitating Agents in the implementation of the project activity (ANAE)
- Alternative livelihoods through intensified agricultural practices (ANAE)

The diverse leakage mitigation measures established by the project proponents will also lead to a significant technology transfer to the local communities in terms of improved farming techniques and diversification of their agricultural practices.

The project activity has also greatly strengthened the capacity of local communities to manage projects through community-based organisation.

Throughout the project, there has been an onus on building Malagasy know-how at all levels. The project conceptualization, design and full integration of the carbon component into the project has been done together with Malagasy researchers, university students, the staff of conservation and development NGOs, and local community members. This entailed the technical training of these local partners and the exchange of information with them.

A.5.6. Proposed measures to be implemented to minimize potential leakage as applicable:

The project proponents are implementing anumber of measures measures to mitigate potential leakage as a consequence of the project activity. These measures include providing strong support to farmers to enable them to diversify away from *tavy* to more sustainable agricultural practices; as well as the implementation of fruit gardens, *savoka* gardens, sustainable forest gardens, native forest plantations and

fuel wood plantations. It is noted that these measures are not project activities that will generate CERs, but these measures are implemented to prevent leakage and to contribute to the development of the local communities.

The opportunities presented by the different mitigation measures will give new income both in the short- and medium-term and so allow farmers to diminish the area of *savoka* exploited in the broader landscape. Three demonstration gardens have been established with participating farmers to show the viability of these alternatives as well as a training tool for other farmers. At each site the leakage measures were established over an area of 0.5 ha. The project will support farmers promote the leakage measures that each farmer chooses to undertake.

Alternative, improved farming techniques The project provides both technical and material support to the farmers to successfully use more productive farming techniques and break away from the practice of *tavy*. The different types of cultivation have included, in particular, the cultivation of food crops using zero tillage / mulching techniques with nitrogen fixing plants. This approach allows control of soil fertility and prevents erosion. Other areas of training and support include: management of hillside lands; composting and market garden cultivation; no-burn, hill rice (mulching) and fruit tree horticulture; Systems of cultivation of food crops are developed according to the farmer's needs and included rice, maize, potatoes, sweet potatoes, beans in association with oats, market vegetables (e.g. tomatoes, courgettes, cucumbers, peas), groundnuts, pineapples, ginger and manioc. Canals are also laid out with on plots of steep slope to ensure infiltration and protection; biological anti-erosion measures, such as planting barriers of *Crotalaria grahamiana, Tephrosia vogelii* and *Vetiveria zizanoïdes*, are also implemented.

The project has provided practical training and continued technical advice, not only to participating farmers, but also to the wider local community. The techniques promoted by the project have been developed in Madagascar since 1995 and successfully implemented in the Andasibe region with other farmers since 2003. Research shows that with intensification measures at the plot level and with a fire-less regime, large sections of the landscape would have the opportunity to regenerate from nutrient-poor, unproductive grasslands, creating a mosaic landscape with diversified agricultural and forestry systems (Styger 2007).

Fruit gardens aim to generate sustainable incomes as well as to increase soil fertility. The project has established fruit tree nurseries that to date have grown 17 different species of fruit trees (6 700 seedlings) that will be distributed to participating farmers. Since the project is situated on the main route between the capital, Antananarivo and the major port of Toamasina, farmers have ready access to markets for forest garden produce. Consequently the fruit gardens are currently of real interest to local communities as a stable source of revenue. Food crops will be planted between the fruit and forest trees to help farmers cope with the food insecurity that prevails in and around Andasibe. Farmers are provided with crop seeds and technical training to implement direct seeding so as minimize soil disturbance.

Figure 9. Bean cultivated under mulch cover, PNAM Mahatsara

Figure 10. Fruit garden with inter-cropped rice and *Stylosanthes Antsapanana*

Savoka forest gardens The project assists farmers to establish sustainable forest gardens on their land. The area and location of land that farmers dedicate to the sustainable forest gardens is at their discretion. The sustainable forest gardens will provide to farmers an alternative use of degraded, unproductive *tavy* lands – particularly those on hillsides. These lands are no longer useful to local farmers, are particularly prone to fire and are at risk of further degradation through soil erosion. The establishment of sustainable forest gardens on these lands brings three main benefits:

- it permits the reclamation and regeneration of what is essentially abandoned land;
- it enables farmers to produce high-value crops, providing them with added sources of food and income and to enable their shift from *tavy* agriculture;
- local tree species make up a significant proportion of the plants used to create forest gardens; so these can be planted to mimic local natural forests in both structure and function.

Fuel wood plantations will provide wood for the fabrication of charcoal as well as fuel wood. Together with the farmers, the project identified local species having both a high energy value and a high regeneration capacity that will be used to establish the fuel wood plantations. The additional fuel sources will decrease pressure on natural forest wherever fuel wood presently comes from.

In addition it should be borne in mind that the project takes place within the context of a regional-scale REDD project that would also diminish any potential leakage originating from this small-scale A/R project at a broader landscape level.

A.6. A description of legal title to the land, current land tenure and land use and rights to tCERs/ lCERs issued:

Land tenure of reforestation sites

The Project Proponent (MEF) is implementing the project activity through Facilitating Agents (FAs), who assist and supervise the individual farmers in carrying out reforestation. The FAs are associations whose members are themselves from the local community. In some instances the FAs also carry out the project activity themselves on land to which they are usufruct. (The management structure for the implementation of the project activity is described in more detail in Section B.8.3.). The individual farmers and FAs carrying out project activities on land to which they are usufruct also constitute Implementing Entities (IEs, or sub-project entities) contracted to the PP.

According to Malagasy law (2005.019 of the 17 October 2005) the lands within the project boundary fall under the following legal statutes:

1. Private lands, which are comprised of:
   (i) private land owned by individuals who possess a standard, registered legal title to the land;
   (ii) and private land owned by farmers who have "property certificates" attesting to their ownership.[4]
2. And state lands, which are comprised of:
   (i) land gazetted as a protected area;
   (ii) forest reserves;
   (iii) and regional land that fell under the authority of the ex-Province of Toamasina.

[4] Before the implementation of the project this was private land with no registered title holder that the farmers had traditionally occupied and farmed. One of the important objectives of the project was to assist farmers to obtain legal title to private land that they have customarily farmed. The project has worked with the Government of Madagascar to establish a cadastral services office in Moramanga and to advance the process of farmers obtaining legal title to their customary land through the use of "property certificates". This is already underway and will be finalised by August 2010. At this date, all of the plots that make up the project area will either be: private lands owned by individuals with registered legal title to the land; or state land. The PDD therefore presents the land tenure situation as such.

It is noted that regardless of legal statute, all of the plots making up the project area were deforested and cultivated through slash-and-burn agriculture. Similarly, the formal legal statute of the different project areas does not always reflect the traditional land uses of the subsistence farmers. As will be described below, the project has ensured formal recognition of the traditional land use and carbon rights of the subsistence farmers participating in the project.

Table 8 and Figure 11 summarise the land tenure of the project area according to the legal owner of the land and the number of farmers present on it. In two instances farmers had previously farmed land that already belonged to a legal title holder and so are named in the table as occupants. These two cases are: (i) the private land of Louys; and (ii) the state land that had belonged to the ex-Province of Toamasina.

Table 8. Table Summary of the land ownership within the project area

Land tenure		**Legal owner**	**No. farmers**	**Area (ha)**	**% of total project area**
Private land	Registered	Louys	42 (occupants)	104.1	25
	Registered	Farmers	44 (owners)	48.2	12
State land	Protected Area	GoM (MNP)	0	104.8	25
	Forest reserve	GoM	0	24.8	6
	Regional	Ex-Province of Toamasina	34 (occupants)	129.6	31
Total				**411.3**	**100**

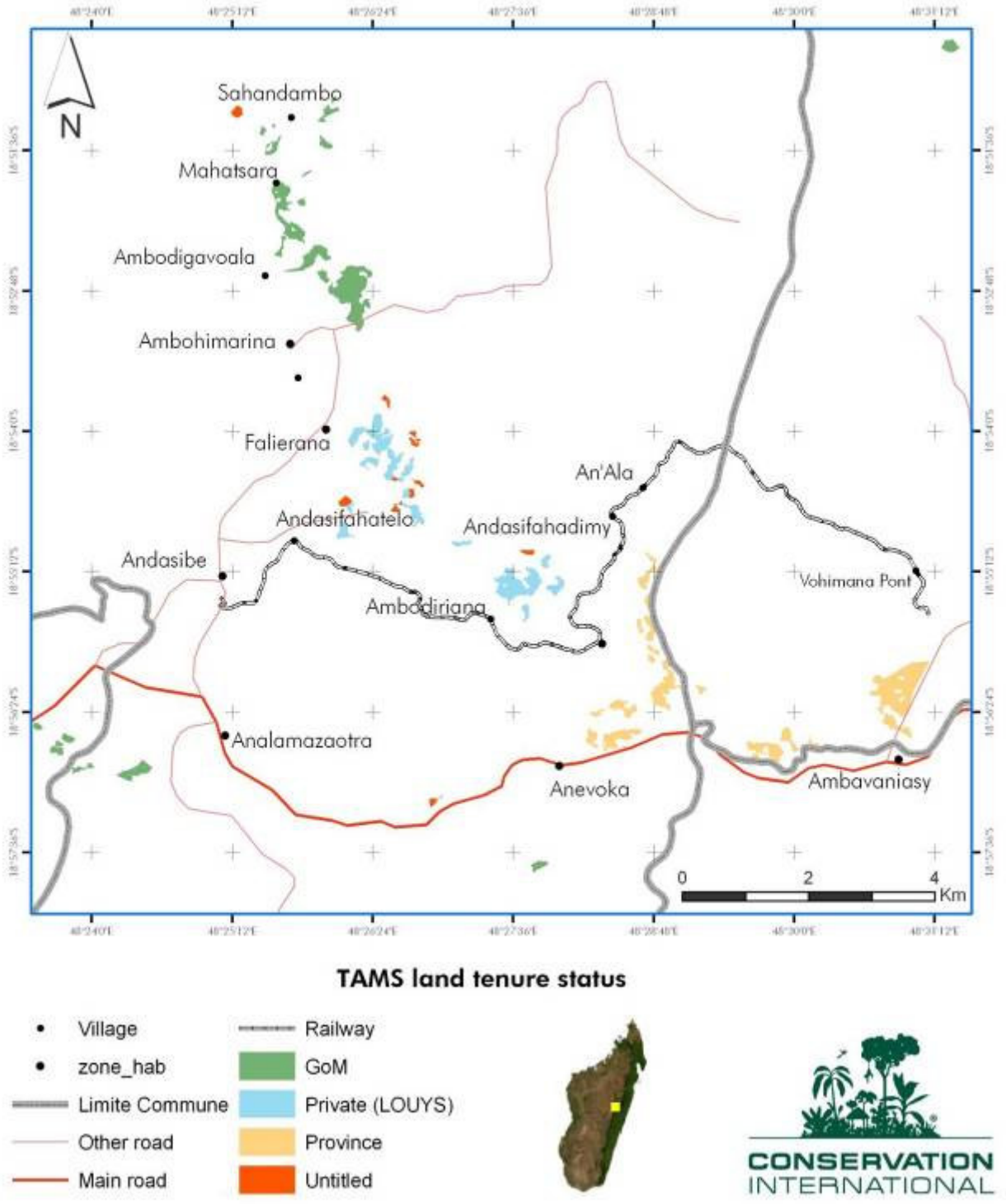

Figure 11. Map depicting land tenure within the project area

Table 9 presents a more detailed summary of the land tenure according to the FA responsible for overseeing the project activity, and the number of individual farmers implicated.

- 12 % of the total project area is registered private land that belongs to 44 farmers. The PP has worked with the local government cadastral service ("Guichet Foncier") to provide land titles to the farmers who are traditional owners of the land.

- 25 % of the project area is private land owned by Louys (a private person). This land has been occupied by 42 farmers for more than 35 years. Contractual agreements have been established between Louys and the farmers wherein the farmers recognise Louys as the legal owner of the land; in return they have the right to use the land and are the legal beneficiaries of any carbon revenues accruing from it.

- 25 % of the project area falls within the National Park of Mantadia (NPM); it constitutes government land with the legal status of a protected area and is managed by the Malagasy National Parks. There are currently no farmers occupying this land as they were resettled upon the establishment of the protected area in 1991. Two FAs are responsible for project activities within the protected area land: Malagasy National Parks, with 32.2 ha; and the local association SAF, with 72.6 ha.

- 6 % of the project area falls under government forest reserve and is managed by the FAs Mitsinjo and GERP through management contracts with the government forest administration (represented by the Direction Générale de l'Environnement et des Forêts).[5] Mitsinjo manages 19.8 ha of forest reserve on which reforestation will take place. Mitsinjo is the only IE responsible for project activities in this area and no farmers occupy it. GERP manages 3.6 ha of forest reserve on which it will carry out the project activity.

- The remaining 31 % of the project area is government land, which had belonged to the ex-Province of Toamasina, and that is occupied by 34 farmers. MATE has a management contract with the ex-Province of Toamasina to manage this land. MATE, ECOPHI and AGA are the FAs that will carry out the project activities on this land.

Table 9. Summary of legal title to land, the FAs and the farmers carrying out project activities

Land tenure		**Legal owner**	**FA(s)**	**No. farmers**	**Total area (ha)**	**% Project Area**
Private land	Registered	Louys	AGA	26	47.4	12
			Mitsinjo	26	56.7	14
	Registered	Farmers	AGA	17	18.0	4
			SAF	27	30.2	7
State land	Protected Area	GoM (MNP)	MNP	0	32.2	8
			SAF	0	72.6	18
	Forest reserve	GoM (Mitsinjo)	Mitsinjo	0	19.8	5
		GoM (GERP)	GERP	0	3.6	1

[5] The management contract of GERP is a long-term contract of indefinite duration, while that of Mitsinjo is for a fixed duration of 30 years. Contract renewal is conditional on the outcome of the administrator's positive evaluation of the manager's performance at the term of the contract.

	Regional	GoM (ex-Province of Toamasina)	MATE	20	69.7	17
			ECOPHI	13	57.4	14
			AGA	1	3.8	1
Total					**411.3**	**100**

Clear land tenure and legal title exists for all of the land that makes up the project area and the IEs have legal usufruct to their respective land.

Rights to tCERs

The Government of Madagascar (GOM) through the MEF will be the sole owner of the tCERs generated by the project activity.

Presently Malagasy law does not explicitly define carbon. So as to clarify rights to CERs Conservation International commissioned an analysis of how Malagasy law treats carbon; this is available to the validator on request.

Sequestered carbon can be qualified as an "industrial fruit" of a plantation, and as such as intangible property. Current regulations give claim of carbon ownership to the following:

- persons holding a legal title to the land on which reforestation takes place;
- the usufruct of legally titled land;
- and any person that has the right of use of the plantations on the lands by virtue of the law or by convention (leases, long term leases, management contracts (including GELOSE and GCF, see Annex 6 for explanation), delegated concessions). This category of possible claimants would include for the project:

  (i) the Madagascar National Parks, who manage the National Park of Mantadia and the Analamazaotra Special Reserve as a parastatal organization under concession from the government;

  (ii) and certain associations, such as MATE, GERP and MITSINJO. They manage the forests on state land (Vohimana, Maromizaha and the Forest Station of Analamazaotra) under contract to the government.

A legal analysis of land tenure of the project area, of the entities having rights to the CERs and of the development of appropriate contracts was undertaken by a legal specialist for the project. Table 10 summarises the project Implementing Entities that have legal usufruct to the reforestation plots and consequently rights to the CERs generated on them. The following entities would have claim to the CERs generated by the project activity:

1. Louys, as a private land owner with a standard, registered property title;
2. The farmers that are registered private land owners through holding property certificates;
3. Madagascar National Parks, as the government delegated concessionaire of a protected area;
4. The FAs Mitsinjo and GERP, which have management contracts with the GoM to manage state forest reserves;

5. The FA MATE, which have a management contract with the GoM to manage land belonging to the ex-Province of Toamisina;
6. And the GoM, in the case of the land belonging to the ex-Province of Toamasina.

Table 10. Summary of legal title to land and of the legal usufructs (IEs) that would have right to CERs generated by the project

Land tenure		Legal owner	FA(s)	Usufruct(s) / IE(s) (no.)	Total area (ha)	% Project Area
Private land	Registered	Louys	AGA	Louys (26*)	47.4	12
			Mitsinjo	Louys (26*)	56.7	14
	Registered	Farmer	AGA	Farmer (17‡)	18.0	4
			SAF	Farmer (27‡)	30.2	7
Private state land	Protected Area	GoM	MNP	MNP (1)	32.2	8
			SAF	MNP (1)	72.6	18
	Forest reserve	GoM	Mitsinjo	Mitsinjo (1)	19.8	5
		GoM	GERP	GERP (1)	3.6	1
	Regional	GoM	MATE	MATE (20†)	69.7	17
			ECOPHI	GoM (13†)	57.4	14
			AGA	GoM (1†)	3.8	1
Total					**411.3**	**100**

* The number of farmers who have traditionally farmed the land of Louys and on whose plots the project activity takes place

‡ The number of farmers with legal title to their land, on which the project activity takes place

† The number of farmers who have traditionally farmed state land and on whose plots the project activity takes place

The case of the farmers who have traditionally farmed the private land belonging to Louys presents a particular case in that prior to the project the farmers did not have any formal rights to use the land. To ensure that these farmers have legal claim to the carbon revenues the project has established "loan-to-use" contracts between Louys and each farmer. This form of contract gives the right of usage of the land to the farmers for essentially no charge, while the land remains the property of the lender. The lender confers to the borrower usufruct of the land, including the carbon rights. The obligations contained in the "loan-to-use" agreement pass on to the inheritors of both the lender and the borrower. This same legal instrument has been used to recognise the traditional use of the ex-Province of Toamasina land by the 34 subsistence farmers implicated in the project. As such, the project has similarly guaranteed that they have formalised carbon rights.

All of the project IEs will have legal title to the carbon sequestered due to the project activity that takes place on their land, or on land to which they are usufruct. The project has developed Sub-Project Agreements between the IEs and the Project Proponent for each of the land tenure situations that exist for the project. Under the agreement, the IEs will cede the rights to all CERs resulting from the project activity to the Government of Madagascar. Consequently all the CERs generated by the project activity will be aggregated under the ownership of the Government of Madagascar.

The Sub-Project Agreements:

1) Gives the consent of the EIs, legal landowners or other legal claimants to cede all claims that they may have to the CERs generated by the project activity to the GoM;
2) Details the EI's obligations in ensuring the permanence of the sequestered carbon over the entire project lifetime, as well as in assisting in the verification of the carbon pools;
3) Ensures that the usage of the land is limited to reforestation using native species and the conservation of the resulting ecologically restored natural forest;
4) And articulates the sharing of the carbon revenues, which will be proportional to the area reforested over which the IE has legal right.

Copies of the Sub-Project Agreements are available to the validator on request.

Land use

All of the land within the project boundary has historically been under a slash-and-burn management regime for the cultivation of rice.

A.7. Assessment of the eligibility of land:

The DNA (MEF) has formally communicated the definition of forest to the CDM Executive Board. Forest is defined as: a minimum tree crown cover of 30 %; a minimum land area of 1 ha; and a minimum tree height of 5 meters.

No land included in the project has (or has had since 1 January 1990) a contiguous area of 1 ha or more with a crown cover greater than 30 % and tree height of 5m and above. Therefore the lands of the proposed A/R CDM project activity comply with the definition for reforestation defined by decision 11/CP.7, and adopted by the DNA of Madagascar.

The eligibility of lands is demonstrated using the definitions provided in paragraph 1 of the annex to the Decision 16/CMP.1 through the analysis of satellite imagery:

Analysis of satellite imagery

The interpretation of Landsat images from 1990, 2000 and 2005 demonstrates unequivocally that the project area was deforested in 1990 and that it has not reverted to forest over the intervening period.

The spatial resolution of the analysis was 28.5 m, which corresponds to the size of the individual pixels of the satellite images. The interpretation of the images was completed with ERDAS IMAGINE. Each pixel was classified through iterative training of the images using a maximal convergence algorithm. The methodology used is described in full in "Evolution de la couverture de forets naturelles a Madagascar

1990 – 2000 – 2005", MEFT, USAID and CI, 2009 and Harper *et al*.[6] The reliability of the results obtained for the period 2000 – 2005 were verified using high-resolution aerial images, aerial videos taken by Conservation International in 2003 and points taken from high resolution Quickbird images (from Google Earth). The images used were Landsat 7 ETM+ for 1990 and 2000; and Landsat 5 TM for 2005. These images were recorded on: 25 October 1990, 19 April 2000 and 24 March 2005.

In this analysis, natural forest is defined as vegetation with a continuous canopy. Degraded forests of open canopy and plantations were treated as forest to ensure a conservative measure of non-forest. The land was shown to be of one of the following categories (see Figure 12):

- natural forest and degraded forests (ineligible);
- eucalyptus plantations (ineligible);
- non-forest (eligible);
- and clouds or cloud shadows.

The clear division of vegetation cover into forested or non-forested over the period of 1990 – 2000 – 2005 enabled the PP to select only those lands eligible for the project activities. The exclusion of degraded forests of open canopy and plantations from the analysis meant that areas which potentially could revert to forest were excluded from consideration for project activities in the satellite image analysis.

To corroborate the above proof the project proponents gained detailed management histories of the abandoned *savoka* on each potential plot of land through appraisals with the local village leaders and farmers. The PP conducted these surveys from February to April 2006. The management histories established reliably the year of the first clearing of forest in a given fallow. These corroborated the satellite image analysis that the lands were deforested before 31 December 1989. The management histories also showed that the vast majority of *savoka* fallow periods were shorter than five years and that within the project area 5-year-old *savokas* are rare.

The historical and present land-use would not have permitted the regeneration of forest since 1990. Historically the entire project area has been under cropland management using traditional slash-and-burn – *tavy*. With the exception of the 87 ha within the National Park of Mantadia, this land use would continue in the remainder of the project area in the absence of the project. Increased population pressure and a decrease in available land have dramatically shortened the fallow period: *savokas* now rarely exceed 5 years, and are frequently as short as 1 to 2 years. This frequency of *tavy-savoka* cycles deflects succession towards unproductive lands dominated by pan-tropical, fire-favoured grasses after 6 - 7 cycles. Under such land use, dating from the 1960's and still current, the natural reversion of young natural stands, plantations and areas of forest temporarily unstocked as a result of human intervention would not have occurred. All lands on which project activities will be carried are currently in degraded fallow that will not return to natural forest without human intervention.

[6] HARPER, G. J., M. K. STEININGER, et al. (2007). "Fifty years of deforestation and forest fragmentation in Madagascar." Environmental Conservation 34(4): 325 – 333.

Natural regeneration of forest on the project lands that are within the National Park of Mantadia and managed by Mitsinjo would not have taken place since the time they underwent *tavy* for the following reasons:

1. The invasive plants, such as *Lantana camara* and *Clidemia hirta* spread to the entire area and prevented the growth of other woody vegetation.
2. The invasive species that dominate areas do not surpass the thresholds of the tree height and crown cover.
3. Plots that are not overgrown by invasive plants are constituted of "dead lands" – *tany maty* – that have undergone so many *tavy-savoka* cycles that they are unproductive and abandoned by farmers.
4. Natural regeneration of forest is dependent on the presence of animal seed dispersers (birds / primate species). The habits constituted by the alien invaders and abandoned *tavy* described above are inhospitable to these species and seed dispersal is unlikely to occur in these areas.

More detailed evidence from the scientific literature that demonstrates the natural re-growth of forest will not have taken place on such lands is presented Section B.6.

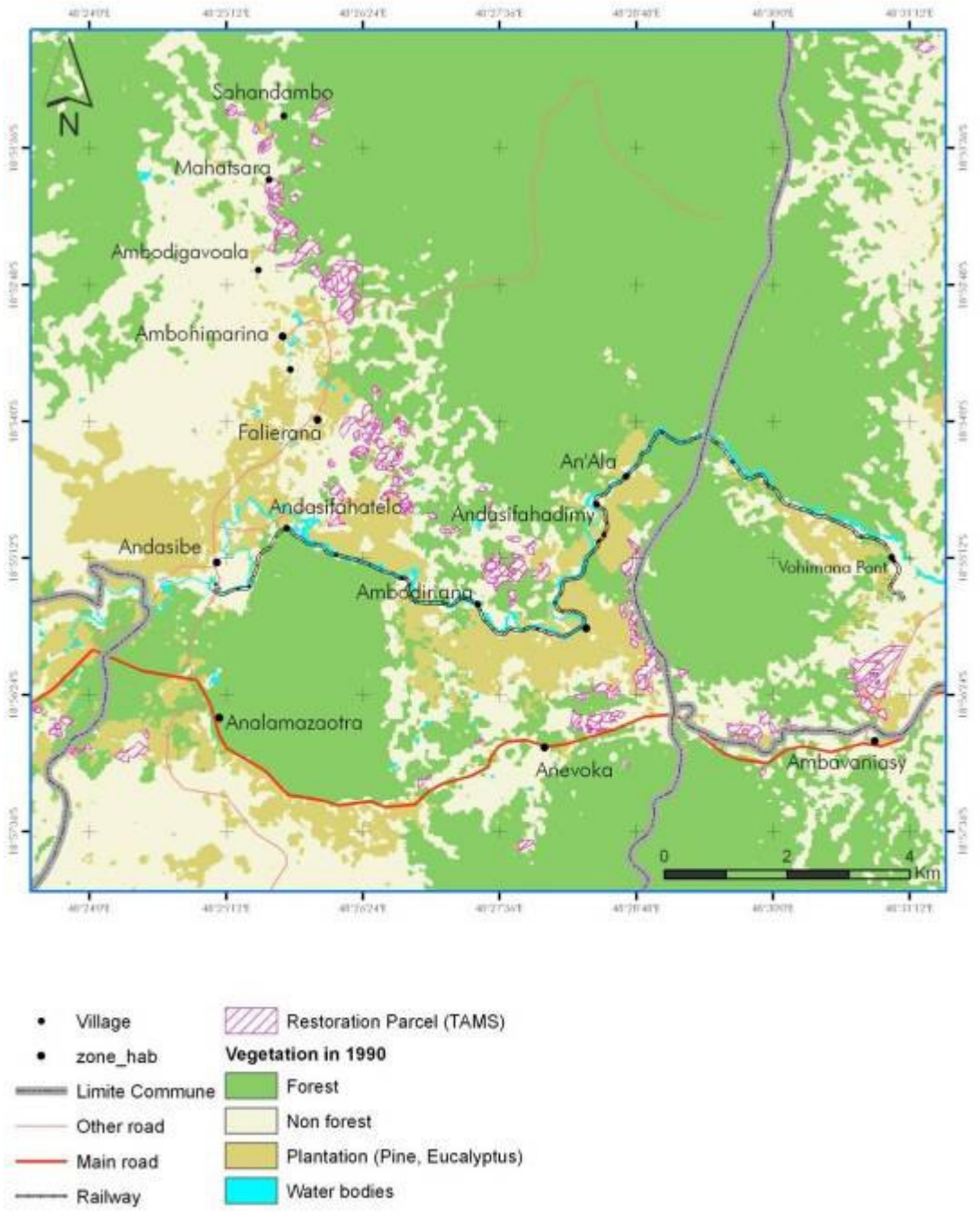

Figure 12. Map demonstrating the eligibility of lands selected under the project

A.8. Approach for addressing non-permanence:

Issuance of tCERs

A.9. Duration of the proposed small-scale A/R CDM project activity / Crediting period:

A.9.1. Starting date of the proposed small-scale A/R CDM project activity and of the (first) crediting period, including a justification:

Starting date of the proposed project activity: 03/12/2007. This is the date that planting actually began.

Starting date of the crediting period: 03/12/2007 (In accordance with paragraph 23 of the modalities and procedures for afforestation and reforestation project activities under the CDM, the crediting period begins at the start of the reforestation project activity.)

The CDM component of the project activity was considered from the initiation of the project, with a PIN being submitted to the World Bank in October 2004.

A.9.2. Expected operational lifetime of the proposed small-scale A/R CDM project activity:

At least 60 years

A.9.3. Choice of crediting period and related information:

1. Renewable crediting period

A.9.3.1. Duration of the first crediting period (in years and months), if a renewable crediting period is selected:

20 years

A.9.3.2. Duration of the fixed crediting period (in years and months), if selected:

Not applicable

A.10. Estimated amount of net anthropogenic GHG removals by sinks over the chosen crediting period:

Years	Annual estimation of net anthropogenic GHG removals by sinks in tonnes of CO_2 e

2007	-1,320
2008	-2,357
2009	-10,062
2010	9,134
2011	9,880
2012	10,291
2013	10,520
2014	10,632
2015	10,663
2016	10,637
2017	10,567
2018	10,464
2019	10,336
2020	10,189
2021	10,026
2022	9,851
2023	9,668
2024	9,478
2025	9,283
2026	9,084
Total estimated net anthropogenic GHG removals by sinks (tonnes of CO_2 e)	156,964
Total number of crediting years	20
Annual average over the crediting period of estimated net anthropogenic GHG removals by sinks (tonnes of CO_2e)	7,848

A.11. Public funding of the proposed small-scale A/R CDM project activity:

The Government of Madagascar (GOM) and Conservation International provided initial funding specifically to undertake the preliminary steps necessary to establishing the CDM project.

The GOM has committed to contribute towards the funding of the project activities through the National Environment Program III, supported by the World Bank. A letter, presented in Annex 2, from the IDA affirms that this is not a diversion of ODA from other commitments. The project falls within the objective of the GOM, articulated in the Third National Environmental Action Plan, and seeks to explore the use of revenue from the sale of carbon credits as a finance mechanism for conservation. The GOM (through the MEF) has affirmed this in a letter of non-objection to the project.

Conservation International's funding for the project activity does not constitute ODA.

A.12. Confirmation that the small-scale A/R CDM project activity is not a debundled component of a larger project activity:

Examination of the project activity against the debundling rules (Annex C para 2a of 6/CMP.1) shows that it does not result from the fragmentation of a large project activity into smaller parts but rather is a separate small-scale project activity:

- The project activity does not form a small part of a large CDM project activity.
- There is no registered small-scale CDM project activity or an application to register another small-scale CDM project activity: with the same project participant; in the same project category and technology/measure; and registered within the previous 2 years, whose project boundary is within 1 km of the project boundary of the proposed small-scale activity.

SECTION B. Application of a baseline and monitoring methodology :

B.1. Title and reference of the approved baseline and monitoring methodology applied to the proposed small-scale A/R CDM project activity:

"Simplified baseline and monitoring methodologies for small-scale afforestation and reforestation project activities under the clean development mechanism implemented on grasslands or croplands"
AR-AMS0001 / Version 05

B.2. Justification of the applicability of the baseline and monitoring methodology to the proposed small-scale A/R CDM project activity:

The average annual sequestration of the project activity is below the small-scale threshold of 16,000 t CO_2e per year.

The project activity meets the four applicability conditions for application of AR-AMS0001 / Version 05:

a) Reforestation will take place on what was cropland prior to the project activity. The project area consists entirely of fallow *savoka* that was previously under cropland management and is currently heavily degraded fallow that will not return to natural forest without human intervention.

b) There is no cropland displacement due to the implementation of the project activity: The plots proposed wered voluntarily by farmers for the project activity are heavily degraded areas of *savoka*. These parcels constitute unproductive areas that they no longer use.

c) Presently no grazing activities occur within the project boundary nor is there a history of grazing animals in the areas surrounding the project area. No grazing animals will be displaced by the project activity.

d) Site preparation is limited to manually digging holes only large enough for the individual seedlings. As such site preparation will disturb less than 10 % of the total area and does not involve significant scarification of the planting area.

B.3. Specification of the greenhouse gases (GHG) whose emissions will be part of the proposed small-scale A/R CDM project activity:

According to AR-AMS0001 / Version 05 project emissions are considered to be insignificant and are therefore neglected.

B.4. Carbon pools selected:

Carbon pools	Selected (answer with yes or no)
Above ground	Yes
Below ground	Yes
Dead wood	No
Litter	No
Soil organic carbon	No

In keeping with AR-AMS0001 / Version 05, the above- and below-ground tree and woody perennials biomass and below-ground biomass of grasslands (i.e. living biomass) are the carbon pools selected.

B.5. Description of strata applied for ex ante estimations:

Measurement of baseline carbon stocks

Between October 2008 and May 2009 Conservation International determined the biomass of *savoka* fallows within the project area. The biomass of 57 random sample plots was assessed and the random sampling of 14 different types of *savoka*, each characterised by the domination of certain species was noted. These included: *Psiadia altisima* savoka (which made up 32 % of the total number of sample plots), *Lantana camara* savoka (21 %), *Aframomum* dominated savokas (16 %) and *Pteridium aquilinium* savoka (7 %). Grasses (*Imperata cyclindrica*, *Stenotaphrum dimidiatum* (Ahipisaka), *Paspalum paniculatum* (Mahabanky) and Sompatra) together constituted 13 % of the total number of sample plots, while ferns (*Pteridium aquilinium*, *Sticherus flagellaris* (Rangotohara) and *Dycranopteris*) constituted 13 %. The age of most of the savoka types varied between 1 and 4 years with the exception of *Pteridium aquilinium*, which reached 13 years. The mean age for all *savoka* types was 3 years.

The mean stock of carbon for *savokas* within the project area was calculated as 15.6 tC/ha (standard deviation ±11.0; minimum 2.2; maximum 45.3; n = 57; 95 % confidence level 2.89). The full details of the estimation of the carbon stocks are presented in Table 16 of Section C.1. (It should be noted that the maximum carbon stock of 45.3 tC/ha was recorded for a *savoka* dominated by a grass species. Despite the high total living biomass, these plots do not meet the definition of forest.)

Stratification for estimation of the baseline carbon stocks

The only land-use of the entire project area prior to the project activity was *tavy* agriculture. Under this land-use the project area comprised a mosaic of cropland and fallows at different points in the *tavy-savoka* succession and dominated by different fallow species.

According to AR-AMS0001 / Version 05, Section II, 7, the strata applicable to this project area are:

"(a) Area of cropland with changes in the carbon stocks in the living biomass pool of woody perennials and in below-ground biomass of grasslands expected not to exceed 10% of *ex ante* actual net GHG removals by sinks multiplied by share of the area in the entire project area;"

and:

"(c) Area of cropland with changes in the carbon stocks in the living biomass pool of woody perennials and in below-ground biomass of grasslands expected to exceed 10% of *ex ante* actual net GHG removals by sinks multiplied by share of the area in the entire project area;"

For any one given plot of land the baseline carbon stocks in the living biomass pool of woody perennials and in below-ground biomass of grasslands would depend on the following factors: the number of *tavy* cycles the plot has already undergone; the length of the previous individual fallow periods; and the length of current and future fallow periods as well as their intensity. Moreover carbon stocks within *savoka* are cyclic, and diminish with each progressive cycle, particularly for those *savoka* in the earlier stages of the *tavy-savoka* succession.

The division of the project area into further strata is neither practicable nor a reliable distinction. (The dominance of a *savoka* by one species is often transient.) Stratification of this project area would not be expected to improve the accuracy of the baseline and the PPs consider that the average carbon stock obtained through the measurement of 57 random plots is adequately representative of the landscape-level mean at any point in time.

The average carbon stocks in the total living biomass is 15.57 tC/ha, the entire project area is 411.3 ha; and the *ex ante* actual net greenhouse gas removals by sinks under the project scenario are 156,964 t CO_2 e. Consequently the total carbon stocks in living biomass within the project area are 4 % of the *ex ante* actual net GHG removals by sinks. Therefore one single strata - (a) - is applicable to the entire project area.

Stratification for estimation of the *ex ante* actual net GHG removals

A stratification according to tree species / groups of tree species was not appropriate as a consistent mixture of tree groups was planted throughout the project area (see section A.5.3 for a full description). The strata applied to estimate the *ex ante* carbon sequestered as a result of project activities reflected the project planting plan and the two soil types present within the project area. Three distinct age classes result from the planting done:

1. Areas planted in December 2007 (8 % of the total project area);
2. Areas planted between August and December 2008 (18 % of the project area);
3. And areas planted between January and August 2009 (74 % of the project area).

In 2007, planting took place on only one soil type, while in 2008 and 2009 planting was carried out on both soil types. Consequently for the calculation of the *ex ante* carbon sequestered the project area is stratified into five carbon pools.

Table 11. Stratification of the project area for calculation of the *ex ante* actual net GHG removals by sinks

i	A_i (ha)	Planting year	Soil type
2007_{s1}	32.2	2007	yellow / red feralitic soils
2008_{s1}	62.3	2008	yellow / red feralitic soils
2008_{s2}	12.4	2008	sols peu evolues at rankers
2009_{s1}	223.3	2009	yellow / red feralitic soils
2009_{s2}	81.0	2009	sols peu evolues at rankers

B.6. Application of baseline methodology to the proposed small-scale A/R CDM project activity:

Baseline scenario

The total carbon stocks in existing living biomass within the project area is estimated to be 6,404.3 tC, which constitutes 5 % of the *ex-ante* actual net GHG removals by sinks (156,964 t CO_2 e).

The land-use prior to the project activity - and so the baseline scenario according to AR-AMS0001 / Version 05) - was cropland management using *tavy-savoka* agriculture.

