



Submit by Monday 1 December 2014

**DARWIN INITIATIVE APPLICATION FOR GRANT FOR ROUND 21: STAGE 2**

Please read the Guidance Notes before completing this form. Where no word limits are given, the size of the box is a guide to the amount of information required.

Information to be extracted to the database is highlighted blue.

**ELIGIBILITY****1. Name and address of organisation** (NB: Notification of results will be by email to the Project Leader in Question 7)

<b>Applicant Organisation Name:</b>	<b>Royal Botanic Gardens Kew</b>
<b>Address:</b>	<b>The Herbarium</b>
<b>City and Postcode:</b>	<b>Richmond, Surrey, TW9 3AB</b>
<b>Country:</b>	<b>UK</b>
<b>Email:</b>	
<b>Phone:</b>	

**2. Stage 1 reference and Project title**

<b>Ref</b> 2698	<b>Title (max 10 words)</b> Conserving Madagascar's yams through cultivation for livelihoods and food security
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**3. Project dates, and budget summary**

<b>Start date:</b> 1 April 2015		<b>End date:</b> 31 March 2018		<b>Duration:</b> 3 years
<b>Darwin request</b>	<b>2015/16</b> £93,110	<b>2016/17</b> £93,912	<b>2017/18</b> £104,760	<b>Total request</b> £291,782
<b>Proposed (confirmed and unconfirmed) matched funding as % of total Project cost:</b>				
<b>Are you applying for DFID or Defra funding?</b> (Note you cannot apply for both)			<b>DFID</b>	

**4. Define the outcome of the project. This should be a repetition of Question 24, Outcome Statement.****(max 30 words)**

Enhanced livelihoods and improved food security by project communities through cultivation, sustainable harvesting and conservation. Native yam species, particularly threatened species, cultivars and biocultural information conserved and accessible in Madagascar.

**30****5. Country(ies)**

Which eligible host country(ies) will your project be working in. You may copy and paste this table if you need to provide details of more than four countries.

<b>Country 1:</b> <b>MADAGASCAR</b>	<b>Country 2:</b>
<b>Country 3:</b>	<b>Country 4:</b>

## 6. Biodiversity Conventions

Which of the conventions supported by the Darwin Initiative will your project be supporting? Note: projects supporting more than one convention will not achieve a higher scoring

Convention On Biological Diversity (CBD)	Yes
Nagoya Protocol on Access and Benefit Sharing (ABS)	No
International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)	Yes
Convention on International Trade in Endangered Species (CITES)	No

### 6b. Biodiversity Conventions

Please detail how your project will contribute to the objectives of the convention(s) your project is targeting. You may wish to refer to Articles or Programmes of Work here.

Note: No additional significance will be ascribed for projects that report contributions to more than one convention

#### (Max 200 words)

The project will link directly to ITPGRFA by recognizing the crucial role of farmers in conserving Madagascar yam diversity (wild species and cultivars). It will establish a national system to conserve wild and cultivated yams and related biocultural knowledge, and provide stakeholders with access to genetic material through seed banks and living collections. It will help Madagascar to meet its obligations under articles 5, 6, 7, 9 and 16 of the treaty, especially 6.2e “promoting... the expanded use of local and locally adapted crops, varieties and underutilized species”.

The project will help Madagascar to deliver GSPC Targets 1, 2, 4, 5, 6, 7, 8, 9, 12, 13 and 14 of the CBD, particularly 5 and 7 (*in-situ* conservation), 6 and 12 (sustainable management) and 9 (crop and CWR genetic diversity conservation).

The project will help Madagascar work towards Aichi Strategic Goals A, B, C, D and E of the CBD, particularly D (enhance the benefits from biodiversity and ecosystem services).

The project will help all other organisations to enhance the conservation of biodiversity and maintenance of ecosystem services in the new protected areas system in Madagascar through supporting communities engaged in conservation in accordance with the Durban Accord (IUCN 2003).

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Is any liaison proposed with the CBD/ABS/ITPGRFA/CITES focal point in the host country?

Yes  No if yes, please give details:

The KMCC team in Madagascar, who will form the core of this project, have and will continue to work closely with Madame Laurette Rasoavahiny and her team in her roles as CBD focal point and the Directeur de la Conservation de la Biodiversité et du Système des Aires Protégées (DCBSAP) at the Ministère de l'Environnement, de l'Ecologie et des Forêts (MEEF).

7. Principals in project. Please identify and provide a one page CV for each of these named individuals. You may copy and paste this table if you need to provide details of more personnel or more than one project partner.

Details	Project Leader	Project Partner 1 - Main	Project Partner 2
Surname	Wilkin	Randriamboavonjy	Raharisoa
Forename (s)	Paul	Tiana	Eugenie
Post held	Head of Natural Capital & Plant	KMCC Communities Team Leader	National Coordinator

	<b>Health Department</b>		
<b>Organisation</b> (if different to above)		<b>Kew Madagascar Conservation Centre</b>	<b>Feedback Madagascar Ny Tanintsika</b>
<b>Department</b>	<b>Natural Capital &amp; Plant Health</b>		
<b>Telephone</b>			
<b>Email</b>			

<b>Details</b>	<b>Project Partner 3</b>	
<b>Surname</b>	<b>Ramamonjisoa</b>	
<b>Forename (s)</b>	<b>Lolona</b>	
<b>Post held</b>	<b>Director</b>	
<b>Organisation</b> (if different to above)	<b>Silo National des Graines Forestières</b>	
<b>Department</b>		
<b>Telephone</b>		
<b>Email</b>		

**8. Has your organisation been awarded a Darwin Initiative award before** (for the purposes of this question, being a partner does not count)? **If so, please provide details of the most recent awards (up to 6 examples).**

<b>Reference No</b>	<b>Project Leader</b>	<b>Title</b>
21-006	Kate Gold	Balancing conservation and livelihoods in the Chimanimani forest belt, Mozambique
21-005	Moctar Sacande	Pesticide plants for organic cotton, livelihoods and biodiversity in Mali
21-003	Hugh Pritchard	Protecting Ugandan endemic cycads from biodiversity loss and trafficking
20-021	William Milliken	Forest Futures: livelihoods and sustainable forest management in Bolivian Amazon
20-020	Stuart Cable	Madagascar Agroforestry Livelihoods Project

**9a. If you answered 'NO' to Question 8 please complete Question 9a, b and c.**

**If you answered 'YES', please go to Question 10** (and delete the boxes for Q9a, 9b and 9c)

**9b. DO NOT COMPLETE IF YOU ANSWERED 'YES' TO QUESTION 8.**

Provide detail of 3 contracts previously held by your organisation that demonstrate your credibility as a research organisation and provide track record relevant to the project proposed. These contracts should have been held in the last 5 years and be of a similar size to the grant requested in your Darwin application.

