

Applicant: **Davis, Aaron**  
Organisation: **Royal Botanic Gardens, Kew**  
Funding Sought: **£200,050.00**  
Funding Awarded: **£200,050.00**

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# **DIR26S2\1018**

## **27-014 Coffee Natural Capital for Environmental and Livelihood Sustainability in Uganda**

Uganda's coffee sector comprises c. 1.7 million householders and over 3.5 million people in related activities, generating c. 25% of the country's export earnings. Sustainability of the sector in Uganda is paramount. The aim of this project is to demonstrate the substantial value of Uganda's coffee natural capital for: Uganda's coffee economy, livelihood sustainability, climate change adaptation, and ecosystem service provision. It will also reveal the positive synergies between climate change adaptation, biodiversity, the ecosystem, and commercial activity (coffee farming).

## PRIMARY APPLICANT DETAILS

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**Title** Dr  
**Name** Aaron  
**Surname** Davis  
**Organisation** Royal Botanic Gardens, Kew  
**Website (Work)** [REDACTED]  
[REDACTED]  
[REDACTED]  
**Tel (Work)** [REDACTED]  
**Tel (Mobile)** [REDACTED]  
**Email (Work)** [REDACTED]  
**Address** [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

## CONTACT DETAILS

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**Title** Dr  
**Name** Maria  
**Surname** Fitzpatrick  
**Organisation** Royal Botanic Gardens, Kew  
**Website (Work)** [REDACTED]  
**Tel (Work)** [REDACTED]  
**Email (Work)** [REDACTED]  
**Address** [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

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## Section 1 - Contact Details

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### PRIMARY APPLICANT DETAILS

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**Title** Dr  
**Name** Aaron  
**Surname** Davis  
**Organisation** Royal Botanic Gardens, Kew  
**Website (Work)** [REDACTED]  
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**Tel (Work)** [REDACTED]  
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**Email (Work)** [REDACTED]  
**Address** [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

### CONTACT DETAILS

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**Title** Dr  
**Name** Maria  
**Surname** Fitzpatrick  
**Organisation** Royal Botanic Gardens, Kew  
**Website (Work)** [REDACTED]  
**Tel (Work)** [REDACTED]  
**Email (Work)** [REDACTED]  
**Address** [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

### GMS ORGANISATION

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Type	Trusted Organisation
Name	Royal Botanic Gardens, Kew
Phone	[REDACTED]
Email (Work)	[REDACTED]
Website (Work)	[REDACTED]
[REDACTED]	
[REDACTED]	
Address	[REDACTED]
	[REDACTED]

Type	General
Name	Royal Botanic Gardens, Kew
Phone (Work)	[REDACTED]
Email (Work)	[REDACTED]
Address	[REDACTED]
	[REDACTED]

## Section 2 - Title, Dates & Budget Summary

### Q3. Project title:

27-014 Coffee Natural Capital for Environmental and Livelihood Sustainability in Uganda

### What was your Stage 1 reference number? e.g. DIR26S1\100123

DIR26S1\1518

### Q4. Country(ies)

Which eligible country(ies) will your project be working in? Where there are more than 4 countries that your project will be working in, please add more boxes using the selection option below.

Country 1	Uganda	Country 2	No Response
Country 3	No Response	Country 4	No Response

### Do you require more fields?

No

### Q5. Project dates

#### Start date:

01 April 2020

#### End date:

31 March 2023

#### Duration (e.g. 2 years, 3 months):

3 years

### Q6. Budget summary

Year:	2020/21	2021/22	2022/23	Total request
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<b>Amount:</b>	£69,652.00	£64,223.00	£66,175.00	<b>£</b>
				200,050.00

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**Q6a. Do you have matched funding arrangements?**

Yes

**What matched funding arrangements are proposed?**

Confirmed match funding arrangements, over three years.

Kew overheads (60% staff costs) £ [REDACTED]

Clifton Coffee (staff time) £ [REDACTED]

Clifton Coffee (travel and subsistence, marketing, photography) £ [REDACTED]

UG Kyagalanyi Coffee (staff time, for training and other activities) £ [REDACTED]

Total £ [REDACTED] (33% of total project cost)

**Q6b. Proposed (confirmed and unconfirmed) matched funding as % of total project cost (total cost is the Darwin request plus other funding required to run the project).** 33%

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## Section 3 - Project Summary

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### Q7. Summary of project

**Please provide a brief summary of your project, its aims, and the key activities you plan on undertaking. Please note that if you are successful, this wording may be used by Defra in communications e.g. as a short description of the project on [GOV.UK](http://GOV.UK).**

**Please write this summary for a non-technical audience.**

Uganda's coffee sector comprises c. 1.7 million householders and over 3.5 million people in related activities, generating c. 25% of the country's export earnings. Sustainability of the sector in Uganda is paramount. The aim of this project is to demonstrate the substantial value of Uganda's coffee natural capital for: Uganda's coffee economy, livelihood sustainability, climate change adaptation, and ecosystem service provision. It will also reveal the positive synergies between climate change adaptation, biodiversity, the ecosystem, and commercial activity (coffee farming).