Current scientific literature shows that in the absence of the project activity the carbon stock in the living biomass pool would be expected to decrease under continued *tavy-savoka* agriculture, the prevailing land use. In this case paragraph 6(b) of AR-AMS0001/05 defines the baseline. It is assumed that the baseline net GHG removals by sinks are zero and that the baseline carbon stocks in the carbons pools are constant and equal to existing carbon stocks measured at the start of the project activity.

Evidence that supports this baseline includes:

1. *Tavy* - the traditional slash-and-burn agricultural system - is the dominant land use in eastern Madagascar.

2. Studies done in the Beforona-Vohidrazana region (in the vicinity to the project area) show that a shortening of fallow periods has taken place from previously 8 – 15 years in the 1970s to 3 – 5 years currently (for example, Styger 2007, Styger 2009).[7,8] Fallow periods must increase in length with each additional fallow/cropping cycle after deforestation in order to restore the soils to a similar level of productivity.[9] But with current land pressures it is impossible for farmers to achieve the necessary fallow periods. With a shortening of the fallow cycles, tree species are unable to regenerate and are displaced by pioneer shrubs and grasses. The loss of woody re-growth and the dominance of grass fallows are associated with a permanent lowering of soil fertility. The land becomes unsuitable for cropping, and is finally abandoned for agriculture. As a result the *tavy* system is collapsing and land degradation is accelerating quickly across the landscape.

3. The transition from mature rainforest to abandoned grasslands under the current fallow periods takes only between 20 and 40 years (Styger *et al.* 2007). Fallow vegetation changes within 5 – 7 fallow/cropping cycles after deforestation from tree (*Trema orientalis*) to shrub (*Psiadia altissima, Rubus moluccanus, Lantana camara*) to herbaceous fallows (*Imperata cylindrica* and ferns) and grasslands (*Aristida sp.*), when land falls out of crop production.

4. The frequent use of fire in the region is replacing native species with exotic, aggressive ones and favours grasses over woody species, creating treeless landscapes that are of minimal productive and ecological value. Over time, recurrent cutting and fire cycles have produced landscapes with little secondary forest re-growth dominated by species-impoverished successional grasslands. These are subject to erosion and are abandoned for agriculture. As such intensive *tavy* practice not only leads to forest and biodiversity loss, but it severely degrades local and regional ecosystems.

5. With the current use of fire the reversion of landscape degradation is essentially impossible. The more degraded the land, the more difficult it is to reclaim. The point of no return or threshold is reached between the third and fourth cycle after deforestation when herbaceous species are starting to dominate the fallows. Dry, herbaceous vegetation catches fire more easily than woody

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[7] Styger, E., H. M. Rakotondramasy, et al. (2007). "Influence of slash-and-burn farming practices on fallow succession and land degradation in the rainforest region of Madagascar." Agriculture Ecosystems & Environment 119(3-4): 257-269.

Styger, E. F., ECM; Rakotondramasy, HM; Rajaobelinirina, E (2009). "Degrading uplands in the rainforest region of Madagascar: Fallow biomass, nutrient stocks, and soil nutrient availability." AGROFORESTRY SYSTEMS 77(2).

[8] Klanderud, K., H. Z. H. Mbolatiana, et al. (2010). "Recovery of plant species richness and composition after slash-and-burn agriculture in a tropical rainforest in Madagascar." Biodiversity Conservation 19: 187 – 204.

[9] Brand, J. P., JL (1998). "Site and watershed-level assessment of nutrient dynamics under shifting cultivation in eastern Madagascar." AGRICULTURE ECOSYSTEMS & ENVIRONMENT 71(1-3)

vegetation. Fire control becomes more difficult. With the increasing scarcity of available cropland and the shortening of fallow periods, burning frequencies increase across the landscape.

Plots that fall within the National Park of Mantadia present a particularity in that they may not experience continued *tavy-savoka* agriculture in the future if the national park regulations were to be strictly enforced. The current literature as well as empirical evidence show that even if these plots do not experience continued *tavy* agriculture in the long term the changes in carbon stocks in living biomass in such *savoka* will not exceed 10% of *ex-ante* actual net GHG removals by sinks. In this case AMS0001/05 paragraph 6(a) states that the changes in carbon stocks shall be assumed to be zero in the absence of the project activity

Evidence to support that the changes in carbon stocks in living biomass within the National Park of Mantadia plots will be negligible even if they do not experience continued *tavy* agriculture includes:

1. None of the *savoka* types measured within the project boundary contained carbon stocks significant enough to exceed the 10 % limit of *ex-ante* actual net GHG removals by sinks. This is corroborated by what is reported in the literature: Brand and Pfund (1998) measured the carbon stocks of the rainforest vegetation at a study site within proximity to the project area to be 230 tC/ha. *Savoka* above and below ground carbon stocks at 5 years of fallow age were 14 tC/ha for *Trema* (or 6 % of forest values), about 11.5 tC/ha for *Psiadia* and *Rubus* (or 5 % of forest carbon), and 4 tC/ha for *Imperata* (or 1.7 % of forest C).[10] The most productive fallow they measured accumulated 10% of the rainforest's biomass, while grass fallows accumulated only 1%.

2. The National Park of Mantadia plots selected for the project activity are overgrown by the invasive plants, such as *Lantana camara*, *Clidemia hirta* and *Rubus moluccanus*. They form a dense, thick, spiny stand that is not penetrable without a machete. The mono-specific stands formed by these species blankets the entire plot area and prevents the growth of any other plants. *Rubus* is the most aggressive among the shrubby species, and out-competes and suppresses *Lantana, Aframomum* or *Psiadia* if they appear in the same plot. This is also the case for regenerating indigenous tree species, in which case *Rubus* impedes the development of a potential secondary forest (Styger 2007). This is reported not only in the scientific literature, but also noted in published environmental indicators for the area.[11]

3. The invasive plants dominating these plots, such as *Rubus* and *Imperata*, do not show a relationship between age and total biomass after canopy closure occurring at the ages of 3 – 4 years. Once the canopy closure, there is no significant increase in plant height and biomass with fallow age. For example, it is reported that the above ground biomass for *Rubus* fallows from 4 to 10 years old was on average 15.9 t/ha. Similarly to *Rubus*, *Imperata* shows no biomass increase

[10] Brand, J. P., Pfund, JL (1998). "Site and watershed-level assessment of nutrient dynamics under shifting cultivation in eastern Madagascar." AGRICULTURE ECOSYSTEMS & ENVIRONMENT 71(1-3)

[11] Tableau de Bord Environnemental de la Province de Toamasina, l'Office National pour l'Environnement (ONE), 2002, page 10

with age beyond 3 years of age, the average above ground biomass was 5.54 t/ha. For *L. camara* the canopy closes at 2.5 – 4 m in height, the stand no longer increases in height, and it becomes very difficult to distinguish a 5-year from a 20-year fallow.

4. Natural regeneration of forest is dependent on the presence of animal seed dispersers (birds / primate species). The habits constituted by the alien invaders and abandoned *tavy* described above are inhospitable to these species and seed dispersal is unlikely to occur in these areas.[12] Under previous slash-and-burn cycles, the soil seed banks would have been progressively depleted, and tree seedlings burned by recurrent fires (Styger 2009).[13]

5. Plots that are not overgrown by invasive plants are constituted of "dead lands" – *tany maty* – that have undergone so many *tavy-savoka* cycles that they are unproductive and abandoned by farmers

In both cases no significant positive changes in the carbon stocks would occur in the business-as-usual scenario and AR-AMS0001/05 states that the baseline net GHG removals by sinks is assumed to be zero.

Project scenario

The project scenario is the reforestation of degraded *savoka* fallows using over 120 different native tree species. This will result in the establishment of natural rain forest habitat.

B.7. Description of how the actual net GHG removals by sinks are increased above those that would have occurred in the absence of the registered small-scale A/R CDM project activity:

Demonstration of the additionality of the project activity follows the simplified methodology (AR-AMS0001/version 05 – Appendix B). The project activity would not have occurred without the CDM component due to the following barriers:

1. Investment barriers

Without the CDM component, there are significant investment barriers to implementation of the project. These include:

(i) Reforestation and the maintenance of forest over the project lifetime would only bring return to a subsistence farmer in the long term. For it to be a viable alternative land-use to local subsistence farmers, they would require credit to offset their investment in terms of lost labour and usable land. Neither the communities nor the community members

[12] Holloway, L. (2000). "Catalysing rainforest restoration in Madagascar." Diversity and Endemism in Madagascar, Lorenco, W.R. & S.M. Goodman (eds.). Orstom Editions, Paris. ISBN 2-903700-04-4.

[13] Gade, D.W. (1996). Deforestation and its Effects in Highland Madagascar. Mountain Research and Development 16: 101; Fernandes, E. C. M., E. Styger, et al. (2001). "Mycorrhiza Fungal Diversity as Impacted by the Loss of Endemic, Rainforest Plants in Madagascar." ICOM 3, Adelaide, Abstracts.

undertaking the project activity have access to the forms of credit necessary to implementing the project. Documentation from a local bank is provided to demonstrate this. Furthermore, without the project they would not have any formal land tenure prerequisite to gaining credit to financing activities on this land.

(ii) Reforestation of the slash-and-burn fallows using 120 native species represents a significant expense with no return on investment if there was no CDM component.

The lack of precedent for such a project in Madagascar represents an investment barrier to both domestic and foreign investors. Within Madagascar there is no tradition of domestic investment in long term natural reforestation projects. On the other hand, the political situation of Madagascar means that there is a significant risk associated with foreign direct investment into the country.

The projected, direct expenses for carrying out reforestation alone (including such expenses as nursery production, site preparation, planting, replanting and maintenance) over the 411.3 ha are estimated to be 770,688 USD net present value using a discount rate of 12%. (Details of the cost analysis are available to the DOE on request.) In addition, the PP incurred significant expenses in developing the project that are not accounted here. These include: the feasibility study and research for the project design; the process of engaging all stakeholders and establishing an inclusive management structure; the transfer of technology and capacity building of the local communities; supporting farmers to formalise land ownership; and the leakage mitigation measures, particularly the support of alternatives to *tavy* agriculture.

It is only through the sale tCERs that the above investment barriers can be overcome and that the project activity becomes viable for farmers and the entities supporting them alike.

2. Institutional barriers

(i) Generally widespread non-compliance with land-use and forest management regulations mean that that the long term restoration of natural forest is not necessitated by law, nor is the reality of land-use conducive to reforestation over the project lifetime.

Long experience has shown that laws governing forest are largely ineffective in Madagascar and that Madagascar's forests have decreased throughout most of the twentieth century.[14,14,15] Root causes for continued deforestation on a national level include: the linking of forest clearing to land ownership; reduced public expenditure has diminished the government means to enforce and

[14] For example, see: Raik, D. (2007). "Forest Management in Madagascar: An Historical Overview." Madagascar Conservation & Development 2(1): 5 - 10

[15] Ganzhorn, J. U., Langrand, O., Wright, P. C., O'Connor, S., Rakotosamimanana, B., Feistner, A. T. C. and Rumpler, Y. 1997. The state of lemur conservation in Madagascar. Primate Conservation 17: 70-86.

monitor of existing environmental legislation;[16] regulations that make no accommodation for traditional livelihoods and therefore are not respected by local communities; and national level policies that are neither coordinated nor complementary;[17] and a lack of formal land tenure.[18]

Data for the 1990's showed that the province also had the highest rate of deforestation of all of the provinces of Madagascar, with a level of 43 % and that the areas of Moramanga and Ambatondrazaka are where most of this deforestation is concentrated.[19, 20] Indeed, a government report on the environmental and development conditions of the region qualified the rate of deforestation here as "catastrophic".[21] The report states that the government agencies do not have the means to enforce the regulations.

Similarly, national legislation governing protected areas prohibits inhabitation and *tavy* within protected areas, yet in the 1990's this still took place within the National Park of Mantadia. A model based on forest loss from 1980-1990 predicts that threats will continue at and within the boundaries of the park.[22] A national-level analysis of historical deforestation showed that designation of forest as Protected Areas did not necessarily safeguard these against continued deforestation.[23]

(ii) On the other hand, the effective local enforcement of the ban on clearing new forest leads to an intensification of *tavy* on existing *savoka* fallows, quickening their demise to unproductive fallows that will not return to forest naturally.

The ineffectiveness of laws relating to forests and land-use, as well as their reinforcement of unsustainable land-uses, make reforestation highly improbable in the absence of the project.

(iii) Nor does the current land tenure regime make the long-term reforestation of *savoka* a foreseeable option in the absence of the CDM component. Within the project area, the majority of lands have had a history of *de facto* occupation of state-owned lands as well as no legal provision

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[16] One analysis of the spiny forest ecoregion showed that the greatest amount of deforestation had taken place in areas managed under the jurisdiction of the Forest Administration (DEF), which nationally receives very little funding.[17]

[17] Ratsifandrihamanana, A. N., D. Montanye, et al. (2006). "Socioeconomic Root Causes of Biodiversity Loss in Madagascar." USDA Forest Service Proceedings RMRS-P-42CD: 203 - 212.

[18] Elmqvist, T., M. Pyyko¨nen, et al. (2007). "Patterns of Loss and Regeneration of Tropical Dry Forest in Madagascar: The Social Institutional Context." PLoS ONE 2(5): e402. doi:10.1371/journal.pone.0000402 May 2007(5): 1 - 14.

[19] Tableau de Bord Environnemental de la Province de Toamasina, l'Office National pour l'Environnement (ONE), 2002, page 12 ; Annuaire Statistiques Agricoles 1998, DPEE / Min Agri

[20] Donnees et statistiques environnementales de Madagascar, 2009, MEF/SG/DGE/DIDE, page 6.

[21] Monographie de la region d'Ambatondrazaka, Unite de Politique pour le Developpement Rural (UPDR) Ministere de l'Agriculture, de l'Elevage et de la Peche. Section 3.1.4.1, pages 70 and 72.

[22] Matthew Sommerville (2005). "An analysis of deforestation trends across Madagascar's protected area system (1980-2000) & implications for future management." MSc, Oxford University. Pages 57 and 75.

[23] Ingram, J. C. and T. P. Dawson (2005). "Inter-annual analysis of deforestation hotspots in Madagascar from high temporal resolution satellite observations." International Journal of Remote Sensing 26(7 April): 1447 – 1461.

being made to title land to individual farmers (less than 10 % of households for the region as a whole have legal title to their land). The two situations - prevailing absence of private land tenure for subsistence farmers and the current regulation that if farmers have cleared and worked parcels of land for seven years, they have the legal right to use that land - encourage the continued practice of *tavy*. The lack of land tenure security at the individual level prevents farmers from investing in their land. (A major benefit for farmers participating in the project is that the PP has enabled them to obtain formal tenure for their lands.)

The CDM component of the project means that reforestation becomes a viable, income-generating land use for local actors and should allow these institutional barriers to be overcome.

2. Barriers relating to local tradition

The slash-and-burn system is deeply rooted in traditional agricultural practice in Madagascar and its widespread use is likely to persist. Hume describes a strong traditional attachment to the practice of *tavy* based on customary beliefs.[24] Traditional customs present a barrier to the land use change practices necessary to implementing the project activities on the lands that are traditionally farmed by subsistence farmers.

3. Barriers due to prevailing practice

The project is the first of its kind within Madagascar. Of the SSC A/R projects currently registered with CDM, none have undertaken to use such a diversity of native species for reforestation. TAMS is a pioneer in its objective of working with subsistence farmers to restore a biological corridor between forest fragments and to re-establish landscape-level ecosystem functioning using a wide variety of native species.

The region has a strong tradition of forest exploitation for timber, charcoal production and authorised clearing for farming. During the 1990's a third of all forest exploitation permits issued nationally in Madagascar's were for the province within which the project is taking place, and particularly for Moramanga and Lac Alaotra.[25]

Reforestation with native species would not take place in the absence of the project given these prevailing practices.

4. Barriers due to local ecological conditions

The practice of *tavy* is the dominant form of agriculture within the project area and leads to a succession of vegetation types depending on the number of cycles and the length between

[24] Hume, D. W. (2006). "Swidden Agriculture and Conservation in Eastern Madagascar: Stakeholder Perspectives and Cultural Belief Systems." Conservation and Society 4(2 June): 287–303.

[25] Monographie de la region d'Ambatondrazaka, Unite de Politique pour le Developpement Rural (UPDR) Ministere de l'Agriculture, de l'Elevage et de la Peche. Section 3.1.4.2, page 73.

burning. The intensification of the *tavy-savoka* cycles, the fact that fallows within the project area have already experienced a number of cycles, and the consistent use of fire in *tavy* agriculture, all mean that the ecological conditions of the project area would not allow the natural regeneration of forest.[26] Detailed evidence of this is presented in B.6. Application of baseline methodology to the proposed small-scale A/R CDM project activity:

The current regime of *tavy*, where the average cycle is 3 years and the project area has already experienced a minimum of 5 – 7 cycles, leads to a deflection of normal ecological succession and makes forest re-growth impossible. Fallow vegetation changes within 5 – 7 fallow/cropping cycles after deforestation from tree (*Trema orientalis*) to shrub (*Psiadia altissima, Rubus moluccanus, Lantana camara*) to herbaceous fallows (*Imperata cylindrica* and ferns) and grasslands (*Aristida sp.*). The frequent use of fire replaces native species with exotic, aggressive ones (which blanket out any natural re-growth) and favours grasses over woody species, creating treeless landscapes. These soils are too deprived of nutrients to allow normal forest re-growth.

In most tropical forests up to 90% of tree and shrub species are adapted to animal dispersal (Bawa & Hadley 1990), with frugivores being the dominant group of animals. This is particularly true for Malagasy rainforests, where most tree species of disperse seeds through frugivores. However, with the depletion of forests, there are few frugivores in the region's forests and this has impacted negatively on natural forest regeneration. The principal seed-dispersers in Madagascar are arboreal lemurs (e.g. Dew & Wright 1998). In the eastern rainforests just three lemur species, *Eulemur fulvus, Varecia variegata variegata* and *Eulemur rubriventer* are important seed dispersers (C. Hemingway, pers. comm.). None of these species inhabit the project area but they are found in the surrounding forests. Almost all of the important seed dispersers are restricted to forests and thus natural seed dispersal of forest species into already degraded areas is extremely limited.

In addition directed plantings are essential to stimulating natural regeneration because repeated burning and cultivation impoverishes both soil seed banks and mycorrhizae communities essential to natural re-growth.[27]

Without the intervention of the project no natural reforestation would occur on the *savoka* fallows within the project area. The project will overcome these ecological barriers through control of invasive species so that they do not smother the re-growth of trees, as well as the planting of native species so as to create habit suitable for seed dispersers.

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[26] See for example: Styger, E., H. M. Rakotondramasy, et al. (2007). "Influence of slash-and-burn farming practices on fallow succession and land degradation in the rainforest region of Madagascar." Agriculture Ecosystems & Environment 119(3-4): 257-269; Styger, E. F., ECM; Rakotondramasy, HM; Rajaobelinirina, E (2009). "Degrading uplands in the rainforest region of Madagascar: Fallow biomass, nutrient stocks, and soil nutrient availability." Agroforestry systems, 77(2); Holloway, L. (2000). "Catalysing rainforest restoration in Madagascar." Diversity and Endemism in Madagascar, ISBN 2-903700-04-4: 1 – 10; Klanderud, K., H. Z. H. Mbolatiana, et al. (2010). "Recovery of plant species richness and composition after slash-and-burn agriculture in a tropical rainforest in Madagascar." Biodiversity Conservation 19: 187 – 204.

[27] Gade, D.W. (1996). Deforestation and its Effects in Highland Madagascar. Mountain Research and Development 16: 101; Fernandes, E. C. M., E. Styger, et al. (2001). "Mycorrhiza Fungal Diversity as Impacted by the Loss of Endemic, Rainforest Plants in Madagascar." ICOM 3, Adelaide, Abstracts.

5. Barriers due to social conditions

The sub-district of Moramanga in which the project area is located is the most populous of the region. It has a population growth rate of 3.5 %, which is higher than the national average of 2.8 %.[28] The population density of Andasibe is approximately 31 inhabitants / km^2. Similarly much of the 43,266 rural inhabitants who comprise the population of the administrative district are subsistence farmers. High population growth coupled with the majority of the population depending on subsistence agriculture means that the long term reforestation of savoka fallows is a highly unlikely land-use scenario in the absence of the CDM project. local population is locked into a cycle of increasing poverty.

B.8. Application of monitoring methodology and monitoring plan to the small-scale A/R CDM project activity:

B.8.1. Data to be monitored: Monitoring of the actual net GHG removals by sinks and leakage.

***Ex post* estimation of the baseline net GHG removals by sinks**

Decision 6/CMP.1, appendix B, paragraph 6, states that it is not necessary to monitor the baseline and the baseline net GHG removals by sinks are assumed to be those estimated in section C.1.

***Ex post* estimation of the actual net GHG removals by sinks**

The monitoring details of the variables that will be measured to establish the verifiable changes in carbon stock within the project boundary resulting from reforestation are presented in section B.8.1.1.1. In addition, the monitoring plan also includes the following measures:

Planting and tree survival: Seedling survival is monitored through one to two field surveys at each site within one month to a year of planting and subsequently again for the first three years after planting. Trees that do not survive are replanted in the same year of planting, with replanting for trees that die between October and November being done after the rainy season.

Project boundary and strata: The boundaries of the discrete plots on which the project activity is implemented have been measured in the field using a differential GPS and recorded in the project GIS. The boundaries of the plots are marked using a technique that has been successfully used in long term ecological monitoring in the area. This entails marking the boundary by tying coloured plastic tape around boundary trees; as the trees reach maturity the tape is replaced by a metal tag and nail. The project manager together with the FAs are responsible for maintaining the boundary markers. The project

[28] Monographie de la region d'Ambatondrazaka, Unite de Politique pour le developpement rural, Ministere de l'Agriculture, de l'Elevage et de la Peche

boundary will be monitored every five years. Any decreases in the project area due to natural factors, such as flooding or fire, that occur will be measured using GPS, recorded in the project database and reported in the monitoring report.

Size of planted area: The size of the areas where the project activity has been implemented for each stratum (A_i) will be calculated from the boundaries of the discrete plots described above (the planted area constituting the project boundary) using ArcGIS and recorded in the project GIS. A correction for slope is done in the calculation of plot area because of the steep, irregular topography of the project area. Areas are multiplied by slope factors, obtained from a digital elevation model, which in turn was derived from contour lines in the FTM BD100 (national database at 1:100 000 scale).

The project area is stratified according to the three age cohorts and the two soil types over which the project area falls. The strata that a given discrete plot falls under are recorded by the FAs as well as by the project manager in the project GIS.

Quality Control by ANAE

ANAE (the technical manager contracted by MEF to manage the project) carries out a number of quality control measures to guarantee the reliability of the measurements and monitoring done by the Facilitating Agents (FAs). These include the following:

Verification of the measurement of the plot areas: A sample of 10 % of the total plots is measured using a GPS. The quality control measurements are intended to ensure that the difference between original measurements of land parcels and remeasurement of sample parcels should not be significant.

Verification of the areas reforested: ANAE monitors the areas replanted at two levels: firstly, ANAE technicians based in Andasibe verify all plots that have been reforested. Secondly, the area reforested is verified by members of the head office team (Project Coordinator, Monitoring and Evaluation Officer and Forestry Engineer) through the measurement of a sample of plots so as to ensure that the reports of the reforested areas should not differ.

Verification of tree condition and the density of planting: the ANAE technicians verify tree condition and the planting density each time they verify the area reforested. Recommendations and necessary improvements are communicated to the FA in the form of monitoring communications that the FAs need to comply.

Stratification

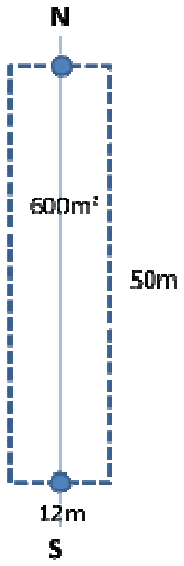
The project area will be divided in the first instance into three age cohorts reflecting the year of planting: 2007, 2008 and 2009. The presence of two soil types within the project area (see Figure 6 in section A.5.2) could also lead to the evolution of distinct carbon pools and therefore the project area is further stratified according to soil type. This leads to five strata summarised in Table 12 that will be used for the *ex post* estimation of project GHG removals by sinks. (All planting that took place in 2007 took place on one soil type, while in subsequent years planting was done on both soil types). At each verification period

the stratification will be assessed according to the growth of areas and if it is necessary new strata will be defined / strata will be combined.

Table 12. Strata used for the *ex post* estimation of project GHG removals by sinks

i	A_i (ha)	Planting year	Soil type
2007_{s1}	32.2	2007	yellow / red feralitic soils
2008_{s1}	62.3	2008	yellow / red feralitic soils
2008_{s2}	12.4	2008	sols peu evolues at rankers
2009_{s1}	223.3	2009	yellow / red feralitic soils
2009_{s2}	81.0	2009	sols peu evolues at rankers

Size and form of permanent sampling plots: The permanent plots will be of a rectangular form of 50 x 12 meters, with a South-North orientation. The axis along the longest side will be used for locating the plot, with a marker point located at both ends of the axis as shown in the figure below:



The size and form of plot was chosen after careful analysis of site conditions and is expected to give the best representation of any variability in planting and growth.

It is also an efficient, practicable approach for sampling plantations with a high amount of weeds and thorny bushes, since it only requires measuring a central axis.

A slope correction will be applied in the field if the sample plot is located on a slope that is >10% in order to correct the effect of the slope in the plot area.

Number of permanent sampling plots: In keeping with AR-AMS0001 / version 05 38 (iii) the monitoring will estimate the project biomass stocks at a precision level of ±10% of the mean at a 95% confidence level. The number of sampling plots required to achieve this is calculated according to the methodology in "Sourcebook for Land Use, Land-Use Change and Forestry Projects, Pearson T., Walker S. and Brown S., 2005" and using the Winrock Terrestrial Sampling Calculator.

Field analysis conducted in August 2004 in Madagascar gave a preliminary indication of the variation in the vegetation systems.[29] The preliminary plots measured to determine the variation in the system should

[29] Nicholas Martin, David Shoch, Aaron Dushku, Tim Pearson and Sean Grimland. 2004. Measurement and Monitoring Plan for the Andasibe-Matandia Corridor Restoration and Conservation Project, Madagascar.

closely approximate the vegetation to be measured during the project. Fully mature forest is therefore not appropriate to assess variation for reforestation. Instead measurements in 10 and 30 year old regenerating forest were used to calculate the number of plots required to give the required precision.

10 year forest:
Mean stocks above and below ground = 74.6 t C/ha with a standard deviation of 20.56 tC/ha
37 12 x 50 meter rectangular plots are required to target 10 % of the mean with 95 % confidence.

Strata	Area (ha)	Carbon stocks (tC/ha)	Standard deviation (tC/ha)	Plot area (ha)	Number of sampling plots
2007_{s1}	32.2	74.6	20.56	0.06	3
2008_{s1}	62.3	74.6	20.56	0.06	6
2008_{s2}	12.4	74.6	20.56	0.06	2
2009_{s1}	223.3	74.6	20.56	0.06	19
2009_{s2}	81.0	74.6	20.56	0.06	7

30 year forest:
Mean stocks above and belowground = 141.3 t C/ha with a standard deviation of 32.08 tC/ha
25 12 x 50 meter rectangular plots are required to target 10 % of the mean with 95 % confidence.

Strata	Area (ha)	Carbon stocks (tC/ha)	Standard deviation (tC/ha)	Plot area (ha)	Number of sampling plots
2007_{s1}	32.2	141.3	32.08	0.06	2
2008_{s1}	62.3	141.3	32.08	0.06	4
2008_{s2}	12.4	141.3	32.08	0.06	1
2009_{s1}	223.3	141.3	32.08	0.06	13
2009_{s2}	81.0	141.3	32.08	0.06	5

So that the sampling intensity is sufficient to resolve the narrowest absolute anticipated confidence interval at the specified precision level, the chosen sample size is that of the 10 year old stand - 37 12 x 50 metre rectangular plots.

Carbon stock: Carbon stocks will be calculated according to paragraph 39, section B. of the approved methodology through the summation of the carbons stocks of each strata:

$$P_{(t)} = \sum_{i=1}^{I} (P_{A(t)\,i} + P_{B(t)\,i}) * A_i * (44/12)$$

where:

$P_{(t)}$ Carbon stocks within the project boundary at time t achieved by the project activity (t CO_2-e)

$P_{A(t)\,i}$ Carbon stocks in above-ground biomass at time *t* of stratum *i* achieved by the project activity

during the monitoring interval (t C/ha)

$P_{B(t)\,i}$ Carbon stocks in below-ground biomass at time *t* of stratum i achieved by the project activity during the monitoring interval (t C/ha)

A_i Project activity area of stratum *i* (ha)

i Stratum *i* (I = total number of strata)

Estimation of the above ground biomass ($E_{(t)\,i}$): Measurement methods and procedures to be adopted for monitoring of the above ground biomass are presented in the supporting documents (Appendix I. Standard Operating Procedures for Measuring and Monitoring Carbon For the Andasibe-Mantadia Corridor Restoration And Conservation Carbon Project).[30]

Measurement activities will not include understory vegetation which typically make up a relatively low percentage of above-ground biomass and are not expected to differ substantially between with- and without project activities. All trees with a DBH > 5 cm will be measured. For palms and tree ferns, biomass is more closely related to height than to diameter. Height will be measured only if the main stem exceeds 1.37 m in height. Height will be measured with a clinometer or directly if the palm is only a few meters tall.

Monitoring changes in biomass will be accomplished by measuring individual trees in permanent sample plots at 5 year intervals, keeping track of growth, ingrowth, and survivorship. Changes in carbon between one interval and the next will be calculated per plot, thus the sampling regime is designed to estimate changes in carbon, not stocks at a given time. Results from the plots will be analyzed to estimate mean change in stocks across the sampled population, which is then applied over the entire project area to estimate total quantity of carbon accrued.

The above-ground biomass will be estimated using an allometric equation described in the monitoring methodology written by Winrock International for the project.[31] It is derived from that of Brown[32] for broadleaf trees in tropical moist forests (1,500 to 4,000 mm annual rainfall):

$$y = exp[-2.289 + 2.649ln(DBH) - 0.021(ln(DBH))^2] \qquad R^2 = 0.98$$

y = biomass per tree in kg; DBH = diameter at breast height; and H = height; exp = “e” raised to the quantity in brackets; DBH range: 5 – 148 cm)

[30] Nicholas Martin, David Shoch, Aaron Dushku, Tim Pearson and Sean Grimland. 2004. Measurement and Monitoring Plan for the Andasibe-Matandia Corridor Restoration and Conservation Project, Madagascar

[31] Nicholas Martin, David Shoch, Aaron Dushku, Tim Pearson and Sean Grimland. 2004. Measurement and Monitoring Plan for the Andasibe-Matandia Corridor Restoration and Conservation Project, Madagascar

[32] Brown, S. 1997. Estimating biomass and biomass change of tropical forests. A primer. FAO Forestry Paper 134. Food and Agriculture Organization of the United Nations, Rome, Italy.

The allometric equation will be further refined by continually taking measurements for the duration of the project. Sampling for the development of the allometric equation will be done by grouping species according to their architecture so as to obtain a fair representation of the diversity of species present Training has been given to the FAs in the practical development of allometric equations and a manual produced that details the procedures to be followed.

Estimation of the below ground biomass ($P_{B(t)\,i}$):

The carbon stocks in below-ground biomass at time *t* achieved by the project activity during the monitoring interval $P_{B(t)}$ shall be estimated for each stratum *i* as follows:

$$P_{B(t)\,i}=E_{(t)\,i} * R * 0.5$$

Where:

$P_{B(t)\,i}$	Carbon stocks in below-ground biomass at time *t* achieved by the project activity during the monitoring interval (t C/ha)
E (t) i	Estimate of above-ground biomass of stratum i at time t achieved by the project activity (t d.m./ha)
R	Root to shoot ratio (dimensionless)
0.5	Carbon fraction of dry matter (t C/t d.m.)

R values will be obtained from table 3A.1.8 of the IPCC good practice guidance for LULUCF.

Project emissions

According to the AR-AMS0001/ version 05, paragraph 47, project emissions are considered negligible and are therefore assumed to be zero.

B.8.1.1. Actual net GHG removals by sinks data:

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B.8.1.1.1. Data to be collected or used in order to monitor the verifiable changes in carbon stock in the carbon pools within the project boundary resulting from the proposed small-scale A/R CDM project activity, and how this data will be archived:

Data variable	Source	Data unit	Measured, calculated or estimated	Frequency (years)	Proportion	Archiving	Comment
Location of the areas where the project activity has been implemented	Field	latitude and longitude	Measured	5	100 %	Electronic, paper	GPS can be used for field survey
A_i - Project activity area of stratum *i*	Field survey	ha	Measured	5	100 %	Electronic, pape	GPS can be used for field survey
Location of the permanent sample plots	Project maps and project design	latitude and longitude	Defined	5	100 %	Electronic, paper	Plot location is registered with a GPS and marked on the map
Diameter of tree at breast height (1.30 m)	Permanen t plot	cm	Measured	5	Each tree in the sample plot	Electronic, paper	Measure diameter at breast height (*DBH*) for each tree that falls within the sample plot and applies to size limits
Height of tree	Permanen t plot	m	Measured	5	Each tree in the sample plot	Electronic, paper	Measure height (*H*) for each tree that falls within the sample plot and applies to size limits
Basic wood density	Literature	tonnes of dry matter per m^3 fresh volume	Estimated	Once		Electronic, paper	
Total CO_2	Project activity	Mg	Calculated	5	All project data	Electronic	Based on data collected from all plots and carbon pools

B.8.1.2. Data for monitoring of leakage (if applicable)

Implementation of the project activity will not displace any area under cropland within the project boundary. Evidence for this is presented in section B.2 and includes:

- reforestation takes place on unproductive cropland of little value to farmers;
- farmers participate in the project voluntarily, and the area and location of reforestation plots is totally at their discretion;

- the area that farmers have set aside for reforestation is only a small proportion of their existing cropland; and they are readily able to absorb the loss of area into their other lands.

There will be no deforestation attributable to the displacement of pre-project activities by the project as there is no more forest available to farmers to deforest within the vicinity of the project area.

If in the event that pre-project activities were to be displaced this would be into existing *savoka* that contain no biomass density higher than that within the project boundary. A land cover analysis from the late 1990s of the different land use systems in the Beforona-Vohidrazana region (which is in the vicinity of the project area) shows that 60% of the land is covered by *savoka* fallows and 12% by *tavy* fields. (Brand and Randriamboavonjy, 1997). Together with upland crops, agroforestry plots and lowland rice fields, these made up 85 % of the land surface. Analyses of satellite images reported by McConnell *et al* in 2004 demonstrated that the "rapid conversion of forest to agricultural land over the past quarter century abated in the past decade" (McConnell 2005). These published data support the farmers view that there is a local stabilisation in available land and that this is already *savoka* fallow.

The project proponents are also implementing a number of measures to intensify the agriculture practices of participating farmers, to provide them with new sources of income and to mitigate any leakage that would occur.

There is no historical or current grazing of animals within the project boundary or in surrounding areas. The project activity will not cause leakage from the displacement of grazing animals. Therefore it is not necessary to monitor the number of domestic grazing animals within the project boundary nor the time-average number of domesticated roaming animals within the project boundary displaced due to the project activity.

Since both the indicators of leakage (the area of the cropland and the number of domesticated grazing animals within the project boundary displaced due to the project activity) are lower than 10 per cent, the *ex post* leakage attributable to the project activity is considered to be zero.

B.8.1.2.1. If applicable, please describe the data and information that will be collected in order to monitor leakage of the proposed small-scale A/R CDM project activity

Not applicable

B.8.2. Describe briefly the proposed quality control (QC) and quality assurance (QA) procedures that will be applied to monitor actual GHG removals by sinks:

A QA/QC plan is detailed in the project documentation and cover procedures for:

- collecting reliable field measurements;
- verifying methods used to collect field data;
- procedures to verify data entry and analysis techniques;
- and data maintenance and archiving.

To guarantee that these procedures are carried out in a repeatable manner, a set of Standard Operating Procedures (SOPs) has been prepared for each step.

Collecting field measurements

Those responsible for the carbon stock measurement will be fully trained in all aspects of the field data collection and data analyses. The extensive training will ensure that they are fully aware of the importance of collecting data as accurately as possible.

They will follow rigidly the SOPs to ensure accurate measurement and re-measurement. The SOPs will cover all aspects of the field measurements and are detailed enough so that any new person working in the field will be able to accurately repeat the previous measurements.

Verifying methods used to collect field data

Checks of the field crews will be conducted to identify errors in field techniques, to verify measurement processes and to correct any identified problems before they are applied. A second type of field check will be used to quantify measurement errors through the complete re-measurement of a number of plots by independent, experienced surveyors other than the original field crews at the end of the fieldwork. About 10% – 20% of the plots will be re-measured this way. Comparison of field data collected at this stage with the original data will show any errors and allow their correction. Identified errors will be expressed as a percentage of all plots that have been rechecked to provide an estimate of the measurement error.