**9c. DO NOT COMPLETE IF YOU ANSWERED 'YES' TO QUESTION 8.**

Describe briefly the aims, activities and achievements of your organisation. (Large organisation please note that this should describe your unit or department)

**10. Please list all the partners involved (including the Lead Institution) and explain their roles and responsibilities in the project. Describe the extent of their involvement at all stages, including project development. This section should illustrate the capacity of partners to be involved in the project. Please provide written evidence of partnerships. Please copy/delete boxes for more or fewer partnerships.**

<p><b>Lead institution and website:</b>          Royal Botanic Gardens Kew          (Kew)  <a href="http://www.kew.org">www.kew.org</a></p>	<p><b>Details (including roles and responsibilities and capacity to engage with the project): (max 200 words)</b></p> <p>Kew will lead the project and provide institutional management and administration, as well as technical steering and training in key areas such as yam taxonomy and ecology, GIS, niche modelling and population and socio-economic surveys.</p> <p>Paul Wilkin is the Head of the Natural Capital Department at Kew and is an internationally acknowledged expert on yams. He has inventoried the diversity of the edible wild species in Madagascar and is currently working on resolving the taxonomy of the last few taxa with colleagues including Mamytiana Rajaonah who has recently submitted his PhD thesis on winged yam agrobiodiversity at the University of Antananarivo. He has undertaken extensive field study on yams and their uses in Madagascar. Paul is also leading an EDGE (Evolutionarily Distinct &amp; Globally Endangered) analysis of Madagascan species.</p> <p>Stuart Cable leads Kew's Madagascar research and conservation programme and the Millennium Seed Bank Partnership. He also manages the Darwin Initiative Madagascar Agroforestry Livelihoods Project. He will provide institutional coordination and guidance in engaging with the conservation community, seed banking and GIS.</p> <p>Tim Harris is a specialist in the African flora and will extend his research on the socio-economic value of the non-native yam <i>Dioscorea alata</i> in Madagascar.</p> <p><b>197</b></p>
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<p><b>Partner Name and website where available:</b> Kew Madagascar Conservation Centre (KMCC) <a href="https://teamkmcc.wordpress.com/">https://teamkmcc.wordpress.com/</a></p>	<p><b>Details (including roles and responsibilities and capacity to engage with the project): (max 200 words)</b></p> <p>The project will be implemented through the Kew Madagascar Conservation Centre (KMCC), based in Antananarivo and staffed by eleven Malagasy botanists. We will appoint a yams specialist for this Darwin project, Mamytiana Rajaonah, and the smaller technical and administrative roles will also be fulfilled from within the current KMCC team.</p> <p>KMCC is the lead organisation managing the new 250 km<sup>2</sup> Itremo Massif Protected Area and it is working with Feedback Madagascar-Ny Tanintsika (FBM/NT) and Silo National des Graines Forestières (SNGF) to develop agroforestry in the Ambositra-Vondrozo Corridor (COFAV) Protected Area through the current Darwin Initiative Agroforestry Livelihoods Project. The local communities are organised into community-based associations (COBAs) to implement management work for the protected areas and are keen to collaborate with this project.</p> <p>We aim to identify NGOs managing protected areas in the north and east of Madagascar to collaborate with us on threatened species. Fanamby, Mitsinjo and Missouri Botanical Garden have expressed interest in being involved in this project and aim to build yams into their management planning.</p> <p><b>169</b></p>	
<p>Have you included a Letter of Support from this institution?</p>		<p>Yes</p>
<p><b>Partner Name and website where available:</b> Feedback Madagascar-Ny Tanintsika (FBM/NT) <a href="http://www.feedbackmadagascar.org">www.feedbackmadagascar.org</a></p>	<p><b>Details (including roles and responsibilities and capacity to engage with the project): (max 200 words)</b></p> <p>FBM/NT have worked for 20 years with communities in the Ambositra-Vondrozo Corridor (COFAV) Protected Area, promoting community-led integrated development and conservation.</p> <p>In 2010 they collaborated with KMCC to establish cultivation of the non-native yam species <i>Dioscorea alata</i> in 12 communities with a grant from the Innocent Foundation. The work was successful, with crops of 12 and 50 tonnes during the project. In 2013, after the project the same communities produced over 100 tonnes and yam cultivation had spread to several adjacent communities without any intervention from FBM/NT extension workers. The communities are now keen to cultivate and sustainably manage native species as well as <i>Dioscorea alata</i>.</p> <p>FBM/NT were involved in the project conception and design, and have consulted COBAs on their willingness to cultivate or sustainably manage wild species of yams. We will use the COFAV communities and technicians to inspire and train communities from other areas.</p> <p><b>147</b></p>	
<p>Have you included a Letter of Support from this institution?</p>		<p>Yes</p>

<p><b>Partner Name and website where available:</b> Silo National des Graines Forestières (SNGF) <a href="http://sngf-madagascar.mg/wp2/">http://sngf-madagascar.mg/wp2/</a></p>	<p><b>Details (including roles and responsibilities and capacity to engage with the project): (max 200 words)</b></p> <p>SNGF is the National Seed Bank and has worked for 30 years developing capacity in Madagascar for the collection, storage and utilisation of forest seeds. Since 2000, it has worked with Kew's Millennium Seed Bank to conserve the seeds of 2,500 species by 2020 (25% of the flora that can be stored in seed banks). It plays a central role implementing national forestry, genetic resources and environmental policy and works directly with communities to support rural development, food security, poverty alleviation and adaptation to climate change.</p> <p>The role of SNGF in the project will be to collect, process and store seeds and to train and monitor other project partners and communities. SNGF will also be involved in any potential associated habitat restoration of wild yams species.</p> <p>SNGF is a leading partner in a Global Environment Facility (GEF) funded restoration project covering 20 sites in the eastern humid forests. We aim to promote yam conservation more widely through this project.</p> <p><b>159</b></p>
Have you included a Letter of Support from this institution?	Yes

11. Have you provided CVs for the senior team including the Project Leader	Yes
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## 12. Problem the project is trying to address

Please describe the problem your project is trying to address. For example, what biodiversity and challenges will the project address? Why are they relevant, for whom? How did you identify these problems?

<p>(Max 200 words)</p> <p><u>Problem: maintaining a sustainable food supply in Madagascar for low-income families in the face of climate change.</u></p> <p>Madagascar's population relies on wild yams for food to supplement small, seasonal and unreliable staple crops. Madagascar's 40 species have edible tubers, but many are overexploited and at least 12 are threatened. The World Bank ranks Madagascar at 207/213 by GNI per capita, famine occurs regularly and food production is predicted to decrease with climate change. Yams occur in all climate zones, their diversity providing resilience against environmental change.</p> <p>Winged yam <i>Dioscorea alata</i>, originally from Asia, is grown on a small scale in gardens. Kew research has shown that when cultivated agriculturally it improves livelihoods and reduces pressure on wild species.</p> <p>This project will utilise both <i>D.alata</i> and major endemic wild edible species to scale up yam cultivation and sustainable harvesting:</p> <ul style="list-style-type: none"> <li>• recognizing the role of farmers in conserving yam diversity</li> <li>• establishing a national system to conserve yams and associated bio-cultural knowledge</li> <li>• providing stakeholders with access to genetic material (seed banks and living collections).</li> </ul> <p>The project will improve livelihoods and food security, through enhancing the agrobiodiversity of yams, and reinforce forest conservation, through demonstrating the natural capital of sustainably managed populations.</p> <p><b>200</b></p>
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### 13. Methodology

Describe the methods and approach you will use to achieve your intended outcomes and impact. Provide information on how you will undertake the work (materials and methods) and how you will manage the work (roles and responsibilities, project management tools etc.).

