Darwin Initiative Main Project Annual Report

Important note: *To be completed with reference to the Reporting Guidance Notes for Project Leaders: it is expected that this report will be about 10 pages in length, excluding annexes*

Submission Deadline: 30 April

Darwin Project Information

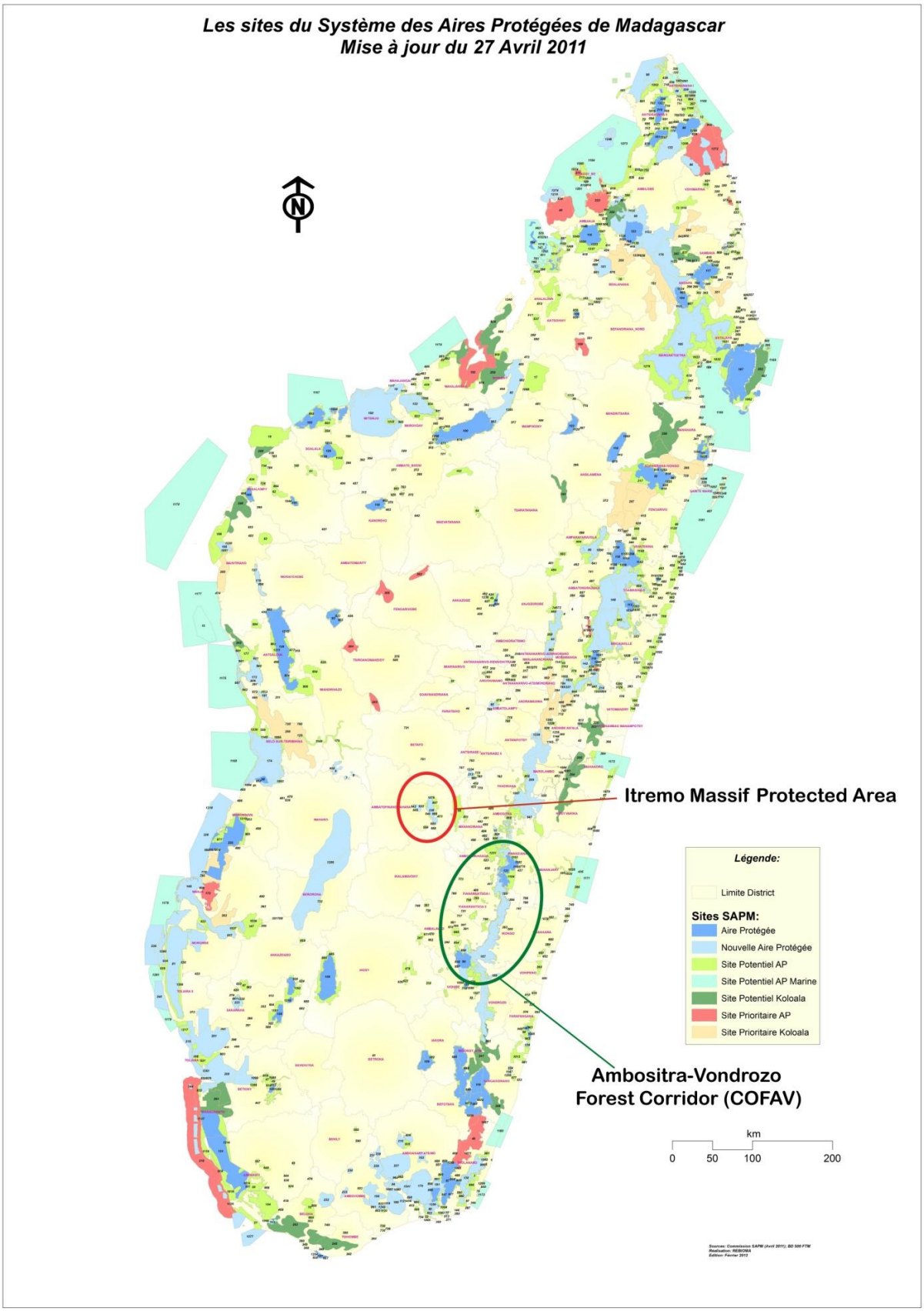
Project Reference	20-020
Project Title	Madagascar Agroforestry Livelihoods Project
Host Country/ies	Madagascar
Contract Holder Institution	Royal Botanic Gardens, Kew
Partner institutions	Kew Madagascar Conservation Centre (KMCC) Feedback Madagascar and Ny Tanintsika (FBM/NT) Silo National des Graines Forestières (SNGF)
Darwin Grant Value	£263,344
Funder (DFID/Defra)	DFID
Start/end dates of project	1 April 2013 – 31 March 2016
Reporting period (e.g., Apr 2015 – Mar 2016) and number (e.g., Annual Report 1, 2, 3)	April 2013 – March 2014 Annual Report 2
Project Leader name	Stuart Cable
Project website/blog/Twitter	@TeamKMCC, www.teamkmcc.org,
Report author(s) and date	Stuart Cable, 28/04/15

1. Project Rationale

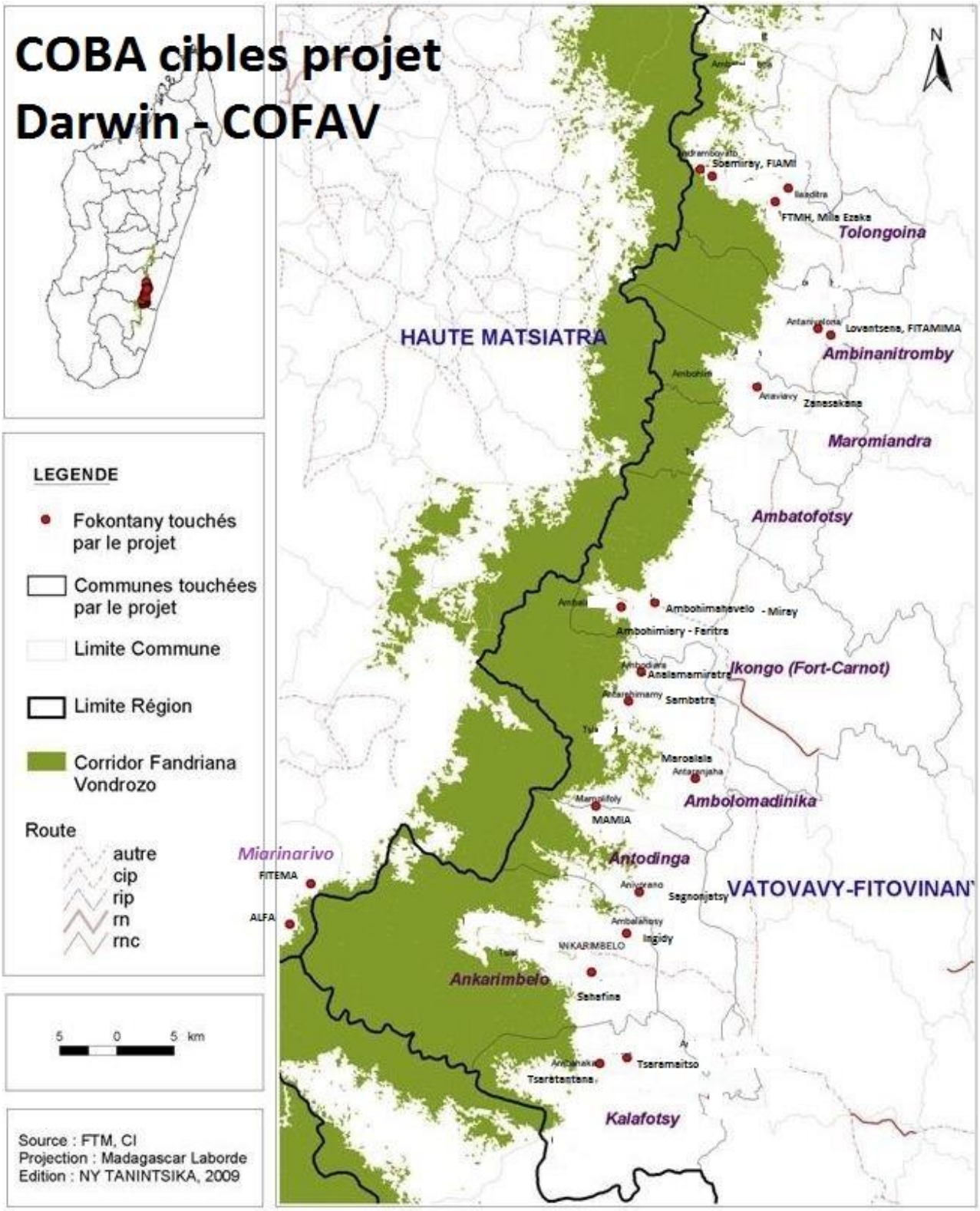
Madagascar is a globally important biodiversity hotspot in economic crisis (IMF 2011 GDP per capita ranking: 173/183). 80% of its population are subsistence farmers living on <$1 pppd and 65% suffer regular food shortages. It has lost >33% of its forests since the 1970s and suffers the highest soil erosion rates in the world. Many plant species are threatened with extinction (*e.g.* IUCN: 83% of the 200 palm species). Many important areas for biodiversity are known and the protected area network in development covers 10% of the land surface. However, nowhere has complete protection and significant biodiversity, as well as many threatened species, exists out-with and buffering the protected area system. The challenge is to engage communities in conservation by providing viable alternatives to damaging agricultural practices and by increasing productivity and tree cover on deforested land. The Madagascar CBD Progress Report states that sustainable agricultural improvement is a national priority: https://www.cbd.int/doc/world/mg/mg-nr-04-en.pdf.