## Section 4 - Lead Organisation Summary

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### Q8. Lead organisation summary

**Has your organisation been awarded a Darwin Initiative or IWT Challenge Fund award before (for the purposes of this question, being a partner does not count)?**

Yes

**If yes, please provide details of the most recent awards (up to 6 examples).**

Reference No	Project Leader	Title
26-024	Bente Klitgaard	Improving indigenous Bolivian Chiquitano people's livelihoods through sustainable forest management
DARFW049	Juan Viruel	BaoBat – Conservation genetics of two mutualistic species in Madagascar
DPLUS084	Martin Hamilton	Identifying and conserving resilient habitats in the British Virgin Islands
EIDPO049	Paul Wilkin	Sustainable yam markets for conservation and food security in Madagascar
DPLUS080	Rosemary Newton	Securing South Georgia's native habitats following invasive species control
25-017	Elinor Breman	Enhancing rural Caucasian community livelihoods through fruit and nut conservation

**Have you provided the requested signed audited/independently examined accounts? If you select "yes" you will be able to upload these. Note that this is not required from Government Agencies.**

Yes

**Please attach the requested signed audited/independently examined accounts.**

 [RBG Kew Annual Report and Accounts for the year ended 31 March 2019](#)  
 03/12/2019  
 12:18:49  
 pdf 908.28 KB

 [kew-annual-report-2017-18-print](#)  
 03/12/2019  
 12:18:49  
 pdf 1007.44 KB

## Section 5 - Project Partners

### Q9. Project partners

**Please list all the partners involved (including the Lead Organisation) 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 Letters of Support for the Lead Organisation and each partner or explain why this has not been included.**

**N.B: There is a file upload button at the bottom of this page for the upload of a cover letter (if applicable) and all letters of support.**

**Lead Organisation name:** Royal Botanic Gardens, Kew

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**Website address:** <https://www.kew.org/>

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**Details (including roles and responsibilities and capacity to engage with the project):**

Kew has a long and productive history in coffee research, especially concerning wild coffee species diversity and mainstreaming biodiversity and forest conservation. Since 2010 Kew has been leading the field in quantifying and acting on the effects of climate change for coffee farming and wild coffee forests. We have completed a number of highly successful projects in Ethiopia and provided support for projects across Africa (Sierra Leone, Cameroon, Kenya, Tanzania, Uganda, Mozambique and Madagascar). Amongst our key foci are the valorisation of coffee species diversity (and wild coffee forests), for coffee sector sustainability and biodiversity conservation.

We have undertaken two scoping visits to Uganda (2016 and 2017), and put considerable effort into building a collaborative project partnership in Uganda. A proof-of-concept study undertaken in Madagascar (2019) clearly demonstrated the substantial scope for developing Ugandan coffee species for climate adaptation and increased productivity.

Kew will be responsible for overall project management and monitoring and evaluation (M&E), and lead on the key science questions and research activities required to achieve the outcome and impacts. We will manage the working relationship between academic (NARO and Makerere University, Uganda) and private-sector partners (Kyagalanyi coffee (Uganda) and Clifton Coffee (UK)).

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**Have you included a Letter of Support from this organisation?**  Yes

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**Have you provided a cover letter to address your Stage 1 feedback?**  Yes

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**Do you have partners involved in the Project?**

Yes

**1. Partner Name:** National Agricultural Research Organization (NARO), Uganda

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**Website address:** <https://www.naro.go.ug/>

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**Details (including roles and responsibilities and capacity to engage with the project):** NARO is the lead government agency for agricultural research in Uganda, and encompasses the National Coffee Research Institute (NACORI). NARO will be the project lead on communication with the Ugandan Government and other lead agencies in Uganda (e.g. Uganda Coffee Development Authority (UCDA)). They will also lead on and manage coffee plot trials in Kampala, and participate in fieldwork (farming communities and forest sites). NARO has field offices across Uganda, which will serve to provide logistic support for the fieldwork elements of the project.

NARO/NACORI have field trial space available, in Kampala and at other sites, and the physical and human resources for undertaking field trials on coffee.