(Max 500 words – repeat from Stage 1 with changes highlighted)

Geographical coverage: Antsiranana and Fianarantsoa Provinces (including COFAV).

#### **Output 1 – National Strategy**

Populations of wild yams will be surveyed and monitored in each growing season of the project. These data will be added to an existing specimen database to generate baseline conservation assessments. In addition biocultural information (e.g. modes of cultivation and utilisation) will be recorded through community-based interviews. We will use GIS-based niche modelling (e.g. Maxent) to build ecological profiles and predict potential future distributions based on various scenarios of climate and forest loss. The baseline data, conservation assessments and modelling will form the basis of the national strategy to be developed with stakeholders.

#### **Outputs 2 – Improved knowledge and awareness**

Information on native species and cultivars (taxonomy, distribution, conservation and biocultural) will be compiled and made available online and through appropriate media (manuals, videos, workshops etc.).

#### **Output 3 – Cultivation of native species and cultivars**

We will bring selected wild yams into cultivation in 60 communities, especially those of the greatest value and preference as foods (10 species) and those that are most threatened (12 species). We will run experiments to evaluate ennoblement potential in the species brought into cultivation. Ennoblement is the phenomenon observed in African yams where epigenetic changes, thought to be driven by environmental interventions, generate improved yields, harvestability and palatability when wild forms are taken into cultivation and establish optimal cultivation techniques. In the same 60 communities, yam cultivation will be promoted by donating cultivars of *D.alata* and monitoring uptake, farming and yield via NGO partners (where possible) and questionnaire-based methods. We have enjoyed substantial success with this approach in a pilot group of communities with our partner FBM/NT. Both yields and numbers of households adopting yam cultivation have increased year on year. The outcomes for the people of those communities have been both improved food security and income generated from sales of excess yams and seed yam tubers.

#### **Output 4 – Conservation management**

Conservation plans will be agreed with target communities and the project will develop and implement a simple methodology for participatory monitoring. Full IUCN conservation assessments will be carried out at the beginning and end of the project.

#### **Output 5 – *Ex-situ* conservation**

*Ex-situ* conservation of all 40 species will be undertaken using established methods developed by Kew's Millennium Seed Bank Project, including germination protocols. Field collection and work with communities will generate establishment of living gene banks through cultivated collections in the 60 communities and 4 or 5 national collections covering Madagascar's range of biomes. Accessions in these collections will be associated with extensive metadata. This will ensure conservation not only of biodiversity but also the knowledge associated with it.

The project will be led in Madagascar by an experienced researcher with a strong background in both wild and cultivated yam diversity and its effective utilisation to PhD level. He will be supported by a management team drawn from Kew, KMCC, SNGF and project partners. Workshops with communities, NGOs and national authorities will contribute to successful project delivery.

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**14. Change Expected**

Detail what the expected changes this work will deliver. You should identify what will change and who will benefit.

- If you are applying for Defra funding this should specifically focus on the changes expected for biodiversity conservation and its sustainable use.
- If you are applying for DFID funding you should in addition refer to how the project will contribute to reducing poverty. Q19 provides more space for elaboration on this.

(Max 250 words)

The direct beneficiaries will be 60 communities (c.3000 households) engaged in sustainable utilisation, cultivation and conservation of the priority species. The yams they produce will improve diets and increase household income (or decrease spending on alternative foods).

Indirect beneficiaries include the communities and projects that will make use of the information and resources that will be actively promoted through workshops and networks such as the Madagascar protected areas system (SAPM). Our experience is that yam cultivation is readily adopted by communities and the techniques continue to spread from farmer to farmer after initial input of training and resources. This project will offer communities tangible benefits for engaging in conservation of biodiversity and forests.

The Ministry of Agriculture is leading on a national strategy for yams focused on *Dioscorea alata*, directly enabling the project to influence policy. KMCC is a partner so we have the opportunity to feed into the process, contributing a complementary strategy for the wild yams. The importance of wild yams is often underappreciated: they are seen just as a famine food for the poorest households. We aim to raise their profile nationally as an important food source, alongside *Dioscorea alata*, that can be managed sustainably and improved for cultivation through the process of ennoblement to provide community resilience to climate change over the coming decades.

The project will conserve native species and important cultivars of yams through seed banks, living collections and sustainable management of the most threatened species. We will enhance livelihoods and conservation through cultivation.

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**15a. Is this a new initiative or a development of existing work (funded through any source)? Please give details (Max 200 words):**

This is a new initiative, but the concept is based on a successful pilot project with FBM/NT. We introduced cultivation of the non-native yam species *Dioscorea alata* to communities in COFAV, who are now keen to cultivate and sustainably harvest wild species. The Innocent Foundation provided funding for 3 years to FBM/NT for the original pilot project, which worked with 12 communities. A year after the project, in 2013, yam production had reached 100 tonnes (4 months food supply for the project households) and has spread to neighbouring communities. CWR-Bioersivity International have had similar success with *Dioscorea alata* in other areas.

COFAV is a protected area in the east of Madagascar, but many of the most threatened species of wild yams are only found in the north where few people cultivate *D.alata* and there are no controls on harvesting wild species. Reports from markets and remaining forested areas indicate high levels of extraction. Many NGOs throughout Madagascar that are leading on managing protected areas with communities have shown interest in yam cultivation and conservation. This project will apply the COFAV model to other areas in Madagascar where exploitation of wild yams have taken some species to the edge of extinction.

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**15b. Are you aware of any other individuals/organisations/projects carrying out or applying for funding for similar work?**

Yes  No

If yes, please give details explaining similarities and differences, and explaining how your work will be additional to this work and what attempts have been/will be made to co-operate with and learn lessons from such work for mutual benefits:

**15c. Are you applying for funding relating to the proposed project from other sources?****X Yes**  No

If yes, please give brief details including when you expect to hear the result. Please ensure you include the figures requested in the spreadsheet as Unconfirmed funding.

We have a commitment from the Kew Foundation to leverage £30-50,000 from donor sources for this project. The Global Crop Diversity Trust has expressed an interest in collaborating with the project and will help source additional funding. We will also submit a proposal in the current call for Madagascar project funding through the Critical Ecosystem Partnership Fund that will contribute to this project through fieldwork costs, either through direct management of a protected area in the north or through development related support work with communities.

**16. Value for money**

Please describe why you consider your application to be good value for money including justification of why the measures you will adopt will secure value for money?

(Max 250 words)

This project is motivated by the success of the small 2-year pilot project at COFAV with FBM/NT, where communities continued to cultivate yams after the project and where the techniques spread to adjacent communities from farmer to farmer. The new protected areas system in Madagascar (SAPM) is a collaboration between conservation organisations and communities. The beneficiaries of this project, under the guidance of NGOs, already have the organisational structure (e.g. Community Associations or COBAs), the land assets and the ambition to participate in many of the areas where the most threatened yam species occur. We expect a strong uptake within the project, and the high potential for scaling-up and for beneficiaries to adapt their skills offers more value downstream. The project will directly improve the livelihoods of >22,000 people, in areas where 50-90% of people earn <\$1.25 per day ([http://harvestchoice.org/data/tpov\\_pt125](http://harvestchoice.org/data/tpov_pt125)).