KMCC is leading on the establishment of the Itremo Massif Protected Area and FBM/NT has supported Conservation International in the establishment of the COFAV Protected Area by undertaking community development work in the region over the last 20 years. The new protected areas system is a collaboration between conservation organisations and communities and tangible economic development is requirement built into the process specified by the Government of Madagascar. The focus is on land close to the communities and the buffer zones around the conservation areas.

Map 1 - project sites within Madagascar and the protected areas system:



Map 2 - participating communities at COFAV:



The project outcome is to increase agricultural productivity, forest cover and biodiversity on deforested land in Itremo and COFAV, through forest restoration and locally adapted, low-input agroforestry systems, that emphasise sustainable soil management and native species and that offer communities viable alternatives to the prevalent damaging agricultural practices such as slash and burn cultivation. At least 3,000 households in 30 communities will benefit directly from maintained ecosystem services and improved livelihoods through this transition to agroforestry and a more tree-based economy. The project has a three-tier strategy focused on low, mid and high value products to help alleviate poverty:

Staple crops – diversification to improve diets and food security, eliminate ‘hungry months’ (between rice harvests) and produce surplus to generate income in local markets.

Mid-value crops – new species and products for regional markets to bring a small increase in revenue to households and build community economies; *e.g*. honey, spices and fruit.

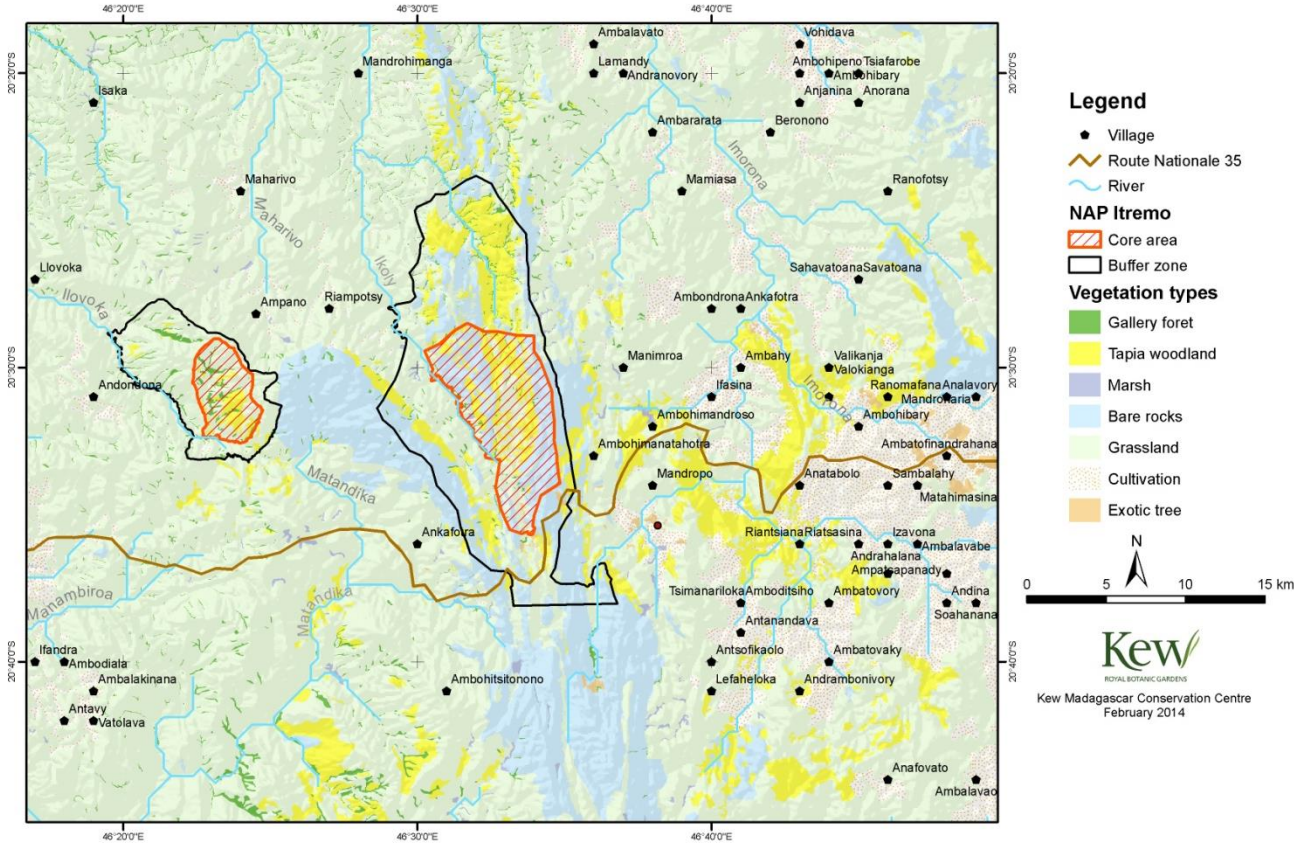
High-value crops - new species and products for national and international markets to bring a significant boost to household incomes and local economies; *e.g*. silk, essential oils and vanilla.

The project is based in Madagascar at two sites:

- Itremo Massif Protected Area – 250 km^2 plus c.250 km^2 community land, 10 communities
- COFAV Protected Area – 2,800 km^2 plus c.250 km^2 community land, 20 communities

The Itremo Massif consists of upland wooded savanna and humid gallery forest and COFAV consists of humid forest. Together they are representative of around 60% of Madagascar's vegetation, so this project has significant potential for providing a widespread solution for biodiversity conservation, food security, improved rural livelihoods and protected and enhanced ecosystem services.