Will there be any quality targets, that if not attained will re-measure the plots? For example the quality targets should be achieved for the measurements:

- Missed or extra trees no error
- Tree species or groups no error
- DBH $< \pm 10\%$
- Height $< \pm 20\%$

Data entry

Field data will be collected firstly using field data sheets and then entered into the electronic worksheets and project database.

To check for data entry errors, an independent person will enter data from about 10%–15% of the field data sheets into the data analysis software. This will be compared to the corresponding data set entered in the standard way to check for errors. Any errors detected will be corrected in the master file. The data analysis software will be developed so that it has checks built into it to highlight potential errors in data

entry. For example, such checks will include tests to check that the diameter limits for a given plot is within the limits set by the field work.

Errors will be reduced by using expert judgment to review the entered data and, if necessary, through comparison with independent data. All personnel involved in measuring and analyzing data should communicate closely to resolve any apparent anomalies before final analysis of the monitoring data can be completed.

Data archiving

Careful attention will be given to the maintenance and storage of data because of the relatively long-term nature of the project activity. Copies of all data analyses, and models; the final estimate of the amount of carbon sequestered; GIS products; and a copy of the measuring and monitoring reports will all be stored in a dedicated and safe place. Given the time frame of the project and the pace of production of updated versions of software and new hardware for storing data, electronic copies of the data and reports will be updated periodically or converted to a format accessible by any future software application.

B.8.3. Please describe briefly the operational and management structure(s) that the project operator will implement in order to monitor actual GHG removals by sinks by the proposed small-scale A/R CDM project activity:

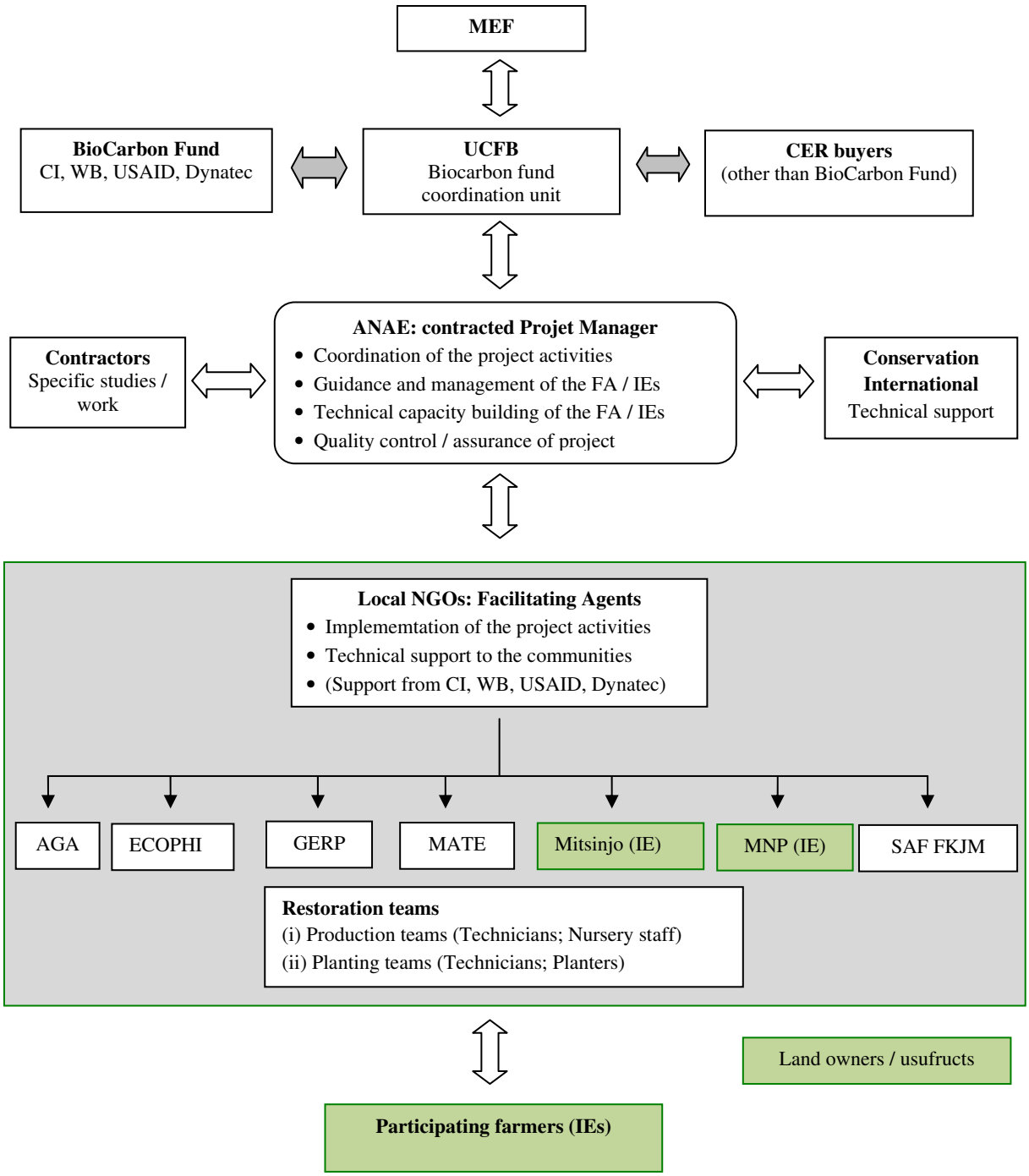

Figure 13. Project management structure

Figure 13 presents how the project is managed and coordinated under the aegis of the Ministère de l'Environnement et Forêt (MEF) - the developer of the project. The Unité de Coordination du Fonds BioCarbone (UFCB) is a government agency that is responsible for overseeing the project on behalf of the MEF.

The ANAE is contracted as the technical Project Manager and is responsible for managing the overall implementation of the project activity. The ANAE is also responsible for carbon monitoring.
The CIREF, another government agency within the MEF, oversees the contractual obligations ANAE has as the Project Manager and monitors the progress of the project.

The ANAE in turn works with seven local associations – called Facilitating Agents (FAs) - who carry out the project activities on the ground with local farmers. (The farmers, as well as certain of the FAs that are usufruct to the land the project activity is taking place on, have carbon rights and are considered as Implementing Entities (EIs).) Much of the membership of these local associations is made up of local farmers and as such they are representative of the local communities. The ANAE coordinates the project activities amongst the seven FAs; provides them with technical guidance and supervision; ensures that they have the technical capacity to competently carry out the project activities; and carries out quality control and assurance of the project implementation. The FAs also receive technical guidance and support from CI, the World Bank BioCarbon Fund, USAID and Dynatec.

Each FA has a Restoration Team, made up of a Production Team (responsible for management of the nursery and production of the seedlings) and a Planting Team (responsible for planting of the seedlings and maintenance of the plantations). Local people comprise the Restoration Teams. Each FA is responsible for a specific geographical zone and works together with the farmers (the Implementing Entities) in their zone to carry out reforestation. Certain FAs (MNP and Mitsinjo) carry out the project activity on land that is not presently occupied by farmers. Here the Implementing Entities are the FAs themselves.

CI provides continued technical support to the project, as well as reinforcement of the role of UFCB by providing technical support and being an additional form of institutional memory for the project.

A monthly coordination meeting is held to update project data, to communicate project progress to all parties and to address any management issues. All of the parties involved in the implementation of the project - UCFB, CIREF, ANAE, CI and the FAs - participate in this meeting. Each FA presents the progress that they have made over the preceding month and any problems that they have encountered. This is compared with ANAE's monitoring and verification of their activities. The meeting enables timely evaluation of the project and allows the parties to quickly resolve technical and organisational problems. The meeting constitutes an efficient means of communicating information and exchanging techniques between all of the FAs. Lessons learnt are shared, specific technical themes are discussed and best practices are integrated into the project activities of all FAs. The meeting forum allows the resolution of technical problems and provides assurance that the FAs maintain best practices. The activity plan for the following month is also established during the meeting.

The ANAE has a permanent office in Andasibe staffed by two technicians who have specialist know-how in the propagation of native plant species and ecological restoration techniques. The technicians each have more than 10 years of experience in the region and have been provided additional training by a CI consultant. They provide permanent technical support to the FAs as well as constant monitoring of the FAs' activities in order to assure the technical quality of the reforestation.

The ANAE has a team dedicated to the project that is supervised by the director of the ANAE. It manages the implementation of the project activity and the carbon monitoring (including measurement of boundaries, establishment of the sampling plots, measurement of AGB, potential monitoring of leakage, data management and archiving etc.). The team comprises the following members:

- A project manager responsible for the coordination of the implementation of the project activity, as well as the carbon monitoring of the project. The project manager is the focal point for all the project stakeholders.
- A forestry specialist responsible for overseeing seedling production and replanting.
- An environmental economist responsible for the socio-economic monitoring and evaluation of the project.
- And a GIS specialist responsible for management of the project database and data archiving.

The table below details the roles and responsibilities of each of the project personnel who carry out the project activity.

Table 13. Roles and responsibilities of the project personnel

Role	Responsibilities
ANAE Project Supervisor	- Supervision of activities - Institutional relations and communication - Monitoring and evaluation of the project - Facilitation of management coordination meetings - Consolidation of data and report production
ANAE Coordinator	- Planning and coordination of the work of technicians - Administrative and organisational management - Local institutional relations and communication - Monitoring of project activities - Management of seed and grafting stocks and project tools - Facilitation of monthly management meetings - Production of periodic reports of activities
ANAE Technicians	- Supervision of activities on the ground - Training of the AF technicians - Support of the AF technicians in the training of farmers - Support & monitoring of farmers' adoptation of the activities - Provision of tools and seeds to the farmers - Production of weekly technical reports
Specialist trainers	- Training of the AF technicians in specific themes - Evaluation of training given

Role	Responsibilities
	- Conception of supporting material that the AF technicians can readlily use - Production of reports on the training
AF Project Managers	- Strategic orientation of the activities - Oversight of the implementation of the activities - Monitoring of the activities - Participation in the monthly coordination meetings - Production of reports of the activities
AF Technical Managers	- Identification of the zones of intervention - Identification of priority activities - Coordination & planning of the activities of technicians - Participation in the training sessions - Training of farmers - Follow up of activity implementation - Participation in monthly coordination meetings - Production of monthly reports of activities
AF Technicians	- Monitoring & support of the demonstration plots - Identification of farmers and their plots - Appraisal of the needs of farmers - Supply of seeds to farmers - Participation in all training workshops - Training & support of farmers - Organisational support to farmers - Support to the work of the nursery staff - Participation in monthly coordination meetings - Production of summaries of activities
Nursery staff	- Establishment of nursery production of native species & fruit trees - Collection of seeds & growth stock (native forest & fruit trees) - Production of grafting root stock for fruit trees - Carrying out all activities relevant to nursery production & maintenance - Keeping of daily records of work done

Role	Responsibilities
Farmers	- Participation in all training given by the ANAE and AFs - Participation in village exchange visits - Application of the techniques advised by ANAE where applicable - Establishment of small plots for the production of vegetable material

B.9. Date of completion of the baseline study and the name of person(s)/entity(ies) determining the baseline and the monitoring methodology:

The baseline study of *savoka* fallows described here was carried out by Conservation International Madagascar between October 2008 and May 2009. The full report "Rapport de mission sur l'inventaire de biomasse du corridor Ankeniheny Zahamena (CAZ) et du corridor Fandriana-Vondrozo (COFAV)" is included in the references supporting this PDD.

Prior to this determination of the baseline, preliminary carbon stock measurements and definition of the monitoring plan was done by Winrock International and completed with technical assistance from Conservation International on 12/22/2004 (Winrock International, Measurement and Monitoring Plan for the Andasibe-Mantadia Corridor Restoration and Conservation Carbon Project, Madagascar).

Contact information of the entities that determined the baseline and monitoring methodology are as follows:

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Neither Winrock International nor Conservation International is a project participant.

SECTION C. Estimation of ex ante net anthropogenic GHG removals by sinks:

The full details of the main aggregated results presented throughout this section are provided in the accompanying excel spreadsheet.

C. 1. Estimated baseline net GHG removals by sinks:

In the absence of the project activity the carbon stock in the living biomass pool of woody perennials would be expected to decrease. In this case, AR-AMS0001 / Version 05, Section II, 6. (b) states that the baseline net GHG removals by sinks shall be assumed to be zero.

The baseline carbon stocks in the carbons pools are constant and equal to existing carbon stocks measured at the start of the project activity.

Measurement of baseline carbon stocks

Between October 2008 and May 2009 Conservation International determined the biomass of *savoka* fallows within the project area. A standard complete-harvesting method was used to determine the biomass of 57 random sample plots. All of the vegetation within a 2 x 2 m square was harvested to the level of the soil surface. The harvested sample was weighed fresh and then a well-mixed sub-sample of 150 – 200 g was taken to determine the dry-to-wet mass ratio. The sub-sample was weighed in the field and then dried in an oven at 85 °C to a constant mass.

The dry biomass is calculated by:

Dry biomass = (mass of dry sub-sample / mass of fresh sub-sample) x fresh mass of whole sample

The biomass density (t/ha) is calculated by multiplying the dry biomass by an expansion factor to account for the plot size. The full report, included in the supporting documents, details the measurement protocol and results.

The random sampling recorded 14 different types of *savoka* (see Table 14), each characterised by the domination of certain species. The most frequently encountered *savoka* type were, in order of importance, *Psiadia altisima* savoka (32 % of the total sample), *Lantana camara* savoka (21 %), *Aframomum* dominated savokas (16 %) and *Pteridium aquilinium* savoka (7 %). Together *savoka* fallows that have no trees or woody perennials and for which only below-ground biomass of grasses are considered constitute 26 % of the *savoka*. These grassland fallows include the following *savoka* types: *Imperata cyclindrica*, *Stenotaphrum dimidiatum* (Ahipisaka), *Paspalum paniculatum* (Mahabanky), Sompatra, *Pteridium aquilinium*, *Sticherus flagellaris* (Rangotohara) and *Dycranopteris*. The age of most of the savoka types varied between 1 and 4 years with the exception of *Pteridium aquilinium*, which reached 13 years. The mean age for all *savoka* types was 3 years.

The *Aframomum* & *Psiadia* savoka represents the highest above ground biomass of 45.2 t/ha. The *Psiadia altissima* and *Rubus* savoka are in the order of 20 t/ha. In contrast, all of the other *savoka* types dominated by woody vegetation are of low above ground biomass.

Table 14. Summary of the different *savoka* types sampled within the project area

Savoka type	Above ground biomass (t/ha)				n	% of sample	Age range	Average age
	Mean	Std. Dev.	Min.	Max.				
Aframomum	16.8	-	-	-	1	2		2
Aframomum &Harongana	42.4	16.8	25.5	60.3	4	7	4	4
Aframomum & Psiadia	45.2	5.5	38.9	51.3	4	7	-	-
*Stenotaphrum dimidiatum**	29.9	-	-	-	1	2	-	2
Clidemia hirta	12.6	8.0	8.5	21.8	3	5	2 - 4	2.7
*Dycranopteris**	7.5	1.7	6.4	8.7	2	4	1 - 4	2.5
*Imperata cylindrical*l*	8.8	1.1	8.0	10.0	3	5	1 - 3	1.3
Lantana camara	17.8	6.4	5.6	29.5	12	21	1 - 3	1.5
*Paspalum paniculatum**	4.2	-	-	-	1	2	-	2
Psiadia altissima	26.0	16.1	7.7	60.4	18	32	2 - 13	4.3
*Pteridium aquilinum**	13.0	7.0	8.4	23.3	4	7	3 - 4	3.3
*Sticherus flagellaris**	6.2	-	-	-	1	2	-	1
Rubus	21.1	-	-	-	1	2	-	4
Sompatra*	39.1	-	20.8	57.4	2	4	2 - 3	2.5

* These *savoka* types are grasslands, have no trees or woody vegetation and therefore only their below-ground biomass is considered

From the 57 sample plots the mean above ground biomass was measured to be 19.44 (t d.m./ha). Table 16 gives the details of the 57 plots and their living biomass.

Carbon stocks in above-ground biomass

The carbon stocks in the above-ground biomass $B_{A(t)}$ in the absence of the project are calculated by:

$B_{A(t)} = M_{(t)} * 0.5$

where:

$B_{A(t)}$	Carbon stocks in above-ground biomass at time t in the absence of the project activity (t C/ha)
$M_{(t)}$	Above-ground biomass at time t that would have occurred in the absence of the project activity (t d.m./ha)[33]
0.5	Carbon fraction of dry matter (t C/t d.m.)

[33] d.m. = dry matter

Since the baseline carbon stocks in living biomass are constant and equal to existing carbon stocks measured at the start of the project activity (AR-AMS0001 / Version 05, Section II, 6. (b)):

$M_{(t=0)} = M_{(t)}$

The carbon stocks in above-ground biomass at time t in the absence of the project activity (t C/ha) are therefore:

$B_{A(t=0)} = B_{A(t)} = 19.44 * 0.5$
$= 9.72$ (tC/ha)

Carbon stocks in below-ground biomass

The average below-ground carbon stock is estimated as follows:

$B_{B(t=0)} = B_{B(t)} = 0.5 * (M_{grass} * R_{grass} + M_{woody\ (t=0)} * R_{woody})$

where:

$B_{B(t)}$	Carbon stocks in below-ground biomass at time *t* that would have occurred in the absence of the project activity (t C/ha)
M_{grass}	Above-ground biomass in grass on grassland at time *t* that would have occurred in the absence of the project activity (t d.m./ha)
$M_{woody\ (t=0)}$	Above-ground biomass of woody perennials at *t=0* that would have occurred in the absence of the project activity (t d.m./ha)
R_{woody}	Root to shoot ratio of woody perennials (t d.m./t d.m.)
R_{grass}	Root to shoot ratio for grasses (t d.m./t d.m.)

Given that the project area is cropland consisting of a mosaic of diverse *savoka* types neither its division into strata nor the distinction of grassland from cropland is appropriate. A single strata of *savoka* was used in the estimation of the baseline net GHG removals by sinks, with $B_{B(t)}$ being obtained from the mean of the 57 sample plots. Table 15 presents the root to shoot ratios used to estimate the below ground biomass from the measured above ground biomass.

Table 15. Root to shoot ratios used to estimated the below ground biomass

Savoka type	R_{woody} / R_{grass}	Source
Aframomum	0.42	1
Aframomum and *Harongana*	0.42	1
Aframomum and *Psiadia*	0.42	1
Clidemia hirta	0.42	1

Dycranopteris	1.58	1
Imperata cylindrical	0.55	2
Lantana camara	0.42	1
Paspalum paniculatum	1.58	1
Psiadia altissima	0.19	2
Pteridium aquilinum	1.58	1
Rubus	0.53	2
Stenotaphrum dimidiatum	1.58	1
Sticherus flagellaris	1.58	1
Sompatra	1.58	1

Sources:

1 Table 3A.1.8 of the IPCC good practice guidance for LULUCF

Tropical grassland R_{grass} 1.58

Secondary tropical forest R_{woody} 0.42

2 From published measurements taken within the vicinity of the project area by Styger *et al* 2009

Using the above R_{woody} and R_{grass} values, which varied with species, the mean baseline carbon stocks in the below-ground biomass were estimated to be:

$B_{B(t=0)} = B_{B(t)} = 5.85$ *(tC/ha)*

The data and calculations used to estimate the above and below ground biomass are presented in Table 16. The mean baseline carbon stocks in living biomass within the project area were calculated as 15.6 tC/ha (standard deviation ±11.0; minimum 2.2; maximum 45.3; n = 57; 95 % confidence level 2.89). The table also shows that the age of the *savoka* fallow bore little relation to the living biomass for a given *savoka* type.

Table 16. Details of the data and calculation of the carbon stocks in living biomass

Savoka type	$M_{(t)}$ (t d.m./ha)	$B_{A(t)}$ (tC/ha)	R_{woody} / R_{grass}	$B_{B(t)}$ (tC/ha)
Aframomum	16.75	8.38	0.42	3.52
Aframomum & Harongana	60.33	30.17	0.42	12.67
Aframomum & Harongana	52.89	26.45	0.42	11.11
Aframomum & Harongana	25.50	12.75	0.42	5.36
Aframomum & Harongana	31.05	15.53	0.42	6.52
Aframomum & Psiadia	42.70	21.35	0.42	8.97
Aframomum & Psiadia	51.26	25.63	0.42	10.76
Aframomum & Psiadia	47.87	23.94	0.42	10.05
Aframomum & Psiadia	38.92	19.46	0.42	8.17

Savoka type	$M_{(t)}$ (t d.m./ha)	$B_{A(t)}$ (tC/ha)	R_{woody} / R_{grass}	$B_{B(t)}$ (tC/ha)
*Stenotaphrum dimidiatum**	29.92	14.96	1.58	23.64
Clidemia hirta	21.84	10.92	0.42	4.59
Clidemia hirta	7.61	3.81	0.42	1.60
Clidemia hirta	8.48	4.24	0.42	1.78
*Dycranopteris**	6.35	3.18	1.58	5.02
*Dycranopteris**	8.69	4.35	1.58	6.87
*Imperata cylindrical**	8.33	4.17	0.55	2.29
*Imperata cylindrical**	7.99	4.00	0.55	2.20
*Imperata cylindrical**	9.97	4.99	0.55	2.74
Lantana camara	19.02	9.51	0.42	3.99
Lantana camara	24.13	12.07	0.42	5.07
Lantana camara	20.36	10.18	0.42	4.28
Lantana camara	12.82	6.41	0.42	2.69
Lantana camara	17.07	8.54	0.42	3.58
Lantana camara	22.26	11.13	0.42	4.67
Lantana camara	17.79	8.90	0.42	3.74
Lantana camara	29.46	14.73	0.42	6.19
Lantana camara	20.06	10.03	0.42	4.21
Lantana camara	5.62	2.81	0.42	1.18
Lantana camara	13.41	6.71	0.42	2.82
Lantana camara	11.12	5.56	0.42	2.34
*Paspalum paniculatum**	4.16	2.08	1.58	3.29
Psiadia altissima	57.94	28.97	0.19	5.50
Psiadia altissima	14.76	7.38	0.19	1.40
Psiadia altissima	25.40	12.70	0.19	2.41
Psiadia altissima	25.39	12.70	0.19	2.41
Psiadia altissima	20.49	10.25	0.19	1.95
Psiadia altissima	50.82	25.41	0.19	4.83
Psiadia altissima	27.94	13.97	0.19	2.65
Psiadia altissima	27.97	13.99	0.19	2.66
Psiadia altissima	22.22	11.11	0.19	2.11
Psiadia altissima	7.69	3.85	0.19	0.73
Psiadia altissima	60.36	30.18	0.19	5.73
Psiadia altissima	37.99	19.00	0.19	3.61

Savoka type	$M_{(t)}$ (t d.m./ha)	$B_{A(t)}$ (tC/ha)	R_{woody} / R_{grass}	$B_{B(t)}$ (tC/ha)
Psiadia altissima	26.95	13.48	0.19	2.56
Psiadia altissima	10.23	5.12	0.19	0.97
Psiadia altissima	13.83	6.92	0.19	1.31
Psiadia altissima	11.25	5.63	0.19	1.07
Psiadia altissima	10.14	5.07	0.19	0.96
Psiadia altissima	17.19	8.60	0.19	1.63
*Pteridium aquilinum**	23.33	11.67	1.58	18.43
*Pteridium aquilinum**	10.55	5.28	1.58	8.33
*Pteridium aquilinum**	9.57	4.79	1.58	7.56
*Pteridium aquilinum**	8.37	4.19	1.58	6.61
*Sticherus flagellaris**	6.23	3.12	1.58	4.92
Rubus	21.05	10.53	0.53	5.58
Sompatra*	57.37	28.69	1.58	45.32
Sompatra*	20.79	10.40	1.58	16.42
Single project strata	**23.15**	**11.58**		**5.85**

* These *savoka* types are grasslands, have no trees or woody vegetation and therefore only their below-ground biomass is considered

Baseline carbon stocks

The baseline carbon stocks in the carbons pools are constant and equal to existing carbon stocks measured at the start of the project activity. The baseline carbon stocks are determined by:

$$B_{(t)} = \sum_{i=1}^{I} (B_{A(t)i} + B_{B(t)i}) * A_i$$

where:

$B_{(t)}$	Carbon stocks in the living biomass within the project boundary at time *t* in the absence of the project activity (t C)

$B_{A(t)\,i}$	Carbon stocks in above-ground biomass at time t of stratum i in the absence of the project activity (t C/ha)
$B_{B(t)\,i}$	Carbon stocks in below-ground biomass at time t of stratum i in the absence of the project activity (t C/ha)
A_i	Project area of stratum i (ha)
i	Stratum *i* (I = total number of strata)

For the single strata applicable to this project the baseline carbon stocks are:

$$B_{(t=0)} = B_{(t)} = (9.72 + 5.85)*411.3$$
$$= 6{,}404.3 \text{ (t C)}$$

Baseline net GHG removals by sinks

The baseline net GHG removals by sinks can be calculated by:

$$\Delta C_{BSL,t} = (B_{(t)} - B_{(t-1)})*(44/12)$$

where:

$\Delta C_{BSL,t}$	Baseline net GHG removals by sinks (t CO_2-e)
$B_{(t)}$	Carbon stocks in the living biomass pools within the project boundary at time *t* in the absence of the project activity (t C)

Since $B_{(t=0)} = B_{(t)}$

$$\Delta C_{BSL,t} = 0$$

The baseline net GHG removals by sinks within the project in the absence of the project activity is **0**.

C. 2. Estimate of the actual net GHG removals by sinks:

Stratification

For the *ex ante* estimation of the sum of verifiable changes in carbon stocks the project area was divided into five strata according to age class (see section B.5) and soil type. A consistent proportion of the three tree species-categories was used throughout the planting area and so no other distinction necessitating the further division of the project into homogenous carbon pools was necessary.

Carbon stocks in above-ground biomass

To model growth, the mixture of the three categories of species planted was treated as comprising three groups of species of the same growth characteristics: Category 1, fast growing species (40 % of planting); Category 2, medium growing species (30 %); and Category 3, slow growing species (30 %). The allometric equations used to model the above ground biomass accumulation of each tree category over time are presented in Table 17. The biomass growth models are based on the much-used Chapman-Richards function (Richards, 1959, Pienaar and Turnbull, 1973). The parameters of the model are derived from field measurements of the above ground biomass of mature forest within the vicinity of the project area carried out by Winrock[34] (see the supporting documents). The biomass growth models as well as the detailed calculation of the *ex ante* GHG removals are presented in the accompanying spreadsheet.

It should be noted that the *ex ante* calculations cannot predict differing biomasses for each of the two soil types because there are no existing growth models for each soil type nor empirical data that would allow the derivation of such growth models.

Table 17. Allometric equations used to estimate the above-ground biomass under the project scenario

	Growth model	**Maximum above ground biomass (t d. m. /ha)**	**Growth speed**	**Curve shape**
Category 1 (fast growth)	AGB = 200.7*(1-EXP(-0.0385*T))^1.25	200.7	0.0385	1.25
Category 2 (medium growth)	AGB = 150.5*(1-EXP(-0.032*T))^1.25	150.5	0.032	1.25
Category 3 (slow growth)	AGB = 150.5*(1-EXP(-0.02*T))^1.25	150.5	0.02	1.25

Where:
AGB = above ground biomass (t d.m./ha)
T = age, years

The carbon stocks in above-ground biomass $N_{A(t)\,i}$ is calculated per stratum *i* as follows:

$N_{A(t)\,i} = T_{(t)i} * 0.5$

where:

$N_{A(t)\,i}$ Carbon stocks in above-ground biomass at time t under the project scenario (t C/ha)

$T_{(t)i}$ Above-ground biomass at time t under the project scenario (t d.m./ha)

0.5 Carbon fraction of dry matter (t C/t d.m.)

The above ground biomasses of each of the three species categories, the summed above ground biomass as well as the carbon stocks in above ground biomass estimated using the above allometric equations are summarised in Table 18 for each of the *ex ante* strata at t = 20.

[34] Nicholas Martin, David Shoch, Aaron Dushku, Tim Pearson and Sean Grimland. 2004. Measurement and Monitoring Plan for the Andasibe-Matandia Corridor Restoration and Conservation Project, Madagascar

Table 18. Carbon stocks in the above ground biomass for each strata *i* at t = 20

i	$T_{(t=20)i}$ (t d.m./ha)	$N_{A(t=20)i}$ (tC/ha)
2007_{s1}	188.89	94.45
2008_{s1}	180.42	90.21
2008_{s2}	180.42	90.21
2009_{s1}	171.75	85.88
2009_{s2}	171.75	85.88

Carbon stocks in below-ground biomass

The below-ground biomass, $N_{B(t)}$ is calculated per stratum *i* as follows:

$N_{B(t)\,i}=T_{(t)} * R * 0.5$

where:

$N_{B(t)\,i}$ Carbon stocks in below-ground biomass at time t under the project scenario (t C/ha)

$T_{(t)}$ Above-ground biomass at time t under the project scenario (t d.m./ha)

R Root to shoot ratio (t d.m./ t d.m.)

0.5 Carbon fraction of dry matter (t C/t d.m.)

The $N_{B(t)\,i}$ of each strata was calculated using a conservative *R* value of 0.37 for all three categories of tree species.

The below ground biomasses calculated for each of the three species categories, as well as the carbon stocks in below ground biomass, are summarised in Table 19 for each of the *ex ante* strata at t = 20.

Table 19. Carbon stocks in below ground biomass for each strata *i* at t = 20

I	$T_{(t=20)i}$ (t d.m./ha)	***R*** (t d.m./ t d.m.)	$N_{B(t)\,i}$ (tC/ha)
2007_{s1}	188.89	0.37	34.94
2008_{s1}	180.42	0.37	33.38
2008_{s2}	180.42	0.37	33.38
2009_{s1}	171.75	0.37	31.77
2009_{s2}	171.75	0.37	31.77

Total carbon stocks in living biomass

The carbon stocks for the project scenario at the starting date of the project activity (*t*=0) shall be the same as the baseline stocks of carbon at the starting date of the project (t=0). Therefore:

$N_{(t=0)} = B_{(t=0)} = 6,404.3$ *(t C)*

For all other years, the carbon stocks within the project boundary ($N_{(t)}$) at time t shall be calculated as follows:

$$N_{(t)} = \sum_{i=1}^{I} (N_{A(t)\,i} + N_{B(t)\,i}) * A_i$$

where:

$N_{(t)}$ Total carbon stocks in biomass at time t under the project scenario (t C)

$N_{A(t)\,i}$ Carbon stocks in above-ground biomass at time t of stratum *i* under the project scenario (t C/ha)

$N_{B(t)\,i}$ Carbon stocks in below-ground biomass at time t of stratum *i* under the project scenario (t C/ha)

A_i Project activity area of stratum *i* (ha)

i Stratum *i* (I = total number of strata)

Table 20 presents the values of $N_{A(t=20)}$ and $N_{B(t=20)}$ for each *ex ante* strata arrived at through the application of the above equation.

Table 20. Summary of the carbon stocks in living biomass under the project scenario

I	$N_{A(t=20)\,i}$ (t C/ha)	$N_{B(t=20)\,i}$ (t C/ha)	A_i (ha)	$N_{(t=20)\,i}$ (t C)
2007_{s1}	94.45	34.94	32.2	4,179.3
2008_{s1}	90.21	33.38	62.3	7,699.5
2008_{s2}	90.21	33.38	12.4	1,532.5
2009_{s1}	85.88	31.77	223.3	26,271.6
2009_{s2}	85.88	31.77	81.0	9,529.8

The total carbon stocks in biomass under the project scenario ($N_{(t=20)}$) are 49,212.6 (t C):

$N_{(t=20)}$ = 4,179.3 + 7,699.5 + 1,532.5 + 26,271.6 + 9,529.8
= 49,212.6 (t C)

Since:

$N_{(t=0)} = B_{(t=0)}$ = 6,404.3 (t C)

The actual net change in carbon stocks in biomass under the project scenario are equal to:

49,212.6 – 6,404.3
= 42,808.3 (t C)

No fertilizer will be used in the reforestation activity. According to AR-AMS0001 / 05 project emissions are considered insignificant:

$GHG_{PROJ,\,t} = 0$

where:

$GHG_{PROJ,\,t}$ Project emissions (t CO_2-e/year)

$\Delta C_{PROJ,t}$ the *ex ante* actual net greenhouse gas removals by sinks under the project scenario were calculated by application of the equations in paragraphs 24 and 26 of AR-AMS0001 / 05 and are estimated to be **156,964 t CO_2e**.

C. 3. Estimated leakage:

The area under cropland displaced due to the project activity is less than 10 % of the total project area, as has been demonstrated in section B.2. The current land pressures together with the local, effective enforcement of regulations against clearing forest mean that the only land available to farmers is the same *savoka* fallow lands that constitute the larger landscape. Consequently, if displacement of cropland from the project area were to take place it would be into already degraded lands and would not lead to any net increase in anthropogenic GHG emissions outside the project boundary.

There is no grazing of domesticated animals within the project boundary, nor is there a tradition or current practice of grazing animals in the larger landscape encompassing the project area.

As such, in accordance with the applied methodology, leakage that is attributable to the project activity is treated as zero:

$L_t = 0$

where:

L_t Leakage attributable to the project activity at time t (t CO_2-e/year)

C. 4. The sum of C. 2. minus C.1. minus C.3. representing the net anthropogenic GHG removals by sinks of the proposed small-scale A/R CDM project activity:

The net anthropogenic GHG removals by sinks
= C.2 – C.1 – C.3
= 156,964 – 0 – 0
= 156,964 t CO2 e

C. 5. Table providing values obtained when applying equations from the approved methodology:

Year	Estimation of baseline net GHG removals by sinks (tonnes of CO_2 e)	Estimation of actual net GHG removals by sinks (tonnes of CO_2 e)	Estimation of leakage (tonnes of CO2 e)	Estimation of net anthropogenic GHG removals by sinks (tonnes of CO2 e)
2007	0	-1,320	0	-1,320
2008	0	-2,357	0	-2,357
2009	0	-10,062	0	-10,062
2010	0	9,134	0	9,134
2011	0	9,880	0	9,880
2012	0	10,291	0	10,291
2013	0	10,520	0	10,520
2014	0	10,632	0	10,632
2015	0	10,663	0	10,663
2016	0	10,637	0	10,637
2017	0	10,567	0	10,567
2018	0	10,464	0	10,464
2019	0	10,336	0	10,336
2020	0	10,189	0	10,189
2021	0	10,026	0	10,026
2022	0	9,851	0	9,851
2023	0	9,668	0	9,668
2024	0	9,478	0	9,478
2025	0	9,283	0	9,283
2026	0	9,084	0	9,084
Total (tonnes of CO2 e)	**0**	**156,964**	**0**	**156,964**

SECTION D. Environmental impacts of the proposed small-scale A/R CDM project activity:

The design of the project has been done so as to meet the Climate, Community and Biodiversity Standards and the project will be submitted for CCBS validation and verification. The project activity is implemented to deliver robust and credible greenhouse gas reductions whilst also delivering net positive benefits to local communities and biodiversity.

D.1. Provide analysis of the environmental impacts, including transboundary impacts (if any):

The project is designed to simultaneously enhance native biodiversity, human and ecosystem well-being through restoration of degraded land to a mosaic of integrating, diverse and productive natural ecosystems. Ecological restoration is a tool to achieve this environmental integrity, creating habitats that

are inherently resilient to disturbance and capable of adapting to environmental (including climatic) change.

Context of the project area

Madagascar has very high levels of endemism in terms of its flora and fauna (see, for example, Conservation International's Global Biodiversity Hotspots, WWF/IUCN Centres of Plant Diversity). It has been stated "A hectare of forest lost in Madagascar has a greater negative impact on global biodiversity than a hectare of forest lost virtually anywhere else on the planet" (Ganzhorn et al. 1997).

The east Madagascar rainforests in proximity to the project area are considered a high priority by a number of global conservation analyses (USAID priority conservation zone; WWF Global 200 Ecoregion 10; BirdLife International's Important Bird Areas zone MG054, critical priority). The project area has been designated a zone of high conservation importance (Projet GEF/PRIF/FEM, 1995). The criteria used to select such a zone include:

- biological importance (species richness and abundance, endemism (local, regional, national));
- ecological functionality (within the ecoregion and representation); and
- threats (pressures and fragmentation).

Habitat continuity was a stated conservation priority at the GEF workshop in Madagascar, 1995. This outcome was integrated into Madagascar's national environmental action plan and forest corridors were proposed for several reserve networks within the Andasibe-Mantadia region as a conservation priority area.

For the strategy period of 2003-2008, USAID has identified three priority zones requiring an ecoregional based conservation and development approach, one of which is the Andasibe/Mantadia-Zahamena Corridor (USAID 2003).

Environmental Impacts of Restoration

Hydrology: The tree canopy will increase water transpiration locally and will rapidly (within 3 - 4 years) provide vegetation cover, which will reduce the impact of heavy rainfall on soils (see below). The canopy cover will also protect the ground from direct sun and thus reduce evaporation from the soil.

Soils: The planting of native forest trees will help to keep top-soils intact due to the binding activity of the tree roots. As clusters start to grow, leaf fall will start to increase soil quality through the addition of humic matter and cycling of nutrients. Once fauna start to frequent planted areas, they will also start to make a positive contribution to soil quality and nutrient levels, as animals drop faeces and vegetable matter whilst feeding. The tree canopy will protect the soil from erosion when heavy rains occur, as will the developing root systems.