The emphasis of the project is on low-cost cultivation and sustainable utilisation for communities. As there is no immediate prospect of widespread support for small farmers in Madagascar 'low-cost' is the driving principle of the project. Alternative means for conservation and intensification of agriculture would be considerably more expensive and difficult to achieve.

The main partners are based in Madagascar and already have teams of people, offices and vehicles. We have included rigorous efficiency elements using all existing resources at minimal cost. We have minimised the international travel budget and the project management team will communicate mainly via Skype and other internet-based systems.

**244****17. Ethics**

Outline your approach to meeting the Darwin Initiative's key principles for research ethics as outlined in the guidance notes.

(Max 300 words)

Kew operates in Madagascar under an *Accord de Siege* with the Government of Madagascar and Access and Benefit Sharing Agreements and Memoranda of Collaboration with key partners such as SNGF. Our programme of research and conservation projects is implemented by a team of 11 Malagasy botanists and 3 support staff at the Kew Madagascar Conservation Centre in Antananarivo. The Système des Aires Protégées de Madagascar (SAPM) is managed as a collaboration between conservation organisations such as KMCC and local communities under a set of protocols developed by the Government of Madagascar. SNGF is part of the Ministry of Environment, Ecology and Forests and has 30 years of experience working with communities. It has worked with Kew since 2000 under an agreement whereby seed collections, while duplicated at Kew's Millennium Seed Bank, remain the property of the Government of Madagascar. Kew has a statutory obligation to share data and the results of research as much as possible while protecting the intellectual property of partners and other stakeholders.

Kew has had a Policy on Access to Genetic Resources and Benefit Sharing since 2001 ([www.kew.org/conservation/index.html](http://www.kew.org/conservation/index.html)). Overseas fieldwork is vetted by an Overseas Fieldwork Committee that ensures that staff are aware of and fulfil requirements of CITES and the CBD, including all national and local legislation on collecting and exporting genetic resources and associated traditional knowledge. Kew has also developed peer reviewed guidance for staff on working with traditional knowledge and local communities.

In COFAV target communities have given Free Prior Informed Consent (FIPC) to collaboration and the participative approach ensures their leading input in project development. Similarly, communities in other areas will be fully informed about the objectives of the project before engaging with the project.

RBG Kew's Mission: *to inspire and deliver science-based plant conservation worldwide, enhancing the quality of life.*

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## 18. Legacy

Please describe what you expect will change as a result of this project with regards to biodiversity conservation/sustainable use and poverty alleviation (for DFID funded projects). For example, what will be the long term benefits (particularly for biodiversity and poor people) of the project in the host country or region and have you identified any potential problems to achieving these benefits?

(Max 300 words)

This project will help drive forward Madagascar's national yam strategy, and thus will directly link to governmental policy development. Conserving and sustainably managing wild species is a "win-win" for poverty reduction and biodiversity conservation and supports Madagascar in achieving its international biodiversity commitments

The pilot yam cultivation project undertaken in COFAV showed self-sustaining uptake of yam cultivation to adjacent communities from farmer to farmer. Also, yam cultivation was more readily adopted by the communities and more self-sustaining than cultivation of other new staple foods such as legumes and sweet potatoes. This particular success of cultivating *Dioscorea alata*, a non-native species of yam, is thought to be due to the cultural significance of yams in Madagascar. This suggests that this project will leave a strong legacy: we expect the uptake of new yam species and cultivars along with new cultivation techniques to continue to spread beyond the particular villages involved in this project.

By the end of the project NGOs will be able to access a range of information about the 40 wild yam species that are all endemic to Madagascar. As protected areas in Madagascar are managed with community involvement, conforming to the Durban Accord, we expect opportunities for methods established during this project to be shared with communities in a wide range of protected areas across Madagascar in support of biodiversity conservation.

We envisage that in the years immediately following the project yams will be integrated into forest restoration projects as a way of intentionally building in natural capital to ensure their long-term conservation or sustainable management.

Part of the legacy of the project will be the safe-guarding of Madagascar's yam diversity in *ex-situ* collections and their direct and growing application to improving food security. The seeds and living plants will also be available for research and restoration projects.

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## 19. Pathway to poverty alleviation

Please describe how your project will benefit poor people living in low-income countries. All projects funded through DFID in Round 21 must be compliant with the OECD Overseas Development Assistance criteria. Projects are therefore required to indicate how they will have a positive impact on poverty alleviation in low-income countries.

(Max 300 words)

Yams are a staple food and not a high value cash crop. However, in the cash-poor, rural subsistence economies of Madagascar any food that can be grown or harvested from the wild will save households from needing to purchase food, freeing money to be spent on other essentials such as clothes, tools, medicines and schooling. Any surplus yams that can be sold in local markets provide a disproportionately valuable supplementary income, particularly for women. Yams are also relatively nutritious amongst tuberous crops: in West Africa yams are the third most important protein source after rice and maize (Asiedu and Sartie 2010). Improved diets help to increase household productivity, performance at school and resistance to diseases.

Madagascar's subsistence farmers are risk averse, because they live on the edge of survival and they cling to existing methods of growing food. It is very difficult to introduce new ideas that they will adopt and that are viable beyond the life of a project. However, we have seen that cultivation of yams is readily adopted and farmers see the benefits very quickly. Yams are therefore the key to unlocking interest in other innovative agricultural practices, such as agroforestry, and higher value crops such as vanilla, peppers, litchis and essential oils.

Yam cultivation is an important first step to more integrated agroforestry and agricultural systems that will improve productivity on the degraded land that covers much of Madagascar. Diversification of production will improve welfare, livelihoods, food security and resilience to climate change and lead to restoration of forests, biodiversity and ecosystems.

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### 19a. Impact to beneficiaries

If applying to DFID funding, please indicate the number of beneficiaries who are expected to be impacted by your project. If possible, indicate the number of women who will be impacted.

We will work with a minimum of 60 communities, comprising 1,500 households in Antsiranana Province in the north and 1,500 households in Fianarantsoa Province in the east. Previous studies by Kew and FBM/NT showed that in Fianarantsoa Province 1500 households is equivalent to 5,630 males and 5,690 females. So we estimate that over 22,000 people will benefit directly from the project, just over 50% female. Across the project areas 50-90% of people earn <\$1.25 per day ([http://harvestchoice.org/data/tpov\\_pt125](http://harvestchoice.org/data/tpov_pt125)).

In Fianarantsoa Province men are currently more involved in yam cultivation than women. (women in 10% of households verses men in 31%). We will aim to increase both the number of households cultivating or sustainably managing yams as well as the proportion of women engaged in yam cultivation.

We also found that 10% of households are female-headed and that these are significantly more likely to collect yams from the wild and slightly less likely to cultivate yams than male-headed households.

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### 20. Exit strategy

State whether or not the project will reach a stable and sustainable end point. If the project is not discrete, but is part of a progressive approach, give details of the exit strategy and show how relevant activities will be continued to secure benefits from the project. Where individuals receive advanced training, for example, what will happen should that individual leave?