Map 3 - Itremo Massif Protected Area:



2. Project Partnerships

The project is implemented by the Kew Madagascar Conservation Centre (KMCC), Feedback Madagascar and local NGO Ny Tanintsika (FBM/NT) and the Silo National des Graines Forestières (SNGF). KMCC is Kew's local office in Madagascar and is staffed entirely by Malagasy botanists. Ny Tanintsika is a conservation and development NGO, supported by Feedback Madagascar, with over 20 years of experience of bringing participatory development to the Itremo and COFAV regions. SNGF is the National Forestry Seed Bank in Madagascar with extensive experience of community tree nurseries for economically useful species and of forest restoration throughout Madagascar. RBG Kew and KMCC have worked with FBM/NT for several years on yams cultivation in the COFAV area. RBG Kew and SNGF have run the Millennium Seed Bank Partnership in Madagascar since 2000, which aims to conserve the seeds of the threatened and economically important plant species. In 2011 we signed an agreement to extend the work to include forest restoration.

Madagascar fully embraced the Durban Accord in 2003 and has strived to make conservation of protected areas a collaboration with communities. However, the country faces severe threats to its biodiversity from over 20 million resource poor subsistence farmers. In order to conserve the 10% of the land surface that is marked for conservation it is necessary to protect and enhance natural capital on adjacent lands. Socio-economic development is built into the legislative framework for protected areas in Madagascar.

The partnership for this Darwin Initiative Project stemmed from the need for agroforestry and forest restoration within the KMCC and FBM/NT areas of operation, and the complementary expertise of the three institutions: KMCC - botanical inventory and monitoring, FBM/NT - community engagement for development and SNGF - tree nurseries and restoration. All partners are involved in project planning and decision making.

Project management has developed into 3-monthly planning and reporting meetings, with each partner responsible for specific activities. Fieldwork is coordinated to reduce overlap, with project partners jointly participating in trips whenever possible. KMCC is responsible for the community work at Itremo and FBM/NT at COFAV, with SNGF providing technical support at both sites for forest restoration as well providing seeds for agroforestry.

Project planning has not always been easy due to the varying wider programmes of the partners, but KMCC and FBM/NT have ensured significant contact with the communities throughout the first two years of the project. In theory, tree planting is a simple process, but restoration is not just tree planting and we have encountered many technical and practical challenges that we are still seeking to solve. Ecological restoration is a developing science and we have begun to look outside of Madagascar for some of the answers. In February 2015 Kew, KMCC, FBM/NT and Missouri Botanical Garden (MBG) had a joint field excursion to Mount Ibity in the Central Highlands (a site similar to Itremo) with James Aronson an international expert on natural capital and ecological restoration to discuss the issues. We were also joined by Leighton Reid, a post-doc at MBG, who trained as part of the team that developed the technique of nucleated planting in Costa Rica. Our brain-storming will lead to the establishment of a restoration network within Madagascar. Internationally, I now represent Kew on the organising committee of the Botanic Gardens Conservation International (BGCI) led Ecological Restoration Alliance (ERA). This seeks to make links between restoration projects and links to technical experts in fields such as seed germination and soils. This project was presented at an ERA symposium in Jordan in early April 2015.

3. Project Progress

3.1 Progress in carrying out project activities

The project has implemented most of the planned activities with greatest effort in Q3 and Q4 due to seasonality and the preparation work required with the communities. The emphasis has been on establishing strong relationships with the communities, agreements with community associations (COBAs), training extension workers and community technicians and building and stocking tree nurseries. 29 communities have tree nurseries and have received training in agroforestry and tree management. Due to seasonality, the forest restoration work was planned for Itremo (*tapia*) rather than COFAV. This was unsuccessful due to poor fruit/seed production this year and poor survival of seedlings in the nurseries. Agroforestry planting of useful species has begun in most communities. Alley-cropping is planned for year 2.

3.2 Progress towards project outputs

Output 1: Baseline surveys and forest management

The Itremo Massif Plant Conservation Checklist will be published in 2015 and will contain over 500 species. The necessary documentation for gaining official protected status was submitted to the Government over the last two weeks and a decision will be made by 17 May 2015. This contains basic maps of vegetation and land use for the area as well as a management plan. The work has been validated by the National Office for the Environment. In Y3 we will use high resolution satellite images to create basic management plans for each of the Itremo

communities. However, land use on the Itremo Massif is dominated by fire and we will initiate a long term study relating fire history and regimes to vegetation structure, outside of this project.

At least two technicians are active in each community. They have all received training in agroforestry and forest restoration, most recently on inoculation of seedlings with ectomycorrhizal fungi. A Malagasy language agroforestry training video was been commissioned from Notion Pictures and will be shown at all of the communities in Y3.

The indicators are appropriate for this output.

Output 2: Conservation and sustainable utilisation of wild species

No progress has been made towards the sustainable utilisation of wild species. This will be implemented in Y3. For income from natural products, we have established capacity at COFAV for curing vanilla and produced 200kg in the first year, selling it to an ethical international company, Symrise AG.

Output 3: Agroforestry

At the end of Y2, 542 households are engaged in alley-cropping and their plots cover 36.4 ha over the two sites. We have seen increasing uptake by households, but we will struggle to meet the target of 3,000 households by the end of Y3. The community demonstration plots are developing and this will increase interest. Most Madagascan tree species are slow growing and we have reverted to non-native legumes. *Inga* is available in Madagascar at one site in the Central Highlands and we have been purchasing seeds whenever they are available. The seedlings are quick growing, but not as quick as in South American agroforestry systems. We will not achieve the first crops at the end of two years, but after 3 or 4 should be possible. Mike Hands of the Inga Foundation will visit this year to advise on propagating *Inga* and we will take an experimental approach measuring growth rates against different treatments, including inoculation, fertilizers and composting.

Rehabilitation of degraded land around communities has been more successful. The COBAs have propagated approximately 486,000 seedlings of useful tree species and 235,000 have been planted covering 113 ha across the communities. In total for agroforestry, 150 ha have been planted with trees.

The indicators are adequate (with the adjustment to one demonstration plot managed by the COBA rather than 5 plots managed by households). We will aim to significantly increase participating householders in Y3.

Alley-cropping

COFAV	Households engaged					Area (ha)				
Community	Baseline	Y1	Y2	Y3	Y4	Baseline	Y1	Y2	Y3	Y4
Manavaona	0	1	33			0.00	0.50	12.37		
Fitema	0	1	20			0.00	0.50	5.25		
Alfa	0	1	25			0.00	0.00	2.16		
Andohanisahafina	0	1	6			0.00	0.50	0.60		
Tsaramaitso	0	1	6			0.00	0.50	0.60		
Tsaratantana	0	1	6			0.00	0.50	0.60		
Mamia	0	1	6			0.00	0.50	0.60		
Avotra	0	1	11			0.00	0.50	0.70		
Ingidy	0	1	36			0.00	0.50	1.30		
Sagnonjatsy	0	1	45			0.00	0.50	1.40		
Alamamiratra	0	1	6			0.00	0.50	0.60		
Maroalala	0	1	6			0.00	0.50	0.60		
Sambatra	0	1	26			0.00	0.50	1.00		
Faritra	0	1	24			0.00	0.50	0.96		
Miray	0	1	6			0.00	0.50	0.60		
Zanasakana	0	1	6			0.00	0.50	0.60		
Fitamima	0	1	6			0.00	0.50	0.60		
Lovantsena	0	1	6			0.00	0.50	0.60		
Milaezaka	0	1	5			0.00	0.50	0.58		
Ftmh	0	1	22			0.00	0.00	0.90		
Totals	**0**	**20**	**307**			**0.00**	**9.00**	**32.62**		