Biodiversity: Obvious benefits to biodiversity include providing connectivity, so enhancing the viability of populations of species through facilitation of gene flow and simultaneously improve the opportunity to

track climate change (Bennett, 1999). Restoration of connectivity will increase the effective size of all the protected forests, especially the small vulnerable Analamazaotra Special Reserve and Vohimana reserves, and so enhance the survival of many species in the long-term. The connectivity will also incorporate currently unprotected species, as well as many narrow range endemic species that currently occur only outside the protected areas. Of particular interest is the palm *Ravenea louvelii*, only found on a single ridge top within the Forest Station. The restoration of natural forest should also ultimately bring economic benefits to the local communities as eco-tourism (particularly for lemurs) is the mainstay of the local economy.

Ecological functions: Forest restoration will bring considerable benefits to the ecological functioning of the landscape over the status quo of *savoka*. Several aspects of ecological functioning have already been mentioned above, but in essence the difference will be between a habitat with poor ecological function and a natural, local-type forest ecosystem, with all the huge range of ecological functions occurring within this habitat.

Beyond the project boundary, the project aims to re-establish natural forest links to re-create an intact band of over 300km of native forest and will thus have benefits over a far greater area than that of direct project activities. Not only will this be contributing to the mitigation of human induced climate change, but it will also address one problem resulting from climate change - potentially enabling organisms currently trapped in forest fragments, to move to more suitable habitat through the provision of linkages as climate change alters the location of their required habitats. It also has the potential to provide environmental services such as improving regional climatic oscillations; enhancing water supply; watershed protection; enhancement of genetic stock of potential medicinal plants and crops; reduced soil erosion and resultant siltation of waterways.

D.2. If any negative impact is considered significant by the project participants or the host Party, a statement that project participants have undertaken an environmental impact assessment, in accordance with the procedures required by the host Party, including conclusions and all references to support documentation:

No significant, negative environmental impact is expected to result from the project activities.

Malagasy laws pertaining to the project activity (the "Charte de l'Environnement Malagasy"[35] and the "Mise en Compatibilité des Investissements avec l'Environnement (MECIE)"[36]) do not prescribe an environmental impact assessment (EIA) for the restoration of natural forest over an area of 411.3 ha that is comprised of discrete plots.

The Malagasy laws that define whether an EIA is necessary are as follows: Annex 1 of the MECIE decree lists the private or public activities and investment projects for which an EIA is obligatory. In general an

[35] Loi n° 90-033 du 21 décembre 1990 portant Charte de l'environnement, modifiée et complétée par les lois n° 97-012 du 06 juin 1997 et n° 2004-015 du 19 août 2004

[36] Décret MECIE n° 99-954 du 15 décembre 1999, modifié par le décret n° 2004-167 du 03 février 2004

EIA must be undertaken for all actions that could generate an ecological imbalance or have detrimental consequences for the environment:

- All developments, constructions and construction works that can affect sensitive zones;[37]
- Any plan, programme or policy that can modify the natural environment or the utilisation of natural resources, and / or the quality of the human environment in the urban or rural context;
- Developments, constructions and construction works that are likely by their technical nature, their extent and the sensitivity of the environment where they are established to have detrimental consequences on the environment.

In specific reference to the forestry sector and to activities that could affect natural resources, Annex 1 of the MECIE, prescribes an EIA for:

- All introductions of new species, animal or vegetable, or of genetically modified organisms into the national territory;
- Any forestry exploitation of more than 500 ha;
- Any collection and / or hunting and sale of species not ever having been the object of commercialisation before;
- Any project for the creation of parks and reserves, terrestrial or marine, of a national or regional scale;
- Any introduction of species present in Madagascar but that were not previously present in the area of introduction;
- Any project of sport hunting or fishing.

D.3. Description of planned monitoring and remedial measures to address significant impacts referred to in section D.2. above:

No significant negative impacts are foreseeable. However, to fulfil the requirements of the CCB Standard, the PP will implement a full monitoring plan on the biodiversity impact of the project activity. This will aim to quantify and document the changes in biodiversity resulting from the project activities both within and outside the project boundaries. Potential variables may include: species abundance; population size, range, trends and diversity; habitat area, quality and diversity; landscape connectivity; and forest fragmentation. The PP is committed to implementing the monitoring plan within 12 months of validation against the CCB Standard.

SECTION E. Socio-economic impacts of the proposed small-scale A/R CDM project activity:

The project is designed meet the CCB Standard, providing multiple-benefits that have positive social and environmental impacts. The project will improve the social and economic well-being of the participating communities and ensures that costs and benefits are equitably shared.

E.1. Provide analysis of the socio-economic impacts, including trans-boundary impacts (if any):

[37] Arrêté interministériel n° 4355/97 du 13 mai 1997 portant définition des zones sensibles ainsi que l'arrêté N° 18177/04 du 27 septembre 2004 portant définition et délimitation des zones forestières sensibles.

Socio-economic aspects of the project have been evaluated using the methodology required by the World Bank's Safeguard Assessment and the Climate, Community and Biodiversity Standards, in particular the criteria and requirements for community and relevant cross-cutting issues (Climate, Community and Biodiversity Alliance, 2005).

Economic

The feasibility study for the project estimated that 85 % of the plots that farmers have set aside for the project activity are considered by them to be unproductive *savokas* of no value as cropland.

The farmers participating in the project have done so voluntarily. Moreover the area and location of cropland that they have set aside for the project activity has been totally at their discretion. This approach has ensured that participating farmers have minimised their risk in carrying out the project activity.

Similarly farmers undertake the different forms of agricultural intensification supported by the project of their free will. These new forms of farming present a risk to subsistence farmers in that they are unknown to them and untried by them. The project has established demonstration plots to prove that the new techniques work and is promoting techniques that have already proven successful in the region.

The risk of investing in agricultural intensification is counterbalanced by the increasingly large risks of continuing with *tavy*. Most households interviewed during the project feasibility study were seeking farming alternatives that did not involve burning. Reasons for this include, *inter alia*: the shortage of still productive *savoka* fallows; the unavailability of forest; the local enforcement of laws outlawing the felling and burning of forest; and the large distances between homesteads and *tavy* sites.

As a result, people in the region are seeking out technical assistance to modify their practices. The project is providing them with this as well as a range of alternative agricultural practices.

Capacity development

The project structure aims to maximize the use of existing resources (such as effective and diverse communication networks, positive relations and trust between NGOs and subsistence farmers), whilst putting into place resources currently lacking (e.g. technical capacity). Equity is promoted in all aspects of the project. This is done, for example, through actively encouraging input from all stakeholders by holding discussions in remote hamlets and small-holdings, as well as through formal workshops.

Immigration

Since project participation is tied to land tenure, there is likely to be strong resistance on part of existing inhabitants to prevent squatters from illegally settling land as it would undermine their own project activities. Within the commune of Andasibe there is no unoccupied land available that would attract migrant farmers. As paid project activities will not substitute for full time employment or completely replace existing livelihoods, it is unlikely that the project will result in an influx of immigrants attracted

by new work or livelihood opportunities. Nor will the project enable local farmers to pay immigrants to carry out *tavy* for them, as has happened with farmers taking up employment in mining (Shyamsundar, 1996; Dolch, pers. comm.)

Health

There are no potential health risks or negative health effects that will arise from the planned project activities, apart from those that farmers already undertake in farming. The project could also bring considerable health benefits.

Safety

There are no potential safety risks or safety issues arising from planned project activities, apart from those that participants already undertake in farming.

E.2. If any negative impact is considered significant by the project participants or the host Party, a statement that project participants have undertaken a socio-economic impact assessment, in accordance with the procedures required by the host Party, including conclusions and all references to support documentation:

This project has no anticipated negative socio-economic impacts that would warrant a socio-economic impact assessment, nor is a socioeconomic impact assessment required by the host Party.

E.3. Description of planned monitoring and remedial measures to address significant impacts referred to in section E.2. above:

No significant negative impacts are anticipated but the PP will implement a monitoring plan of the project's socio-economic impact to fulfil the requirements of the CCB Standards. The plan will aim to quantify and document changes in social and economic well-being resulting from the project activities for both the local communities and other stakeholders. The PP anticipates developing it within six months of the validation of the project. Variables will be chosen that are directly linked to the project's community development objectives and anticipated impacts. These may include: income, employment generation, health, market access, schools, food security and education.

SECTION F. Stakeholders' comments:

F. 1. Brief description of how comments by local stakeholders have been invited and compiled:

Consultation with local stakeholders has been ongoing since the project idea emerged. There have been a number of phases to the consultation process, which can be divided as follows:

- Project conceptualization
- Project design phase

- Uptake and full integration of the carbon component into project design

Project conceptualisation

The ecological and social research and consultation that formed the basis for the project conceptualisation was undertaken in direct collaboration with local community members. It frequently entailed the technical training of these local partners and the exchange of information with them. Methods included Participatory Rural Appraisal (PRA), direct observation through living with and sharing in the work of subsistence farmers, informal surveys, activity based workshops, formal meetings, training and establishment of empirical trials in forest and *savoka*, ecological monitoring, literature research and consultation with specialists.

Project design phase

Project design has evolved with stakeholder engagement in the project area since the initial feasibility study for the project. The feasibility study looked into the potential for rainforest restoration corridors linking the protected areas in the Andasibe region, alongside restoration of degraded land towards sustainable cultivation systems. It was undertaken in collaboration with the Malagasy National Parks (MNP), SAF and VITA (Volunteers in Technical Assistance, a US based NGO, then working in partnership with MNP to manage the National Park of Mantadia). During this study, several weeks were spent staying with families of subsistence farmers living in the corridor restoration zone. Their perspectives are listed in section F.2. and influenced many aspects of project design. Awareness raising was undertaken by using video films of sustainable cultivation practices in other tropical nations entailed touring with a generator and television to the local villages.

Informal surveys with people in villages were conducted by a small team comprising a consultant, a local resident and staff of SAF and MNP. In addition to discussion on security of land tenure, topics such as implications for social/cultural systems; species of interest for cultivation (from native trees to vegetables; resources available and required (e.g. technical, material) were also debated.

Ground based mapping of land use and vegetation cover was conducted with SAF, MNP and people from local communities. This process provided insights into why a high proportion of land is abandoned despite there being a perceived shortage of land for cultivation.

Subsequent to discussions with many individuals and organisations in the project area and in anticipation of start-up funding (from the Carbon Storage Trust, UK), a round table meeting of representatives of all local stakeholder groups was proposed by SAF and the Mayor of Andasibe.

The goal was to establish a steering group to coordinate the restoration project, in which everyone had an equal voice. A farmers association was formed to develop and implement the project. The information on acquisition of funding to the project is summarised in section F.2.

A brief reassessment of the status of the forest restoration corridors was also carried out. During this people involved in extraction of natural resources were engaged in discussion. Comments received on the project are noted in F.2.

Information workshops and discussions were held in 2004 by CI Madagascar, to which all representatives of all NGOs acting in the area, MNP, the public sector (the Water and Forestry Service, Topography and Estate Service), local associations (e.g. koloharenas, associations paysannes), local authorities (mayors of all five communes, presidents of the nineteen Fokontanys, private enterprises (e.g. hotels, timber, mining), were invited. The workshops focused on the potential roles and responsibilities of engaging in a CDM carbon project. The NGOs and projects provided feedback to help CI evaluate the NGO accomplishments and experiences in the field of conservation (forest management and reforestation) and development (village animation, community activities, etc). Comments received are summarized in section F.2.

Several meetings were held in the project area with representatives of local authorities and NGOs with the aim of establishing a local coordinating body for the project. As a result a team of "Facilitating Agents" was formed in November 2004. It comprised members of AGA, MNP, CIREF, MATE, Mitsinjo, NAT, and SAF, and was coordinated by two CI-employed consultants with long-term relevant experience in the project area. The Facilitating Agents acted as a steering committee to further project preparation. A protocol of collaboration was signed between these organizations. This steering committee was responsible for programming activities during the planning phase of the project. It worked in parallel with committees created in the villages. These village committees ensured communication between facilitating agents and other members of the community. Local committees were the primary anchor points to facilitate community education and the identification of available land for the project as well as planning priority activities. Monthly meetings take place between the steering committee and the villager committees to follow the evolution of the project.

Subsequent site visits in November 2004 with NAT, MATE, Mitsinjo, SAF, the project preparation coordinators, individual farmers, and a few large village meetings discussed the design of incentive structure for the sustainable livelihoods activities, which is outlined in section F.3.

At the national level, a “Carbon Finance” commission was created by the Coordination Unit of the National Environmental Program 3 (EPIII), the Ministry of Environment and Forest (MEF), the World Bank, MNP and CI in order to facilitate investments that can benefit financing carbon sequestration. This commission met a number of times to examine the project to ensure coherence of the project’s objectives and activities within the national environmental policy and the proposed conservation site in the Zahamena-Mantadia corridor.

F. 2. Summary of the comments received:

The comments received from various stakeholders during the consultation process are summarized below.

Project conceptualisation

Results of informal surveys regarding access to forest:

- 85% of people consulted stated - no, there is not enough forest; 15% stated - yes, there is sufficient forest but access is denied since cutting of remaining forest is prohibited. People perceive a shortage of forest, even those living adjacent to forest.
- Access to forest is perceived as more than direct utilization of its resources - environmental functions of forest are perceived as important. For example: there is a strong association between soil fertility and proximity of forest amongst 25% of the respondents.
- Some people indicated that the social structure of communities was being disrupted with forest loss, for instance, it is the role of men to clear the forest for cultivation, and young men can only become independent from their parents when they are able to acquire wood to build their own homes.
- Most people see no solution to the shortage of both cultivatable land and forest.

Project design

Subsistence farmer's comments related to project design included:

- Self-reliance is an important goal within the local culture
- Food security is of paramount importance to the subsistence farmers
- There is very limited awareness of the natural resource management options that would lead to more sustainable human-environmental interactions
- In addition to direct use values, environmental services provided by forests are appreciated but many people see no option other than to cut forest to obtain fertile soil.
- Assured short-term benefits are a prerequisite to engagement in activities that require long term waiting to realize benefits. A local Malagasy story frequently related to illustrate the immediacy of people's needs describes how a man desperately contemplating to feed his family could steal neighbour's produce, risking imprisonment, thereby depriving his family of food for weeks.
- Local level project coordination should operate in conjunction with traditional authorities to ensure reasonable equity.

CI Madagascar consulted with potential project partners through workshops on the risks and benefits of the project. The following is a synthesis of comments stakeholders made during the workshops and meetings held by village committees, the steering committee and the Carbon Finance Commission. Feedback from the evaluation of the capacity of NGOs partners is also included.

National officials and regional partners consider the project to be compatible with development and sustainable conservation priorities, because of its benefits generated for local communities as well as for enhancing biodiversity. Particularly relevant in this respect are:

- Identification of alternative income sources to *tavy*
- Development of new agricultural and forestry techniques to give renewed value to degraded zones and to stabilize communities
- Increased forest cover and reconstitution of forest landscape

- Effective management of forest corridors through sustainable livelihoods and biodiversity conservation

According to the government forestry policy, decentralized management of forests is encouraged by the Water and Forest Service. This policy meant that they supported a participatory approach to implementing the project that was founded on community associations and used community-based forest management.

The process of formalising legal land tenure (supported by the PP) was seen by the local communities and associations to be essential in promoting sustainable and stable management of land. In order to avoid appropriation of contested land, the stakeholders recommended the need to closely collaborate with the Circonscription des Domaines et Topography in the tenure formalisation process.

The farmers participating in the project also fully supported the responsibility taken by the village leaders in enforcement of the law and local agreements that dictate the management of resources at the village level.

The facilitating agents and the communities agreed that the introduction of new techniques and production can take time and requires organisation of villagers. They voiced concerns to simplify the key messages to facilitate farmers to adopt the new agricultural techniques introduced by the project. Local coordination is needed to ensure project activities are integrated into the area's existing development programmes. This will ensure that local farmers, who are carbon producers, benefit from other complimentary development measures (e.g. technical assistance on off-season crops coupled with agro-forestry).

Table 21. Examples of comments made by representatives from local community associations and FAs, November 2004.

Stakeholder	Organisation	Comment
Gervais	AGA	This project fits with the saying "give a man a fish and he will eat for a day; teach a man to fish and he will eat for life"; It looks as though it will empower people in the area to live sustainable livelihoods; It integrates the Indri's need for food with the people's need for food and finds a mutual solution to their problems
Rainer	Mitsinjo	In the fokotany of Menalamba (near Torotorofotsy) there is an accumulation of abandoned, degraded land and as much as 30% (±2,700 ha) has deteriorated to the point where it is uncultivable under the traditional *tavy*. Without the project, rural depopulation is likely because people will be unable to continue traditional *tavy* and have/see no alternative options
Gerome	MNP	People are losing their understanding of the forest, due to lack of access and lives increasingly divorced from forest; this lowers its value to them. Self-reliance is declining due to increasing dependence on external support. Vulnerability (economic) is also

		increasing due to investment in production of a single cash crop. The project will give an opportunity for people to re-establish their connection with the forest and begin to value it again.
Claude	SAF	For the majority of people, daily survival is a pre-occupation. As a result, they do not think long-term. There is no security from land, food production and work. NGOs do not have sufficient resources deliver their objectives. Without the project there will be worsening poverty alongside increased environmental degradation. Organisations working with good intent will continue to be desperately under-resourced. This project has consulted well, has been designed appropriately and should succeed with the participative approach already underway.

F. 3. Report on how due account was taken of any comments received:

The following conclusions drawn from the early consultations strongly influenced project design, particularly in ensuring true integration of restoration activities. The stakeholder comments and feedback have been taken into account in the design and implementation of the project in the following ways:.

The shortage of cultivatable land that people are facing is compounding the problems associated with the unsustainable "*tavy*" cultivation system. People need forest but their need to produce food is more pressing. Conservation measures which demarcate areas for protection are having limited success, as is evidenced on the one hand by the lack of unprotected forest in the region as a whole and on the other hand by encroachment by people inside the reserve boundaries. The needs of the people are inevitably at odds with government policy on land-use. Restoring connectivity between forest fragments through catalysing regeneration processes will need to go hand in hand with improving the sustainability of land under cultivation. The nature of *savoka* is currently the problem but also the potential solution. An integrated approach is required. Local people need to be fully involved at all levels of a reforestation project that restores ecosystem functioning if it is to succeed in the long-term.

Project design phase

Some comments made during informal surveys with subsistence farmers, meetings with NGOs and MNP and during the round table meeting in 1998 contributed to project design in the following ways:

- Activities promoted as a result of the project include short term benefits e.g. fruit and spice gardens and mixed native tree plantations that yield within the short term.
- Many species used in the project activity as well as in the development of farming alternatives to *tavy* were suggested by local people.
- Extending the area of cultivatable land and reducing pressure on natural forest requires modification of *tavy* practices - it would be culturally unacceptable to attempt to replace *tavy*. *Savoka* gardens were designed directly in response to people's intention to maintain rice production.
- Project design must enable participation on an individual and collective basis.

- Local project coordination should engage customary/traditional authorities so that management of project activities can be integrated into cultural systems. This would involve organizational tiers that people are accustomed to - *kolharenas* and *fokontanys*, which communicate with the commune and appropriate NGOs.

The project objectives are closely aligned with many of the independently compiled development priorities of the Andasibe communal development plan. Mr Prospere, Mayor of Andasibe at the time of the project development, was consulted with the potential for the commune to take a coordinating role at the local level by participating as a facilitating agent alongside MNP, SAF etc.

Annex 1: CONTACT INFORMATION ON PARTICIPANTS IN THE PROPOSED SMALL-SCALE A/R CDM PROJECT ACTIVITY

Organization:	Ministry of Environment and Forest
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Represented by:	Mr. Gary Pringle
Title:	
Salutation:	Mr.
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Annex 2: INFORMATION REGARDING PUBLIC FUNDING

The World Bank
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

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Washington, D.C. 20433
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Cable Address: INTBAFRAD
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May 31, 2010

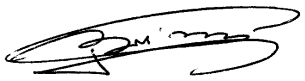
TO WHOM IT MAY CONCERN

International Development Association Involvement in the Madagascar Ankeniheny-Zahamena-Mantadia Biodiversity Conservation Corridor and Reforestation Project – Reforestation Component

The purpose of this letter is to affirm that International Development Association funding is not used to purchase emission reductions from the Madagascar Ankeniheny-Zahamena-Mantadia Biodiversity Conservation Corridor and Reforestation Project – Reforestation Component, and therefore has not been diverted for these purposes.

The Environmental Program III, financed by IDA, has provided USD1.5 million in financing to the ecological restoration activities, as a support to testing new markets for environmental services in the country, notably the carbon market. IDA funding was meant to kick-start the planting activities, whereas carbon finance should cover the expenses for maintaining the plantations and paying the landholders for the opportunity costs in conceding part of their land to the plantation activities.

Sincerely,



Adolfo Brizzi
Country Manager for the World Bank in Madagascar

RCA 248423. WUI 64145 FAX (202) 477-6391

Annex 3: DECLARATION ON LOW-INCOME COMMUNITIES

Annex 4: List of Implementing Entities

Implementing Entity	# plots	Area (ha)
Andriamahatody Alphonse	1	1.2
ANDRIAMANANTENA Jean	1	1.0
Andriamihaja Harison	1	1.2
ArsΦne LOUYS	2	6.5
Association Mitsinjo	13	19.5
BOTOKAMISY Felix	1	0.5
Dadavita	1	3.2
DIMASY	1	2.6
Domaine MATE	1	1.4
DonnΘe	1	1.2
EDMOND	1	0.3
Edmond RANDRIANARISON	1	0.7
Fihaonana	1	2.3
Filipo	1	0.5
GABRIEL ROBERt	1	0.8
GERP	4	4.9
Haja Delice Victorien	1	0.8
HARISON Gilbert	1	0.2
Henri Chrysostome	1	0.4
Iamby/ Kotoson	1	12.4
JEAN BAPTISTE	1	0.9
JEAN MAURICE	1	1.4
Jean Noel	1	0.5
Jean Paul2	1	1.2
Jeroma	1	1.3
Jio jio Famille	1	0.9
Katity	1	0.4
KOTO	1	3.6
Koto Albert	1	3.5
Kotosambana	3	2.7
Kotosaona	9	17.4

Implementing Entity	# plots	Area (ha)
LEKAMISY	1	1.0
LEKRISY	1	2.1
LESABOTSY	1	1.3
Levita	1	1.6
Lezoma	1	1.5
Lezoma, Baomiary, Claude	1	11.7
Lita	1	2.2
Luisette	1	4.6
Marchel	1	2.7
Marchial	1	4.4
Maurice	1	18.6
Miso, Masina Paul	1	5.9
Mpoly Jerome	1	3.0
NAIVO Gabriel	1	0.5
Naivoson	1	1.1
NARIVELO Paul	1	0.8
Patrice	3	6.6
Piere	1	1.2
PIERRE Justin	1	1.5
National Park of Mantadia	27	87.1
Radison	1	0.7
Rajaonarisolo Bruno	2	2.0
Rakotoalibera Jean Louis	1	1.8
Rakotoarimanana	1	0.3
Rakotoarisoa Martial	1	2.0
Rakotomalala AndrΘ,Odette, Razafimandimby Germain	1	4.0
RAKOTOMANAHIRANA	2	2.8
Rakotonandrasana Jean	1	1.0
Rakotonandrasana Justin	2	2.5
Rakotonandrasana Laurent	1	2.3
Rakotondramasy Tsiavony	1	0.8
RAKOTONDRASOA Jean Claude	1	1.8
RAKOTONIAINA Feno	3	3.4
Rakotonirina Augustin	1	7.2

Implementing Entity	# plots	Area (ha)
Rakotonirina Bernard	1	0.3
Rakotozanaka	2	2.4
RAMAMONJY charles Rija	1	1.1
RAMANANJATOVO DΘsirΘ Martin	2	2.0
Ramarolahy Philibert	1	2.7
Ramdezy	2	2.2
Randrianantenaina Martial	1	1.7
Randrianarison Ferdinand	1	0.6
Randrianasolo	1	3.8
Randrianasolo DonnΘ	1	1.9
RANDRIANASOLO Simon	1	2.1
RANDRIANASOLO Simon,RAKOTONDRASOA Jean Claude,PIERRE Justin	1	4.3
RAPORAKA DΘsirΘ	2	1.8
Rasoa Emilienne ZANAMANA	1	0.5
RASOAMARIE	1	0.9
Rasoatiana	1	1.6
RATOVOSONINA Jean RΘmi	1	1.5
RATSANGANA Edmond	4	1.8
RATSIMBAZAFY Bernard	1	0.4
Ratsy	1	3.0
RAVAO	1	1.3
RAVELO Michel	1	1.1
Ravita	1	1.4
Razafiarison Jean Paul	1	0.2
RAZAFIARISON Romule	2	1.5
RAZAFIMAHEFA	2	1.2
Razafimanatsoa Jean Christophe	1	0.8
Razafimanatsoa Jean Emile	1	0.7
RAZAFIMANDIMBY Albert	1	1.2
RAZAFINDRAFARA Julienne	1	0.8
Razafindrakoto Martin Francois	1	1.9
Razafindranosy Christine	1	3.0
RAZAFINDRATSIMANIRY Fanoarimanana	1	1.4
RAZANAMISY Modeste	1	0.8

Implementing Entity	# plots	Area (ha)
Razanatsara Antoinette	1	1.2
Razanatsara CΘlΘstine	1	0.3
Razanatsara CΘlΘstine, Miso, Ranjalahy Joseph, Rakotonirina FidΦle	1	10.2
REPALA	2	1.4
SAMPILAHY Julien	1	0.5
Solopierre	1	2.7
Talata	1	2.6
TEFATSARA Perline	1	0.5
Telolahy	3	2.8
Telolahy Felix	1	1.1
Tena	1	1.4
Tiambelona	2	3.2
TODIVAVY	1	0.6
TONGATSARA	1	0.6
Velontody Jean Felix	1	1.5
Victor	1	1.0
ZAFININDRINA	1	0.9
Zaka	1	2.5
Zanatsara	1	1.2
Zanatsara Celestin	1	1.5
Total	**191**	**411.3**

Annex 5: Coordinates of the individual plot boundaries on which the small-scale A/R CDM project activity will take place

FA	Code	Location	Area (ha)	X	Y
AGA	RJC	Andranolava	1.82	863613.18	7904956.73
				863612.37	7904907.46
				863669.96	7904863.25
				863748.23	7904877.85
				863749.25	7904902.99
				863778.04	7904902.18
				863777.23	7904882.72
				863869.70	7904899.14
				863892.41	7904915.57
				863893.01	7904926.92
				863907.41	7904926.52
				863920.19	7904935.24
				863892.81	7904955.51
				863837.05	7904957.34
				863836.03	7904928.75
				863807.44	7904930.17
				863808.25	7904958.35
				863780.07	7904959.16
				863779.87	7904960.99
				863756.55	7904944.77
				863722.28	7904939.29
				863722.28	7904932.40
				863693.48	7904933.82
				863693.89	7904938.68
AGA	MODESTE	Andranolava	0.77	864352.33	7905595.03
				864238.77	7905628.11
				864211.30	7905572.82
				864229.04	7905571.79
				864227.78	7905539.05
				864255.95	7905534.35
				864256.40	7905542.25
				864281.70	7905541.54
				864314.21	7905565.95
				864314.33	7905568.70
				864317.88	7905568.70
AGA	S JC JP	Ampasimadinika	4.3	862352.11	7906782.13

FA	Code	Location	Area (ha)	X	Y
				862177.24	7906779.20
				862073.71	7906572.14
				862133.71	7906448.12
				862193.70	7906546.90
				862237.60	7906594.09
				862236.51	7906646.77
				862298.70	7906685.18
				862329.06	7906734.20
AGA	RZFMHF	Morafeno	0.43	863308.75	7900894.12
				863230.96	7900896.94
				863262.60	7900803.49
AGA	MAHEFA	Morafeno	0.74	863230.76	7900896.74
				863187.84	7900898.15
				863186.02	7900891.50
				863196.30	7900755.47
				863201.94	7900755.47
				863223.71	7900783.08
				863262.60	7900803.44
AGA	AL	Ampasimadinika	4.77	862541.92	7906997.75
				862465.28	7906958.90
				862449.39	7906869.91
				862440.21	7906866.37
				862461.40	7906765.37
				862350.15	7906732.88
				862329.67	7906733.59
				862411.60	7906615.28
				862458.22	7906617.75
				862523.55	7906680.97
				862536.26	7906683.09
				862590.65	7906771.37
				862599.13	7906854.37
				862588.53	7906855.07
				862592.77	7906956.43
				862576.17	7906968.79
				862563.81	7906969.49
				862564.16	7906979.03
AGA	SIMON	Ampasimadinika	2.15	865044.54	7904719.45
				865090.15	7904677.79
				865048.05	7904623.85
				865018.66	7904600.17
				865020.42	7904579.12

FA	Code	Location	Area (ha)	X	Y
				865047.61	7904577.36
				865051.12	7904575.17
				865047.17	7904491.85
				864960.78	7904511.58
				864927.01	7904560.70
				864950.25	7904583.50
				864929.20	7904607.19
				864937.53	7904605.87
				864938.41	7904648.85
				864955.07	7904647.09
AGA	LA	Ampasimadinika	1.14	862394.05	7906582.22
				862293.39	7906508.21
				862320.81	7906400.87
				862390.17	7906438.07
AGA	J P	Andranolava	1.48	862953.44	7905814.98
				862951.67	7905786.55
				862896.22	7905787.97
				862892.67	7905759.86
				862890.18	7905741.06
				862867.79	7905639.05
				862913.99	7905650.42
				862975.48	7905649.36
				862985.14	7905714.04
				862977.61	7905780.51
				862977.97	7905814.27
AGA	RAVAO	Ampasimadinika	1.33	862521.16	7906671.54
				862504.83	7906661.44
				862468.29	7906626.39
				862478.39	7906589.56
				862509.58	7906512.05
				862550.56	7906526.30
				862593.33	7906624.31
				862590.96	7906648.96
AGA	SAMBANA	Ampasimadinika	1.32	862509.85	7906511.74
				862506.30	7906521.13
				862474.81	7906518.59
				862427.35	7906527.98
				862434.46	7906461.47
				862471.52	7906392.68
				862527.12	7906382.01
				862536.76	7906438.12

FA	Code	Location	Area (ha)	X	Y
				862553.01	7906488.89
				862534.48	7906520.37
AGA	AMPK1	Ampasimadinika	0.87	862648.98	7906613.88
				862637.26	7906626.12
				862625.54	7906626.46
				862605.03	7906602.33
				862574.86	7906575.09
				862572.10	7906575.26
				862550.21	7906526.14
				862534.69	7906520.45
				862553.14	7906488.90
				862536.93	7906437.88
				862534.18	7906420.47
				862539.86	7906418.57
				862572.27	7906433.39
				862581.58	7906479.25
				862596.58	7906506.83
				862615.02	7906534.06
				862618.30	7906583.37
AGA	AMPK3	Ampasimadinika	1.39	862753.70	7906671.05
				862741.25	7906672.82
				862678.58	7906625.26
				862649.02	7906613.93
				862619.02	7906583.04
				862615.69	7906534.15
				862623.24	7906528.37
				862720.36	7906504.81
				862720.36	7906507.26
				862719.54	7906507.69
				862722.41	7906593.25
				862750.95	7906592.37
AGA	AMPK4	Ampasimadinika	1.47	862717.56	7906214.69
				862663.99	7906163.34
				862654.14	7906124.47
				862682.69	7906086.57
				862726.66	7906067.11
				862770.64	7906093.64
				862799.94	7906093.39
				862803.73	7906139.38
				862790.34	7906182.85
				862737.27	7906189.42

FA	Code	Location	Area (ha)	X	Y
AGA	AMPK5	Ampasimadinika	0.89	862725.36	7906067.16
				862682.62	7906086.42
				862671.91	7906100.26
				862662.26	7906096.19
				862648.30	7906081.81
				862647.22	7906053.59
				862621.44	7906054.54
				862608.69	7906041.65
				862607.47	7905989.43
				862639.08	7905961.34
				862638.67	7905936.52
				862669.19	7905988.75
AGA	4ANDL3	Andranolava	0.43	862727.72	7905993.33
				862732.34	7905925.24
				862767.77	7905924.47
				862802.43	7905917.84
				862815.06	7905960.82
AGA	4ANDL2	Andranolava	0.66	862827.69	7905991.02
				862815.06	7905960.98
				862802.74	7905917.84
				862814.29	7905917.69
				862866.51	7905906.9
				862895.63	7905891.19
				862898.56	7905991.02
				862900.71	7905959.44
				862919.51	7905958.67
				862917.81	7905977.15
				862859.12	7905968.83
AGA	AMPK6	Ampasimadinika	0.55	862919.69	7906368.15
				862885.72	7906361.53
				862885.89	7906359.26
				862877.70	7906359.61
				862864.12	7906356.82
				862806.97	7906299.51
				862774.57	7906290.79
				862774.39	7906284.70
				862865.51	7906285.74
				862895.65	7906340.97
				862913.59	7906343.93
AGA	AMPK2	Ampasimadinika	1.15	862871.08	7906286.09
				862774.39	7906284.52

FA	Code	Location	Area (ha)	X	Y
				862729.97	7906254.91
				862708.89	7906233.83
				862717.25	7906215.01
				862737.46	7906189.75
				862790.07	7906183.13
				862861.50	7906230.52
AGA	ANDL1	Andranolava	0.25	864141.51	7905525.30
				864083.05	7905455.47
				864138.84	7905443.78
AGA	ANDL2	Andranolava	1.04	863040.36	7905792.99
				862978.61	7905789.63
				862978.41	7905775.97
				862986.23	7905714.12
				862977.92	7905661.68
				862981.78	7905649.51
				863025.91	7905651.68
				863032.94	7905654.16
				863033.53	7905669.50
				863062.03	7905668.60
				863062.62	7905683.84
				863061.53	7905684.93
AGA	AMPK8	Ampasimadinika	0.39	862253.73	7906168.51
				862303.02	7906161.13
				862352.07	7906119.93
				862392.08	7906099.45
				862392.32	7906119.69
				862363.98	7906120.41
				862365.17	7906148.98
				862336.36	7906150.17
				862338.50	7906206.36
				862353.98	7906206.13
				862350.88	7906210.18
				862366.36	7906192.08
				862379.46	7906177.08
				862366.12	7906177.56
AGA	AMPK10	Ampasimadinika	1.42	862449.79	7906297.48
				862449.79	7906300.84
				862350.18	7906302.24
				862233.21	7906202.90
				862253.63	7906168.48
				862347.66	7906210.17

FA	Code	Location	Area (ha)	X	Y
				862342.62	7906234.52
				862392.71	7906214.93
				862406.98	7906214.09
AGA	AMPK9	Ampasimadinika	0.54	862449.70	7906297.45
				862406.86	7906214.96
				862455.25	7906177.23
				862462.28	7906174.25
				862464.20	7906173.61
				862487.01	7906278.05
				862497.66	7906276.56
				862498.73	7906280.83
AGA	RDM	Ampasimadinika	0.56	862497.66	7906276.78
				862487.22	7906277.84
				862464.20	7906173.82
				862479.97	7906173.18
				862479.12	7906152.93
				862497.24	7906144.19
				862502.35	7906144.19
				862436.46	7906270.81
AGA	AMPK11	Ampasimadinika	1.59	862660.69	7906453.23
				862649.65	7906424.39
				862659.54	7906424.16
				862658.39	7906383.93
				862664.94	7906385.31
				862657.12	7906355.66
				862657.01	7906346.81
				862658.27	7906345.66
				862666.20	7906308.65
				862697.92	7906264.63
				862729.87	7906254.63
				862774.35	7906284.63
				862774.47	7906290.95
				862778.95	7906291.87
				862766.77	7906337.84
				862741.83	7906398.87
				862715.74	7906427.37
AGA	AMPK12	Ampasimadinika	0.8	862720.37	7906059.82
				862668.88	7905988.73
				862638.56	7905936.20
				862732.13	7905924.70
				862727.42	7905993.44

FA	Code	Location	Area (ha)	X	Y
				862751.73	7905998.67
				862749.64	7906048.06
AGA	ANDL8	Andranolava	1.11	863028.56	7906181.41
				863033.09	7906184.13
				863062.05	7906288.67
				863026.30	7906285.51
				863024.94	7906269.67
				862996.88	7906270.57
				862992.81	7906156.07
				862964.75	7906156.97
				862966.56	7906213.55
				862962.49	7906214.45
				862927.19	7906154.26
				862899.58	7906091.80
				862919.94	7906075.51
				862922.66	7906067.82
				862940.31	7906071.44
				862945.29	7906059.67
				862981.95	7906080.04
				863005.48	7906113.98
				862963.84	7906143.40
				862942.12	7906168.29
				862966.11	7906203.14
				862995.07	7906231.20
				862999.14	7906234.36
AGA	MNHRN	Andranolava	1.68	862999.43	7906233.36
				862994.85	7906231.60
				862992.38	7906156.20
				862963.84	7906156.90
				862942.00	7906167.47
				862963.84	7906143.87
				863005.07	7906113.57
				862981.46	7906080.45
				862945.87	7906059.31
				862939.88	7906071.29
				862875.06	7906055.08
				862875.76	7906045.57
				862865.19	7906046.27
				862853.56	7905987.08
				862912.40	7905993.07
				862936.36	7906001.52