(Max 200 words)

The project will reach a stable and sustainable end point when the project communities have practiced native yam cultivation over two or three growing seasons and the exchange of information and tubers has made such cultivation self sustaining. The community's initial investments in the project will help to ensure that they are self-reliant for the ongoing cultivation of native yams.

KMCC will continue to liaise with partners and to engage with the communities after the project ends. We will continue to monitor the conservation status of Madagascar's native yams and develop new projects within the geographical ranges if the most threatened species (we aim to

establish a sub-office in North Madagascar to enable a range of conservation and research projects).

We will ensure that yam conservation and sustainable cultivation features strongly in management planning for the protected areas with threatened species. The *ex-situ* collections will be maintained in the long-term by the relevant partners as part of wider programmes. The most important element of the exit strategy is to fully engage yams with the national agricultural, climate resilience and development policies, especially via the Government's national yam strategy.

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## **21. Raising awareness of the potential worth of biodiversity**

If your project contains an element of communications, knowledge sharing and/or dissemination please provide a description of your intended audience, how you intend to engage them, what the expected products/materials there will be and what you expect to achieve as a result. For example, are you expecting to directly influence policy in your host country or is your project a community advocacy project to support better management of biodiversity?

(Max 300 words)

Most communities in Madagascar have no idea about the conservation significance of the plant species around them or that most are only found in Madagascar. This project will make a strong link between yams and biodiversity at all stages. We will inform communities about both yam and other threatened species and promote conservation of biodiversity and ecosystems.

The key components of the project focus on research, communications, knowledge sharing and dissemination with beneficiaries and wider stakeholders, e.g. protected areas managers. Beneficiaries will exchange knowledge at regular meetings throughout the project, with the extension workers providing an open channel for communications. Farmer to farmer teaching and exchange visits will be actively promoted. The results and teaching materials will comprise a broad knowledge base to engender continuity and replication of successes.

The project will disseminate results in a final workshop involving the conservation and development community and national planners in Madagascar. We will fully utilise the Kew and project websites to promote the project and exploit our links with international media through Kew's PR Team. Appropriate results will be published in scientific journals.

FBM/NT has over 20 years experience of working with communities to educate, promote conservation and development and share knowledge. The strategies include extension workers, farm visits, workshops, competitions, festivals, radio broadcasts, school lessons and videos. We will ensure that FBM/NT's expertise informs the other NGO partners within the project as necessary.

SNGF is a branch of the Ministry of Environment, Water and Forests with strong links to national research centres and universities. It will play a key role disseminating information about the project to a wide and strategic administrative, political, technical and scientific audience. SNGF participates in national reviews of policy, planning, strategy and legislation in the agriculture and forestry sectors.

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## **22. Access to project information**

Please describe the project's open access plan and detail any specific costs you are seeking from Darwin to fund this.

(Max 250 words)

Kew Recognises that free and open access to publicly-funded research, datasets and technical reports offers significant social and economic benefits. Following the Finch Report on 'Accessibility, sustainability, excellence: how to expand the access to research publications' and the UK Government's response, Kew began a process of developing an internal policy to

comply with the new open access recommendations. We will seek open-access costs from matched funding.

In this project we are committed to making outputs freely available through different formats. Illustrated technical manuals on species ennoblement protocols will be translated into Malagasy and distributed through partner NGOs, community technicians and the wider development community. More generally, information will be distributed through yam festivals and community yam champions who will play an important role in communicating appropriate information to other farmers. Peer reviewed publications from this project will cover topics such as germination, ennoblement protocols and predicted future distributions of endangered species. Research will target widely accessible journals including those distributed in Madagascar, e.g. 'Madagascar Conservation and Development' and 'Malagasy Nature'.

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### 23. Importance of subject focus for this project

If your project is working on an area of biodiversity or biodiversity-development linkages that has had limited attention (both in the Darwin Initiative portfolio and in conservation in general) please give details.

(Max 250 words)

Significant international attention and resources have been directed at protecting Madagascar's biodiversity. Huge advances have been made in national policy and legislation to protect areas via community management. As yet there are few examples of successful sustainable management of forests and poverty alleviation amongst communities. Throughout Madagascar communities have invested in the conservation process in the promise of development returns from NGOs and government, but momentum and confidence will be lost if communities do not realise benefits quickly.

The Comprehensive Food and Nutrition Security and Vulnerability Analysis coordinated by World Food Programme (<http://www.wfp.org/content/madagascar-comprehensive-food-nutrition-security-vulnerability-analysis-2011>) identified low farm productivity as one of the leading causes of poverty and food insecurity in Madagascar. This project supports Millennium Development Goal No.1 which aims to end extreme hunger.

The over-exploitation of wild yams is one way in which the biodiversity of Madagascar is threatened. The uniqueness of Madagascar's biodiversity has been recognised in Madagascar's National CBD report which describes 90% of the nation's plant species being endemic. Several of those endemic species are potential significant future food sources.

Kew has a successful history of studying many facets of yam diversity, conservation and exploitation, especially in Madagascar. This project will make this body of knowledge available to facilitate participatory species conservation and sustainable food security.

This project will promote ex-situ conservation of native yams through seed banking and local cultivation of native species. It supports Millennium Development Goal No.7: reducing the rate of biodiversity loss and particularly recognising the value of forests for the poorest people.

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### 24. Leverage

#### a) Secured

Provide details of all funding successfully levered (and identified in the Budget) towards the costs of the project, including any income from other public bodies, private sponsorship, donations, trusts, fees or trading activity.

#### Confirmed:

- Kew overheads above 40% - £XXXX
- UK costs for the Millennium Seed Bank - £XXXX

**b) Unsecured**

Provide details of any matched funding where an application has been submitted, or that you intend applying for during the course of the project. This could include matched funding from the private sector, charitable organisations or other public sector schemes.

<b>Date applied for</b>	<b>Donor organisation</b>	<b>Amount</b>	<b>Comments</b>
January 2015	Kew Foundation	£30-50,000	We have a commitment from the Kew Foundation to leverage £30-50,000 from donor sources.
December 2014	Critical Ecosystems Partnership Fund	£60,000	Shared field work costs for seed collecting of endangered species.

## PROJECT MONITORING AND EVALUATION

### MEASURING IMPACT

**25. LOGICAL FRAMEWORK**

Darwin projects will be required to report against their progress towards their expected outputs and outcomes if funded. This section sets out the expected outputs and outcomes of your project, how you expect to measure progress against these and how we can verify this.

The information provided here will be transposed into a logframe should your project be successful in gaining funding from the Darwin Initiative. The use of the logframe is sometimes described in terms of the Logical Framework Approach, which is about applying clear, logical thought when seeking to tackle the complex and ever-changing challenges of poverty and need. In other words, it is about sensible planning.

**Impact**

The Impact is not intended to be achieved solely by the project. This is a higher-level situation that the project will contribute towards achieving. All Darwin projects are expected to contribute to poverty alleviation and sustainable use of biodiversity and its products.

(Max 30 words)

Food security, livelihoods, forest protection, biodiversity conservation and resilience of communities to climate change is improved in Madagascar.

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**Outcome**

There can only be one Outcome for the project. The Outcome should identify what will change, and who will benefit. The Outcome should refer to how the project will contribute to reducing poverty and contribute to the sustainable use/conservation of biodiversity and its products. This should be a summary statement derived from the answer given to question 14.