Itremo	Households engaged					Area (ha)				
Community	Baseline	Y1	Y2	Y3	Y4	Baseline	Y1	Y2	Y3	Y4
Fanavaozana (Itremo)	0	1	35			0.00	0.00	0.39		
Soahotanteraka I (Ifasina)	0	1	7			0.00	0.00	0.15		
Soahotanteraka II (Ambondrona)	0	1	27			0.00	0.00	0.26		
Miara mizotra (Ihazofotsy)	0	1	23			0.00	0.00	0.83		
Lovasoa (Ankafotra)	0	1	14			0.00	0.00	0.45		
Mitsinjo (Riampotsy)	0	0	11			0.00	0.00	0.25		
Mahatanamaintso (Mandimbizaka)	0	1	38			0.00	0.00	0.50		
Hanitriniala (Andondona)	0	0	20			0.00	0.00	0.72		
Mahay Miray (Mahavanona)	0	1	60			0.00	0.00	0.25		
Totals	**0**	**7**	**235**			**0.00**	**0.00**	**3.79**		

Rehabilitation

COFAV	Rehabilitation - seedlings propagated					Rehabilitation - trees planted					
Community	Y1	Y2	Y3	Y4	Total	Y1	Y2	Y3	Y4	Total	Area (ha)
Manavaona	3,121	92,390			95,511		10,548			10,548	5.27
Fitema	5,103	10,948			16,051		4,729			4,729	2.36
Alfa	1,840	44,138			45,978		3,658			3,658	1.83
Andohanisahafina	7,244	52,747			59,991	378	81,500			81,878	40.94
Tsaramaitso	5,391	14,509			19,900	6	20,570			20,576	10.29
Tsaratantana	15,667	5,200			20,867	27	4,239			4,266	2.13
Mamia	2,648	2,830			5,478	28	3,541			3,569	1.78
Avotra	3,327	610			3,937	49	14,145			14,194	7.10
Ingidy	5,035	10,540			15,575	205	13,341			13,546	6.77
Sagnonjatsy	10,682	9,840			20,522		8,075			8,075	4.04
Alamamiratra	3,891	50,559			54,450		9,423			9,423	4.71
Maroalala	4,155	16,142			20,297	154	9,892			10,046	5.02
Sambatra	10,719	7,996			18,715	133	7,933			8,066	4.03
Faritra	1,794	7,636			9,430		2,616			2,616	1.31
Miray	576	9,294			9,870		826			826	0.41
Zanasakana	3,307	8,749			12,056	3,357	890			4,247	2.12
Fitamima	5,577	7,906			13,483		1,007			1,007	0.50
Lovantsena	6,142	9,125			15,267	298	1,552			1,850	0.93
Milaezaka	3,364	2,581			5,945	3,500	530			4,030	2.02
Ftmh	2,930	7,792			10,722	4,663	492			5,155	2.58
Totals	**102,513**	**371,532**			**474,045**	**12,798**	**199,507**			**212,305**	**106.15**

Itremo	Rehabilitation - seedlings propagated					Rehabilitation - trees planted					
Community	Y1	Y2	Y3	Y4	Total	Y1	Y2	Y3	Y4	Total	Area (ha)
Fanavaozana (Itremo)	250	574			824		2,722			2,722	1.07
Soahotanteraka I (Ifasina)	150	742			892	610	1,760			2,370	0.51
Soahotanteraka II (Ambondrona)	150	625			775		1,214			1,214	0.45
Miara mizotra (Ihazofotsy)	1,000	1,475			2,475		3,914			3,914	1.22
Lovasoa (Ankafotra)	400	1,260			1,660		1,716			1,716	0.86
Mitsinjo (Riampotsy)		924			924		1,154			1,154	0.12
Mahatanamaintso (Mandimbizaka)		1,821			1,821		3,423			3,423	0.81
Hanitriniala (Andondona)		679			679		1,660			1,660	0.58
Mahay Miray (Mahavanona)		2,080			2,080		4,739			4,739	1.37
Totals	**1,950**	**10,180**			**12,130**	**610**	**22,302**			**22,912**	**6.99**

Output 4: Forest restoration

Forest restoration has been the most difficult output. When devising the project we over-estimated the capacity of the communities for propagating trees (we revised the target from 150,000 to 60,000 seedlings per nursery for the project in Y1) and under-estimated the difficulty of collecting seeds and transporting seedlings to the planting sites. Hence a greater emphasis has been placed on useful species for the rehabilitation of land around the villages. We will revise our strategy for restoration in Y3 and are already in discussions with various restoration specialists. It is likely that we will adopt a 'nucleated' planting approach, whereby the trees are planted in patches and adjacent to forest fragments in order to facilitate natural regeneration. We will focus more on quick growing species to form a matrix for slower growing shade-tolerant species to colonise. The restoration target in terms of hectares will remain, but we will devise management plans to assist regeneration. We will also try direct seeding and seed-bombs to reduce the effort needed to propagate and transport seedlings. The communities propagated over 180,000 native trees and planted around 38,000.

The indicators are adequate (with the revised target for seedling production).

COFAV	Restoration - seedlings propagated					Restoration - trees planted					
Community	Y1	Y2	Y3	Y4	Total	Y1	Y2	Y3	Y4	Total	Area (ha)
Manavaona		7,136			7,136		499			499	0.40
Fitema	223	3,793			4,016		2,685			2,685	2.15
Alfa	45	2,066			2,111		460			460	0.23
Andohanisahafina		2,860			2,860	324	1,184			1,508	0.75
Tsaramaitso	182	50			232		1,419			1,419	1.14
Tsaratantana	2	2,761			2,763		580			580	0.46
Mamia	53	40			93		1,171			1,171	0.94
Avotra	838	3,558			4,396		3,624			3,624	2.90
Ingidy	402	902			1,304		2,069			2,069	1.27
Sagnonjatsy		3,618			3,618		87			87	0.46
Alamamiratra	420	19,746			20,166		1,200			1,200	0.99
Maroalala	1,125	8,513			9,638						0.50
Sambatra	615	17,550			18,165		351			351	0.28
Faritra		7,636			7,636		950			950	0.76
Miray	77	4,693			4,770						0.52
Zanasakana	252	5,143			5,395		2,096			2,096	1.98
Fitamima	1,969	35,408			37,377		8,211			8,211	8.52
Lovantsena	30	7,777			7,807						
Milaezaka	721	18,726			19,447		1,358			1,358	1.09
Ftmh	1,524	9,029			10,553		2,877			2,877	2.87
Totals	**8,478**	**161,005**			**169,483**	**324**	**30,821**			**31,145**	**28.21**

Itremo	Restoration - seedlings propagated					Restoration - trees planted					
Community	Y1	Y2	Y3	Y4	Total	Y1	Y2	Y3	Y4	Total	Area (ha)
Fanavaozana (Itremo)	950	998			1,948	15	1,779			1,794	0.40
Soahotanteraka I (Ifasina)	950	1,300			2,250		1,300			1,300	0.00
Soahotanteraka II (Ambondrona)	85	250			335		250			250	0.00
Miara mizotra (Ihazofotsy)	775	1,016			1,791		1,016			1,016	0.00
Lovasoa (Ankafotra)	1,000	1,030			2,030		12			12	0.03
Mitsinjo (Riampotsy)		30			30		30			30	0.00
Mahatanamaintso (Mandimbizaka)	150	170			320		1,133			1,133	0.48
Hanitriniala (Andondona)		750			750		788			788	0.00
Mahay Miray (Mahavanona)		800			800		903			903	0.33
Totals	**3,910**	**6,344**			**10,254**	**15**	**7,211**			**7,226**	**1.24**

3.3 Progress towards the project Outcome

The project will not achieve the Outcome by the end of funding. We will have increased agricultural productivity, forest cover and biodiversity on deforested land in COFAV and Itremo, through forest restoration and locally adapted, low-input agroforestry systems and we will have helped the communities to break through the risk aversion and lack of resources that has prevented development. The indicator for increasing tree cover per community is far too ambitious, and 50 ha in 5 years would have been achievable rather than 100 ha in 3 years. The other indicators are adequate, even though the time-frame is a challenge.