Catherine Kiwuke (NARO) is a member of the Ugandan civil service and the agricultural and conservation research community. She undertook her PhD on Ugandan robusta coffee, investigating the genetic basis of climate tolerance. She has experience in conducting field trials, climate data gathering and analysis, and farm-worker management. Ms. Kiwuke routinely communicates with key government and coffee sector representatives in Uganda.

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**Have you included a Letter of Support from this organisation?**  Yes

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**2. Partner Name:** Makerere University, Kampala, Uganda

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**Website address:** <https://www.mak.ac.ug/about-makerere>

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**Details (including roles and responsibilities and capacity to engage with the project):**

Makerere University has a comprehensive teaching programme and conducts research and outreach programmes in botany, economic botany, and plant resource conservation. The university has a long-standing collaborative relationship with RBG Kew, including recent work on adapting agriculture to climate change via the use of crop wild relatives (CWRs).

Makerere University will lead on the coffee diversity survey, which involves herbarium survey and forest fieldwork in Uganda. They will also be the project representative for engagement with international and national biodiversity conventions, including the National Biodiversity Strategy and Action Plan (NBSAP) for Uganda.

Prof. James Kalema is eminently suited to manage and participate in the coffee species diversity study in Uganda. He has an unsurpassed knowledge of Uganda's flora, and forests, with areas of expertise in tree and forest conservation, conservation assessments, CWRs, adapting agriculture to climate change, and habitat restoration. Prof. Kalema is a member of: the National Environment Management Authority Technical Committee on Biodiversity Conservation for Uganda, the Uganda National Commission for United Nations Educational, Scientific and Cultural Organisation (UNESCO), and the Man and Biosphere (MAB) Programme Committee; he has actively participated in National Biodiversity Strategy and Action Plan (NBSAP) for Uganda.

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**Have you included a Letter of Support from this organisation?**

Yes

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**3. Partner Name:**

Kyagalanyi Coffee Limited

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**Website address:**

[www.kyagalanyi.co.ug](http://www.kyagalanyi.co.ug)

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**Details (including roles and responsibilities and capacity to engage with the project):**

Kyagalanyi Coffee Ltd. (part of the EDF & Man group) are based in Kampala, and undertake production, processing and export of coffee from Uganda, for small scale and major commercial buyers. The activities and resources required as a partner for the project fall squarely within their daily modes of operation.

Kyagalanyi Coffee Ltd. will lead on the installation of processing equipment, farmer/household engagement and training (harvest and post-harvest techniques), and agronomic and commercial assessment of Liberica (*C. liberica*) and eugenioides (*C. eugenioides*) coffees.

Kyagalanyi Coffee Ltd are the in-country business partner for Clifton Coffee Company (see below) and will thus provide services for procurement and exportation, and other value chain logistics.

Kyagalanyi Coffee Ltd. Have already started their engagement with the community at Luwero by undertaking an initial feasibility assessment for Liberica coffee at the project site.

Dr Anneke Fremont has a PhD in Agronomy (Wageningen University, the Netherlands) and a strong track record in coffee sustainability. She works extensively with rural households and is engaged in a broad spectrum of sustainability work, including certification, coffee farming systems, farming as a business, coffee quality and processing, climate change, gender equality improvement, youth and extension strategies.

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**Have you included a Letter of Support from this organisation?**

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Yes

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**4. Partner Name:**

Clifton Coffee Roasters

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**Website address:**

<https://cliftoncoffee.co.uk/>

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**Details (including roles and responsibilities and capacity to engage with the project):**

Based in Bristol (UK), Clifton Coffee Company, supply coffee to 850 sites across the UK. Coffee purchasing includes Uganda, where they work in partnership with Kyagalanyi Coffee Ltd. (Uganda). Clifton Coffee are keen to develop Liberica coffee for the UK market, in order to provide differentiated products, linked to livelihood improvement, sustainability, climate resilience and biodiversity conservation.

Clifton Coffee will be responsible for the management of the business relationship between themselves and Kyagalanyi Coffee Ltd., the physical and sensory assessment of coffee quality, market and consumer demand assessment, farmer price premiums, and agronomic assessment of coffee production.

Sam McCuaig (Green Coffee Buyer) is the joint owner and chief coffee buyer for Clifton Coffee. He has travelled widely in Uganda, and the global coffee landscape, to manage and oversee procurement relationships with farmers and other value chain representatives. Sam has undertaken livelihood and social improvement projects in Ethiopia, Colombia and Brazil.