(Max 30 words)

Enhanced livelihoods and improved food security by project communities through cultivation, sustainable harvesting and conservation. Native yam species, particularly threatened species, cultivars and biocultural information conserved and accessible in Madagascar.

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### Measuring outcomes - indicators

Provide detail of what you will measure to assess your progress towards achieving this outcome. You should also be able to state what the change you expect to achieve as a result of this project i.e. the difference between the existing state and the expected end state. You may require multiple indicators to measure the outcome – if you have more than 3 indicators please just insert a row(s).

Indicator 1	Seeds conserved <i>ex-situ</i> , banked through the MSBP, with at least 10 collections for each species/cultivar, and available to communities, projects and researchers in Madagascar through SNGF by year 3.
Indicator 2	Living plants of all twelve endangered yam species/cultivars growing in at least 4 collections by year 3
Indicator 3	Information on native species and cultivars (taxonomy, distribution, conservation, cultivation, sustainable utilisation and ethno-botanical) available online and through appropriate media (manuals, videos <i>etc.</i> ) by year 3.
Indicator 4	60 communities (c.3,000 households) benefiting from yam cultivation, with an improvement in food security shown by an average 10% increase in nutritional intake across all involved households (as shown by consumption survey) by year 3.
Indicator 5	Unsustainable wild yam exploitation reduced by 50% in the project areas by year 3 and management agreements in place for threatened and valued edible species in all 60 communities.
Indicator 7	Two populations from each wild yam species located and assessed for harvesting impacts (through counting extraction holes) by end of year 1, creating a baseline for future community monitoring

### Verifying outcomes

Identify the source material the Darwin Initiative (and you) can use to verify the indicators provided. These are generally recorded details such as publications, surveys, project notes, reports, tapes, videos *etc.*

Indicator 1	MSBP databases and website.
Indicator 2	Project reports and website.
Indicator 3	Project website.
Indicator 4	Community association reports, photographs, socio-economic surveys and project website.
Indicator 5	Project website and peer-reviewed scientific publications.

### Outcome risks and important assumptions

You will need to define the important assumptions, which are critical to the realisation of the *outcome and impact* of the project. It is important at this stage to ensure that these assumptions can be monitored since if these assumptions change, it may prevent you from achieving your expected outcome. If there are more than 3 assumptions please insert a row(s).

Assumption 1	Within the time-frame of the project, weather and/or climate does not have adverse affects on yam cultivation and/or wild populations.
Assumption 2	Most communities will prefer cultivation of yams to harvesting wild yams (that convenience and productivity will be valued over the taste and cultural value of wild yams).

Assumption 3	There are wild species in each region that can be cultivated successfully or that will respond to ennoblement.
Assumption 4	All 40 native species can be located and have some viable populations which can be conserved.

### Outputs

Outputs are the specific, direct deliverables of the project. These will provide the conditions necessary to achieve the Outcome. The logic of the chain from Output to Outcome therefore needs to be clear. If you have more than 3 outputs insert a row(s). It is advised to have less than 6 outputs since this level of detail can be provided at the activity level.

<b>Output 1</b>	<b>A national strategy</b> for wild yam species conservation, including baseline data on the conservation status of all species, ecological profiles and climate change predictions. Supported by workshops with national authorities and conservation and development NGOs managing the protected areas system.
<b>Output 2</b>	<b>Improved knowledge and awareness</b> of the importance of yams through appropriate media nationally and locally. Including a website with compiled data on the taxonomy, distribution, conservation, cultivation, sustainable utilisation and ethno-botany.
<b>Output 3</b>	<b>Cultivation of native species and cultivars</b> by 60 communities, with increasing output by year 3 that is economically sustainable and linked to the conservation of threatened species (in Output 4).
<b>Output 4</b>	<b>Conservation management</b> of the 20 species that are most threatened (including all IUCN rated CR and EN species) and most highly valued as wild food, in partnership with local communities.
<b>Output 5</b>	<b>Ex-situ conservation</b> of all wild species and non-native cultivars through seed banking (Kew's Millennium Seed Bank and SNGF) and at least 4 living collections (community gene banks and/or botanic gardens).

### Measuring outputs

Provide detail of what you will measure to assess your progress towards achieving these outputs. You should also be able to state what the change you expect to achieve as a result of this project i.e. the difference between the existing state and the expected end state. You may require multiple indicators to measure each output – if you have more than 3 indicators please just insert a row(s).

<b>Output 1: A national strategy for wild yam species conservation</b>	
Indicator 1	IUCN Red List Assessments published for all species by end of year 2.
Indicator 2	Ecological profiles published for all species by end of year 2.
Indicator 3	National strategy for wild yams completed and presented to relevant authorities and NGOs by end of year 3.

<b>Output 2: Improved knowledge and awareness of the importance of yams</b>	
Indicator 1	Website online by end of year 1 and updated with ecological profiles, conservation strategy and project materials as they become available.
Indicator 2	Communication strategy devised in year 1, with regular national and regional newspaper articles and radio interviews and more frequent updates through Twitter and the KMCC blog. Annual regional yam festivals by year 3.

Indicator 3	3 scientific papers submitted/published in peer-reviewed open access journals, with at least one of these <i>Madagascar Conservation and Development</i> or <i>Malagasy Nature</i> .
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<b>Output 3:</b> Cultivation of native species and cultivars by 60 communities	
Indicator 1	At least 50 households in 60 communities engaged in yam cultivation by end of year 3.
Indicator 2	10% increase in household incomes, with surplus tubers also available for cultivation by additional households or adjacent communities by year 3.
Indicator 3	Community technicians trained in year 1 and provided with a basic yam cultivation manual. Updated and improved manual available by end of year 3.

<b>Output 4:</b> Conservation management of the 20 most threatened species	
Indicator 1	Conservation management plans for all 20 species developed in partnership with NGOs and communities and agreed by year 3.
Indicator 2	Community monitoring methodology developed and implemented and integrated into the conservation management plans by end of year 3.
Indicator 3	No decline in main populations apparent by year 3.

<b>Output 5:</b> Ex-situ conservation of all wild species and non-native cultivars	
Indicator 1	Collections of seed from up to 10 populations from throughout the ranges of all native species collected and stored <i>ex-situ</i> by year 3.
Indicator 2	Germination protocols for all native species published by year 3.
Indicator 3	Plants of all wild species and non-native cultivars grown in living collections in Madagascar; including 4 botanic gardens and/or regional community 'gene-banks' that will be established through the project by year 3.

### Verifying outputs

Identify the source material the Darwin Initiative (and you) can use to verify the indicators provided. These are generally recorded details such as publications, surveys, project notes, reports, tapes, videos etc.

Indicator 1	Agreements with collaborating NGOs and communities (Outputs 3.1, 3.2, 3.3, 4.1, 4.2, 5.3).
Indicator 2	3-monthly project reports (All outputs).
Indicator 3	Blog posts, videos and photographs, links to media activity available through the project website (Outputs 1.1, 1.3, 2.1, .2.2, 4.1, 5.3)
Indicator 4	Journal papers (Outputs 1.1, 1.2, 2.3, 5.2).