We are not able to calculate the change to slash and burn cultivation yet or the increase in agricultural productivity around villages, but we will in Y3. On average the increase in tree cover per community through planting new trees is 6 ha. Most communities have diversified their agricultural production by 5 crops as per indicator. The key to increasing incomes at COFAV is vanilla production and we have established capacity in a handful of communities, with the necessary route to market at the standard price for Madagascan producers. We will extend production to most communities in Y3. At Itremo we have helped the communities to increase silk production in terms of harvestable cocoons, but we have not established yet the capacity for value-adding activities such as dying and weaving.

We aim to extend the project with these communities to at least 5 years. We have started fund raising efforts, and although we will apply to Darwin for an extra year of funding if this is an option, we are not assuming that extra funds will be available. We are also looking to establish one of two large nurseries that we will manage to produce seeds and seedlings to supplement community capacity.

3.4 Monitoring of assumptions

The outcome and output level assumptions still hold true. However, there are signs that political stability is improving and that this will contribute to a stronger economy. The presidential elections in January 2015 passed without incident and were endorsed by the international community. The new government has a strong anti-corruption policy and has indicated continued support for conservation and the new protected areas system. The new Ministry for Ecology, Environment, Marine and Forests, led by Hon. Ralava Beboarimisa, is seeking international support to tackle the illegal exploitation of high value timbers which is devastating forests in the NE of Madagascar. He has indicated that there will be government support for protected areas managers to help find funding (a $50m endowment fund will provide basic support for PAs established by 17 May 2015). Funding is critical, because the support of the communities that have agreed to forest management plans will be dependent on the realisation of tangible benefits such as improved livelihoods in the short-term.

3.5 Impact: achievement of positive impact on biodiversity and poverty alleviation

As indicated in section 3.4, this project directly supports establishment and management of two protected areas. The Itremo Massif PA has over 500 species of plants of which 95% are endemic to Madagascar and 10% are only found within the protected area. For example, one of the project communities is helping us to conserve an orchid (*Angraecum longicalcar*) with a total population of 12 plants in the wild and a yam (*Dioscorea decaryana*) with a total population of 20 plants in the wild. The flora of COFAV is less well known, but we are building a checklist and are aware of at least 6 species of critically endangered palms within the project area.

For human development and welfare, we have broadened agricultural productivity and have taught communities how to grow and plant trees to rebuild natural capital on their land. We have established or strengthened community capacity for producing useful and valuable crops, including vanilla, silk and essential oils, and will calculate the improvement to household incomes during Year 3.

4. Project support to the Conventions (CBD, CMS and/or CITES)

The project will help Madagascar to deliver GSPC Targets 2, 3, 4, 5, 6, 7, 8, 12, 13 and 14 of the CBD, particularly 5 and 7 (in-situ conservation) and 6 and 12 (sustainable management).

The project will help Madagascar to deliver Aichi Strategic Goals A, B, C, D and E of the CBD, particularly D (enhance the benefits to all from biodiversity and ecosystem services) and E (enhance implementation through participatory planning, knowledge management and capacity building).

We have not interacted with national CBD focal points for this project, but we will invite representatives to the Year 3 project workshop in Antananarivo. Kew/KMCC have attempted to meet with the new Minister of Ecology, Environment, Marine and Forests, Hon. Ralava Beboarimisa, to introduce the project and our restoration plans, but so far that has not been possible. A meeting is agreed in principle, but we have met him in other contexts (*e.g*. closed meeting at Chatham House on 26 March 2015), not least because Kew guided Madagascar through the process to list various precious timber species (rosewoods and ebonies) under CITES. He has been supportive of KMCC establishing and managing the Itremo Massif as a protected area and that will be signed off by the Government in the next few weeks.

5. Project support to poverty alleviation

Poverty alleviation is an output of the project:

Output 2, Indicator 3 - 50% increase in household incomes from natural products (*e.g*. silk, yams, essential oils, vanilla, bamboo, fuel and timbers) by end of Year 3.

The project aims to bring benefits to 3,000 households across 30 communities.

We have established a relationship with Symrise AG for supplying vanilla and have built two curing plants and trained technicians. This year we produced 200 kg of cured vanilla (from 1 tonne of green pods) selling at the market price (communities often have to sell well below the market price. This was much less output than we had hoped for, but the infrastructure is now in place to increase production and involve more communities. We have also found a second ethical buyer based locally. Essential oils and silk have been less successful so far. Production is OK for essential oils, but we have not yet established a good route to market. Silk production is a slow process with the most added value contributed by weaving, but we have not reached that stage yet.

Our communities are generally better equipped to adopt new ideas through this project and they are more aware of what is possible. Intangible benefits include improved diets through agricultural diversification leading to fitter and more productive people. Long-term, the project aims to enable communities to sustain and improve natural capital on deforested land, including watersheds, and to build resilience against climate change.

6. Project support to Gender equity issues

We have not specifically targeted women for support through this project, but women play a significant role within the COBAs and many of our technicians are women. We aim to gather quantitative data on the role of women in the COBAs and food production during Y3.

7. Monitoring and evaluation

The partners use the project outputs and indicators during quarterly meetings to evaluate progress. Itremo and COFAV are treated separately. Meetings are held in Malagasy with input from the extension workers. We have learnt that frequent reporting is necessary, with partners meeting every quarter, even if fieldwork is undertaken jointly. We have implemented and are refining a simple excel reporting tool with data recorded for each of the 30 communities.

8. Lessons learnt

Relative success of activities

- Bamboo cultivation failed and we are seeking training from experts for the project team.
- The market for essential oils is satiated within Madagascar and problems with quality from some producers has dented the potential for exports.
- Vanilla has been a success even if initial production was low. We have built the infrastructure necessary to increase production and have established the route to market.
- The tree nurseries cannot produce sufficient trees for the original restoration targets.
- Our agroforestry tree species are slow growing, even with the use of *Inga*, and we will not have established alley-cropping cycles at the end of Year 3.
- Seed supply has been an issue for agroforestry, rehabilitation and restoration.
- Identification of restoration species is a problem, particularly for seed collectors.
- The project has been stretched to fulfil the sustainable management of 5 wild species per community (Output 2).
- The engagement of COBAs has been a success, but we are struggling to reach the target of 100 households per community.
- We were slow to employ a forestry/agroforestry specialist at KMCC, because we were not offering a competitive salary (it took 3 rounds of adverts and interviews).

What would we do differently next time?

- Invest more preparation time in order to learn from other projects and make links to experts that might help the project.
- Simplify and focus on just agroforestry (including forest gardens) and restoration.
- Place more emphasis on soil management, including mulching and composting.
- Research techniques that would facilitate the transport of seedlings from the nurseries to the restoration sites (*i.e*. production of smaller seedlings with well-developed root systems) or that reduce the need to propagate the trees in nurseries (*e.g*. seed-bombs, transplanting forest seedlings, and nucleated planting).