FA	Code	Location	Area (ha)	X	Y
				862944.82	7906001.17
				862986.04	7906015.62
				863016.69	7906080.09
				863053.34	7906136.82
AGA	AMPK13	Ampasimadinika	3.61	862002.42	7905295.85
				861933.24	7905243.35
				861917.79	7905150.69
				861874.56	7905082.74
				861885.67	7905030.86
				861897.41	7905019.12
				861949.92	7905038.89
				862051.22	7905049.39
				862129.67	7905049.39
				862157.47	7905059.27
				862156.85	7905071.63
				862072.22	7905074.71
				862071.60	7905102.51
				862044.42	7905103.13
				862048.75	7905216.79
				862006.74	7905243.97
AGA	ANDL9	Andranolava	0.81	862994.43	7905368.74
				862994.66	7905356.63
				862965.63	7905357.77
				862964.72	7905327.15
				862981.63	7905332.63
				863001.74	7905322.35
				863027.57	7905319.38
				863060.02	7905309.78
				863100.93	7905302.46
				863098.88	7905299.49
				863147.33	7905282.58
				863140.93	7905295.84
				863138.87	7905295.38
				863121.73	7905320.29
				863096.13	7905348.40
				863090.88	7905358.00
				863047.00	7905355.49
				863008.60	7905371.94
AGA	REPALA	Andranolava	0.61	863115.61	7905443.31
				863030.36	7905432.94
				863046.45	7905355.79

FA	Code	Location	Area (ha)	X	Y
				863090.37	7905358.01
				863132.80	7905424.95
AGA	ROMUL	Andranolava	0.55	863132.71	7905425.00
				863090.38	7905357.94
				863095.98	7905348.85
				863121.95	7905320.41
				863139.11	7905295.53
				863165.66	7905310.30
				863168.93	7905322.52
				863164.42	7905322.52
				863165.22	7905351.03
				863136.78	7905351.90
				863137.80	7905380.56
				863183.33	7905379.11
				863141.44	7905415.47
AGA	ANDL5	Andranolava	0.98	863192.79	7905321.67
				863168.81	7905322.51
				863165.71	7905310.27
				863140.73	7905296.37
				863147.60	7905282.96
				863098.09	7905299.24
				863074.16	7905277.92
				863047.80	7905272.61
				863041.93	7905275.54
				863058.77	7905225.86
				863002.50	7905211.85
				863066.47	7905176.63
				863073.72	7905174.58
				863075.94	7905239.93
				863104.40	7905238.93
				863105.34	7905267.57
				863133.92	7905266.57
				863132.93	7905238.05
				863161.45	7905237.11
				863160.56	7905211.08
				863178.17	7905208.36
				863188.09	7905254.44
				863202.38	7905292.82
				863191.85	7905293.15
AGA	MRF	Morafeno	0.46	864148.39	7901537.05
				864147.22	7901493.56

FA	Code	Location	Area (ha)	X	Y
				864089.89	7901495.55
				864089.31	7901467.18
				864070.43	7901467.77
				864089.19	7901452.65
				864101.15	7901446.32
				864175.24	7901480.66
				864175.70	7901492.74
				864192.82	7901492.15
				864210.87	7901518.06
				864161.17	7901531.19
AGA	ANDL4	Andranolava	0.76	863408.32	7905200.14
				863443.29	7905133.15
				863431.94	7905158.06
				863443.66	7905141.91
				863472.17	7905140.81
				863471.25	7905112.38
				863556.79	7905109.62
				863558.73	7905166.46
				863529.94	7905167.38
				863531.05	7905195.99
AGA	4ANDL4	Andranolava	0.94	862991.06	7905972.6
				863042.30	7905928.28
				863042.97	7905955.58
				863045.08	7905926.00
				863060.11	7905912.92
				863062.47	7905884.97
				863085.77	7905862.77
				863106.28	7905865.64
				863123.67	7905856.10
				863143.76	7905833.99
				863172.55	7905809.00
				863210.96	7905835.93
				863162.08	7905893.42
				863155.25	7905893.75
				863155.50	7905901.69
				863147.90	7905911.23
				863134.65	7905922.88
				863103.08	7905923.97
				863095.56	7905918.32
				863086.28	7905924.40
AGA	4ANDL5	Andranolava	1.33	862869.63	7905605.43

FA	Code	Location	Area (ha)	X	Y
				862837.14	7905693.82
				862833.91	7905575.34
				862806.84	7905563.11
				862830.20	7905562.15
				862829.03	7905533.64
				862876.92	7905532.15
				862880.28	7905546.69
				862860.02	7905565.72
				862801.34	7905560.50
				862783.55	7905554.87
				862760.19	7905558.30
				862754.28	7905555.35
				862732.92	7905503.34
				862714.63	7905479.09
				862688.26	7905473.39
				862691.08	7905464.18
				862711.07	7905445.42
				862737.24	7905432.51
				862763.83	7905438.07
				862779.22	7905421.31
				862783.27	7905421.10
				862797.77	7905449.27
				862826.21	7905448.10
				862827.11	7905476.68
				862798.80	7905477.71
				862779.69	7905506.29
				862771.11	7905507.12
				862772.28	7905535.70
				862800.66	7905534.87
AGA	4ANDL6	Andranolava	1.38	864633.73	7904793.87
				864627.27	7904772.88
				864716.06	7904720.95
				864776.86	7904715.57
				864808.47	7904704.95
				864813.05	7904707.23
				864811.70	7904711.67
				864826.90	7904735.62
				864834.43	7904743.02
				864832.96	7904754.58
				864834.97	7904759.70
				864833.36	7904761.31

FA	Code	Location	Area (ha)	X	Y
				864838.20	7904767.50
				864839.14	7904772.07
				864841.43	7904772.21
				864840.89	7904785.39
				864799.86	7904798.98
				864794.35	7904784.05
				864757.76	7904800.32
				864741.75	7904789.56
				864724.80	7904782.83
				864714.31	7904796.69
				864666.15	7904793.06
AGA	4AMPK1	Ampasimadinika	0.48	862624.26	7906690.97
				862621.25	7906700.13
				862594.93	7906688.54
				862559.46	7906679.73
				862545.90	7906663.61
				862620.20	7906638.81
				862626.26	7906659.91
				862649.42	7906641.47
				862679.09	7906668.37
				862652.78	7906687.26
AGA	REZ	Ampasimadinika	0.49	862628.78	7906777.45
				862634.00	7906746.03
				862624.26	7906691.20
				862652.89	7906687.26
				862679.09	7906668.48
				862694.04	7906674.16
				862715.49	7906698.85
				862721.52	7906707.32
				862697.99	7906708.24
				862698.68	7906736.53
				862670.28	7906737.57
				862671.09	7906763.42
AGA	4AMPK3	Ampasimadinika	1.12	862116.44	7905604.76
				862024.44	7905535.80
				862049.08	7905461.52
				862109.88	7905414.02
				862113.96	7905475.71
				862102.97	7905509.03
				862088.79	7905537.93
				862120.87	7905539.88

FA	Code	Location	Area (ha)	X	Y
				862153.67	7905570.19
AGA	4AMPK4	Ampasimadinika	2.19	862045.00	7905695.34
				862004.05	7905690.20
				861978.00	7905675.84
				861977.11	7905648.19
				861948.57	7905649.25
				861947.51	7905620.53
				861904.08	7905622.13
				861919.85	7905590.40
				861927.83	7905546.97
				861992.00	7905530.48
				862021.43	7905535.98
				862024.26	7905535.27
				862114.67	7905603.51
				862116.44	7905607.59
				862079.39	7905657.94
AGA	4AMPK5	Ampasimadinika	1.03	863020.88	7906603.25
				863006.44	7906606.70
				862991.47	7906591.73
				862991.60	7906585.24
				863022.60	7906535.43
				863024.72	7906492.38
				863111.86	7906450.52
				863147.39	7906504.83
				863147.65	7906515.03
				863110.30	7906518.34
				863098.11	7906503.37
				863055.32	7906568.55
AGA	4AMPK6	Ampasimadinika	0.53	863030.18	7906772.27
				863014.43	7906779.85
				863013.36	7906754.75
				862984.71	7906755.46
				862983.76	7906727.15
				862955.22	7906727.86
				862954.39	7906799.68
				862925.73	7906700.39
				862925.38	7906688.19
				862928.93	7906788.07
				862955.10	7906672.44
				862969.79	7906780.85
				862993.59	7906670.55

FA	Code	Location	Area (ha)	X	Y
				863002.59	7906681.68
AGA	AMPK14	Ampasimadinika	0.74	863017.17	7906698.99
				862989.85	7906665.78
				863029.98	7906643.30
				863085.40	7906595.72
				863093.64	7906597.68
				863095.99	7906666.05
				863112.85	7906665.52
				863090.11	7906697.42
AGA	4AMPK2	Ampasimadinika	0.27	863093.48	7906597.79
				863086.61	7906595.83
				863088.29	7906595.69
				863093.20	7906585.31
				863092.92	7906581.80
				863087.59	7906574.22
				863090.54	7906564.96
				863081.56	7906552.75
				863113.27	7906546.02
				863148.07	7906525.81
				863149.05	7906550.09
				863180.76	7906549.24
				863161.12	7906572.68
				863154.24	7906578.71
				863092.78	7906580.68
AGA	4AMPK7	Ampasimadinika	0.64	862660.44	7907280.26
				862631.71	7907281.42
				862630.67	7907252.69
				862602.29	7907253.73
				862600.67	7907208.15
				862604.94	7907211.03
				862615.21	7907196.26
				862628.94	7907195.57
				862628.36	7907179.42
				862634.25	7907180.69
				862670.25	7907196.50
				862712.36	7907198.00
				862714.67	7907203.53
				862715.13	7907221.19
				862686.63	7907222.23
				862687.44	7907250.73
				862659.28	7907251.76

FA	Code	Location	Area (ha)	X	Y
AGA	4AMPK10	Ampasimadinika	0.51	862712.53	7907198.24
				862670.17	7907196.59
				862665.42	7907194.27
				862662.22	7907173.75
				862669.28	7907151.35
				862671.05	7907134.81
				862679.98	7907107.89
				862689.03	7907092.88
				862685.72	7907074.13
				862707.45	7907066.19
				862710.10	7907065.97
				862714.29	7907190.96
AGA	4AMPK12	Ampasimadinika	0.44	861762.73	7906911.12
				861750.67	7906911.74
				861749.73	7906909.71
				861745.50	7906903.29
				861734.23	7906864.76
				861736.26	7906854.90
				861761.00	7906854.12
				861760.06	7906825.77
				861823.17	7906824.05
				861836.80	7906851.45
				861789.50	7906853.33
				861790.29	7906881.52
				861761.79	7906882.77
AGA	4AMPK13	Ampasimadinika	0.36	862850.15	7906988.36
				862822.76	7906989.41
				862821.50	7906986.67
				862820.45	7906960.97
				862809.91	7906961.18
				862797.48	7906933.15
				862819.81	7906932.73
				862817.92	7906875.22
				862845.94	7906874.79
AGA	4AMPK8	Ampasimadinika	0.89	861946.28	7906108.82
				861945.23	7906109.87
				861921.04	7906101.63
				861901.30	7906085.27
				861890.31	7906042.61
				861906.69	7906020.01
				861917.45	7905977.56

FA	Code	Location	Area (ha)	X	Y
				861922.63	7905976.29
				861952.72	7905991.39
				861964.23	7905992.13
				861967.72	7906010.93
				861974.05	7906014.09
				861998.87	7905993.71
				861998.45	7906019.37
				862009.01	7906035.53
				862012.49	7906038.70
				861997.60	7906040.28
				861991.69	7906051.48
				861988.42	7906050.31
				861979.12	7906055.07
				861967.40	7906059.71
				861961.17	7906071.22
				861955.26	7906086.75
				861947.23	7906097.83
				861944.17	7906107.65
AGA	4AMPK9	Ampasimadinika	0.37	861892.96	7905698.84
				861881.66	7905717.82
				861866.96	7905728.08
				861839.86	7905732.89
				861820.87	7905732.15
				861824.94	7905729.93
				861818.66	7905724.54
				861818.36	7905712.06
				861822.20	7905688.94
				861832.62	7905684.28
				861839.71	7905676.46
				861854.41	7905668.33
				861863.05	7905655.85
				861863.86	7905680.74
				861892.30	7905679.63
AGA	AMPK7	Ampasimadinika	1.51	862701.21	7906508.60
				862623.03	7906528.35
				862615.05	7906534.23
				862596.97	7906506.92
				862581.84	7906479.18
				862572.39	7906433.57
				862539.81	7906418.65
				862534.14	7906420.12

FA	Code	Location	Area (ha)	X	Y
				862527.41	7906381.88
				862471.30	7906392.18
				862528.67	7906323.67
				862558.52	7906331.65
				862550.53	7906360.02
				862565.45	7906399.53
				862607.06	7906402.05
				862612.52	7906397.43
				862630.18	7906396.59
				862631.23	7906424.96
AGA	ANDL11	Andranolava	2.14	862895.58	7905580.23
				862890.41	7905502.56
				862970.49	7905500.32
				862969.46	7905471.73
				862998.39	7905471.22
				862994.78	7905368.57
				863008.38	7905372.19
				863046.27	7905356.52
				863030.43	7905432.98
				863115.68	7905443.49
				863119.64	7905511.34
				863081.92	7905536.66
				863028.53	7905537.69
				863000.63	7905539.76
				863000.12	7905528.05
				862942.94	7905529.77
				862943.80	7905551.30
				862926.92	7905559.05
				862915.73	7905559.39
				862915.73	7905565.59
ECOPHI	T	Andasifahadimy	2.65	866558.23	7904453.43
				866563.10	7904452.45
				866564.07	7904330.75
				866542.65	7904245.07
				866477.42	7904216.83
				866444.32	7904155.50
				866435.55	7904156.47
				866437.50	7904184.70
				866408.29	7904186.65
				866406.34	7904212.94
				866380.06	7904243.12

FA	Code	Location	Area (ha)	X	Y
				866381.03	7904308.36
				866402.45	7904328.80
				866468.66	7904325.88
				866470.60	7904353.14
				866497.87	7904352.17
				866500.79	7904410.59
				866556.28	7904406.69
ECOPHI	S	Andasifahadimy	2.79	866477.42	7904155.50
				866444.32	7904216.84
				866464.76	7904154.52
				866462.81	7904125.31
				866518.31	7904125.31
				866521.23	7904151.60
				866535.84	7904152.57
				866577.87	7904159.51
				866577.62	7904150.32
				866566.90	7904151.09
				866517.42	7904067.05
				866602.99	7904063.68
				866601.64	7904007.75
				866630.61	7904006.41
				866628.59	7903978.11
				866447.46	7903976.09
				866589.51	7903914.77
				866582.77	7903857.50
				866536.96	7903858.85
				866481.03	7903973.39
				866480.36	7903983.50
				866487.10	7903982.83
				866487.10	7903011.50
				866516.07	7903009.78
ECOPHI	F	Andasifahadimy	3.99	866729.64	7903574.25
				866757.59	7903573.46
				866755.19	7903516.77
				866784.33	7903514.77
				866783.14	7903487.23
				866811.88	7903486.03
				866809.88	7903434.12
				866781.14	7903427.75
				866752.80	7903431.34
				866753.99	7903488.43

FA	Code	Location	Area (ha)	X	Y
				866726.45	7903489.22
				866477.37	7903726.77
				866533.51	7903723.66
				866532.73	7903695.59
				866562.36	7903694.81
				866560.02	7903639.45
				866588.87	7903636.33
				866587.31	7903578.63
				866616.16	7903549.78
				866641.89	7903547.45
				866642.67	7903520.94
				866669.96	7903519.38
				866668.40	7903490.53
				866640.33	7903492.09
				866638.77	7903435.17
				866610.70	7903435.95
				866606.80	7903352.52
				866504.66	7903433.61
				866526.49	7903492.09
				866524.93	7903467.92
				866553.78	7903465.58
				866557.68	7903549.78
				866528.65	7903552.12
				866527.27	7903541.21
				866450.08	7903698.71
				866476.59	7903697.15
ECOPHI	G	Ambohimanolaka	1.64	866496.87	7903431.27
				866607.58	7903344.73
				866549.88	7903339.27
				866545.21	7903325.23
				866491.41	7903326.79
				866493.75	7903352.52
				866488.29	7903354.86
				866485.95	7903411.00
				866495.31	7903411.00
				866519.43	7903268.22
				866548.06	7903266.54
				866546.71	7903238.26
				866568.26	7903237.25
				866571.29	7903220.41
				866567.25	7903201.89

FA	Code	Location	Area (ha)	X	Y
				866601.60	7903176.63
				866600.59	7903151.04
				866629.21	7903150.03
				866630.22	7903161.82
				866659.52	7903131.51
				866665.58	7903110.63
				866660.86	7903091.77
				866652.44	7903091.77
				866615.40	7903126.80
				866531.56	7903168.55
				866499.90	7903118.83
				866499.57	7903240.28
				866517.41	7903238.93
ECOPHI	J	Ambohimanolaka	10.18	866568.26	7903237.25
				866612.04	7903235.90
				866585.10	7903211.65
				866582.07	7903195.49
				866602.61	7903194.14
				866602.61	7903207.28
				866631.23	7903206.60
				866630.89	7903191.79
				866638.30	7903190.44
				866659.18	7903177.64
				866670.29	7903170.91
				866690.16	7903147.67
				866685.78	7903148.01
				866684.43	7903090.78
				866660.86	7903091.77
				866665.58	7903110.63
				866659.52	7903131.51
				866660.22	7903161.82
				866629.21	7903150.03
				866600.59	7903151.04
				866601.60	7903176.63
				866567.25	7903201.89
				866571.29	7903220.41
				866768.21	7903030.67
				866792.52	7903030.27
				866789.77	7903018.90
				866802.71	7903006.35
				866734.09	7902875.77

FA	Code	Location	Area (ha)	X	Y
				866735.66	7902918.12
				866724.68	7902918.52
				866724.68	7902980.47
				866714.09	7903004.39
				866766.64	7903001.65
				866571.40	7903220.52
				866802.71	7903006.35
				866734.09	7902875.77
				866735.10	7902861.59
				866790.15	7902858.00
				866791.35	7902830.48
				866816.48	7902828.08
				866816.48	7902800.56
				866790.15	7902800.56
				866786.56	7902745.51
				866730.32	7902745.51
				866729.12	7902689.27
				866756.64	7902688.07
				866754.25	7902659.35
				866670.48	7902664.13
				866668.09	7902605.50
				866611.84	7902606.69
				866609.45	7902580.37
				866583.12	7902579.17
				866579.53	7902524.12
				866552.01	7902526.51
				866547.22	7902440.35
				866574.75	7902439.15
				866573.55	7902362.57
				866595.09	7902374.53
				866638.17	7902380.52
				866640.56	7902412.83
				866613.04	7902433.17
				866601.07	7902465.48
				866605.86	7902497.79
				866648.94	7902527.71
				866686.04	7902513.35
				866720.74	7902522.92
				866782.97	7902454.71
				866820.07	7902497.79
				866811.69	7902538.48

FA	Code	Location	Area (ha)	X	Y
				866855.97	7902564.81
				866895.48	7902544.46
				866934.95	7902579.17
				866964.87	7902566.00
				866976.84	7902583.96
				866997.18	7902589.94
				866985.21	7902594.73
				866981.62	7902612.68
				866963.67	7902623.45
				866954.10	7902625.84
				866954.10	7902597.12
				866894.27	7902598.32
				866899.05	7902685.68
				866926.58	7902683.28
				866927.77	7902712.00
				866901.45	7902713.20
				866895.46	7902757.48
				866882.30	7902762.26
				866894.27	7902777.82
				866896.66	7902795.77
				866878.71	7902824.49
				866876.31	7902832.87
				866853.58	7902841.25
				866853.58	7902871.16
				866803.32	7902846.03
				866811.69	7902867.57
				866821.27	7902990.83
ECOPHI	S2	Ambohimanolaka	5.94	866056.12	7902408.51
				866123.22	7902376.27
				866202.15	7902363.12
				866201.50	7902336.15
				866145.58	7902337.46
				866142.95	7902280.89
				866171.89	7902280.23
				866170.58	7902251.29
				866228.47	7902250.63
				866228.47	7902278.92
				866256.75	7902276.94
				866258.07	7902305.89
				866286.36	7902305.89
				866288.99	7902353.91

FA	Code	Location	Area (ha)	X	Y
				866312.67	7902302.60
				866323.19	7902264.44
				866337.01	7902242.74
				866319.91	7902219.05
				866312.01	7902219.05
				866311.35	7902210.50
				866254.78	7902184.85
				866237.02	7902153.93
				866221.23	7902107.88
				866169.26	7902109.85
				866165.97	7902123.67
				866137.69	7902139.46
				866141.63	7902224.97
				866112.69	7902253.92
				866999.54	7902256.55
				866998.89	7902237.47
				866970.60	7902246.68
				866971.26	7902257.87
				866937.05	7902259.84
				866916.00	7902274.31
				866915.34	7902315.10
				866923.24	7902330.88
				866971.26	7902367.72
ECOPHI	AL	Andriambavibe	3.54	865581.80	7901986.39
				865581.81	7901986.40
				865591.40	7901977.59
				865589.00	7901959.19
				865618.60	7901956.79
				865617.00	7901928.00
				865645.00	7901927.20
				865645.00	7901899.20
				865730.60	7901895.20
				865729.00	7901868.00
				865737.00	7901868.00
				865717.00	7901834.40
				865725.00	7901780.00
				865669.80	7901776.00
				865695.40	7901756.00
				865641.00	7901742.40
				865665.00	7901705.60
				865699.40	7901707.20

FA	Code	Location	Area (ha)	X	Y
				865740.20	7901670.40
				865712.20	7901640.01
				865687.40	7901640.81
				865664.20	7901658.41
				865665.00	7901669.60
				865650.60	7901669.60
				865553.89	7901746.40
ECOPHI	P	Ambatosenegaly	7.22	867966.63	7901699.39
				868042.77	7901694.04
				868050.41	7901667.29
				868076.39	7901663.47
				868116.89	7901685.63
				868140.57	7901674.17
				868200.17	7901675.70
				868263.59	7901686.40
				868332.36	7901657.36
				868401.89	7901661.95
				868421.75	7901638.26
				868450.79	7901635.97
				868492.81	7901562.61
				868453.08	7901541.22
				868437.80	7901503.02
				868386.61	7901529.76
				86859.86	7901488.50
				868313.25	7901466.34
				868284.98	7901467.87
				868288.80	7901607.70
				868233.03	7901611.52
				868231.50	7901583.25
				868202.46	7901584.01
				868200.17	7901527.41
				868256.71	7901524.41
				868257.48	7901495.38
				868171.14	7901499.20
				868171.14	7901525.94
				868142.86	7901529.00
				868115.36	7901515.24
				868116.12	7901529.76
				868086.32	7901530.52
				868087.09	7901558.79
				868001.51	7901562.61

FA	Code	Location	Area (ha)	X	Y
				867975.53	7901643.61
				867976.29	7901674.17
ECOPHI	B	Ambohimanolaka	0.27	866612.14	7903236.04
				866632.05	7903234.82
				866630.82	7903206.33
				866652.26	7903206.03
				866659.61	7903196.53
				866659.30	7903177.24
				866715.66	7903175.70
				866715.05	7903147.22
				866689.93	7903147.53
				866670.33	7903171.42
				866659.30	7903177.24
				866637.56	7903190.71
				866630.82	7903191.63
				866630.82	7903206.33
				866602.64	7903207.56
				866602.64	7903193.77
				866582.43	7903195.61
				866585.49	7903211.23
ECOPHI	ADI	Samoranandro	1.22	867210.62	7902616.91
				867259.44	7902614.64
				867266.25	7902601.39
				867267.01	7902585.88
				867351.79	7902582.85
				867351.41	7902555.22
				867407.43	7902522.19
				867407.04	7902535.54
				867380.93	7902533.27
				867339.30	7902518.51
				867303.35	7902462.11
				867281.39	7902436.76
				867274.20	7902466.28
				867262.85	7902488.23
				867264.74	7902528.74
				867259.66	7902529.10
				867254.90	7902551.43
				867230.68	7902583.60
ECOPHI	V	Andriambavibe	1.38	865627.92	7902213.30
				865661.87	7902218.49
				865692.29	7902209.14

FA	Code	Location	Area (ha)	X	Y
				865718.24	7902215.03
				865730.35	7902199.45
				865742.47	7902205.34
				865736.58	7902229.56
				865759.42	7902238.56
				865771.19	7902237.17
				865771.19	7902247.90
				865781.23	7902259.67
				865798.88	7902247.21
				865819.29	7902249.63
				865830.02	7902264.48
				865847.67	7902263.48
				865847.67	7902245.83
				865826.91	7902221.95
				865783.65	7902228.52
				865782.96	7902198.42
				865791.95	7902195.30
				865794.03	7902176.27
				865790.57	7902150.60
				865738.31	7902153.08
				865737.62	7902126.09
				865705.78	7902131.28
				865706.13	7902150.66
				865625.84	7902176.96
				865625.84	7902185.61
				865619.96	7902185.61
				865615.81	7902192.88
				865619.27	7902202.57
				865625.89	7902176.101
ECOPHI	LM	Ambavaniasy	11.67	869912.13	7902718.13
				869975.91	7902710.81
				870011.45	7902689.90
				870026.09	7902648.08
				870026.10	7902648.09
				870070.00	7902676.31
				870102.41	7902679.44
				870125.41	7902655.44
				870188.14	7902665.85
				870228.91	7902648.08
				870273.86	7902653.31
				870294.77	7902647.03

FA	Code	Location	Area (ha)	X	Y
				870293.73	7902626.12
				870350.18	7902624.03
				870350.13	7902633.44
				870380.50	7902621.94
				870404.55	7902598.94
				870379.46	7902568.62
				870371.09	7902534.12
				870241.46	7902529.94
				870198.59	7902511.12
				870186.05	7902479.76
				870231.00	7902465.12
				870202.77	7902456.76
				870201.73	7902446.30
				870228.93	7902454.69
				870182.91	7902422.26
				870208.00	7902359.53
				870146.32	7902388.80
				870105.54	7902371.03
				870086.73	7902344.89
				870052.23	7902328.17
				870004.13	7902431.67
				869964.41	7902421.21
				869934.09	7902380.44
				869913.18	7902380.44
				869829.54	7902399.26
				869832.68	7902470.35
				869945.59	7902466.17
				869945.59	7902522.62
				869975.91	7902522.62
				869978.00	7902549.81
				869948.73	7902550.85
				869947.68	7902580.12
				869884.95	7902582.22
				869890.18	7902593.72
				869879.72	7902651.22
ECOPHI	RAJ	Ambavaniasy	0.72	869995.32	7902257.63
				870008.95	7902256.18
				870081.43	7902297.93
				870106.37	7902232.40
				870050.99	7902234.72
				870050.41	7902206.02

FA	Code	Location	Area (ha)	X	Y
				870022.29	7902206.89
				870021.42	7902195.29
				870990.68	7902182.82
				870935.30	7902189.49
				870930.95	7902209.79
				870993.29	7902208.05
ECOPHI	FR GER	Domaine GERP	0.75	868496.15	7900974.43
				868524.17	7900973.63
				868523.77	7900945.61
				868542.99	7900943.60
				868547.39	7900927.19
				868537.78	7900881.56
				868513.37	790847.14
				868492.15	7900850.74
				868492.55	7900860.35
				868464.13	7900861.95
				868465.33	7900917.99
				868493.75	7900916.79
				868430.15	7900720.15
				868459.41	7900720.15
				868457.87	7900691.66
				868486.36	7900690.12
				868483.28	7900631.60
				868426.30	7900635.45
GERP	PH3 JEAN PAUL	Morafeno	0.43	864270.05	7900072.89
				864267.95	7900005.74
				864210.59	7900007.70
				864211.43	7900035.96
				864183.31	7900036.94
				864183.45	7900046.03
GERP	PH3 RUPHIN	Morafeno	2.84	864777.98	7899888.41
				864952.14	7899865.73
				864934.00	7899816.29
				864771.17	7899740.10
				864746.23	7899674.79
				864741.69	7899674.79
				864742.60	7899703.36
				864713.57	7899705.17
				864716.75	7899789.99
				864688.63	7899790.89
				864689.08	7899819.92

FA	Code	Location	Area (ha)	X	Y
				864718.56	7899819.01
				864718.11	7899847.59
				864775.71	7899844.87
GERP	PH1 JEAN PAUL	Andranotsanasantanana	0.33	866409.34	7901102.69
				866444.49	7901079.07
				866443.22	7901044.21
				866414.82	7901045.33
				866413.84	7901016.80
				866411.17	7901021.72
				866382.77	7901036.90
				866389.80	7901066.56
MATE	RKTM	Asity	1.96	866483.85	7904745.91
				866678.55	7904595.73
				866677.96	7904547.06
				866648.87	7904745.65
				866646.50	7904490.07
				866674.99	7904489.48
				866674.39	7904437.83
				866640.56	7904405.78
				866563.39	7904430.12
				866563.99	7904452.67
				866558.05	7904453.86
				866559.83	7904464.55
				866587.73	7904463.36
				866589.51	7904492.44
				866617.41	7904491.26
				866620.97	7904577.92
				866563.99	7904579.11
				866565.17	7904635.50
				866537.27	7904637.28
				866537.27	7904664.59
				866508.78	7904667.56
				866511.75	7904721.57
				866482.66	7904725.14
MATE	RZNS CH	Amalonabe	2.98	866719.55	7902522.85
				866741.70	7902491.83
				866740.59	7902482.97
				866710.68	7902461.92
				866737.27	7902294.64
				866730.62	7902262.52
				866685.21	7902262.52

FA	Code	Location	Area (ha)	X	Y
				866686.31	7902292.43
				866598.80	7902293.54
				866603.23	7902323.45
				866571.10	7902325.66
				866572.21	7902362.22
				866596.58	7902374.41
				866640.89	7902414.29
				866613.20	7902435.33
				866601.01	7902465.24
				866603.23	7902497.37
				866648.65	7902526.17
				866686.31	7902510.60
MATE	ZNTR	Amalonabe	1.21	866715.17	7902440.31
				866775.83	7902423.58
				866771.65	7902319.00
				866837.53	7902314.82
				866829.16	7902242.67
				866811.38	7902213.38
				866737.14	7902296.00
MATE	TMBL	Asity	0.4	866490.00	7903955.12
				866536.39	7903858.87
				866570.94	7903856.89
				866564.03	7903849.00
				866585.75	7903808.52
				866536.89	7903809.02
				866538.37	7903838.63
				866509.25	7903838.63
				866511.22	7903895.40
				866486.54	7903897.37
MATE	RZTSR ANT	Amalonabe	1.22	866512.86	7903121.72
				866596.45	7903064.69
				866597.43	7903035.19
				866624.96	7903035.19
				866623.98	7902994.87
				866607.26	7902980.12
				866594.48	7902980.12
				866595.46	7902969.31
				866565.96	7902953.57
				866566.95	7902981.10
				866538.43	7902982.09
				866538.43	7902009.62

FA	Code	Location	Area (ha)	X	Y
				866508.93	7902010.60
MATE	ZC	Sahakondro	1.5	866361.45	7903672.65
				866421.38	7903670.96
				866432.12	7903638.73
				866445.12	7903612.72
				866416.85	7903614.42
				86614.03	7903527.91
				866442.30	7903526.78
				866441.73	7903498.51
				866470.00	7903496.25
				866469.44	7903469.68
				866440.60	7903469.68
				866439.47	7903443.10
				866381.24	7903443.67
				866385.19	7903529.04
				866356.92	7903530.17
				866498.27	7903482.12
				866505.06	7903440.84
				866497.14	7903431.00
				866467.17	7903412.01
				866475.09	7903411.44
				866467.74	7903404.09
MATE	RDZ	Ihasina	1.56	866173.29	7901909.52
				866238.80	7901927.99
				866208.55	7901870.03
				866238.80	7901927.99
				866289.65	7901942.97
				866352.76	7901928.78
				866404.13	7901903.83
				866379.18	7901686.60
				866349.83	7901851.48
				866323.41	7901827.99
				866245.12	7901866.64
				866222.13	7901856.37
				866208.55	7901870.03
MATE	FLP	Ihasina	0.5	866208.55	7901870.03
				866176.60	7901807.95
				866151.49	7901819.96
				866167.13	7901847.25
				866200.25	7901878.55
				866208.55	7901870.03

FA	Code	Location	Area (ha)	X	Y
				866222.13	7901856.37
				866272.33	7901768.39
				866176.60	7901807.95
MATE	FHNN	Andriambavibe	1.79	866173.29	7901909.52
				866200.25	7901878.55
				866167.13	7901847.25
				866151.49	7901819.96
				866176.60	7901807.95
				866151.45	7901760.47
				866108.37	7901774.10
				866042.43	7901786.85
				866030.57	7901827.73
				866037.16	7901877.84
				866020.89	7901899.82
				866079.36	7901919.16
				866176.60	7901807.95
				866188.81	7901801.35
				866199.80	7901753.88
				866151.45	7901760.47
MATE	ZAKA	Andriambavibe	2.45	866020.89	7901899.82
				866037.16	7901877.84
				866030.57	7901827.73
				866042.43	7901786.85
				866991.88	7901763.11
				866934.74	7901763.55
				866874.96	7901797.40
				866834.52	7901802.23
				865807.26	7901792.12
				865817.81	7901839.16
				865830.56	7901864.65
				865929.02	7901861.14
				865929.90	7901887.95
MATE	LITA	Zanarano Andriambavibe	2.21	865807.26	7901792.12
				865834.52	7901802.23
				865874.96	7901797.40
				865934.74	7901763.55
				865991.88	7901763.11
				865998.92	7901726.19
				866013.86	7901688.38
				866021.77	7901649.26
				865965.99	7901641.79

FA	Code	Location	Area (ha)	X	Y
				865903.09	7901647.50
				865904.41	7901650.14
				865894.30	7901651.02
				865847.26	7901692.34
				865865.73	7901691.90
				865867.04	7901720.03
				865831.88	7901721.35
				865820.01	7901738.93
MATE	RAMDZ	Zanarano Ambony	0.66	865820.01	7901738.93
				865831.88	7901721.35
				865867.04	7901720.03
				865865.04	7901691.90
				865847.26	7901692.34
				865894.30	7901651.02
				865904.41	7901650.14
				865903.09	7901647.50
				865847.26	7901581.57
				865835.39	7901594.75
				865808.14	7901609.26
				865824.41	7901653.66
				865798.47	7901683.55
				865787.92	7901719.15
				865794.95	7901730.58
				865811.22	7901723.11
				865809.02	7901693.66
MATE	RSON FER	Santratenany	0.6	866021.77	7901649.26
				866036.28	7901655.85
				866035.40	7901629.48
				865978.70	7901631.24
				865977.38	7901603.11
				865952.32	7901603.99
				865951.44	7901639.59
				865978.74	7901631.28
				866039.80	7901658.05
				866057.81	7901667.28
				866100.02	7901663.33
				866092.98	7901650.14
MATE	TLT	Andrano Harongana	2.58	868356.47	7901486.88
				868354.28	7901467.25
				868367.43	7901434.28
				868411.27	7901375.09

FA	Code	Location	Area (ha)	X	Y
				868418.94	7901372.90
				868383.87	7901352.08
				868337.84	7901350.98
				868341.13	7901409.07
				868309.34	7901407.97
				868312.63	7901466.06
				868313.16	7901515.38
				868140.56	7901498.94
				868140.56	7901414.55
				868167.96	7901412.36
				868166.86	7901383.86
				868138.37	7901386.05
				868137.10	7901329.18
				868165.83	7901328.46
				868165.11	7901325.23
				868104.78	7901331.70
				868026.84	7901351.81
				868024.33	7901441.23
				868027.20	7901449.85
				868032.59	7901475.35
				868056.65	7901474.63
				868057.37	7901503.36
				868114.11	7901500.85
MATE	LZM	Andrano Harongana	1.52	868491.28	7901562.36
				868516.55	7901527.14
				868515.79	7901516.42
				868513.49	7901486.56
				868485.16	7901488.09
				868483.63	7901460.52
				868455.30	7901460.52
				868452.23	7901375.53
				868424.67	7901375.53
				868423.90	7901369.40
				868410.12	7901374.78
				868369.54	7901435.25
				868359.58	7901488.85
				868385.62	7901530.97
				868437.68	7901501.87
				868453.76	7901539.39
MATE	JER	Andrano Harongana	1.33	868619.15	7901722.39
				868635.23	7901704.78