### Output risks and important assumptions

You will need to define the important assumptions, which are critical to the realisation of the achievement of your outputs. It is important at this stage to ensure that these assumptions can be monitored since if these assumptions change, it may prevent you from achieving your expected outcome. If there are more than 3 assumptions please insert a row(s).

Assumption 1	<p>Within the time-frame of the project, weather and/or climate does not have adverse affects on yam cultivation and/or wild populations.</p> <p><b>Mitigation:</b> yam cultivation will continue in following years, but outreach will continue. The effects of cyclones are usually localised and are unlikely to affect all project communities.</p>
Assumption 2	<p>Most communities will prefer cultivation of yams to harvesting wild yams (that convenience and productivity will be valued over the taste and cultural value).</p> <p><b>Mitigation:</b> during community engagement, the time saving benefits of cultivation instead of walking many miles to collect yams will be highlighted.</p>
Assumption 3	<p>There are wild species in each region that can be cultivated successfully or harvested sustainably or that will respond to ennoblement.</p> <p><b>Mitigation:</b> even if some native yams cannot be sustainably harvested or improved through ennoblement, cultivation of cultivars of <i>Dioscorea alata</i> will still provide a reliable food source.</p>
Assumption 4	<p>All 40 native species can be located and have some viable populations which can be conserved.</p> <p><b>Mitigation:</b> baseline surveys at the start of the project will identify the locations of viable populations and conservation will be prioritised on the basis of these surveys. We have just rediscovered the one species (<i>Dioscorea decaryana</i>) that was thought to be extinct.</p>
Assumption 5	<p>Pests do not have significantly adverse affects on cultivation.</p> <p><b>Mitigation:</b> Kew has experts on insect and fungal pathogens. Incidence of disease would provide an opportunity to apply our expertise and devise appropriate actions that can improve food security for communities.</p>

## Activities

Define the tasks to be undertaken by the research team to produce the outputs.

<b>Output 1:</b> A national strategy for wild yam species conservation	
Activity 1.1	Baseline surveys of populations of priority species, including: area, individuals/density, forest size and conservation status.
Activity 1.2	Inventory of new areas and collection of herbarium specimens and leaf samples for DNA analysis to refine the conservation assessments of priority species.
Activity 1.3	IUCN Red List assessments and ecological profiling.
Activity 1.4	Workshops with stakeholders to develop a national strategy and conservation action plans for priority species.

<b>Output 2:</b> Improved knowledge and awareness of the importance of yams	
Activity 2.1	Building and populating a project website and blog.
Activity 2.2	Implementation of a project communication strategy, including radio, newspapers, social media, leaflets and yam festivals.
Activity 2.3	Preparation of journal articles.

<b>Output 3:</b> Cultivation of native species and cultivars by 60 communities	
Activity 3.1	Socio-economic surveys of community and household consumption of yams and the availability of wild yams in local markets.

Activity 3.2	Training for community technicians in cultivation and ennoblement techniques.
Activity 3.3	Development of a manual and other materials, tested by communities, to facilitate farmer to farmer dissemination.
Activity 3.4	Repeated surveys of food consumption in households in the project areas to assess changes throughout the life of the project.

**Output 4: Conservation management of the 20 most threatened species**

Activity 4.1	Baseline surveys and monitoring of the harvesting of priority species and populations from forests.
Activity 4.2	Research into the most effective ennoblement protocols and management of wild species for sustainable food production.
Activity 4.3	Participatory development of a monitoring methodology for communities.
Activity 4.4	Development of conservation management plans for each species and agreement with communities and NGOs managing protected areas.

**Output 5: Ex-situ conservation of all wild species and non-native cultivars**

Activity 5.1	Identification of sites for collection of seeds from yam populations, informed by the baseline surveys.
Activity 5.2	Seed collection trips in combination with baseline surveys.
Activity 5.3	Germination tests carried out on all yam species in Madagascar by SNGF and at Kew's Millennium Seed Bank (routine for all MSB collections).
Activity 5.4	Distribution of germination protocols, seeds and tubers to botanic gardens and communities engaged to preserve living collections of wild species and cultivars.

26. Provide a project implementation timetable that shows the key milestones in project activities. Complete the following table as appropriate to describe the intended workplan for your project.

Activity	No of Months	Year 1				Year 2				Year 3			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Output 1 A national strategy for wild yam species conservation</b>													
1.1 Baseline surveys of populations of priority species	6												
1.2 Inventory of new areas to enhance distribution data	6												
1.3 IUCN Red List assessments and ecological profiling	2												
1.4 Workshops to develop a national strategy and conservation plans	3												
<b>Output 2 Improved knowledge of the importance of yams</b>													
2.1 Building and populating a project website and blog.	12												
2.2 Communication: radio, social media, leaflets and yam festivals <i>etc.</i>	8												
2.3 Preparation of journal articles	4												
<b>Output 3 Cultivation of native species and cultivars by 60 communities</b>													
3.1 Baseline surveys of consumption and availability in markets	6												
3.2 Training for community technicians in cultivation and ennoblement	18												
3.3 Development of a manual and other materials	6												
3.4 Monitoring of production and food consumption in households	12												
<b>Output 4 Conservation management of the 20 most threatened species</b>													
4.1 Baseline surveys and monitoring of harvesting of priority species	6												
4.2 Research on ennoblement protocols and sustainable management	12												
4.3 Development of a monitoring methodology for communities	6												
4.4 Agreement of conservation management plans	3												
<b>Output 5 Ex-situ conservation of wild species and non-native cultivars</b>													
5.1 Identification of sites for collection of seeds	3												
5.2 Seed collection trips in combination with baseline surveys	6												
5.3 Germination tests in Madagascar by SNGF and at Kew's MSB	4												
5.4 Establishment of living gene-banks	12												

## 27. Project based monitoring and evaluation (M&E)

Describe, referring to the Indicators above, how the progress of the project will be monitored and evaluated, making reference to who is responsible for the projects M&E. Darwin Initiative projects are expected to be adaptive and you should detail how the monitoring and evaluation will feed into the delivery of the project including its management. M&E is expected to be built into the project and not an 'add' on. It is as important to measure for negative impacts as it is for positive impact.

(Max 500 words)

The in-country project management team will meet every 3 months and will be joined by a Kew project principal once per year. The responsibilities for monitoring and reporting are:

- KMCC – population surveys, ecological profiling, modelling, ennoblement trials
- FBM/NT and other NGOs – community outreach
- PBZT – living collections
- SNGF – seed banking

The project management team will review progress towards the outputs against the logframe, implementing any changes necessary based on progress and unanticipated changing conditions, opportunities or needs of the communities.

Socio-economic metrics will include: the numbers of households and communities participating in yam cultivation, the weight per year of production per community, income derived from yams per household, the number and weight of wild yams harvested, the methods of harvesting wild yams, the number of communities with wild yam management agreements and the area of forest under sustainable management of wild yam populations.

*In-situ* conservation metrics will include: population area and density, number of female plants (for very rare species and if possible to measure), number and density of yam tuber extraction holes, number of species harvested and the general species richness, biodiversity and conservation significance of the site.