Recommendations

- 3-monthly meetings work well. Any further apart and there would be mission-creep.
- Keep the management as simple as possible and always focus on the project outputs at meetings, recording progress against outputs in spreadsheets (it is easy to get carried away by particular activities and lose sight of the outputs).
- When working with communities, have a quick win, something that produces tangible benefits in the first year or so (*e.g*. growing beans to improve diets).
- In Madagascar, at least, place more emphasis on the contribution of individuals to the community rather than the project, *i.e*. employment is more of a social contract than a paid job even if remuneration is the same. This is so that the main benefit of the project is not perceived within the community as employment for a few individuals.

Future plans

- Our management experience with this project will make subsequent projects far more effective, including a new Darwin Initiative project to conserve and sustainably utilise or cultivate Madagascar's threatened edible yam species.
- We plan to develop a Madagascar Ecological Restoration Network with Missouri Botanical Garden.
- We have secured funding to undertake ecological profiling of Madagascar's 4,000 tree species (*e.g.* soils, geology, climate, regeneration characteristics, seed dispersal, pollination and phenology) and to make multiple seed bank collections of 500 tree species.
- We plan to establish one or more research nurseries to develop techniques appropriate for Madagascar and to demonstrate and research agroforestry and restoration (it is difficult to undertake research in community nurseries).
- We are seeking funds to continue the work of this project in the over the next few years.

9. Actions taken in response to previous reviews (if applicable)

Our management has been adaptive with solutions sought to problems at the quarterly meetings as they arise. We are striving to improve data management and streamline documentation and reporting within the project.

10. Other comments on progress not covered elsewhere

A significant development since the start of the project is that we have discovered that the South American tree species Inga edulis has been introduced into Madagascar, probably as a shade tree for coffee. Local communities value the species for its edible fruit (the pulp around the seeds) and for its ornamental value, but have no idea about its potential for agroforestry. A specimen of Inga edulis in the National Herbarium of Madagascar collected in French Guiana in the 1870s suggests that the species may have a long history in Madagascar, but there is no record in the botanical literature. As *Inga edulis* is well established in Madagascar at a couple of sites and we have decided to use it for agroforestry, while researching the potential of native species with similar properties. There is no evidence that it is invasive. There is an issue with seed supply and we have given Inga to all of our communities to grow for seeds as well as agroforestry. It seems though, that even though *Inga* outgrows native species it is still slower growing than in South America. Mike Hands, the Director of the Inga Foundation, will visit in 2015 to advise on its propagation and use.

The project philosophy is still to promote native tree species and to use seeds or plants of local provenance. This is difficult as most native species are relatively slow growing and are judged by communities in comparison to well established non-native species such as Eucalyptus for fuel wood and charcoal. We are continuing to explore long term funding for promoting and conserving Madagascar's tree species.

The project has made it starkly clear how little is known about Madagascar's 4000 tree species even within the scientific community. We have had problems identifying species and selecting species for particular ecological traits (*e.g.* fast-growing pioneers or nitrogen-fixing species). Seed supply is also a difficult problem. Kew has just been awarded a 5 year grant from the Garfield Weston Foundation to establish multiple seed collections of Madagascar's 500 most threatened species and to undertake ecological profiling for all species to facilitate restoration projects. This is unlikely to significantly benefit this Darwin project in its final year, but it will have an impact (especially as the work will start with legumes) in following years and for similar projects elsewhere in Madagascar.

The main risks in Itremo are banditry, locusts and disease (including plague). In COFAV the main risks are if Conservation International withdraws as protected area manager and a lack of funds to support all of the communities around the site (over 80), which covers over 4,000 km^2 including community lands. However, as a project our main concern is the time-scale for establishing agroforestry, especially as the trees in our project areas are slow growing. Kew and FBM/NT are putting in a lot of effort to raise money to continue the project beyond 3 years.

11. Sustainability and legacy

The emphasis during the first year was on establishing the project partnership and developing strong support from the communities. The second year has been about consolidating the work and getting trees into the ground. We have promoted the project extensively at the local level through workshops, visits and radio. Within the conservation community we have talked about the project and our solutions to the provisioning and livelihoods problems that everyone is facing. We are building an online presence and the project has been presented at an international BGCI Ecological Restoration Alliance Symposium. It is one of their example projects (they aim to have 100) and will be featured on the ERA website hosted by BGCI.

The partners all have long term commitments to working in the project area beyond the life of the project. RBG Kew is trying to raise money for forest management within the Itremo Massif region, and this will include supporting DREF and communities to develop and implement forest management plans outside of the protected area. The official designation of Itremo Massif as a

protected area in the next few weeks will qualify it for rolling funding from the Madagascar Biodiversity Fund. This will be sufficient to support the COBAs in the long-term. FBM/NT is initiating the 'Treemad Campaign' to secure long term funding for forest restoration in the Amoroni Mania Region and have been successful in raising funds to extend agroforestry to more communities located between the Itremo and COFAV Darwin Initiative sites. SNGF is a lead organisation in a large GEF funded project to restore 20 sites around Madagascar, so this project will influence similar work throughout Madagascar.

FBM/NT is also raising money to buy or lease a significant parcel of land between Itremo and COFAV in order to establish a large nursery for seed production and agroforestry training for communities. Kew is about to raise money to build a new Kew Madagascar Conservation Centre at the National Botanic Garden, Parc Tsimbazaza, in Antananarivo. This will include facilities for training conservation and development professionals from around Madagascar.

Our exit strategy is to leave a simple agroforestry system in place, along with trained community workers and secure routes to market that will ensure sustainable and growing benefits for communities beyond the life of the project. We will continue to seek funding as the Darwin Initiative support only covers 3 years, which is short for establishing agroforestry, and all partners have long term programmes within the region and nationally. Our long-term strategy is to work with the Darwin Initiative communities to develop a system that has its own momentum and will be adopted more widely passing from household to household and community to community... the *alavaoimboly* movement ('crops married to trees'). Our strategy is still valid. There is not enough money in conservation to pay for the restoration of forests and natural capital, so the answer is to empower communities to plant trees themselves.

Through supporting community development, this Darwin Initiative project has made a significant contribution to our successful application for official designation of the Itremo Massif as a protected area. This will be announced by Government decree in May 2015. As a consequence of its full status as a protected area, the Itremo Massif will receive a small but significant amount of rolling funding from the Madagascar Biodiversity Fund's $50m endowment fund for the new protected areas system.

12. Darwin Identity

We are currently developing a new KMCC website with pages on the Darwin Project. It has not been possible to develop pages on the Kew website, but the project is mentioned. We post regular updates on Twitter through @TeamKMCC and occasional French language blog posts through https://teamkmcc.wordpress.com/. We have used local radio stations to broadcast to project areas about the project.

The Darwin Initiative support is recognised as a distinct project.

The Darwin Initiative is well known within the international conservation community in Madagascar as it has supported a number of projects. We are beginning to develop a social media presence and link to Darwin on Twitter. At the moment the internet is regularly unreliable in Antananarivo, but we will scale-up our efforts.

13. Project Expenditure

Table 1 Project expenditure during the reporting period (1 April 2014 – 31 March 2015)

Project spend (indicative) since last annual report	2014/15 Grant (£)	2014/15 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items				
Others				
TOTAL				

Total project spend was £76,176, with £11,136 contributed from matched funding.

14. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes

I agree for the Darwin Secretariat to publish the content of this section (please leave this line in to indicate your agreement to use any material you provide here)

Through supporting community development, this Darwin Initiative project has made a significant contribution to our successful application for official designation of the Itremo Massif as a protected area. This will be announced by Government decree in May 2015.

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2014-2015

Project summary	Measurable Indicators	Progress and Achievements April 2014 - March 2015	Actions required/planned for next period
Impact In COFAV and Itremo protected areas forest loss and erosion of biodiversity and ecosystem services (including soil fertility and water supply) are reduced. Resilience to climate change, food security and local livelihoods are all improved through a shift from food production dependant on damaging agricultural practices, such as slash and burn cultivation, to ecologically and economically sustainable agroforestry systems. Forest restoration helps to conserve biodiversity and maintain ecosystem services.		Itremo Massif is now designated a protected area (socio-economic development is a prerequisite). Progress on most outputs, if not meeting indicators.	
Outcome Agricultural productivity, forest cover and biodiversity are increased on deforested land in COFAV and Itremo, through forest restoration and locally adapted, low-input agroforestry systems, that emphasise sustainable soil management and native species and that offer communities viable alternatives to the prevalent damaging agricultural practices such as slash and burn cultivation. At least 3,000 households in 30 communities will benefit directly from maintained ecosystem services and improved livelihoods.	Indicator 1 – COFAV: annual forest area cleared by communities for tavy reduced by 30% in the project area by year 3. Indicator 2 – COFAV: increase in agricultural production on deforested land around communities is greater than the production lost through the 30% reduction in tavy by year 3. Indicator 3 – Increase in tree cover through restoration and agroforestry of 100 ha per community by year 3. Indicator 4 – Diversification of agricultural production around communities, with adoption of at least 5 new crops per community by year 3. Indicator 5 – Increase in average income for participating household from 30,000-60,000 Ariary (£8-16) per month to 45,000-90,000 Ariary (£12-24).	1) Not calculated. 2) Not calculated. 3) 6 ha per community. 4) All communities 4-5 new crops. 5) Not calculated.	1) Complete. 2) Complete. 3) Increased capacity. 4) Continue to diversify. 5) Increase vanilla production, continue training in silk products.
Output 1 Baseline data, monitoring systems and skills developed within COBAs/CFMs and extension workers for forest management, agroforestry and	Indicator 1 – Monitoring system in place with simple metrics and baseline data on species ecology and vegetation, published in checklists/reports for	1) Year 3. 2) At least 2 technicians active per COBA.	

sustainable utilisation of natural resources.	Itremo. Indicator 2 – 2 community technicians active in each COBA and able to teach households, implement management plans and monitor progress. Indicator 3 – Manuals for agroforestry, forest restoration and sustainable utilisation of key species produced for communities and forest managers. Indicator 4 – Itremo forest management plans agreed with communities and local forestry department.	3) Manuals drafted, restoration book available and DVD produced in Malagasy. 4) Year 3 for (management transfer plans), but project agreements in place.
Activity 1.1 Workshops with COBAs/CFMs towards project planning.		Complete.
Activity 1.2 Recruit and train technicians.		Complete.
Activity 1.3 Ground surveys of species, vegetation, soils and land use.		Ongoing.
Activity 1.4 Remote sensing, GIS and data analysis.		To be done.
Activity 1.5 Testing of monitoring methodologies.		To be done.
Activity 1.6 Progress workshops with COBAs/CFMs.		Ongoing.
Activity 1.7 Final workshop with national/regional planners and NGOs.		To be done.
Output 2 30 communities engaged in the conservation and sustainable utilisation of wild species with income generating potential.	Indicator 1 – Management plans agreed for wild 5 species per community. Indicator 2 – Monitoring shows no decrease in wild populations by Year 3. Indicator 3 – 50% increase in household incomes from natural products (e.g. silk, yams, essential oils, vanilla, bamboo, fuel and timbers) by end of Year 3. Indicator 4 – Peer-reviewed paper submitted to a conservation and/or development journal on sustainable	1) To be done. 2) To be done. 3) Ongoing development, silk and vanilla main focus. 4) To be done.

	utilisation and economic benefits.	
Activity 2.1	Training for technicians and householders.	Ongoing.
Activity 2.2	Selection of species, surveys, collection/harvesting.	Ongoing.
Activity 2.3	Domestication trials.	Ongoing.
Activity 2.4	Train householders in processing/manufacturing products.	Ongoing.
Activity 2.5	Production and marketing of products.	Ongoing.
Activity 2.6	Community evaluation, economic surveys and follow-up.	Ongoing.
Output 3 30 communities engaged in agroforestry with demonstration household plots managed under agreements with the project.	Indicator 1 – Agroforestry agreements in place with 30 COBAs. Indicator 2 – 5 COBA/CFM managed household demonstration plots per community, with benefits shared by the community. Indicator 3 – 100 households undertaking agroforestry per COBA by end of Year 3. Indicator 4 – Final workshop with MEEMF, Ministry of Agriculture and conservation/development NGOs.	1) All 30 communities are engaged with agreements in place. 2) 5 household demonstration plots per community was a mistake and we reverted to one plot managed by the COBA. 3) Not all COBAs have 100 households as members. 4) At end of Year 3. However we have been invited to collaborate with a planned Ministry of Ecology, Environment, Marine and Forests (MEEMF) project to restore 20 forests throughout Madagascar supported by GEF. If that goes ahead the results of this project will be presented through that mechanism as well.
Activity 3.1	Construction of tree nurseries (for Outputs 2, 3 and 4).	Completed.
Activity 3.2	Training for technicians and householders.	All 30 COBAs and technicians have been trained. Follow-up training ongoing as necessary to improve results.
Activity 3.3	Selection and collection of seeds, seedlings, cuttings.	Ongoing, but seed availability has been an issue. This will improve over the medium-term as communities produce and manage their own seeds.
Activity 3.4	Establishment and maintenance of demonstration plots.	Ongoing, but one per community and managed by the COBA.

Activity 3.5 Community evaluation and follow-up training.		Ongoing.
Output 4 30 communities engaged in forest restoration under agreements.	Indicator 1 – Forest restoration agreements in place with 30 COBAs. Indicator 2 – 150,000+ tree seedlings raised by each COBA. Indicator 3 – 100 ha planted and maintained per COBA by end Year3. Indicator 4 – Summary reports accepted by PA management and evaluation committees.	1) All 30 communities are engaged with agreements in place. 2) The communities are currently not able to produce 150,000+ trees, this was an over-estimate. So far the average is 2,500 trees per COBA for Itremo and 30,000 trees per COBA at COFAV. Tree production has been variable between communities and we are working to improve success through training and monitoring. 3) With the lower number of trees produced by the nurseries 100 ha cannot be planted with trees at even density. We are planning with the COBAs to maintain the area targets but to adopt alternative strategies including nucleated planting, assisted regeneration and direct seeding where appropriate. Also, we had not anticipated that the distance between the nurseries and the restoration sites would be a limiting factor, so we are looking at producing smaller seedlings with stronger root systems. 4) Not undertaken yet, but the COBAs are represented on the PA management committees and we have included local forestry departments in the planting whenever possible.
Activity 4.1 Training for technicians and householders.		All 30 COBAs and technicians have been trained. Follow-up training ongoing as necessary to improve results.
Activity 4.2 Collection and propagation of seeds.		Seed availability and the time available to householders have been limiting factors and propagation results have been mixed. We have started training and testing of simple techniques for inoculating appropriate species with mycorrhizal fungi and nitrogen-fixing bacteria. Species identification by the collectors at COFAV is a problem that we aim to address with better baseline surveys (including labelling of trees) and post propagation identification (not ideal).
Activity 4.3 Preparation of sites (*e.g*. construction of fire-breaks).		Ongoing.
Activity 4.4 Tree-planting with technicians and householders.		Ongoing.
Activity 4.5 Post-planting management (*e.g*. weeding, fire-breaks).		Ongoing.

Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Goal: Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.			
Outcome: Agricultural productivity, forest cover and biodiversity are increased on deforested land in COFAV and Itremo, through forest restoration and locally adapted, low-input agroforestry systems, that emphasise sustainable soil management and native species and that offer communities viable alternatives to the prevalent damaging agricultural practices such as slash and burn cultivation. At least 3,000 households in 30 communities will benefit directly from maintained ecosystem services and improved livelihoods.	a) COFAV: annual forest area cleared by communities for *tavy* reduced by 30% in the project area by year 3. b) COFAV: increase in agricultural production on deforested land around communities is greater than the production lost through the 30% reduction in *tavy* by year 3. c) Increase in tree cover through restoration and agroforestry of 100 ha per community by year 3. d) Diversification of agricultural production around communities, with adoption of at least 5 new species per community by year 3. e) Increase in average income for participating household from 30,000-60,000 Ariary (£8-16) per month to 45,000-90,000 Ariary (£12-24) per month by yr 3.	a) Remote sensing data and ground truthing surveys. b) Community-based surveys and questionnaires. c) Remote sensing data and ground truthing surveys. d) Community-based surveys and questionnaires. e) Community-based surveys and questionnaires.	• The political situation in Madagascar does not affect project implementation. • Natural disasters such as cyclones do not adversely affect the project. • Agreements will be maintained by the communities. • Agroforestry is shown to be economically viable and sustainable versus *tavy* within the period of the project. • Communities continue to perceive the benefits of forest conservation. • Community forests are not overrun by landless immigrants.
Output 1: Baseline data, monitoring systems and skills developed within COBAs/CFMs and extension workers for forest management, agroforestry and sustainable utilisation of natural resources.	2a) Monitoring system in place with simple metrics and baseline data on species ecology and vegetation, published in checklists/reports for Itremo and COFAV and available to COBAs and CFMs and other NGOs/projects. 2b) 2 community technicians active in each COBA/CFM and able to teach households, implement management plans and monitor progress. 2c) Manuals for agroforestry, forest	1a) Project reports and checklists. 1b) Project reports and blog. 1c) Training materials. 1d) Project reports.	• 30 communities work with the project and maintain interest. • Changes in the forestry laws or the political and economic situation affect the project or the communities.

	restoration and sustainable utilisation of key species produced for communities and forest managers. 2d) Itremo forest management plans agreed with communities and local forestry department.		
Output 2: 30 communities engaged in the conservation and sustainable utilisation of wild species with income generating potential.	2a) Management plans agreed for wild 5 species per community. 2b) Monitoring shows no decrease in wild populations at end of Year 3. 2c) 50% increase in household incomes from natural products (*e.g.* silk, yams, essential oils, bamboo, fuel and timbers) by end of Year 3. 2d) Peer-reviewed paper submitted for publication in a conservation and/or development journal on sustainable utilisation and economic benefits.	2a) Project reports. 2b) Project reports. 2c) Project reports. 2d) Published paper available online.	• 30 communities work with the project and maintain interest. • Populations of useful species are not already too depleted to utilise.
Output 3: 30 communities engaged in agroforestry with demonstration household plots managed under agreements with the project.	4a) Agroforestry agreements in place with 30 COBAs/CFMs. 4b) 5 COBA/CFM managed household demonstration plots per community, with benefits shared by the community. 4c) 100 households engaged in agroforestry per COBA/CFM by end of Year 3. 4d) Final workshop with MEEMF and Ministry of Agriculture and other conservation and development NGOs.	3a) Project reports. 3b) Project reports and COBA records. 3c) Project reports and COBA records. 3d) Workshop report.	• 30 communities work with the project and maintain interest. • 100 households undertake and maintain agroforestry per community.
Output 4: 30 communities engaged in forest restoration under agreements.	4a) Forest restoration agreements in place with 30 COBAs/CFMs. 4b) 50,000+ tree seedlings raised in each community nursery. 4c) 100 ha planted and maintained per COBA/CFM by end of Year 3. 4d) Summary reports accepted by PA	4a) Project reports. 4b) Project reports and COBA records. 4c) Project reports and COBA records. 4d) Workshop report.	• 30 communities work with the project and maintain interest. • 100 households undertake and maintain agroforestry per community. • Populations of useful species are not already too depleted to utilise. • Changes in the forestry laws or the

	management and evaluation committees.		political and economic situation affect the project or the communities.

Activity 1.1	Workshops with COBAs/CFMs towards project planning and agreements.
Activity 1.2	Recruit and train technicians.
Activity 1.3	Ground surveys of species, vegetation, soils and land use.
Activity 1.4	Remote sensing, GIS and data analysis.
Activity 1.5	Testing of monitoring methodologies.
Activity 1.6	Progress workshops with COBAs/CFMs.
Activity 1.7	Final workshop with national/regional planners and NGOs.
Activity 2.1	Training for technicians and householders.
Activity 2.2	Selection of species, surveys, collection/harvesting.
Activity 2.3	Domestication/enoblement trials
Activity 2.4	Training householders in processing/manufacturing products.
Activity 2.5	Production and marketing of products
Activity 2.6	Community evaluation, economic surveys and follow-up training.
Activity 3.1	Construction of tree nurseries (for Outputs 2, 3 and 4).
Activity 3.2	Training for technicians and householders.
Activity 3.3	Selection and collection of seeds, seedlings, cuttings.
Activity 3.4	Preparation, planting and maintenance of demonstration plots.
Activity 3.5	Community evaluation and follow-up training.
Activity 4.1	Training for technicians and householders.
Activity 4.2	Collection and propagation of seeds.
Activity 4.3	Preparation of sites (e.g. construction of fire-breaks).
Activity 4.4	Tree-planting with technicians and householders.
Activity 4.5	Post-planting management (e.g. weeding, clearing fire-breaks).
Activity 4.6	Community evaluation and follow-up training.

Annex 3 Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Gender of people	Nationality of people	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during project
6A	Number of people to receive training			60			60	120
6B	Number of training weeks to be provided			2			2	6
7	Number of training materials to be produced for use by host country			2			1	3
8	Number of weeks to be spent by UK project staff on project work in the host country			2			2	6
11 B	Number of papers to be submitted to peer reviewed journals					2	0	2
14 A	Number of conferences/seminars/ workshops to be **organised** to present/disseminate findings					1	0	0
20	Estimated value (£'s) of physical assets to be handed over to host country(ies) – Landrover and camera equipment etc.			40,000			5,000	40,000
23	Value of resources raised from other sources (ie. in addition to Darwin funding) for project work							

Table 2 Publications

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g.website link or publisher)

Annex 4 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

This may include outputs of the project, but need not necessarily include all project documentation. For example, the abstract of a conference would be adequate, as would be a summary of a thesis rather than the full document. If we feel that reviewing the full document would be useful, we will contact you again to ask for it to be submitted.

It is important, however, that you include enough evidence of project achievement to allow reassurance that the project is continuing to work towards its objectives. Evidence can be provided in many formats (photos, copies of presentations/press releases/press cuttings, publications, minutes of meetings, reports, questionnaires, reports etc.) and you should ensure you include some of these materials to support the annual report text