FA	Code	Location	Area (ha)	X	Y
				868664.33	7901697.12
				868668.92	7901673.39
				868689.60	7901645.82
				868701.85	7901619.79
				868755.45	7901560.06
				868681.94	7901524.84
				868657.44	7901534.03
				868658.20	7901540.92
				868642.89	7901540.15
				868624.51	7901646.59
				868616.09	7901668.03
				868613.79	7901700.18
MATE	MPL JRM	Andrano Harongana	2.99	868531.66	7901916.11
				868613.79	7901912.28
				868610.73	7901855.62
				868639.83	7901854.09
				868637.53	7901769.10
				868619.15	7901722.39
				868613.79	7901700.18
				868564.79	7901696.36
				868505.07	7901707.08
				868468.31	7901702.48
				868460.66	7901707.84
				868494.35	7901794.37
				868491.28	7901834.95
				868533.40	7901896.20
MATE	SLP	Tetezakambana	2.74	870253.40	7902779.95
				870467.54	7902903.47
				870587.02	7902901.46
				870588.37	7902908.84
				870741.42	7902914.21
				870703.16	7902849.77
MATE	RTS	Andrano Harongana	3	868829.72	7901564.66
				868828.96	7901513.35
				868813.64	7901515.65
				868822.83	7901557.00
				868939.98	7901501.10
				868973.67	7901499.57
				868970.61	7901476.60
				868893.27	7901759.91
				868940.75	7901741.53

FA	Code	Location	Area (ha)	X	Y
				868937.68	7901704.01
				868943.04	7901656.54
				869046.41	7901660.37
				869064.79	7901626.68
				869039.52	7901610.60
				869177.35	7901619.02
				869151.31	7901540.15
				869073.21	7901549.34
				869023.44	7901561.59
				869020.38	7901527.14
				868988.22	7901529.43
				868979.80	7901543.98
				868977.50	7901528.67
				868970.61	7901528.67
				868972.14	7901557.00
				868943.81	7901557.77
				868944.58	7901586.86
				868915.48	7901587.63
				868918.54	7901644.29
				868887.91	7901645.82
				868891.74	7901702.48
				868920.07	7901701.72
				868921.60	7901730.81
				868892.51	7901730.81
MATE	MORICE	Tetezakambana	18.56	870253.40	7902779.95
				870703.16	7902849.77
				870487.77	7902448.95
				870417.30	7902204.76
				870237.02	7902240.81
				870184.58	7902265.40
				870155.08	7902293.26
				870123.94	7902376.84
				870146.89	7902388.31
				870209.16	7902358.81
				870182.94	7902422.73
				870199.33	7902445.67
				870199.33	7902457.14
				870228.83	7902457.14
				870228.83	7902466.98
				870182.94	7902480.09
				870196.05	7902511.23

FA	Code	Location	Area (ha)	X	Y
				870241.94	7902530.89
				870371.41	7902534.17
				870377.97	7902570.23
				870402.55	7902598.09
				870379.61	7902624.31
				870350.11	7902637.42
				870346.83	7902625.95
				870294.38	7902627.59
				870294.38	7902647.25
				870269.80	7902655.45
				870228.83	7902645.61
				870186.22	7902670.20
				870127.22	7902657.08
				870099.36	7902681.67
MATE	IMB/KTS	Ambodikijy	12.43	870048.06	7902091.32
				870076.38	7902090.27
				870075.33	7902119.64
				870104.70	7902117.54
				870103.65	7902063.00
				870129.88	7902060.90
				870131.97	7902089.22
				870159.24	7902086.07
				870160.29	7902060.90
				870186.51	7902058.80
				870186.51	7902002.16
				870214.83	7902000.07
				870211.69	7901916.16
				870267.28	7901911.96
				870270.42	7901884.69
				870295.60	7901882.59
				870294.55	7901854.27
				870323.92	7901854.27
				870326.01	7901882.59
				870408.88	7901877.35
				870408.88	7901822.81
				870436.15	7901820.71
				870442.44	7901708.48
				870404.68	7901707.43
				870406.78	7901735.75
				870378.46	7901737.85
				870379.51	7901765.12

FA	Code	Location	Area (ha)	X	Y
				870319.72	7901768.27
				870321.82	7901797.63
				870294.55	7901797.63
				870293.50	7901825.95
				870237.91	7901829.10
				870238.96	7901856.37
				870209.59	7901858.47
				870207.49	7901827.00
				870152.95	7901832.25
				870152.95	7901860.57
				870124.63	7901859.52
				870125.68	7901888.89
				870096.31	7901890.98
				870100.51	7901919.30
				870040.72	7901920.35
				870040.72	7901949.72
				870011.35	7901950.77
				870016.60	7902007.41
				870043.87	7902004.26
				870020.76	7902195.16
				870018.70	7902120.69
				870048.06	7902120.69
				870048.06	7902092.37
				869989.33	7902092.37
				869989.33	7902121.73
				869965.20	7902121.73
				869946.32	7902186.76
				869990.38	7902182.57
				869911.71	7902380.81
				869910.66	7902353.54
				869895.98	7902353.54
				869884.44	7902387.10
				869933.74	7902381.85
				869964.15	7902420.66
				870002.96	7902431.15
				870052.26	7902326.26
				870084.77	7902345.14
				870103.65	7902371.37
				870121.48	7902376.61
				870150.85	7902293.75
				870185.47	7902263.33

FA	Code	Location	Area (ha)	X	Y
				870238.96	7902241.31
				870417.27	7902206.69
				870421.46	7902078.73
				870417.27	7902109.15
				870391.04	7902108.10
				870390.00	7902078.73
				870359.58	7902079.78
				870359.58	7902051.46
				870272.52	7902051.46
				870274.62	7902083.98
				870246.30	7902083.98
				870246.30	7902112.29
				870189.66	7902116.49
				870190.71	7902142.71
				870163.44	7902143.76
				870164.49	7902172.08
				870134.07	7902174.18
				870137.22	7902231.87
				870106.80	7902232.92
				870081.63	7902297.94
				870008.21	7902258.09
				869995.62	7902258.09
				869996.67	7902266.48
				869968.35	7902266.48
				869967.30	7902293.75
				869997.72	7902293.75
				869997.72	7902379.26
PNAM	SAH 01	Sahandambo	1.33	861037.88	7911615.76
				861046.74	7911615.35
				861069.57	7911596.77
				861080.70	7911528.71
				861034.92	7911530.25
				860910.18	7911534.50
				860920.96	7911534.15
				860920.00	7911505.68
				860948.57	7911504.69
				860944.56	7911390.57
				861030.22	7911387.72
				861028.49	7911340.80
				860859.50	7911418.31
PNAM	AMB 01	Ambodigavoala	1.51	861007.68	7909418.93

FA	Code	Location	Area (ha)	X	Y
				861080.64	7909407.54
				861073.85	7909341.17
				861026.56	7909310.08
				860998.36	7909313.70
				860982.46	7909305.02
				860955.96	7909301.55
				860947.69	7909321.80
				860932.48	7909328.75
				860924.43	7909355.67
				860908.89	7909341.31
				860901.60	7909345.47
				860883.90	7909361.09
PNAM	PNAM 1 T2	Ambodigavoala	5.67	861629.80	7909672.36
				861742.23	7909664.47
				861741.77	7909651.43
				861759.51	7909650.83
				861786.88	7909613.91
				861826.23	7909618.08
				861822.51	7909505.87
				861851.02	7909505.05
				861849.98	7909476.60
				861878.42	7909475.45
				861877.27	7909442.22
				861871.63	7909443.00
				861780.29	7909417.05
				861691.56	7909529.55
				861664.82	7909508.51
				861670.21	7909486.97
				861668.09	7909482.73
				861650.50	7909483.27
				861649.53	7909454.83
				861654.02	7909454.65
				861645.77	7909438.03
				861613.08	7909443.79
				861587.61	7909463.81
				861534.72	7909461.87
				861501.55	7909478.18
				861474.01	7909499.95
				861483.29	7909521.18
				861563.17	7909559.94
				861559.04	7909572.01

FA	Code	Location	Area (ha)	X	Y
				861567.90	7909571.70
				861568.87	7909600.15
				861597.37	7909599.30
				861599.13	7909651.82
				891612.96	7909655.76
				861627.76	7909655.34
				861628.31	7909670.44
PNAM	AMB 04	Ambodigavoala	7.97	861456.49	7909499.28
				861535.01	7909461.11
				861587.50	7909463.28
				861639.12	7909422.06
				861607.45	7909368.27
				861617.43	7909364.80
				861615.70	7909313.18
				861583.16	7909313.61
				861576.22	7909337.47
				861481.65	7909293.23
				861448.68	7909265.90
				861293.82	7909252.01
				861278.63	7909275.87
				861278.63	7909294.53
				861397.50	7909315.78
				861454.32	7909379.99
				861466.90	7909429.00
				861445.21	7909491.04
				861450.42	7909490.60
				861456.49	7909499.28
				861535.01	7909461.11
				861587.50	7909462.84
				861639.12	7909422.50
				861607.02	7909367.84
				861617.87	7909365.24
				861615.70	7909312.75
				861583.16	7909313.61
				861576.22	7909337.47
				861482.09	7909293.23
				861448.68	7909265.46
				861293.82	7909251.58
				861278.20	7909275.87
				861278.20	7909294.96
				861397.50	7909316.22

FA	Code	Location	Area (ha)	X	Y
				861454.32	7909380.42
				861466.90	7909429.00
				861444.78	7909490.60
				861449.98	7909490.60
				861729.35	7909280.76
				861757.11	7909279.46
				861756.68	7909251.27
				861807.44	7909248.66
				861807.44	7909187.93
				861811.34	7909181.42
				861810.91	7909163.64
				861821.32	7909162.77
				861852.98	7909104.21
				861787.48	7909059.09
				861724.15	7909133.27
				861724.15	7909137.93
				861720.38	7909138.37
				861669.28	7909199.45
				861670.18	7909225.44
				861641.75	7909226.77
				861642.64	7909254.98
				861728.37	7909252.09
PNAM	VL	Site Volove	3.32	871206.37	7912709.54
				871234.93	7912709.91
				871234.20	7912696.89
				871307.59	7912694.00
				871332.53	7912656.04
				871338.32	7912615.92
				871390.37	7912627.12
				871382.06	7912611.94
				871384.23	7912611.56
				871324.22	7912545.06
				871306.50	7912533.49
				871230.95	7912522.65
				871126.48	7912580.49
				871116.72	7912601.82
				871117.44	7912615.19
				871111.65	7912615.19
				871109.12	7912620.62
				871142.02	7912653.51
				871149.25	7912671.23

FA	Code	Location	Area (ha)	X	Y
				871204.56	7912669.78
PNAM	VH	Ampandroanjaza Ranomena	6.97	871954.04	7917671.65
				872042.76	7917673.40
				872087.12	7917653.56
				872117.47	7917647.14
				872089.45	7917561.92
				872114.55	7917487.21
				872091.20	7917453.94
				872084.78	7917450.44
				872067.86	7917352.97
				871930.69	7917377.48
				871915.51	7917383.90
				871853.07	7917471.45
				871875.25	7917532.15
				871853.07	7917612.12
				871827.97	7917613.29
MITSINJO	PL 01	Station Forestière	0.69	858109.50	7901840.62
				858107.60	7901784.83
				858164.03	7901782.92
				858163.14	7901754.45
				858191.86	7901753.31
				858191.10	7901732.59
				858217.79	7901751.78
				858231.64	7901744.54
				858247.91	7901734.24
				858248.80	7901751.53
				858252.49	7901751.40
				858254.27	7901757.76
				858264.18	7901779.23
				858249.82	7901780.00
				858249.95	7901788.89
				858229.86	7901795.12
				858221.60	7901797.28
				858221.48	7901780.89
MITSINJO	PL 04A	Station Forestière	0.25	857276.25	7902174.60
				857264.43	7902171.47
				857262.74	7902123.23
				857264.62	7902121.67
				857270.10	7902113.95
				857284.69	7902122.87
				857298.19	7902120.82

FA	Code	Location	Area (ha)	X	Y
				857312.66	7902137.10
				857330.15	7902140.48
				857310.98	7902155.67
				857313.03	7902161.34
				857290.36	7902170.38
MITSINJO	PL 21	Station Forestière	0.94	857277.69	7902203.79
				857276.97	7902179.06
				857276.25	7902174.84
				857290.48	7902170.38
				857313.27	7902161.10
				857311.22	7902155.67
				857330.27	7902140.48
				857312.79	7902137.22
				857298.31	7902120.70
				857300.00	7902117.08
				857289.63	7902098.87
				857311.58	7902092.72
				857332.20	7902093.21
				857343.66	7902103.34
				857355.71	7902089.95
				857360.78	7902087.30
				857375.49	7902083.20
				857376.09	7902094.89
				857384.17	7902094.89
				857389.00	7902109.12
				857417.94	7902135.05
				857390.81	7902136.26
				857371.03	7902148.92
				857382.00	7902164.96
				857369.58	7902180.87
				857350.53	7902181.84
				857350.77	7902196.43
				857333.53	7902197.76
				857318.57	7902203.66
MITSINJO	PL 11	Station Forestière	2.15	857703.26	7902039.27
				857689.18	7901982.07
				857678.13	7901955.20
				857680.73	7901942.20
				857713.45	7901941.11
				857712.36	7901917.28
				857726.23	7901909.04

FA	Code	Location	Area (ha)	X	Y
				857779.10	7901886.07
				857796.00	7901869.82
				857796.65	7901880.87
				857839.78	7901879.79
				857843.03	7901882.39
				857854.08	7901886.72
				857854.94	7901907.09
				857882.90	7901906.66
				857884.63	7901953.90
				857863.61	7901964.08
				857828.29	7901965.38
				857828.94	7901988.13
				857813.77	7901996.37
				857772.60	7901996.37
				857772.82	7902012.84
				857746.82	7902023.89
MITSINJO	PL 13	Station Forestière	2.17	857182.05	7902476.05
				857150.85	7902487.87
				857119.18	7902503.00
				857116.34	7902503.00
				857104.52	7902486.92
				857103.81	7902475.34
				857075.22	7902476.53
				856972.64	7902463.53
				856975.95	7902450.53
				857096.96	7902289.10
				857097.91	7902304.46
				857131.23	7902303.28
				857135.01	7902312.26
				857104.05	7902346.06
				857085.62	7902354.09
				857133.83	7902347.71
				857134.30	7902349.13
				857084.43	7902426.18
				857107.36	7902432.80
				857115.87	7902414.13
				857147.30	7902412.00
				857168.81	7902415.55
				857173.07	7902442.73
MITSINJO	PL 14B	Station Forestière	0.35	857897.98	7901506.52
				857897.10	7901477.94

FA	Code	Location	Area (ha)	X	Y
				857803.32	7901481.30
				857806.15	7901479.89
				857819.33	7901464.23
				857839.41	7901448.48
				857850.12	7901436.45
				857868.17	7901450.07
				857873.74	7901451.31
				857895.33	7901461.31
				857909.66	7901473.34
				857910.28	7901475.55
				857920.01	7901474.93
				857933.02	7901480.15
				857929.83	7901496.88
				857922.67	7901503.69
				857916.56	7901505.99
MITSINJO	PL 09	Station Forestière	0.44	857952.57	7901431.67
				857950.54	7901432.91
				857940.45	7901446.36
				857940.19	7901448.66
				857919.84	7901474.76
				857910.19	7901475.47
				857909.57	7901473.25
				857895.42	7901461.31
				857873.65	7901451.13
				857868.34	7901450.07
				857822.07	7901417.16
				857831.63	7901402.83
				857861.09	7901389.11
				857865.42	7901384.60
				857866.66	7901422.03
				857952.13	7901419.11
MITSINJO	PL 15	Station Forestière	0.83	857683.12	7901892.12
				857682.49	7901884.86
				857654.19	7901885.94
				857655.00	7901908.29
				857635.27	7901915.14
				857626.61	7901915.50
				857626.52	7901918.21
				857622.65	7901919.56
				857592.10	7901923.34
				857593.72	7901896.67

FA	Code	Location	Area (ha)	X	Y
				857597.68	7901877.92
				857583.71	7901863.59
				857589.57	7901843.76
				857624.18	7901833.04
				857640.76	7901817.18
				857701.33	7901842.59
				857696.73	7901875.94
MITSINJO	PL 20	Station Forestière	1.14	858127.96	7901555.96
				858071.13	7901557.57
				858068.62	7901500.93
				858040.48	7901502.00
				858039.40	7901473.32
				857982.76	7901475.29
				857983.30	7901495.01
				857979.00	7901496.98
				857966.45	7901499.49
				857952.65	7901500.03
				857929.70	7901496.80
				857933.11	7901479.95
				857919.84	7901474.93
				857940.64	7901448.58
				857940.82	7901446.25
				857950.85	7901433.17
				857952.47	7901431.20
				857953.18	7901447.51
				858038.50	7901444.82
				858045.14	7901473.14
				858046.93	7901481.93
				858054.10	7901481.57
				858071.85	7901469.20
				858095.87	7901471.35
				858119.35	7901479.06
				858121.68	7901476.55
				858122.04	7901471.17
				858132.08	7901476.91
				858163.99	7901485.69
				858132.44	7901519.75
				858143.75	7901526.56
				858127.06	7901527.28
MITSINJO	PL 16A	Station Forestière	1.13	857621.72	7901827.29
				857615.98	7901824.42

FA	Code	Location	Area (ha)	X	Y
				857602.90	7901823.31
				857558.06	7901838.78
				857540.99	7901834.47
				857507.17	7901782.62
				857502.54	7901761.24
				857511.80	7901747.52
				857512.75	7901732.21
				857532.54	7901725.03
				857557.27	7901730.93
				857606.25	7901725.82
				857612.31	7901735.24
				857617.41	7901740.66
				857619.97	7901803.04
				857625.87	7901804.48
				857626.03	7901813.73
				857695.91	7901822.19
				857660.17	7901811.34
				857621.88	7901803.84
				857614.38	7901716.09
				857619.97	7901715.77
				857618.85	7901687.37
				857610.87	7901687.85
				857610.07	7901684.50
				857618.85	7901684.50
MITSINJO	PL 12A	Station Forestière	1.02	857637.20	7901686.42
				857644.38	7901690.57
				857651.88	7901692.16
				857667.19	7901685.62
				857670.22	7901689.29
				857686.66	7901680.99
				857688.89	7901688.01
				857688.09	7901693.92
				857693.99	7901693.76
				857706.76	7901698.70
				857696.71	7901791.72
MITSINJO	PL1 A	Ambodiriana	3.18	864652.07	7904167.67
				864609.35	7904150.94
				864542.45	7904173.84
				864547.86	7904182.34
				864530.87	7904198.55
				864516.72	7904176.42

FA	Code	Location	Area (ha)	X	Y
				864473.23	7904169.45
				864429.75	7904153.52
				864463.97	7904144.51
				864468.09	7904133.96
				864470.66	7904102.83
				864470.67	7904050.82
				864463.63	7904054.99
				864416.17	7904034.39
				864406.00	7904036.74
				864427.65	7903986.41
				864434.17	7903937.91
				864440.16	7903909.49
				864457.38	7903904.27
				864460.76	7903994.23
				864488.67	7903993.71
				864490.49	7904021.61
				864518.13	7904021.09
				864519.70	7904048.99
				864547.60	7904048.47
				864549.16	7904076.89
				864698.58	7904071.68
				864718.40	7904097.23
				864681.63	7904127.22
MITSINJO	PL1 B	Ambodiriana	4.42	865129.36	7904361.04
				865128.54	7904342.56
				865156.88	7904341.94
				865156.47	7904318.98
				865185.02	7904311.95
				865181.53	7904226.72
				865031.19	7904231.64
				865023.59	7904214.60
				864999.76	7904175.98
				865009.00	7904175.57
				865008.18	7904152.57
				865016.40	7904153.39
				865043.51	7904160.37
				865076.17	7904128.74
				865097.53	7904099.78
				865107.18	7904075.14
				865130.39	7904072.47
				865154.83	7904056.45

FA	Code	Location	Area (ha)	X	Y
				865177.42	7904099.78
				865178.24	7904112.72
				865185.64	7904112.11
				865208.03	7904145.18
				865232.06	7904151.34
				865236.37	7904151.34
				865237.19	7904167.77
				865265.74	7904167.15
				865267.59	7904223.63
				865278.06	7904223.63
				865288.33	7904269.23
				865272.11	7904300.04
				865230.41	7904334.34
				865204.95	7904365.35
				865169.00	7904365.15
				865146.82	7904356.93
MITSINJO	PL2 A	Ambodiriana	3.1	864722.50	7904285.40
				864713.86	7904270.72
				864726.53	7904270.72
				864725.95	7904242.79
				864754.17	7904241.06
				864752.44	7904184.35
				864695.72	7904186.07
				864696.59	7904214.29
				864668.09	7904215.73
				864663.77	7904209.11
				864652.83	7904206.52
				864640.45	7904192.12
				864619.72	7904181.18
				864652.25	7904167.94
				864681.33	7904127.34
				864718.75	7904097.98
				864740.06	7904096.54
				864749.85	7904067.46
				864776.05	7904044.14
				864777.20	7904069.19
				864805.12	7904067.75
				864806.85	7904096.54
				864835.35	7904095.68
				864837.37	7904152.68
				864865.00	7904152.10

FA	Code	Location	Area (ha)	X	Y
				864866.73	7904180.32
				864894.95	7904179.74
				864895.52	7904187.80
				864870.47	7904207.67
				864833.05	7904228.40
				864805.41	7904265.53
				864762.80	7904278.20
				865093.95	7904104.46
				865076.07	7904128.58
				865043.60	7904160.18
				865016.01	7904153.41
				865008.38	7904152.71
				865008.03	7904146.98
				865036.67	7904145.77
				865035.28	7904117.30
				865063.75	7904116.26
				865062.88	7904088.31
MITSINJO	PL2 B	Ambodiriana	0.89	865091.18	7904087.10
				865090.65	7904061.06
				865089.44	7904029.99
				865032.50	7904032.07
				865030.60	7903975.31
				865002.13	7903975.83
				865001.61	7903952.92
				865039.97	7903949.80
				865058.72	7903954.13
				865088.92	7903993.36
				865089.09	7904001.35
MITSINJO	PL2 C	Ambodiriana	0.52	865138.39	7903984.34
				865094.47	7904000.65
				865089.61	7903999.79
				865089.27	7903993.36
				865058.54	7903953.96
				865039.97	7903949.80
				865001.26	7903952.75
				865001.09	7903947.37
				864994.84	7903947.54
				864997.79	7903941.46
				865022.09	7903930.35
				865020.53	7903921.33
				865014.28	7903918.72

FA	Code	Location	Area (ha)	X	Y
				865085.45	7903915.77
				865086.66	7903944.24
				865141.34	7903942.51
MITSINJO	PL3 A	Ambodiriana	1.56	864732.66	7903928.02
				864658.11	7903930.65
				864657.14	7903901.88
				864631.14	7903902.99
				864630.04	7903873.12
				864627.68	7903872.43
				864626.58	7903846.15
				864655.21	7903845.04
				864654.38	7903816.41
				864682.72	7903815.45
				864681.48	7903775.48
				864731.41	7903743.53
				864739.29	7903734.12
				864743.30	7903756.25
				864737.77	7903756.53
				864740.82	7903845.87
				864731.55	7903846.84
				864741.23	7903851.68
				864741.78	7903870.35
				864744.27	7903870.49
				864738.46	7903877.68
				864722.70	7903915.30
MITSINJO	PL3 F	Ambodiriana	0.44	864738.27	7903734.62
				864731.20	7903743.48
				864681.48	7903775.62
				864678.85	7903701.51
				864650.45	7903702.21
				864648.52	7903653.87
				864661.40	7903649.30
				864695.75	7903695.14
				864723.86	7903709.13
MITSINJO	PL7 D	Ambodiriana	1.6	864253.45	7904618.12
				864227.15	7904624.67
				864208.93	7904616.28
				864196.45	7904603.90
				864217.94	7904586.29
				864232.57	7904545.77
				864233.80	7904522.33

FA	Code	Location	Area (ha)	X	Y
				864237.90	7904495.31
				864248.54	7904471.16
				864248.44	7904469.52
				864231.65	7904457.65
				864248.03	7904458.77
MITSINJO	PL1 C	Ambodiriana	1.93	864843.14	7903638.82
				864819.57	7903639.65
				864819.41	7903643.13
				864744.72	7903625.37
				864745.39	7903556.50
				864759.49	7903555.83
				864760.82	7903584.38
				864845.80	7903581.56
				864840.98	7903439.16
				864869.69	7903438.50
				864871.52	7903495.09
				864899.90	7903494.26
				864901.56	7903533.59
				864871.69	7903567.95
				864841.48	7903620.89
				865065.96	7903460.10
				865041.74	7903461.12
				865040.72	7903432.39
				864955.14	7903435.06
				864954.32	7903406.74
				864982.85	7903405.51
				864980.59	7903353.59
				865004.60	7903352.36
				865006.24	7903377.81
				865068.01	7903388.68
MITSINJO	PL3 H	Ambodiriana	0.29	864876.51	7903637.74
				864843.58	7903638.85
				864841.64	7903620.86
				864871.81	7903568.01
				864901.97	7903534.80
				864904.19	7903608.69
				864875.68	7903608.69
MITSINJO	PL4 A	Ambodiriana	4.19	864303.63	7904342.92
				864253.44	7904365.23
				864225.15	7904361.51
				864234.03	7904324.54

FA	Code	Location	Area (ha)	X	Y
				864255.51	7904392.53
				864256.13	7904286.54
				864299.29	7904285.09
				864297.02	7904228.09
				864268.93	7904228.92
				864266.87	7904172.12
				864244.56	7904172.94
				864251.17	7904156.63
				864236.71	7904136.80
				864236.92	7904124.62
				864284.63	7904116.97
				864298.67	7904088.47
				864329.86	7904055.43
				864352.58	7904088.89
				864368.07	7904125.44
				864368.89	7904138.66
				864399.46	7904124.62
				864429.82	7904153.74
				864472.99	7904170.26
				864516.15	7904176.66
				864530.82	7904198.76
				864516.36	7904238.83
				864491.58	7904280.14
				864466.79	7904307.60
				864454.81	7904292.32
				864444.49	7904270.02
				864434.78	7904287.98
				864368.69	7904276.42
				864341.01	7904256.59
				864316.23	7904243.37
				864310.03	7904265.68
				864310.65	7904291.49
				864355.47	7904254.73
				864354.44	7904226.44
				864411.23	7904224.16
				864412.06	7904252.87
MITSINJO	PL4 B	Ambodiriana	3.8	864791.21	7904463.55
				864761.20	7904438.14
				864759.02	7904383.93
				864730.95	7904384.42
				864729.98	7904355.62

FA	Code	Location	Area (ha)	X	Y
				864682.55	7904357.80
				864672.87	7904347.63
				864671.42	7904308.67
				864683.04	7904300.93
				864699.49	7904299.96
				864699.25	7904294.40
				864722.48	7904284.96
				864762.65	7904278.42
				864805.48	7904265.84
				864833.31	7904229.06
				864871.30	7904208.49
				864895.50	7904187.44
				864896.71	7904236.08
				864925.27	7904235.11
				864925.99	7904263.66
				864949.95	7904263.18
				864888.73	7904388.53
				864887.03	7904387.32
				864839.36	7904422.65
MITSINJO	PL6 A	Ambodiriana	1.16	864429.18	7904153.22
				864399.59	7904124.48
				864368.70	7904138.42
				864368.27	7904125.34
				864353.05	7904088.45
				864330.10	7904055.42
				864416.10	7904034.62
				864463.28	7904054.78
				864470.79	7904050.92
				864470.79	7904103.03
				864467.79	7904133.49
				864463.71	7904144.21
MITSINJO	PL6 B	Ambodiriana	2.2	864558.08	7904343.45
				864554.65	7904343.24
				864551.43	7904327.58
				864532.77	7904322.86
				864491.81	7904279.76
				864516.26	7904239.01
				864530.84	7904198.90
				864548.43	7904182.39
				864542.21	7904173.38
				864609.12	7904151.29

FA	Code	Location	Area (ha)	X	Y
				864651.59	7904167.80
				864619.63	7904180.67
				864640.22	7904192.04
				864652.44	7904206.84
				864662.95	7904209.20
				864667.89	7904215.63
				864668.53	7904244.16
				864640.22	7904245.01
				864641.94	7904302.28
				864613.63	7904303.13
				864614.70	7904331.44
				864557.44	7904333.37
				864670.89	7904308.50
				864670.67	7904301.20
				864682.90	7904300.56
				864698.98	7904294.56
				864698.13	7904271.82
				864713.35	7904270.75
				864722.15	7904283.40
				864722.79	7904285.55
MITSINJO	PL6 C	Ambodiriana	0.83	864689.09	7904582.01
				864661.48	7904560.06
				864660.57	7904558.03
				864713.07	7904556.56
				864735.81	7904537.21
				864735.59	7904527.25
				864706.96	7904528.27
				864704.93	7904471.02
				864733.44	7904470.23
				864732.64	7904441.61
				864761.16	7904440.59
				864760.93	7904438.21
				864791.25	7904463.67
				864807.32	7904461.07
				864847.48	7904467.06
				864847.71	7904470.46
				864824.74	7904497.16
				864764.21	7904523.41
				864763.98	7904526.12
				864756.18	7904526.35
				864734.57	7904498.67

FA	Code	Location	Area (ha)	X	Y
				864762.85	7904497.72
				864682.82	7904357.76
				864672.64	7904358.01
				864672.18	7904347.62
MITSINJO	PL7 A	Ambodiriana	2.02	864417.02	7904401.00
				864417.15	7904395.55
				864303.07	7904399.23
				864302.12	7904370.47
				864295.30	7904370.88
				864296.26	7904361.20
				864304.03	7904343.35
				864311.11	7904291.56
				864309.89	7904265.93
				864316.16	7904243.17
				864340.69	7904256.67
				864368.49	7904276.56
				864434.60	7904288.56
				864443.41	7904270.43
				864454.91	7904292.51
				864466.63	7904307.50
				864473.85	7904319.91
				864459.54	7904332.72
				864448.09	7904385.06
MITSINJO	PL7 C	Ambodiriana	1.69	864534.78	7904505.68
				864477.94	7904507.45
				864478.49	7904523.40
				864450.00	7904519.17
				864449.59	7904508.40
				864392.48	7904510.04
				864390.71	7904453.34
				864361.82	7904454.16
				864361.13	7904426.08
				864417.97	7904423.63
				864417.15	7904401.00
				864448.09	7904385.19
				864503.02	7904407.14
				864503.43	7904421.04
				864516.38	7904420.22
				864525.37	7904456.75
				864533.55	7904465.61
MITSINJO	PL7 B	Ambodiriana	0.8	864533.75	7904465.49

FA	Code	Location	Area (ha)	X	Y
				864525.55	7904456.67
				864516.33	7904420.18
				864532.32	7904419.97
				864503.41	7904407.05
				864448.46	7904384.70
				864459.33	7904332.63
				864473.88	7904320.32
				864466.91	7904307.82
				864491.72	7904280.34
				864532.52	7904322.99
				864551.18	7904327.70
				864554.87	7904343.29
				864554.05	7904349.44
				864558.56	7904357.64
				864558.36	7904361.54
				864501.77	7904364.20
MITSINJO	PLSB	Station Forestière	7.55	858885.64	7901594.18
				858818.20	7901510.66
				858710.11	7901445.45
				858637.76	7901429.37
				858636.86	7901423.57
				858622.12	7901424.46
				858610.51	7901421.33
				858586.84	7901417.31
				858610.07	7901419.55
				858580.59	7901415.97
				858579.25	7901397.66
				858551.11	7901398.55
				858549.77	7901369.97
				858493.94	7901371.31
				858492.15	7901360.14
				858503.77	7901354.34
				858501.09	7901351.21
				858533.24	7901330.67
				858654.28	7901278.41
				858729.32	7901253.40
				858726.19	7901353.44
				858817.75	7901329.77
				858856.61	7901369.08
				858929.41	7901367.74
				858949.95	7901378.01

FA	Code	Location	Area (ha)	X	Y
				858950.40	7901385.16
				858960.67	7901383.82
				858975.86	7901392.30
				859012.93	7901436.07
				859037.49	7901447.68
				859038.39	7901465.55
MITSINJO	PLS E	Station Forestière	0.86	859019.62	7901766.82
				858956.78	7901767.16
				858958.68	7901710.35
				859014.70	7901621.90
				859015.60	7901640.01
				859044.00	7901639.01
				859046.79	7901724.44
				859018.39	7901725.22
MITSINJO	RKTZ C	Ambodiriana	1.09	865388.23	7903437.15
				865327.53	7903432.16
				865330.86	7903422.47
				865354.32	7903421.56
				865353.42	7903393.11
				865381.87	7903392.20
				865380.96	7903363.74
				865437.72	7903361.78
				865436.66	7903333.47
				865465.42	7903332.26
				865464.66	7903303.81
				865493.26	7903302.90
				865491.75	7903274.30
				865511.27	7903273.69
				865507.94	7903292.31
				865482.06	7903329.54
				865496.90	7903359.96
				865494.78	7903359.96
				865495.69	7903388.26
				865467.23	7903389.32
				865468.29	7903415.05
				865412.44	7903415.36
MITSINJO	RKTZ B	Ambodiriana	0.83	865523.23	7903358.91
				865496.88	7903359.88
				865482.04	7903329.66
				865507.95	7903292.51
				865511.72	7903273.63

FA	Code	Location	Area (ha)	X	Y
				865520.42	7903273.36
				865519.45	7903244.82
				865548.00	7903243.94
				865547.38	7903227.34
				865553.09	7903226.46
				865570.13	7903240.25
				865606.49	7903282.15
				865606.84	7903298.92
				865549.93	7903300.94
				865550.89	7903329.49
				865522.44	7903330.28
MITSINJO	TLH D	Ambodiriana	4.56	864491.82	7904794.33
				864345.59	7904808.19
				864345.17	7904797.43
				864373.92	7904796.40
				864371.65	7904739.72
				864477.76	7904735.59
				864317.25	7904811.08
				864272.78	7904814.39
				864198.52	7904772.82
				864154.46	7904625.55
				864194.80	7904561.84
				864184.25	7904483.24
				864182.18	7904443.53
				864162.53	7904398.23
				864137.30	7904367.61
				864127.99	7904324.59
				864235.55	7904322.11
				864233.89	7904324.38
				864225.20	7904361.41
				864253.54	7904365.55
				864303.60	7904343.62
				864296.36	7904361.00
				864295.12	7904370.92
				864273.81	7904371.34
				864274.23	7904400.30
				864246.30	7904400.92
				864247.13	7904429.87
				864275.47	7904428.63
				864276.50	7904456.76
				864247.96	7904458.42

FA	Code	Location	Area (ha)	X	Y
				864231.41	7904455.38
				864248.58	7904469.38
				864248.58	7904471.66
				864238.03	7904495.44
				864233.27	7904522.13
				864232.44	7904545.71
				864218.17	7904585.83
				864196.04	7904604.03
				864208.66	7904616.24
				864226.65	7904624.93
				864253.75	7904617.89
				864255.61	7904686.15
				864227.48	7904686.98
				864229.34	7904744.27
				864257.68	7904743.24
				864258.71	7904771.78
				864287.26	7904770.75
				864288.08	7904799.09
				864316.63	7904798.05
MITSINJO	PL7 D	Ambodiriana	0.37	864739.58	7904095.48
				864718.95	7904097.40
				864704.40	7904077.74
				864711.76	7904071.18
				864719.91	7904071.18
				864718.79	7904042.88
				864776.03	7904040.65
				864776.19	7904044.16
				864749.97	7904067.19
				864766.32	7903755.38
				864743.65	7903756.40
				864738.92	7903734.40
				864723.52	7903709.03
				864696.12	7903695.15
				864661.43	7903649.31
				864648.58	7903653.87
				864647.56	7903617.16
				864676.15	7903615.81
				864675.48	7903596.02
				864744.84	7903613.44
				864744.84	7903625.62
				864819.45	7903643.55

FA	Code	Location	Area (ha)	X	Y
				864820.46	7903668.09
				864791.87	7903668.93
				864792.72	7903697.52
				864764.29	7903698.71
				864560.94	7903591.11
				864550.96	7903591.62
				864536.41	7903570.13
				864560.43	7903573.85
MITSINJO	PLB B	Ambodiriana	1.37	864422.24	7903710.13
				864408.42	7903710.94
				864402.79	7903673.32
				864401.50	7903604.36
				864424.33	7903571.08
				864448.44	7903548.90
				864476.73	7903503.41
				864511.13	7903512.57
				864536.37	7903569.96
				864551.16	7903591.50
				864504.22	7903593.27
				864504.87	7903622.04
				864448.12	7903623.97
				864449.73	7903681.04
				864421.44	7903681.84
MITSINJO	PLB D	Ambodiriana	1.42	864358.83	7903884.59
				864316.90	7903887.66
				864304.15	7903900.10
				864281.58	7903869.99
				864255.77	7903841.12
				864259.61	7903823.46
				864272.05	7903815.62
				864304.77	7903805.79
				864313.68	7903779.37
				864318.13	7903770.77
				864338.87	7903770.16
				864340.86	7903827.14
				864397.54	7903825.15
				864398.15	7903846.96
				864308.15	7903714.71
				864299.24	7903695.05
				864296.47	7903652.05
				864331.03	7903615.49