*Ex-situ* conservation metrics will include:

- i) seed banks - the number of species stored, the number of collections and populations represented per species and the number of seeds per collection;
- ii) living collections – the number of living collections (*i.e.* replication between botanic gardens, NGOs and communities), the number of species grown, number of plants grown per species and the representation of the main populations of each species.

Project 'influencing' metrics will include: the number of organisations adopting yam conservation via the project, the number of communities and households adopting yam conservation and cultivation via other organisations, the distribution of the yam manual and other project outputs, the participation of other organisations in workshops, downloads and hits on the project website and the incorporation of wild species into the national policy on yams by the Ministry of Agriculture.

KMCC and FBM/NT will assess livelihoods against baseline data, including health and education indicators, household income and access to productive land, using standard surveys and questionnaires familiar to the communities through previous work. Quantitative and qualitative data will be recorded via extension workers reports and beneficiary chosen fora, such as village meetings or individual interviews. Special provision will be made for identified marginalised or under represented sectors of communities, for example women, single parent led families and landless families etc. Monitoring and evaluation reports will be fed back to communities.

At the end of the project we will publish a report of evaluating the impact of the project and its successes and failures as a case study for other projects and conservation managers. This will be disseminated through the final workshop and institutional websites. Appropriate results will be published in academic journals, such as Madagascar Conservation and Development.

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## FUNDING AND BUDGET

**Please complete the separate Excel spreadsheet which provides the Budget for this application. Some of the questions earlier and below refer to the information in this spreadsheet.**

**NB:** Please state all costs by financial year (1 April to 31 March) and in GBP. **Budgets submitted in other currencies will not be accepted.** Use current prices – and include anticipated inflation, as appropriate, up to 3% per annum. The Darwin Initiative cannot agree any increase in grants once awarded.

### 28. Cost Effectiveness

Please explain how you worked out your budget and how you will provide value for money through managing a cost effective and efficient project. You should also discuss any significant assumptions you have made when working out your budget.

(max 300 words)

The budget is based on experience of similar project work by the partners. We have budgeted to work with 3 communities for 20 species, and in humid forest areas a realistic total for household participation is 50 per community. The main unknown is the cost of undertaking similar work in the far north of Madagascar, which is dependent on the number of communities close to endangered species and the capacity of the existing extension networks of possible partner NGOs. We will look for further funding and partners to scale-up the project (e.g. through the GEF restoration project).

We have included rigorous efficiency elements using all existing resources such as vehicles and offices at minimal cost. We have excluded non-vital components, minimised the international travel budget (which will be mostly contributed from other sources of funding) and will carry out much of the down-line management by Skype and email.

The cost of seed banking (including cleaning, air-freighting, germination testing and long-term storage) at Kew's Millennium Seed Bank is covered from other funding including DEFRA's grant in aid to Kew. The Darwin Initiative funding will cover SNGF's costs banking yam seeds as well as training for partners (NGOs and community technicians) and some equipment (e.g. collecting bags and 35lt storage barrels containing silica gel).

The current Darwin Initiative Madagascar Agroforestry Livelihoods Project is developing methods for participatory community surveys and monitoring using GPS equipped compact cameras. A KMCC JRS Biodiversity Fund project is developing citizen-science methods for recording 'sight' records to refine IUCN Red List assessments. The KMCC team will be equipped with rugged smartphones or toughpad computers to increase the speed and efficiency of recording field data. This Darwin Initiative project will benefit from the innovations from both of these projects as well as some of the equipment.

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### FCO NOTIFICATIONS

Please check the box if you think that there are sensitivities that the Foreign and Commonwealth Office will need to be aware of should they want to publicise the project's success in the Darwin competition in the host country.

Please indicate whether you have contacted your Foreign Ministry or the local embassy or High Commission (or equivalent) directly to discuss security issues (see Guidance Notes) and attach details of any advice you have received from them.

**Yes (no written advice)**    **X**                      **Yes, advice attached**                          **No**   

### CERTIFICATION

On behalf of the trustees of                      **The Royal Botanic Gardens Kew**

I apply for a grant of **£291,782** in respect of **all expenditure** to be incurred during the lifetime of this project based on the activities and dates specified in the above application.

I certify that, to the best of our knowledge and belief, the statements made by us in this application are true and the information provided is correct. I am aware that this application form will form the basis of the project schedule should this application be successful.

- I enclose CVs for project principals and letters of support.
- Our most recent audited/independently verified accounts and annual report are also enclosed/can be found at: <http://www.kew.org/about/our-work/reports-accounts-plans>

<b>Name (block capitals)</b>	Professor Katherine Willis
<b>Position in the organisation</b>	Director of Science

**Signed**



**Date:**

1<sup>st</sup> December 2014

**Stage 2 Application - Checklist for submission**

	Check
Have you <b>read the Guidance Notes</b> ?	X
Have you provided <b>actual start and end dates</b> for your project?	X
<b>Have you indicated whether you are applying for DFID or Defra funding. NB: you cannot apply for both</b>	X
Have you provided your <b>budget based on UK government financial years</b> i.e. 1 April – 31 March and in GBP?	X
Have you checked that your <b>budget is complete</b> , correctly adds up and that you have included the correct final total on the top page of the application?	X
Has your application been <b>signed by a suitably authorised individual</b> ? (clear electronic or scanned signatures are acceptable in the email)	X
Have you included a <b>1 page CV for all the Principals</b> identified at Question 7?	X
Have you included a <b>letter of support from the main partner(s) organisations</b> identified at Question 10?	X
Have you <b>been in contact with the FCO</b> in the project country/ies and have you included any evidence of this?	X
Have you included a signed <b>copy of the last 2 years annual report and accounts</b> for the lead organisation? An electronic link to a website is acceptable.	X
Have you <b>checked the Darwin website</b> immediately prior to submission to ensure there are no late updates?	X

Once you have answered the questions above, please submit the application, not later than midnight GMT on Monday 1 December 2014 to [Darwin-Applications@ltsi.co.uk](mailto:Darwin-Applications@ltsi.co.uk) using the application number (from your Stage 1 feedback letter) and the first few words of the project title **as the subject of your email**. If you are e-mailing supporting documentation separately please include in the subject line an indication of the number of e-mails you are sending (eg whether the e-mail is 1 of 2, 2 of 3 etc). You are not required to send a hard copy.

DATA PROTECTION ACT 1998: Applicants for grant funding must agree to any disclosure or exchange of information supplied on the application form (including the content of a declaration or undertaking) which the Department considers necessary for the administration, evaluation, monitoring and publicising of the Darwin Initiative. Application form data will also be held by contractors dealing with Darwin Initiative monitoring and evaluation. It is the responsibility of applicants to ensure that personal data can be supplied to the Department for the uses described in this paragraph. A completed application form will be taken as an agreement by the applicant and the grant/award recipient also to the following:- putting certain details (ie name, contact details and location of project work) on the Darwin Initiative and Defra websites (details relating to financial awards will not be put on the websites if requested in writing by the grant/award recipient); using personal data for the Darwin Initiative postal circulation list; and sending data to Foreign and Commonwealth Office posts outside the United Kingdom, including posts outside the European Economic Area. Confidential information relating to the project or its results and any personal data may be released on request, including under the Environmental Information Regulations, the code of Practice on Access to Government Information and the Freedom of Information Act 2000.