FA	Code	Location	Area (ha)	X	Y
				864403.37	7903679.69
				864408.14	7903710.72
				864394.16	7903711.03
				864392.62	7903682.92
				864307.23	7903685.53
MITSINJO	PL2 D	Ambodiriana	2.71	865389.05	7904448.45
				865379.64	7904447.96
				865295.98	7904390.78
				865239.80	7904361.33
				865222.72	7904344.50
				865230.64	7904334.60
				865272.47	7904300.19
				865288.31	7904269.50
				865278.16	7904222.97
				865336.82	7904221.24
				865328.16	7904236.83
				865345.24	7904242.03
				865369.99	7904269.50
				865399.94	7904315.54
				865402.91	7904333.11
				865385.33	7904333.85
				865236.52	7904150.94
				865207.87	7904145.25
				865185.59	7904112.58
				865234.85	7904110.10
				865177.42	7904099.71
				864156.14	7904058.13
				864157.13	7904055.90
				864175.69	7904056.15
MITSINJO	PL3 G	Ambodiriana	2.31	865138.71	7903800.09
				865110.11	7903800.71
				865111.34	7903826.22
				865101.26	7903815.52
				865095.09	7903806.88
				865048.80	7903831.36
				865026.17	7903832.18
				865024.53	7903803.79
				864996.14	7903805.03
				864995.11	7903776.64
				864938.33	7903778.28
				864937.30	7903749.89

FA	Code	Location	Area (ha)	X	Y
				864908.91	7903750.51
				864907.26	7903700.72
				864944.29	7903724.38
				864933.80	7903692.90
				864935.24	7903693.11
				864935.24	7903686.32
				864952.52	7903691.67
				864964.45	7903674.18
				864972.48	7903675.62
				865049.21	7903684.47
				865049.63	7903689.00
				865068.35	7903688.17
				865078.22	7903693.73
				865079.05	7903716.56
				865107.23	7903715.74
				865108.46	7903743.93
				865137.06	7903743.31
MITSINJO	PLE	Ambodiriana	5.21	864943.61	7904770.82
				864841.75	7904777.47
				864841.51	7904772.79
				864838.80	7904771.81
				864838.06	7904767.38
				864833.63	7904762.46
				864834.86	7904759.75
				864832.65	7904754.59
				864834.62	7904743.02
				864826.74	7904735.40
				864812.23	7904711.53
				864813.21	7904707.35
				864808.54	7904705.38
				864804.35	7904706.12
				864785.66	7904671.43
				864773.60	7904628.86
				864765.73	7904568.83
				864765.23	7904555.05
				864761.79	7904554.56
				864754.90	7904527.00
				864764.00	7904526.27
				864763.51	7904523.31
				864824.28	7904497.48
				864847.66	7904470.66

FA	Code	Location	Area (ha)	X	Y
				864849.62	7904523.07
				864935.00	7904519.87
				864933.03	7904462.79
				864852.58	7904465.99
				864893.66	7904429.33
				864905.47	7904403.25
				864889.48	7904388.24
				864903.26	7904360.69
				864956.16	7904410.14
				864959.85	7904419.73
				864960.34	7904433.51
				864965.26	7904433.27
				864977.32	7904464.76
				864978.05	7904507.57
				864961.08	7904511.50
				864926.63	7904561.20
				864950.99	7904582.36
				864929.34	7904606.47
				864880.87	7904608.20
				864881.61	7904636.74
				864853.56	7904636.74
				864854.30	7904665.77
				864939.67	7904663.31
				864939.43	7904650.02
				864955.42	7904647.32
				865023.32	7904702.67
				865005.12	7904714.24
MITSINJO	PL6 E	Ambodiriana	0.98	865048.11	7904491.51
				864978.19	7904507.46
				864977.28	7904464.92
				864965.52	7904433.92
				864960.20	7904419.55
				864956.13	7904410.16
				864903.29	7904359.92
				864950.36	7904263.07
				864954.77	7904262.96
				864955.79	7904291.36
				864984.30	7904290.23
				864987.13	7904375.99
				864958.84	7904377.01
				864989.28	7904433.13

FA	Code	Location	Area (ha)	X	Y
				864990.07	7904461.64
				865018.81	7904460.39
				865019.71	7904489.02
				865047.89	7904488.11
MITSINJO	PL6 D	Ambodiriana	0.37	864851.99	7904466.13
				864847.42	7904466.54
				864807.19	7904460.91
				864791.28	7904463.62
				864838.94	7904423.04
				864887.00	7904387.30
				864905.36	7904403.70
				864893.12	7904429.08
MITSINJO	PLJ B	Ambodiriana	0.88	865690.91	7904922.85
				865576.63	7904926.77
				865574.12	7904841.06
				865602.22	7904840.28
				865601.59	7904811.86
				865629.85	7904810.76
				865630.94	7904838.86
				865659.67	7904838.23
				865660.46	7904866.65
				865688.71	7904865.55
SAF FJKM	PLJ	An'ala	7.09	865330.02	7904990.74
				865375.30	7904900.17
				865374.61	7904876.48
				865398.29	7904876.48
				865401.78	7904869.51
				865402.47	7904847.22
				865410.14	7904845.83
				865424.77	7904772.68
				865438.70	7904757.35
				865452.63	7904682.11
				865488.86	7904583.88
				865485.38	7904558.80
				865478.41	7904560.19
				865479.11	7904587.36
				865422.68	7904590.15
				865417.10	7904475.89
				865389.24	7904476.59
				865388.54	7904448.72
				865378.79	7904447.33

FA	Code	Location	Area (ha)	X	Y
				865295.88	7904390.90
				865239.45	7904363.03
				865221.34	7904344.92
				865205.32	7904365.12
				865187.20	7904365.12
				865167.00	7904365.82
				865144.71	7904356.76
				865128.68	7904361.64
				865130.77	7904400.65
				865187.20	7904398.56
				865187.90	7904426.43
				865215.07	7904425.73
				865217.16	7904453.60
				865304.94	7904479.38
				865332.11	7904479.38
				865334.20	7904505.85
				865389.93	7904505.85
				865394.81	7904618.02
				865422.68	7904618.02
				865424.77	7904675.14
				865396.20	7904677.94
				865396.90	7904677.23
				865397.60	7904704.40
				865369.73	7904705.80
				865370.43	7904734.36
				865341.86	7904734.36
				865338.38	7904679.32
				865309.82	7904678.63
				865306.33	7904594.33
				865279.16	7904595.72
				865281.25	7904650.76
				865252.69	7904652.85
				865251.99	7904681.41
				865251.99	7904745.51
				865271.50	7904937.09
				865289.61	7904936.39
				865293.10	7904981.68
				865287.52	7904820.75
				865315.39	7904821.44
				865314.00	7904794.27
				865286.13	7904793.58

FA	Code	Location	Area (ha)	X	Y
SAF FJKM	Limitée F	Mahatsara Mantadia	4.71	861582.70	7910855.70
				861611.15	7910854.34
				861610.49	7910833.70
				861473.54	7910745.02
				861464.72	7910745.68
				861465.72	7910773.80
				861494.51	7910773.14
				861495.17	7910801.26
				861524.13	7910800.26
				861524.63	7910828.88
				861581.70	7910826.88
				861150.75	7910679.03
				861164.93	7910661.18
				861174.91	7910661.71
				861198.54	7910639.65
				861203.27	7910639.12
				861203.79	7910612.34
				861251.58	7910610.24
				861226.90	7910592.39
				861232.68	7910547.75
				861231.63	7910493.66
				861184.36	7910444.30
				861204.84	7910413.32
				861183.31	7910411.21
				861136.05	7910443.25
				861085.11	7910458.48
				861053.08	7910478.43
				861041.00	7910463.20
				861039.43	7910452.18
				861031.55	7910450.60
				861026.82	7910461.10
				861027.35	7910474.23
				861020.52	7910475.81
				861003.72	7910515.72
				861001.62	7910557.73
				861038.38	7910632.82
				861058.86	7910654.35
				861129.75	7910652.25
				861075.81	7910530.42
				861085.11	7910529.90
				861084.59	7910502.06

FA	Code	Location	Area (ha)	X	Y
				861057.28	7910502.59
				861383.92	7910789.31
				861389.17	7910777.24
				861379.19	7910777.76
				861379.71	7910748.35
				861335.08	7910749.93
SAF FJKM	RE	Andranonamalona Mantadia	0.77	861251.32	7910609.43
				861259.83	7910609.04
				861257.90	7910581.56
				861287.70	7910580.01
				861284.60	7910493.70
				861270.28	7910489.45
				861255.58	7910492.54
				861246.19	7910443.90
				861250.16	7910439.13
				861226.16	7910439.90
				861224.22	7910401.20
				861212.61	7910412.81
				861205.65	7910413.20
				861185.13	7910443.77
				861231.97	7910493.32
				861232.35	7910547.11
				861228.10	7910592.01
SAF FJKM	ANG1	Mahatsara Mantadia	0.57	861153.31	7909850.99
				861183.83	7909842.66
				861149.15	7909842.66
				861149.15	7909842.66
				861148.11	7909814.57
				861181.40	7909813.53
				861172.73	7909798.62
				861191.46	7909788.91
				861230.59	7909787.87
				861203.59	7909755.27
				861174.46	7909756.31
				861173.08	7909713.31
				861167.18	7909709.15
				861134.24	7909673.43
				861144.99	7909752.15
				861131.46	7909796.54
				861131.46	7909809.03
				861232.72	7909784.06

FA	Code	Location	Area (ha)	X	Y
				861250.41	7909781.63
				861239.66	7909754.58
				861232.03	7909753.89
SAF FJKM	RP	Mahatsara Mantadia	1.48	861167.56	7909709.12
				861172.81	7909708.25
				861169.60	7909614.03
				861161.14	7909614.18
				861142.48	7909623.36
				861139.27	7909614.18
				861141.87	7909610.09
				861136.50	7909481.89
				861122.20	7909482.18
				861081.22	7909504.35
				861025.80	7909505.52
				861029.15	7909536.44
				861101.05	7909615.05
				861134.75	7909673.24
SAF FJKM	RA	Mahatsara Mantadia	1.95	861053.29	7910478.79
				861085.85	7910458.61
				861137.18	7910443.04
				861183.90	7910410.47
				861205.50	7910412.60
				861212.22	7910413.31
				861224.26	7910400.56
				861223.20	7910354.19
				861307.80	7910351.01
				861308.15	7910322.69
				861250.45	7910324.81
				861250.10	7910296.14
				861221.07	7910297.20
				861221.07	7910290.12
				861176.82	7910313.84
				861070.99	7910354.19
				861074.17	7910378.97
				861045.50	7910408.00
				861037.71	7910444.46
				861039.84	7910452.95
				861040.90	7910462.86
				861082.67	7910416.14
				861138.95	7910413.66
				861137.53	7910356.67

FA	Code	Location	Area (ha)	X	Y
				861080.54	7910359.86
SAF FJKM	RB	Mahatsara Mantadia	1.64	861183.52	7910096.22
				861185.53	7910089.87
				861184.86	7910075.49
				861184.86	7910070.47
				861190.54	7910070.14
				861191.54	7910065.46
				861212.28	7910050.41
				861212.61	7910040.71
				861229.67	7910039.71
				861232.01	7910034.02
				861240.70	7910038.37
				861240.03	7910011.28
				861268.79	7910009.61
				861270.13	7910038.03
				861326.64	7910036.36
				861325.64	7910007.94
				861382.15	7910005.93
				861381.82	7909977.84
				861409.91	7909976.50
				861408.91	7909950.75
				861391.85	7909948.41
				861375.13	7909951.76
				861330.32	7909953.10
				861309.92	7909974.16
				861272.80	7909969.15
				861254.08	7909960.45
				861251.07	7909956.77
				861177.83	7909959.11
				861175.49	7909997.91
				861147.40	7910027.00
				861149.74	7910042.05
				861156.10	7910035.69
SAF FJKM	RC	Mahatsara Mantadia	5.53	861210.56	7909957.81
				861251.31	7909956.24
				861253.92	7909959.90
				861272.73	7909968.26
				861309.31	7909974.53
				861330.73	7909953.11
				861374.62	7909952.06
				861392.39	7909948.40

FA	Code	Location	Area (ha)	X	Y
				861409.63	7909950.49
				861436.80	7909947.88
				861436.80	7909919.14
				861463.97	7909917.58
				861463.45	7909889.36
				861492.71	7909888.84
				861490.10	7909803.67
				861461.36	7909804.19
				861458.22	7909747.24
				861487.48	7909746.19
				861484.87	7909684.54
				861477.56	7909687.15
				861456.66	7909726.34
				861441.50	7909741.49
				861414.33	7909728.95
				861384.55	7909741.49
				861368.35	7909778.59
				861366.79	7909770.23
				861352.16	7909761.35
				861258.10	7909781.72
				861249.74	7909781.72
				861231.98	7909784.86
				861232.50	7909812.03
				861204.81	7909813.07
				861204.29	7909840.77
				861183.91	7909842.86
				861155.17	7909852.26
				861191.75	7909907.13
				861195.40	7909927.50
				861295.72	7909951.54
				861323.94	7909951.02
				861322.90	7909923.32
				861350.59	7909921.76
				861350.59	7909893.03
				861293.11	7909894.59
				861204.81	7909813.07
				861204.81	7909786.95
				861192.27	7909789.04
				861173.46	7909798.44
				861181.82	7909813.60
SAF	ANG 2	Mahatsara Mantadia	2.86	861071.41	7910354.22

FA	Code	Location	Area (ha)	X	Y
FJKM				861177.03	7910314.09
				861220.50	7910290.13
				861220.50	7910268.11
				861247.81	7910267.55
				861247.81	7910239.13
				861276.23	7910237.74
				861275.95	7910224.64
				861253.66	7910216.28
				861241.96	7910234.11
				861201.27	7910219.90
				861161.42	7910221.85
				861162.26	7910241.64
				861105.69	7910243.59
				861101.79	7910158.59
				861112.65	7910157.76
				861110.98	7910141.60
				861129.93	7910144.10
				861130.21	7910129.33
				861158.36	7910127.94
				861157.24	7910099.24
				861182.32	7910098.96
				861183.44	7910095.62
				861156.13	7910035.98
				861150.00	7910041.83
				861147.21	7910027.34
				861084.51	7910096.17
				861044.94	7910200.67
SAF FJKM	RD	Andranonamalona Mantadia	1.17	861477.21	7910426.76
				861508.14	7910401.96
				861481.94	7910402.24
				861480.55	7910374.09
				861507.86	7910372.70
				861504.52	7910309.72
				861488.63	7910287.98
				861420.64	7910290.77
				861421.47	7910318.64
				861393.33	7910319.75
				861395.28	7910379.11
				861432.90	7910390.53
SAF FJKM	AML Parcl1	Andranonamalona Mantadia	1.88	861871.43	7909082.26
				861892.35	7909068.90

FA	Code	Location	Area (ha)	X	Y
				861890.12	7908990.12
				861947.09	7908988.34
				861948.43	7909016.83
				861976.92	7909015.05
				861978.70	7909041.31
				862013.41	7909036.41
				862018.31	7908962.08
				862041.46	7908839.68
				861894.57	7908928.70
				861875.43	7908986.56
				861880.78	7908999.47
				861846.50	7909022.17
				861863.42	7909023.95
SAF FJKM	AML Parcl2	Andranonamalona Mantadia	2.31	861893.58	7909074.98
				861891.65	7909069.66
				861875.71	7909075.94
				861952.03	7909099.61
				862029.79	7909097.68
				862080.99	7909081.74
				862097.90	7909022.81
				862091.62	7908817.52
				862040.90	7908840.22
				862017.23	7908961.95
				862011.92	7909035.85
				861977.63	7909041.16
				861978.11	7909044.54
				861950.09	7909045.51
SAF FJKM	AML Parcl3	Andranonamalona Mantadia	3.88	862039.90	7909164.33
				862155.83	7909138.57
				862143.94	7909114.30
				862182.58	7908974.59
				862207.85	7908955.76
				862270.76	7908941.40
				862208.34	7908852.22
				862208.34	7908852.22
				862089.94	7908817.54
				862096.87	7909022.64
				862080.53	7909081.60
				862029.50	7909098.44
				861951.22	7909100.42
				861951.72	7909102.90

FA	Code	Location	Area (ha)	X	Y
				861979.96	7909101.42
				861981.44	7909128.66
				862010.18	7909128.65
				862010.67	7909158.39
				862038.91	7909155.91
SAF FJKM	AML Parcl4	Andranonamalona Mantadia	4.34	862014.29	7909244.05
				862100.12	7909256.40
				862153.44	7909252.50
				862258.13	7909228.44
				862290.64	7909127.01
				862254.22	7909056.13
				862270.48	7908942.34
				862207.41	7908956.00
				862181.40	7908975.51
				862143.03	7909114.65
				862154.74	7909138.71
				862039.00	7909164.72
				862040.95	7909214.14
				862012.99	7909213.49
SAF FJKM	AMLII	Andranonamalona	6.84	862119.02	7909333.47
				862187.67	7909338.26
				862259.52	7909310.32
				862359.30	7909323.89
				862359.30	7909315.11
				862386.44	7909315.90
				862385.64	7909286.37
				862415.18	7909284.77
				862414.38	7909257.63
				862471.06	7909255.24
				862470.26	7909226.50
				862486.23	7909226.50
				862490.22	7909196.16
				862489.42	7909166.63
				862460.68	7909142.68
				862408.79	7909143.48
				862411.99	7909200.16
				862383.25	7909200.95
				862384.85	7909231.29
				862299.43	7909232.88
				862297.04	7909175.41
				862380.85	7909173.01

FA	Code	Location	Area (ha)	X	Y
				862380.06	7909145.07
				862408.79	7909143.48
				862407.20	7909057.26
				862401.61	7909050.08
				862400.81	7909014.96
				862388.04	7908998.19
				862391.23	7908987.02
				862388.84	7908972.65
				862376.06	7908974.24
				862374.47	7908960.67
				862350.52	7908948.70
				862269.10	7908967.06
				862253.93	7909055.67
				862289.05	7909127.51
				862254.73	7909228.89
				862152.55	7909252.04
				862099.06	7909256.83
				862083.10	7909253.64
				862077.51	7909273.60
SAF FJKM	BE	Andranonamalona	2.61	862269.27	7908966.67
				862349.49	7908948.95
				862374.21	7908960.14
				862374.21	7908945.22
				862346.22	7908945.68
				862345.29	7908917.70
				862317.31	7908918.63
				862313.11	7908861.73
				862342.96	7908859.86
				862342.03	7908839.81
				862325.23	7908844.01
				862312.64	7908849.60
				862302.38	7908846.80
				862293.99	7908832.35
				862270.20	7908810.89
				862252.94	7908790.37
				862242.68	7908776.84
				862227.75	7908770.78
				862207.23	7908770.78
				862189.04	7908766.58
				862181.58	7908745.13
				862174.58	7908737.66

FA	Code	Location	Area (ha)	X	Y
				862164.32	7908738.13
				862140.07	7908751.66
				862125.14	7908744.66
				862121.88	7908735.80
				862098.56	7908748.39
				862092.03	7908754.46
				862090.63	7908770.78
				862086.43	7908770.78
				862085.03	7908790.84
				862090.16	7908817.89
				862208.63	7908851.94
				862272.06	7908942.42
SAF FJKM	AMLIII	Andranonamalona	0.81	861846.06	7909021.76
				861897.90	7908998.85
				861875.74	7908987.36
				861893.50	7908928.55
				861950.93	7908893.31
				861907.65	7908894.42
				861877.96	7908875.00
				861831.91	7908908.30
				861826.92	7908948.25
				861821.64	7908969.33
				861830.80	7909300.68
SAF FJKM	DA	Andranonamalona	1.51	861907.90	7908894.32
				861950.84	7908893.32
				862041.06	7908839.72
				862090.34	7908818.08
				862084.68	7908791.45
				862087.01	7908770.81
				862087.01	7908766.81
				862081.35	7908749.50
				862066.37	7908727.19
				862025.08	7908728.53
				862024.42	7908720.20
				862021.75	7908734.85
				861990.13	7908760.15
				861979.47	7908803.76
				861944.52	7908835.39
				861901.57	7908863.69
SAF FJKM	T	Andranonamalona	5.26	862341.08	7908842.10
				862342.71	7908831.53

FA	Code	Location	Area (ha)	X	Y
				862315.08	7908833.16
				862311.82	7908805.52
				862285.00	7908804.71
				862280.94	7908748.63
				862311.01	7908747.00
				862309.38	7908718.55
				862338.64	7908717.74
				862341.08	7908775.45
				862369.53	7908773.82
				862370.34	7908802.27
				862408.54	7908799.83
				862394.73	7908751.06
				862370.34	7908720.99
				862333.77	7908698.23
				862333.77	7908673.04
				862341.08	7908613.70
				862318.32	7908564.94
				862291.50	7908542.18
				862225.67	7908512.11
				862217.54	7908499.91
				862203.72	7908483.66
				862173.65	7908483.66
				862152.52	7908492.60
				862132.20	7908501.54
				862132.20	7908508.85
				862125.69	7908508.04
				862120.82	7908519.42
				862108.63	7908529.99
				862109.44	7908568.19
				862133.01	7908562.50
				862154.95	7908621.83
				862162.27	7908700.67
				862159.83	7908719.37
				862162.27	7908738.87
				862172.84	7908738.06
				862180.96	7908746.19
				862190.72	7908765.69
				862206.16	7908769.76
				862227.29	7908771.38
				862241.92	7908775.45
				862252.49	7908790.08

FA	Code	Location	Area (ha)	X	Y
				862269.56	7908810.40
				862294.75	7908831.53
				862301.26	7908845.35
				862311.01	7908848.60
				862324.01	7908844.53
SAF FJKM	C1	Andranonamalona	3.23	862108.65	7908536.18
				862081.91	7908509.06
				862087.32	7908497.59
				862096.04	7908481.29
				862107.70	7908468.39
				862119.27	7908459.10
				862127.80	7908446.40
				862148.28	7908442.99
				862162.69	7908427.25
				862174.25	7908430.19
				862191.70	7908417.58
				862197.38	7908411.42
				862197.38	7908408.29
				862202.88	7908392.74
				862208.95	7908398.52
				862214.54	7908386.39
				862220.42	7908386.10
				862223.17	7908383.26
				862237.67	7908376.72
				862240.71	7908379.75
				862252.27	7908373.40
				862210.47	7908324.96
				862216.15	7908321.64
				862219.28	7908321.54
				862233.79	7908315.10
				862242.32	7908305.62
				862248.20	7908305.43
				862245.16	7908302.49
				862250.85	7908299.55
				862256.73	7908293.10
				862264.88	7908290.07
				862271.33	7908286.66
				862274.08	7908283.53
				862277.02	7908289.60
				862282.90	7908286.56
				862288.87	7908292.63

FA	Code	Location	Area (ha)	X	Y
				862288.96	7908298.89
				862295.13	7908307.70
				862298.54	7908323.06
				862301.48	7908329.13
				862307.35	7908332.16
				862310.39	7908341.45
				862310.67	7908350.36
				862313.33	7908350.27
				862319.39	7908353.68
				862334.85	7908384.40
				862340.73	7908399.19
				862346.70	7908408.19
				862332.48	7908427.25
				862338.45	7908461.28
				862329.35	7908461.57
				862330.11	7908479.30
				862307.92	7908507.74
				862290.86	7908541.77
				862249.62	7908524.23
				862225.73	7908512.48
				862222.79	7908506.41
				862216.91	7908499.87
				862216.91	7908497.12
				862210.75	7908487.92
				862201.93	7908481.95
				862172.55	7908482.61
				862154.72	7908492.09
				862143.54	7908494.94
				862131.69	7908501.48
				862131.5	7908508.21
				862126.09	7908508.21
				862123.44	7908511.43
				862117.56	7908523.66
				862108.55	7908529.92
SAF FJKM	AB	Andranonamalona	1.64	862436.74	7908800.29
				862408.24	7908801.26
				862394.68	7908748.97
				862370.48	7908719.01
				862334.92	7908697.90
				862334.44	7908673.30
				862341.91	7908611.84

FA	Code	Location	Area (ha)	X	Y
				862318.04	7908566.13
				862290.92	7908541.61
				862307.97	7908507.51
				862329.97	7908479.34
				862333.14	7908575.47
				862361.72	7908574.66
				862365.45	7908688.57
				862393.95	7908687.67
				862393.06	7908659.10
				862449.81	7908657.23
				862449.24	7908633.44
				862451.35	7908652.93
				862457.60	7908683.21
				862457.36	7908685.56
				862451.03	7908685.56
				862452.81	7908742.72
				862424.39	7908743.70
				862425.53	7908772.11
				862449.73	7908771.46
SAF FJKM	DADA	Mahatsara	0.74	860450.20	7911785.75
				860457.24	7911779.63
				860468.37	7911757.84
				860476.91	7911745.41
				860491.19	7911720.65
				860488.41	7911719.54
				860491.10	7911714.53
				860508.44	7911698.67
				860532.09	7911707.48
				860570.58	7911740.59
				860570.86	7911746.80
				860559.54	7911752.92
				860539.04	7911771.66
				860510.29	7911803.38
				860487.11	7911809.77
				860471.99	7911797.81
				860451.59	7911785.75
SAF FJKM	DADA 2	Mahatsara	1.26	860529.68	7911895.10
				860515.02	7911895.38
				860491.28	7911877.48
				860470.14	7911856.15
				860446.02	7911819.79

FA	Code	Location	Area (ha)	X	Y
				860448.62	7911787.15
				860450.29	7911785.75
				860451.49	7911785.75
				860471.99	7911797.81
				860487.02	7911809.96
				860510.48	7911803.47
				860539.04	7911771.75
				860559.54	7911753.02
				860570.76	7911746.80
				860570.76	7911740.59
				860573.82	7911740.50
				860603.32	7911761.46
				860589.03	7911783.06
				860590.05	7911835.56
				860596.27	7911853.83
				860570.30	7911860.50
				860543.96	7911879.61
				860544.24	7911888.70
SAF FJKM	EDMOND	Mahatsara	0.34	860416.72	7911811.72
				860414.77	7911750.98
				860443.15	7911750.14
				860442.31	7911721.58
				860470.69	7911720.56
				860470.51	7911715.55
				860491.00	7911720.65
				860476.91	7911745.32
				860468.37	7911757.84
				860457.24	7911779.45
				860428.22	7911805.04
SAF FJKM	GIABY	Andranobefoza	0.78	859662.03	7913117.82
				859622.73	7913119.09
				859618.29	7913116.76
				859604.21	7913096.48
				859604.00	7913091.20
				859600.48	7913091.34
				859597.03	7913086.41
				859617.38	7913067.40
				859637.10	7913036.34
				859640.12	7913029.86
				859660.27	7913017.33
				859668.86	7913007.96

FA	Code	Location	Area (ha)	X	Y
				859683.86	7913016.97
				859695.97	7913044.30
				859696.46	7913065.92
				859702.52	7913078.24
				859695.13	7913088.03
				859661.04	7913089.37
SAF FJKM	RIRY	Ambolomborona	0.43	859428.65	7912861.83
				859448.12	7912806.01
				859462.12	7912780.98
				859488.76	7912795.74
				859506.75	7912808.00
				859507.17	7912829.26
				859510.18	7912838.63
				859519.09	7912844.78
				859522.15	7912850.64
				859521.00	7912855.13
				859516.55	7912853.90
				859507.85	7912863.49
				859490.08	7912857.59
				859478.37	7912854.62
				859460.98	7912858.10
				859449.40	7912861.41
				859443.20	7912864.72
SAF FJKM	DELISY	Andranobefoza	0.83	859591.25	7913089.64
				859574.90	7913073.06
				859574.66	7913063.62
				859565.41	7913063.95
				859545.57	7913048.76
				859545.09	7913036.20
				859531.53	7913036.49
				859530.90	7913004.52
				859539.82	7913001.02
				859548.35	7912994.93
				859569.15	7912985.11
				859586.41	7912975.71
				859595.08	7912975.62
				859612.81	7912987.41
				859650.73	7912977.77
				859648.23	7912995.99
				859639.90	7913014.44
				859634.19	7913029.97

FA	Code	Location	Area (ha)	X	Y
				859632.18	7913043.92
				859617.32	7913067.26
				859596.95	7913086.38
SAF FJKM	HAJA	Ambolomborona	1.22	859457.39	7912973.46
				859456.69	7912953.42
				859428.16	7912954.53
				859427.26	7912926.00
				859408.54	7912926.56
				859409.24	7912920.23
				859428.58	7912861.92
				859443.26	7912864.64
				859449.39	7912861.30
				859461.01	7912858.03
				859478.33	7912864.69
				859490.02	7912857.47
				859507.83	7912863.52
				859516.53	7912853.99
				859536.92	7912859.76
				859531.42	7912872.08
				859520.01	7912881.75
				859543.32	7912890.24
				859558.21	7912886.90
				859563.85	7912893.16
				859549.93	7912914.94
				859548.82	7912921.41
				859535.32	7912927.19
				859526.97	7912936.93
				859506.23	7912943.19
				859497.47	7912949.73
				859489.12	7912952.93
				859471.65	7912965.67
SAF FJKM	NDRINA	Andranobefoza	0.88	859531.00	7913014.44
				859525.44	7913017.07
				859515.98	7913019.59
				859515.73	7913008.58
				859488.01	7913009.51
				859486.98	7913008.38
				859486.05	7912981.12
				859457.62	7912982.00
				859457.41	7912973.46
				859471.71	7912965.64

FA	Code	Location	Area (ha)	X	Y
				859488.98	7912952.94
				859497.57	7912949.80
				859506.32	7912943.27
				859526.94	7912936.95
				859535.32	7912927.33
				859550.03	7912921.06
				859576.25	7912914.16
				859582.22	7912929.44
				859597.18	7912947.75
				859612.35	7912959.73
				859635.65	7912962.35
				859650.62	7912977.73
				859612.77	7912987.34
				859595.08	7912975.52
				859586.33	7912975.67
				859569.16	7912985.13
				859548.33	7912994.85
				859539.79	7913001.02
				859530.90	7913004.47
SAF FJKM	DIAMSY2	Andranomahitsy	2.55	860856.66	7911226.75
				860845.34	7911224.18
				860803.97	7911224.94
				860770.75	7911163.79
				860732.85	7911161.52
				860679.40	7911133.59
				860678.04	7911103.69
				860681.81	7911097.65
				860696.76	7911084.97
				860706.12	7911084.67
				860705.82	7911077.72
				860715.79	7911069.42
				860751.72	7911083.76
				860754.74	7911083.76
				860791.89	7911049.49
				860838.69	7911057.64
				860881.27	7911093.88
				860916.30	7911113.05
				860921.59	7911166.50
				860877.20	7911195.50
				860873.88	7911211.50
SAF	SOLO	Andranomahitsy	0.97	860487.16	7910949.51

FA	Code	Location	Area (ha)	X	Y
FJKM				860444.68	7910951.02
				860443.65	7910922.46
				860415.24	7910923.58
				860415.09	7910921.27
				860422.33	7910887.62
				860425.03	7910865.98
				860421.69	7910847.44
				860427.26	7910831.69
				860451.20	7910846.73
				860471.21	7910837.10
				860483.26	7910858.58
				860495.35	7910870.51
				860513.09	7910873.14
				860539.27	7910879.03
				860551.60	7910906.31
				860508.32	7910922.86
SAF FJKM	ALPHONSE	Andranomahitsy	1.18	860463.24	7910738.77
				860436.94	7910739.16
				860404.87	7910727.62
				860363.51	7910719.21
				860365.85	7910700.64
				860366.15	7910682.15
				860339.26	7910667.00
				860344.15	7910640.60
				860364.19	7910639.82
				860400.76	7910650.67
				860450.04	7910643.63
				860503.04	7910667.00
				860492.09	7910691.83
				860480.65	7910729.38
SAF FJKM	DONNEE	Mahatsara	1.94	860715.32	7910570.55
				860682.96	7910555.94
				860670.57	7910540.59
				860640.61	7910513.59
				860631.74	7910492.51
				860636.91	7910476.98
				860654.85	7910469.95
				860654.67	7910461.07
				860638.15	7910423.72
				860706.63	7910410.77
				860720.69	7910392.28

FA	Code	Location	Area (ha)	X	Y
				860758.78	7910366.39
				860778.94	7910387.47
				860788.56	7910400.63
				860791.88	7910418.17
				860792.25	7910447.39
				860789.67	7910458.38
				860780.61	7910480.31
				860778.75	7910508.05
				860729.19	7910546.33
SAF FJKM	RJ	Mahatsara	1.08	860814.67	7910565.77
				860794.33	7910566.12
				860784.89	7910541.76
				860778.48	7910508.10
				860780.74	7910480.57
				860789.47	7910458.53
				860792.28	7910446.98
				860791.51	7910418.32
				860789.33	7910404.24
				860794.18	7910339.87
				860823.62	7910408.46
				860844.53	7910420.79
				860876.43	7910417.05
				860891.21	7910425.57
				860891.42	7910456.27
				860877.27	7910462.96
				860836.64	7910472.96
				860837.00	7910487.61
				860825.73	7910516.48
				860826.47	7910556.19
SAF FJKM	MARSIAL	Mahatsara	1.69	860180.49	7910349.90
				860152.04	7910339.04
				860094.71	7910312.77
				860041.50	7910285.40
				860029.99	7910276.28
				860038.20	7910269.72
				860055.35	7910260.09
				860081.81	7910241.31
				860084.09	7910219.42
				860107.12	7910194.60
				860115.61	7910188.72
				860143.87	7910123.07

FA	Code	Location	Area (ha)	X	Y
				860160.20	7910199.83
				860172.12	7910206.03
				860190.57	7910254.54
				860193.02	7910265.15
				860193.35	7910274.79
				860195.31	7910274.79
				860196.45	7910279.36
				860193.84	7910294.22
				860189.10	7910337.66
SAF FJKM	TSAUONY	Mahatsara	0.79	860597.22	7910145.38
				860589.76	7910118.67
				860616.18	7910117.54
				860616.85	7910139.37
				860587.33	7910108.33
				860582.53	7910186.69
				860604.23	7909987.74
				860611.57	7909986.54
				860612.24	7910003.76
				860669.26	7910001.76
				860668.33	7909674.72
				860683.15	7909971.31
				860692.67	7910035.68
				860696.37	7910054.17
				860703.52	7910102.92
				860701.31	7910103.38
				860700.71	7910086.16
				860672.27	7910087.16
				860671.27	7910058.71
				860642.69	7910059.78
				860641.75	7910031.14
				860613.17	7910032.21
				860615.18	7910089.23
				860586.73	7910090.18
SAF FJKM	J NOEL	Ambodigavoala	0.47	860296.18	7909785.04
				860318.88	7909790.56
				860342.00	7909768.07
				860318.24	7909741.33
				860294.27	7909720.12
				860264.77	7909704.84
				860263.50	7909702.50
				860247.16	7909720.96

FA	Code	Location	Area (ha)	X	Y
				860256.92	7909760.43
				860274.32	7909766.37
				860266.26	7909775.92
				860269.44	7909793.95
				860289.81	7909790.77
SAF FJKM	BOYEE	Ambodigavoala	0.27	860247.00	7909720.99
				860263.67	7909702.43
				860244.17	7909690.00
				860220.11	7909665.94
				860217.81	7909666.10
				860209.10	7909686.54
				860197.78	7909706.36
				860194.01	7909709.66
				860186.14	7909724.92
				860197.31	7909721.93
				860200.77	7909721.93
				860220.58	7909724.13
SAF FJKM	LORA	Ambodigavoala	2.31	860171.85	7909765.40
				860137.02	7909753.97
				860109.70	7909741.77
				860083.38	7909723.85
				860065.57	7909702.79
				860044.52	7909690.70
				860038.25	7909675.36
				860043.96	7909656.77
				860048.88	7909617.01
				860080.69	7909582.40
				860133.21	7909559.67
				860142.06	7909572.32
				860145.20	7909574.68
				860154.16	7909596.51
				860163.34	7909599.65
				860216.87	7909665.72
				860208.58	7909687.57
				860197.27	7909706.38
				860194.14	7909709.63
				860185.85	7909725.08
				860185.96	7909728.22
				860178.01	7909753.30
SAF FJKM	RAKOTO	Ambodigavoala	1.79	860654.28	7909949.99
				860657.83	7909949.99

FA	Code	Location	Area (ha)	X	Y
				860665.65	7909932.22
				860667.07	7909909.46
				860660.68	7909903.06
				860663.52	7909875.33
				860673.47	7909868.22
				860681.30	7909844.75
				860709.74	7909949.02
				860691.96	7909821.13
				860688.41	7909803.35
				860679.16	7909786.44
				860679.16	7909768.67
				860672.67	7909744.49
				860677.74	7909723.16
				860677.74	7909718.18
				860637.92	7909713.20
				860618.72	7909696.85
				860603.08	7909695.43
				860586.01	7909686.89
				860580.32	7909693.29
				860576.06	7909711.78
				860573.92	7909741.65
				860572.50	7909785.02
				860594.54	7909817.73
				860613.74	7909846.89
				860619.43	7909855.42
				860631.52	7909890.97
				860642.19	7909910.88
SAF FJKM	NAIVOSN	Ambodigavoala	1.12	860585.62	7909687.46
				860604.16	7909695.53
				860618.41	7909697.68
				860638.30	7909713.81
				860677.54	7909717.84
				860690.17	7909724.56
				860701.46	7909703.05
				860698.77	7909696.60
				860666.25	7909684.78
				860677.00	7909654.40
				860668.13	7909648.22
				860651.47	7909651.18
				860635.88	7909642.31
				860623.78	7909626.72

FA	Code	Location	Area (ha)	X	Y
				860625.93	7909617.58
				860605.78	7909599.57
				860610.88	7909593.39
				860591.80	7909590.97
				860552.82	7909600.65
				860545.03	7909637.20
				860553.09	7909655.75
				860568.95	7909671.34
SAF FJKM	PAUL	Mahatsara	0.23	860750.87	7910295.98
				860768.62	7910295.55
				860785.92	7910292.23
				860794.00	7910258.19
				860808.14	7910233.67
				860790.83	7910227.32
				860780.73	7910227.76
				860770.06	7910227.61
				860755.63	7910246.80
				860755.92	7910253.43
SAF FJKM	BERNARY	Mahatsara	0.32	860670.31	7910214.55
				860688.05	7910232.46
				860705.62	7910237.73
				860705.79	7910228.95
				860734.42	7910227.72
				860734.59	7910244.93
				860755.85	7910246.66
				860770.25	7910227.72
				860758.48	7910225.09
				860755.67	7910221.93
				860755.49	7910212.79
				860749.17	7910204.01
				860722.12	7910185.75
				860693.50	7910192.24
				860691.04	7910195.05
SAF FJKM	PL	Mahatsara	0.82	860667.35	7910173.04
				860672.33	7910186.33
				860687.29	7910195.64
				860691.28	7910194.98
				860693.61	7910192.32
				860722.53	7910185.67
				860749.12	7910203.62
				860755.44	7910212.60

FA	Code	Location	Area (ha)	X	Y
				860756.10	7910221.90
				860758.76	7910224.90
				860770.07	7910227.55
				860780.70	7910227.22
				860790.68	7910227.22
				860808.30	7910233.54
				860830.57	7910193.31
				860836.88	7910189.66
				860838.88	7910171.71
				860841.54	7910166.72
				860817.60	7910168.38
				860816.61	7910144.45
				860812.95	7910153.09
				860798.32	7910153.76
				860769.40	7910159.41
				860742.47	7910157.74
				860722.20	7910164.39
				860674.33	7910146.11
				860674.99	7910172.37
				860845.76	7910156.87
				860847.69	7910152.55
				860845.47	7910148.58
SAF FJKM	TOFY	Ambodigavoala	0.81	860790.03	7909738.35
				860790.33	7909731.68
				860793.66	7909731.68
				860826.98	7909715.36
				860747.97	7909712.36
				860870.96	7909693.37
				860870.63	7909670.38
				860873.30	7909650.39
				860883.96	7909615.73
				860874.63	7909594.74
				860849.64	7909619.73
				860819.99	7909614.07
				860822.98	7909617.07
				860811.32	7909636.73
				860805.99	7909661.05
				860799.99	7909763.71
				860798.00	7909679.71
				860792.00	7909694.37
				860771.67	7909710.03

FA	Code	Location	Area (ha)	X	Y
				860771.34	7909714.03
				860769.01	7909714.03
SAF FJKM	KOLY	Ambodigavoala	0.66	860792.00	7909694.37
				860798.00	7909679.71
				860799.99	7909763.71
				860805.99	7909661.05
				860811.32	7909636.73
				860795.66	7909592.41
				860765.68	7909787.41
				860752.68	7909584.75
				860734.36	7909579.42
				860699.37	7909598.41
				860714.70	7909616.07
				860717.70	7909634.06
				860732.69	7909652.39
				860735.36	7909671.71
				860744.69	7909665.05
				860755.68	7909652.39
				860767.68	7909646.05
				860780.00	7909648.72
				860791.33	7909661.05
SAF FJKM	TA	Ambodigavoala	1.88	860466.35	7909156.79
				860464.21	7909153.80
				860461.22	7909157.65
				860433.84	7909180.32
				860417.58	7909191.87
				860394.91	7909211.98
				860353.84	7909238.50
				860350.42	7909247.06
				860388.07	7909284.28
				860422.29	7909297.11
				860447.96	7909310.37
				860453.52	7909318.93
				860495.01	7909321.92
				860517.69	7909318.07
				860520.68	7909324.06
				860528.38	7909271.87
				860528.38	7909223.10
				860529.67	7909188.45
				860486.46	7909172.20
SAF	JN PAUL	Ambodigavoala	1.23	860460.69	7909157.33

FA	Code	Location	Area (ha)	X	Y
FJKM				860435.85	7909134.56
				860398.59	7909098.55
				860402.73	7909095.23
				860405.63	7909100.62
				860411.84	7909107.24
				860415.15	7909114.28
				860383.97	7909111.34
				860366.68	7909120.71
				860353.72	7909132.95
				860337.87	7909149.52
				860339.32	7909162.48
				860328.51	7909177.61
				860319.87	7909197.77
				860319.87	7909203.53
				860309.06	7909215.06
				860301.86	7909222.98
				860294.66	7909242.43
				860299.70	7909245.31
				860305.46	7909241.71
				860314.11	7909243.87
				860324.19	7909261.15
				860332.83	7909260.43
				860335.71	7909253.23
				860332.83	7909247.47
				860341.48	7909240.27
				860353.00	7909238.11
				860395.49	7909212.18
				860418.54	7909192.01
				860433.67	7909180.49
SAF FJKM	FELIX	Ambodigavoala	1.49	860460.69	7909157.33
				860465.24	7909153.19
				860466.48	7909156.92
				860473.11	7909150.30
				860476.83	7909142.84
				860476.42	7909139.95
				860485.53	7909128.35
				860481.80	7909124.63
				860489.25	7909116.76
				860496.71	7909103.93
				860492.98	7909096.06
				860497.12	7909089.85

FA	Code	Location	Area (ha)	X	Y
				860504.57	7909068.32
				860492.15	7909050.11
				860499.60	7909045.14
				860507.47	7909043.90
				860512.44	7909040.17
				860512.85	7909031.89
				860518.23	7909025.68
				860500.85	7909014.50
				860474.35	7909985.94
				860473.52	7909980.97
				860464.41	7909971.04
				860422.60	7909004.98
				860406.87	7909018.54
				860386.58	7909031.06
				860377.89	7909045.97
				860380.79	7909065.01
				860387.00	7909082.81
				860398.59	7909098.55
				860402.73	7909095.23
				860405.63	7909100.62
				860411.84	7909107.24
				860415.15	7909114.28
				860435.85	7909134.56
SAF FJKM	CIR2	Mahatsara	3.05	861097.08	7911170.67
				861127.92	7911143.55
				861146.53	7911134.51
				861176.84	7911108.99
				861188.00	7911089.85
				861188.00	7911068.05
				861180.03	7911048.37
				861173.65	7911029.76
				861165.67	7911013.28
				861161.95	7910992.01
				861155.57	7910972.87
				861139.62	7910940.44
				861130.58	7910921.30
				861123.67	7910896.84
				861098.68	7910900.56
				861079.00	7910910.13
				861083.79	7910914.38
				861081.13	7910931.93

FA	Code	Location	Area (ha)	X	Y
				861086.98	7910948.95
				861083.79	7910980.85
				861076.88	7911004.77
				861066.24	7911021.79
				861051.89	7911039.34
				861028.49	7911037.21
				861026.90	7911028.17
				861008.29	7911034.02
				860999.78	7911038.80
				860989.68	7911044.12
				860968.41	7911043.59
				860933.85	7911060.60
				860918.96	7911051.03
				860929.06	7911064.86
				860942.89	7911074.96
				860949.80	7911077.62
				860962.56	7911083.47
				860980.64	7911091.97
				861001.91	7911097.82
				861011.48	7911102.08
				861022.64	7911107.93
				861031.68	7911114.31
				861039.13	7911117.50
				861043.91	7911124.41
				861053.48	7911132.38
				861063.05	7911147.80
				861081.66	7911157.37
SAF FJKM	CIR3	Mahatsara	1.5	861130.54	7911323.92
				861139.07	7911310.59
				861163.06	7911307.39
				861169.45	7911301.00
				861168.39	7911240.76
				861196.11	7911239.16
				861195.04	7911182.65
				861222.76	7911182.12
				861220.63	7911137.34
				861198.24	7911140.01
				861182.78	7911117.62
				861173.72	7911120.28
				861145.46	7911141.61
				861111.35	7911163.46

FA	Code	Location	Area (ha)	X	Y
				861100.15	7911198.11
				861118.28	7911229.03
				861111.88	7911261.55
				861112.95	7911287.14
				861122.01	7911303.66
				861262.58	7911123.13
				861278.05	7911122.55
				861277.89	7911120.09
				861264.99	7911122.05
SAF FJKM	TM2	Mahatsara	0.81	861196.64	7911135.21
				861220.63	7911133.08
				861221.16	7911124.55
				861259.54	7911122.42
				861277.67	7911117.09
				861276.60	7911098.43
				861266.47	7911084.57
				861260.61	7911065.91
				861247.82	7911066.98
				861244.62	7911006.74
				861238.22	7911012.60
				861219.03	7911015.27
				861201.44	7911017.93
				861173.18	7911018.47
				861195.04	7911083.50
				861192.78	7911092.56
				861188.11	7911102.16
				861190.78	7911117.62
SAF FJKM	CIR1	Mahatsara	1.58	861174.25	7911017.93
				861194.51	7911011.54
				861205.70	7911010.47
				861225.43	7911012.60
				861243.55	7911005.14
				861230.22	7910981.15
				861215.83	7910981.68
				861213.70	7910919.85
				861203.04	7910896.92
				861202.50	7910893.19
				861213.17	7910905.45
				861211.57	7910868.67
				861231.29	7910866.54
				861191.31	7910846.81

FA	Code	Location	Area (ha)	X	Y
				861159.86	7910840.95
				861133.20	7910840.95
				861137.47	7910848.95
				861126.27	7910868.14
				861124.14	7910886.26
				861131.60	7910905.99
				861136.94	7910924.64
				861153.99	7910959.66
				861159.32	7910979.55
				861166.25	7910998.21
				861241.95	7910895.32
				861270.74	7910895.32
				861271.80	7910923.04
				861328.31	7910921.44
				861329.38	7910949.16
				861358.70	7910948.10
				861359.23	7910976.35
				861386.95	7910975.82
				861387.48	7911004.07
				861416.80	7911003.54
				861418.93	7911032.86
				861446.65	7911031.26
				861423.73	7911006.74
				861415.74	7910999.27
				861402.41	7910981.15
				861384.82	7910968.36
				861377.89	7910958.76
				861369.36	7910947.03
				861338.97	7910923.04
				861328.31	7910921.44
				861294.19	7910910.78
				861275.00	7910892.66
				861257.94	7910885.20
				861240.89	7910872.40
SAF FJKM	TM1	Mahatsara	3.34	861138.89	7910829.82
				861158.32	7910823.82
				861176.98	7910823.82
				861198.31	7910829.82
				861218.30	7910840.48
				861234.96	7910856.48
				861252.95	7910868.47

FA	Code	Location	Area (ha)	X	Y
				861270.94	7910877.80
				861285.60	7910895.79
				861304.26	7910891.13
				861314.25	7910910.45
				861334.24	7910912.45
				861353.57	7910919.78
				861366.23	7910937.77
				861380.22	7910903.79
				861380.22	7910881.13
				861399.54	7910880.46
				861412.20	7910865.14
				861411.54	7910810.50
				861384.88	7910798.50
				861365.23	7910798.50
				861314.25	7910783.84
				861296.26	7910751.86
				861277.60	7910763.85
				861252.95	7910751.86
				861239.62	7910779.85
				861217.63	7910760.52
				861201.64	7910728.54
				861208.30	7910709.21
				861204.97	7910677.89
				861193.64	7910662.57
				861189.64	7910667.90
				861184.98	7910663.90
				861176.32	7910661.90
				861154.99	7910682.56
				861150.99	7910678.56
				861147.66	7910685.89
				861155.66	7910731.20
				861143.67	7910768.52
				861142.33	7910801.83
				861143.00	7910813.83
AGA	AB	Ampasimadinika	1.85	862365.04	7906681.94
				862311.45	7906684.80
				862243.56	7906650.30
				862237.10	7906613.40
				862237.47	7906601.04
				862275.75	7906557.96
				862288.11	7906525.03

FA	Code	Location	Area (ha)	X	Y
				862289.59	7906518.21
				862332.67	7906557.96
				862384.60	7906583.98
				862410.43	7906607.91
				862392.63	7906642.28
				862385.15	7906651.50
				862381.19	7906658.97
AGA	FL	Andranolava	1.53	864090.74	7905984.69
				864021.44	7905990.36
				863986.30	7905995.42
				863985.68	7905979.51
				863957.20	7905980.25
				863956.21	7905952.01
				863927.72	7905953.00
				863926.61	7905924.64
				863912.43	7905924.89
				863910.71	7905911.32
				863913.17	7905909.60
				863984.45	7905897.39
				864096.78	7905895.05
				864096.41	7905935.61
AGA	MF	Morafeno	0.36	863185.27	7900898.54
				863156.58	7900899.58
				863155.71	7900871.11
				863127.07	7900871.97
				863125.98	7900836.82
				863141.36	7900818.55
				863143.73	7900814.35
				863153.75	7900814.06
				863153.69	7900813.25
				863176.11	7900844.83
				863185.85	7900890.64
AGA	NR	Morafeno	2.69	864335.58	7900325.04
				864318.90	7900320.00
				864301.44	7900327.89
				864233.79	7900310.10
				864214.15	7900300.08
				864221.31	7900268.24
				864227.47	7900257.83
				864192.77	7900248.15
				864190.31	7900246.47

FA	Code	Location	Area (ha)	X	Y
				864189.98	7900236.57
				864174.31	7900237.13
				864161.16	7900229.24
				864159.87	7900188.39
				864226.35	7900059.46
				864269.94	7900072.72
				864270.50	7900091.13
				864242.02	7900091.97
				864242.97	7900120.68
				864271.62	7900119.62
				864273.58	7900176.64
				864302.12	7900175.63
				864303.01	7900204.11
				864274.58	7900205.17
				864275.37	7900233.55
				864304.02	7900232.54
				864304.91	7900261.13
				864333.28	7900260.18
				857995.74	7902702.46
				857993.81	7902702.17
				857986.46	7902689.77
				857982.15	7902672.31
				857970.61	7902654.03
				857948.26	7902650.29
				857936.68	7902644.59
				857935.82	7902618.13
MITSINJO	SFF	Farahevitra	0.26	857907.40	7902619.16
				857906.49	7902591.89
				857928.22	7902604.66
				857931.42	7902602.16
				857943.58	7902616.90
				857964.49	7902623.15
				857975.58	7902622.20
				857993.44	7902636.82
				857993.57	7902637.97
ECOPHI	Z	Andasisihanaka	2.9	862876.82	7901134.53
				862909.62	7901141.51
				862950.09	7901130.35
				862962.65	7901114.99
				862957.77	7901104.53
				862971.72	7901090.57

FA	Code	Location	Area (ha)	X	Y
				862991.26	7901059.77
				862988.47	7900991.48
				863017.08	7900989.39
				863014.29	7900904.95
				862985.68	7900904.95
				862984.99	7900875.64
				862911.01	7900879.13
				862899.85	7900884.71
				862899.85	7900908.44
				862871.93	7900909.14
				862873.33	7900937.75
				862859.37	7900938.45
				862859.37	7900951.01
				862867.05	7900963.57
				862888.68	7900969.85
				862875.42	7900987.99
				862912.41	7900990.08
				862897.06	7901022.18
				862894.26	7901051.49
				862905.43	7901051.49
				862902.52	7901108.01
				862883.10	7901108.01
				862883.80	7901118.48
PNAM	SAHA1	Sahandambo	2.42	861056.10	7911327.75
				861055.77	7911301.06
				861084.49	7911299.65
				861085.43	7911328.83
				861113.20	7911327.89
				861114.14	7911334.95
				861134.38	7911330.20
				861108.96	7911289.76
				861104.26	7911269.05
				861111.79	7911244.10
				861090.13	7911199.86
				861093.90	7911174.91
				861068.01	7911155.14
				861032.71	7911116.07
				861012.47	7911108.07
				860991.76	7911096.77
				860920.68	7911070.88
				860915.03	7911082.65

FA	Code	Location	Area (ha)	X	Y
				860937.63	7911094.89
				860941.39	7911141.49
				860931.04	7911176.32
				860937.16	7911185.27
				860937.16	7911162.67
				860993.64	7911160.79
				860995.05	7911188.56
				861022.77	7911188.02
				861025.86	7911273.48
				860997.98	7911274.76
				860996.27	7911246.13
				860968.50	7911246.99
				860966.79	7911218.36
				860943.29	7911218.21
				860939.01	7911230.75
				860931.32	7911238.01
				860936.45	7911252.97
				860947.13	7911268.78
				860957.81	7911262.37
				860979.61	7911261.94
				860988.58	7911285.45
				861031.31	7911306.81
				861047.98	7911324.33
PNAM	AMG1	Ambodigavoala	4.98	860879.77	7909357.60
				860907.15	7909338.04
				860935.84	7909325.80
				860950.19	7909298.92
				860976.27	7909297.61
				861003.66	7909308.05
				861021.91	7909305.44
				861068.86	7909338.04
				861087.12	7909341.95
				861148.41	7909394.12
				861196.67	7909398.03
				861217.53	7909388.90
				861222.75	7909361.52
				861231.88	7909347.17
				861248.83	7909341.95
				861273.61	7909356.30
				861294.47	7909357.60
				861291.87	7909344.56

FA	Code	Location	Area (ha)	X	Y
				861302.30	7909330.22
				861280.13	7909308.05
				861273.61	7909281.97
				861290.56	7909250.67
				861265.78	7909253.27
				861224.05	7909249.36
				861194.06	7909241.54
				861140.59	7909236.32
				861089.73	7909228.50
				861071.47	7909235.02
				861002.35	7909220.67
				860918.89	7909216.76
				860874.55	7909212.85
				860860.20	7909281.97
				860864.12	7909334.13
MATE	AND5/1	Andasifahadimy	2.76	866564.51	7904835.94
				866573.07	7904835.94
				866573.52	7904847.20
				866579.38	7904844.05
				866601.45	7904866.57
				866622.16	7904865.21
				866646.94	7904890.44
				866659.55	7904889.54
				866658.65	7904861.61
				866687.47	7904859.36
				866686.12	7904832.33
				866715.40	7904830.98
				866715.40	7904859.36
				866744.22	7904858.46
				866745.58	7904885.48
				866759.54	7904884.58
				866770.35	7904896.74
				866760.89	7904907.10
				866770.80	7904917.91
				866780.26	7904906.25
				866769.90	7904884.13
				866780.71	7904872.87
				866790.62	7904850.80
				866779.81	7904839.99
				866780.26	7904818.37
				866789.26	7904795.40

FA	Code	Location	Area (ha)	X	Y
				866778.91	7904795.40
				866768.55	7904751.26
				866756.39	7904729.19
				866744.67	7904716.13
				866739.72	7904716.13
				866739.72	7904772.43
				866712.70	7904772.43
				866712.70	7904718.48
				866682.52	7904717.48
				866682.52	7904705.32
				866667.65	7904712.08
				866620.04	7904766.12
				866610.00	7904788.19
				866609.55	7904799.91
				866600.54	7904799.91
				866579.38	7904811.62
				866568.57	7904831.43
MATE	AND5/2	Andasifahadimy	2.21	866547.49	7904836.59
				866558.16	7904836.28
				866571.32	7904822.60
				866579.72	7904806.53
				866603.15	7904796.79
				866618.38	7904763.93
				866666.06	7904708.17
				866681.71	7904702.47
				866678.50	7904596.85
				866488.51	7904743.31
				866494.62	7904752.63
				866512.35	7904752.32
				866513.38	7904777.51
				866514.94	7904778.86
				866525.72	7904801.04
				866533.18	7904808.71
				866542.92	7904808.50
				866543.44	7904826.54

Annex 6: Malagasy laws relating to forest governance

Politique, Législation et Régime forestiers

• Décret du 25 janvier 1930 réorganisant le régime forestier à Madagascar, modifié par le décret n° 61 261 du 26 mai 1961, et le décret n° 87 110 du 31 mars 1987.
• Arrêté du 17 novembre 1930 portant application du décret du 25 janvier 1930, modifié par arrêté du 29 janvier 1984 (J.O du 07.02. 84).
• Ordonnance n° 62 123 du 1er octobre 1962 et décret n° 72 272 du 21 juillet 1972 portant sur le classement en zones à vocations forestières, pastorales ou agricoles des terres de Madagascar.
• Loi n° 97 017 du 08 août 1997 portant révision de la Législation forestière.
• Décret n° 97 1200 du 02 octobre 1997 portant les principes fondamentaux et les grandes orientations de la Politique forestière malagasy.
• Arrêté n° 97 200 du 02 octobre 1997 portant ensemble des orientations du Plan directeur forestier national (PDFN).
• Arrêté n° 57 090/98 du 17 août 1998 portant adoption du Plan directeur forestier national (PDFN).
• Décret n° 98 781 du 1- septembre 1998 fixant les conditions générales d'application de la loi n° 97 017 du 08 août 1997 portant révision de la Législation forestière.

Exploitation forestière et régime des produits forestiers

• Ordonnance n° 74 009 du 22 février 1974 instituant un droit de sortie sur les produits forestiers (J.O du 13.03.74).
• Ordonnance n° 74 078 du 28 février 1974 portant réglementation sur l'exportation des produits forestiers (J.O du 23.03.74).
• Arrêté n° 3 883-MDR/FOR/REF/MVF du 02 septembre 1974 complétant la réglementation en vigueur en matière d'exploitation forestière (J.O du 05.10.74).
• Arrêté n° 991-83 du 14 février 1983 déterminant les délais impartis aux différentes collectivités territoriales décentralisées pour instruire les dossiers d'exploitation forestière (J.O du 26.03.83).
• Arrêté n° 4615/85 du 29 octobre 1985 portant conduite de l'exploitation forestière avec cahier des charges (J.O du 09.11.85) .
• Arrêté n° 4374/86 du 13 octobre 1986 interdisant l'exportation des bois sous forme de grumes hors du territoire de la République Démocratique de Madagascar (J.O du 25.10.86).
• Décret n° 87 110 du 31 mars 1987 fixant les modalités des exploitations forestières, des permis de coupe et des droits d'usage (J.O du 11.05.87).
• Arrêté n° 2894/90 du 22 mai 1990 portant autorisation d'exportation sous forme de grumes de bois d'industries de petites et moyennes dimensions hors du territoire de la République démocratique de Madagascar (J.O du 28.05.90).
• Arrêté n° 2391/93 du 21 mai 1993 interdisant temporairement l'exploitation des bois précieux, sauf sous forme d'objets d'art (J.O du 04 octobre 1993).
• Arrêté n° 5139/94 du 15 novembre 1994 complétant la réglementation en vigueur en matière d'exploitation forestière et réglementant la commercialisation des produits principaux des forêts.
• Décret n° 98 782 du 16 septembre 1998 portant régime de l'exploitation forestière.

• Arrêté n° 12702/2000-MEF du 20 novembre 2000, en application des dispositions des articles 22 et 25 du décret n° 98-782 relatif au régime de l'exploitation forestière, les permis ou conventions d'exploitation sont désormais attribués sur appel d'offre ou par adjudication.
• Arrêté n° 12704/2000-MEF du 20 novembre 2000 relatif à la prohibition de toute activité d'extraction de ressources ligneuses dans les zones sensibles citées à l'alinéa 2 dudit arrêté.

Exploitation de divers produits

• Arrêté du 21 octobre 1931 réglementant le mode d'exploitation du santal.
• Arrêté du 05 août 1932 réglementant l'exploitation des peuplements de palétuviers.
• Arrêté n° 1808-MAER réglementant sur l'ensemble du territoire de la République Malgache l'exploitation, la collecte, la vente et la circulation des produits dénommés «Raphia» et «Bao».
• Arrêté n° 5196-MAER/DIR/FOR/MVF réglementant l'exploitation, le débitage et l'exportation des pins.
• Arrêté n° 2871-MDR/FOR/MVF fermant à l'exploitation toutes les forêts domaniales dans l'île et les îlots dépendants de Sainte-Marie.
• Arrêté n° 1247-SE/EF du 13 juin 1952 fixant les limites maxima et minima des redevances à percevoir pour les permis de coupe.
• Décret n° 69 434 du 07 octobre 1969 sur la réglementation de l'importation et l'exportation d'animaux et de produits d'origine animal, de fourrages et denrées.
• Loi n° 71 006 du 30 octobre 1971 établissant un droit de sortie sur les animaux sauvages et les orchidées (cf. Ordonnance n° 62 079 du 29 septembre 1962).
• Arrêté n° 1976 du 24 mai 1977 rectificatif de l'arrêté n° 4249 du 23 novembre 1976 réglementant l'exploitation, la commercialisation et la protection des plantes médicinales.
• Décret n° 82 312 du 19 juillet 1982 réglementant la fabrication du charbon de bois (J.O du 07.08.82).
• Arrêté interministériel n° 2915/87 du 30 juin 1987 portant conduite de l'exploitation des produits accessoires des forêts et réglementant l'exploitation, la commercialisation et la protection des plantes médicinales (J.O du 07.09.87).
• Décret n° 2001-068 du 24 janvier 2001 fixant les modalités de vente des produits forestiers saisis ou confisqués.
• Arrêté n° 3710/2001 du 30 mars 2001 portant application du décret n° 2001/068.
• Arrêté n° 7604/2001 du 17 juillet 2001 fixant les modalités de répartition des parts sur les recettes provenant des produits saisis et confisqués.

Infractions forestières

• Ordonnance n° 60 127 du 03 octobre 1960 fixant le régime des défrichements et des feux de végétation (J.O du 15.10.60).
• Décret n° 61 079 du 08 février 1961 réglant les modalités d'application de l'ordonnance n° 60 127.
• Ordonnance n° 75 028 du 22 octobre 1975 modifiant certaines dispositions des articles 34, 35 et 36 de l'ordonnance n° 60 127.
• Décret n° 87 143 du 28 avril 1987 fixant les modalités des défrichements et feux de végétation (J.O du 15.06.87).
• Ordonnance n° 60 128 du 03 octobre 1960 fixant la procédure applicable à la répression des infractions à la législation forestière, de la chasse, de la pêche et de la protection de la nature (J.O du 15.10.60).

• Décret n° 61 078 du 08 février 1961 fixant les modalités d'application de l'ordonnance n°60 128 (J.O du 18.02.61).
• Décret n° 65 047 du 10 février 1965 modifiant le décret n° 61 078 (J.O du 20 février 1965).
• Loi n° 83 009 du 20 juin 1983 portant ratification de l'ordonnance n° 83 010 du 05 mars 1983 portant modification de l'ordonnance 60 128, relative à la répression des infractions à la législation forestière, la chasse, la pêche et la protection de la nature (J ;O du 25 juin 1983).

Reforestation et reboisement

• Loi n° 63 032 du 24 décembre 1963 sur obligation au reboisement, devoir national (J.O du 28.12.63).
• Arrêté n° 2747-MDR/FOR/REF/MVF du 03 août 1973 fixant les contributions des exploitants forestiers dans le cadre de l'obligation de reboisement (J.O du 06 octobre 1973).
• Arrêté n° 2661/84 du 16 avril 1984 modifiant l'arrêté n° 2 747 du 03 août 1973 (J.O du 13.10.84).
• Décret n° 85 072 du 13 mars 1985 portant création d'une opération nationale d'action en faveur de l'arbre (J.O du 25 mai 1985).
• Arrêté interministériel n° 3145 du 15 juillet 1987 fixant les modalités du cadre de l'action en faveur de l'arbre et celle d'attribution des aides et faveurs pour ladite action.
• Loi n° 94 038 du 03 janvier 1995 relative à la législation semencière (J.O du 27 mars 1995).
• Décret n° 2000/383 du 27 juin 2000 relatif au reboisement.
• Arrêté n° 9398/2000 du 05 septembre 2000 fixant les modalités d'application du décret n° 2000/383.

Protection de la nature et des espèces

• Décret du 31 décembre 1927 sur statut juridique des réserves naturelles.
• Ordonnance n° 60 126 du 03 octobre 1960 fixant le régime de la chasse, de la pêche et de la protection de la faune (J.O du 15.10.60).
• Décret n° 61 093 du 16 février 1961 portant application de l'ordonnance n° 60 126 du 03 octobre 1960 (J.O du 25 février 1961).
• Décret n° 61 096 du 16 février 1961 catégorisant en trois catégories les oiseaux, les mammifères et autres animaux sauvages vivant dans le territoire de la République Malgache.
• Décret n° 62 321 du 03 juillet 1962 portant organisation du Conseil Supérieur de la Protection de la Nature (J.O du 14.07.62), modifié par le décret n° 84 393 du 13 novembre 1984 (J.O du 14.12.84).
• Décret n° 66 242 du 1er juin 1966 sur création et statut juridique des réserves naturelles intégrales.
• Décret n° 88 243 du 15 juin 1988, modifiant les articles 1 et 2 du décret n° 62 096 du 16 février 1961 sur la liste d'espèces animales protégées.
• Loi n° 91 008 du 25 juillet 1991 relative à la vie des animaux.
• Décret n° 92 285 du 26 février 1992 relatif à la police sanitaire des animaux.
• Ordonnance n° 93 022 du 04 mai 1993 modifiant les dispositions de l'ordonnance n° 60 126 du 03 octobre 1960 sur le régime de la pêche et l'aquaculture.
• Arrêté interministériel n° 4355/97 du 13 mai 1997 portant définition des zones sensibles.
. Arrêté n° 18177/04 portant définition et délimitation des zones forestières sensibles.
• Arrêté n° 12704/2000-MEF du 20 novembre 2000 relatif à la prohibition de toute activité d'extraction de ressources ligneuses dans les zones sensibles.
• Loi n° 2001-005 du 21 février 2003 portant code de gestion des aires protégées.

Conventions internationales

• Ordonnance n° 75 014 du 08 mai 1975 portant ratification de la Convention sur le commerce international des espèces de flore et faune sauvages menacées d'extinction ou CITES.
• Décret n° 77 276 du 26 août 1977 portant publication des annexes révisées de la Convention CITES.
• Loi n° 95 012 du 09 août 1995 sur autorisation de ratification des amendements apportés à l'article XXI de la CITES
• Loi n° 95 013 du 08 août 1995 et décret n° 95 695 du 03 novembre 1995 portant ratification de la Convention sur la Diversité Biologique.
• Loi n° 96 023 du 04 septembre 1996 autorisant la ratification de la Convention des Nations Unies sur la lutte contre la désertification.
• Loi n° 98 003 du 19 février 1998 autorisant la ratification de la Convention RAMSAR relative aux zones humides d'importance internationale particulièrement comme habitats des oiseaux d'eau.
• Loi n° 98 020 du 02 décembre 1998 autorisant la ratification de la Convention Cadre des Nations Unies sur les Changements Climatiques.

Patrimoine national, Propriété foncière et Gestion des ressources naturelles

• Loi n° 60 004 relative au Domaine privé national, et ordonnance n° 72 031 du 18 septembre 1972.
• Ordonnance n° 73 080 relative à la sauvegarde, la protection et la conservation des biens culturels.
• Ordonnance n° 83 030 tendant à renforcer la protection, la sauvegarde et la conservation du domaine privé national et du domaine public.
• Ordonnance n° 82 029 du 06 novembre 1982 relative à la sauvegarde, la protection et la conservation du patrimoine national.
• Loi n° 96 025 du 30 septembre 1996 relative à la gestion locale sécurisée des ressources naturelles renouvelables (GELOSE).
• Décrets n° 2000-027 et 028 du 13 janvier 2000 en application de la loi n° 96 025 et relatifs aux communautés de base chargées de la gestion locale des ressources naturelles renouvelables et aux médiateurs environnementaux.
• Arrêté n° 12703/2000 du 20 novembre 2000 portant création d'un observatoire du secteur forestier.
• Décret n° 2001-122 du 14 février 2001 fixant les conditions de mise en oeuvre de la gestion contractualisée des forêts (GCF) de l'Etat.
• Décret n° 2001/1123 du 28 décembre 2001 fixant les modalités de gestion des Fonds Forestiers National, Provincial et Régional.

Forest management regimes in Madagascar

Source: from Ferguson H. B. 2009, "REDD in Madagascar: An Overview of Progress", Independent Report, 20 August 2009, and references cited therein.

Type of Management Regime	Area (ha)	% Forest
i. Classic Protected Areas Managed by Madagascar National Parks (MNP) or declared prior to 2003 and managed by MEF (IUCN Categories I, II, IV): National Parks, Integral Nature Reserves, Special Reserves. (2003 area + extensions) (i/ii).	1,787,961	18.99

ii. New Protected Areas With temporary protection status and under various management regimes, (IUCN Categories III, V, VI) (Includes some of the areas under Community Forest Management using GCF and GELOSE policies): Natural Monuments, Protected Harmonious Landscapes, Natural Resource Reserves. (i/ii).	3,796,609	40.33
iii. Total Protected Areas (i+ii)	5,584,570	59.32
iv. 'Koloala' : Sustainable Production Forests (Includes some of the areas under Community Forest Management using GCF and GELOSE policies) (iii).	803,625	8.53
v. Other Forests (Includes some of the areas under Community Forest Management using GCF and GELOSE policies as well as areas destined to become 'Koloala' production forests) (VI-(III+IV)).	3,025,023	32.13
vi. Total Forest Area (2005) (vi).	**9,413,218**	**100**

GELOSE – Gestion Locale Sécurisée (Secured Local Management). The first community based natural resource management (CBNRM) law enacted in Madagascar in 1996. It facilitates the time bound transfer of management rights of natural resources to local communities.

GCF – Gestion Contractualisée des Forets (Contracted Forest Management). In 2000 a 'streamlined' policy for forests was enacted, specifically for transferring management of forests to communities.

VOI – Vondron Olona Ifotony ; COBA – Communauté de Base. – Legally recognised community associations with an 'elected' management committee (COGE – Comite de Gestion) – who sign time bound contracts with the forest service to take charge of forest management.

Annex 8: Sub-Project Agreement

MINISITERAN'NY TONTOLO IAINANA SY NY ALA
TETIKASA MAMPODY SAVOKA (TAMS) ANDASIBE

FIFANEKENA

Antony

Ity fifanekena ity dia mahakasika ny fampiasana ny tany ataon'ny tompon-tany hambolen-kazo io amin'n'ny sehatry ny TAMS, tetikasa iarahana amin'ny Minisiteran'ny Tontolo Iainana sy Ala izay soloin'ny…… tena.

Mombamomba ireo mifanaiky

*ANDANINY ny tompon-tany

Anarana : ……
Fanampiny : ……...
Kara-panondro laharana :…… Nomena tamin'ny …….
Tao……..
Duplicata nomena tamin'ny ……tao……
Fonenana : …….
Fokontany :…… Kaominina :……
Distrika : ……

*ANKILANY ny solon-tenan'ny Minisitera

Mpisolo tena : RAZAFINDRAHANTA Voahangiarivelo Hanitriniaina
Numero Matricule : 257339
Chef CIREF Moramanga
Adiresy : Batiment CIREF Moramanga

Votoatin'ny fifanekena

3.1 Ny tompon'ny tany dia manaiky fa ny taniny hambolen-kazo amin'ny TAMS ka tsy hanapaka ireo hazo maniry eo mandritra ny telopolo taona.

3.2 Ny tetikasa dia tsy maka ny tany izay nambolena hazo fa mijanona ho an'ny tompony foana ny tany

3.3 Ny Minisitera, miaraka amin'ny Birao Ifoton'ny Fananan-tany dia manamora ny fahazoan'ny tompon-tany karan-tany ara-dalana ho an'ny taniny fa misy fandraisan'anjara ara-bola ataon'ny tompon-tany amin'izany.

3.4 Ny tompon'ny tany no mikarakara sy miaro ny hazo voavoly

3.5 Toy izao ny mombamomba ny tany natolotra :
- Toerana misy azy (tanàna, fokontany, kaominina) :
- Velarany tombamaso :
- Velarany (araka ny données SIG) :
- Coordonnées GPS mamaritra ny tany :

3.6 Ity fifanekena ity dia hohamafisina amin'ny fifanekena ara-panjakana mamaritra (protocol d'accord) ny tombontsoa ho azon'ny tompon-tany aoriana izay hosoniavina rehefa voavolavolan'ny mpahay lalàna sy eken'ny tompon-tany

Mombamomba ny vavolombelona

Misy vavolombelona eo amin'ny mpiara-monina manamarina fa an'ny tompon'ny tany marina ny tany atolony hambolen-kazo amin'ny TAMS. Toy izao ny mombamomba io vavolombelona io :
Anarana : ……
Fanampiny : ……...
Kara-panondro laharana :…… Nomena tamin'ny …….
Tao……..
Duplicata nomena tamin'ny ……tao……
Fonenana : ……
Fokontany :…… Kaominina :……

Natao teto : ……..... tamin'ny ……

Ny Tompon-tany Ny Vavolombelona

Ny Solon-tenan'ny Minisitera

Ny Fokontany Ny Kaominina

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History of the document

Version	Date	Nature of revision
02	EB35, Annex 22 19 October 2007	• Sections A and B were restructured; • Requirement to repeat equations has been removed from section C; • Sections D and E have been aligned with the requirements of the Modalities and Procedures.
01	EB 23, Annex 16(a) and 16(b) 24 February 2006	Initial adoption