Joshua Clarke (Director of Coffee) manages supply and technical support, overseeing the roasting and sale of over 450 tonnes of coffee per year. He has competed successfully in coffee making/tasting championships, and at national and international levels.

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**Have you included a Letter of Support from this organisation?**

Yes

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**5. Partner Name:**

*No Response*

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**Website address:**

*No Response*

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**Details (including roles and responsibilities and capacity to engage with the project):**

*No Response*

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**Have you included a Letter of Support from this organisation?**

Yes  
 No

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**6. Partner Name:**

*No Response*

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**Website address:**

*No Response*

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**Details (including roles and responsibilities and capacity to engage with the project):**

*No Response*

**Have you included a Letter of Support from this organisation?**  Yes  No

**If you require more space to enter details regarding Partners involved in the project, please use the text field below.**

*No Response*

**Please provide a cover letter responding to feedback received at Stage 1 if applicable and a combined PDF of all letters of support.**

 [Letters of Support Uganda](#)

 05/12/2019

 14:15:52

 pdf 1021.94 KB

 [Covering Letter DIR26S1 151 Kew Darwin](#)

 05/12/2019

 14:15:52

 pdf 158.44 KB

## Section 6 - Project Staff

### Q10. Key project staff

**Please identify the key project personnel on this project, their role and what % of their time they will be working on the project.**

**Please provide 1 page CVs for these staff, or a 1 page job description or Terms of Reference for roles yet to be filled. These should match the names and roles in the budget spreadsheet.**

**If your team is larger than 12 people please review if they are core staff, or whether you can merge roles (e.g. 'admin and finance support') below, but provide a full table based on this template in the pdf of CVs you provide.**

Name (First name, Surname)	Role	% time on project	1 page CV or job description attached?
Aaron Davis	<b>Project Leader</b>	20	Checked
Aisyah Faruk	Co-investigator/M&E leader	20	Checked
Anneke Fremont	Agronomic assessment, household training, value chain logistics,	10	Checked

James Kalema	Coffee and coffee forest diversity survey; CBD liason	20	Checked
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**Do you require more fields?**

Yes

Name (First name, Surname)	Role	% time on project	1 page CV or job description attached?
Catherine Kiwuke	Agronomic research and assessment; field trial management; government liaison.	20	Checked
Sam McCuaig	Coffee purchasing and value chain management	10	Checked
Joshua Clarke	Coffee evaluation, product development.	10	Checked
No Response	No Response	0	Unchecked
No Response	No Response	0	Unchecked
No Response	No Response	0	Unchecked
No Response	No Response	0	Unchecked
No Response	No Response	0	Unchecked

**Please provide 1 page CVs (or job description if yet to be recruited) for the project staff listed above as a combined PDF.**

**Ensure the file is named clearly, consistent with the named individual and role above.**

-  [CVs Uganda Coffee](#)
-  04/12/2019
-  13:22:32
-  pdf 823.75 KB

**Have you attached all project staff CVs?**

Yes

## Section 7 - Problem Statement & Conventions

### Q11. Problem the project is trying to address

**Please describe the problem your project is trying to address in terms of biodiversity and its relationship with poverty. For example, what are the drivers of loss of biodiversity that the project will attempt to address? Why are they relevant, for whom? How did you identify these problems?**

Uganda's coffee agroforestry systems are key to the sustainability of Uganda's coffee sector, agriculture and landscape level ecosystem service provision, and biodiversity conservation.

Since the 1980s there have been serious issues for coffee production in Uganda, related to disease (coffee wilt disease) pests (coffee twig borer), and changing climate (drought) (Jassogne et al. 2003). The conversion of coffee agroforestry systems to other crops leads to a decline in ecosystem services (e.g. pollinator services, climate amelioration) a loss of biodiversity (including primates and birds) and a reduction in income diversity. Importantly, in lowland Uganda, coffee production is mostly situated above arable land (as seen via satellite imagery), where it provides critical water capture and soil stabilization services.

Uganda is unique amongst the world's coffee growing countries, being a major producer and the home of three (of four) highest priority coffee crop wild relatives (CWRs): *C. canephora*, *C. liberica* and *C. eugenioides* (Davis et al. 2019). Presently the value of this natural capital is understudied, and grossly underestimated in terms of its value to provide transformative sustainability solutions for the Ugandan coffee sector.

A full assessment of wild coffee species diversity (distribution, population size/density, environmental range (including adaptive potential) in Uganda has never been undertaken. The last survey was undertaken over 80 years ago (Thomas, 1936). Liberica and eugenioides coffee show potential as crop species; the development of the three main CWR coffee species and their interspecies hybrids offers substantial benefits for climate resilience, pest and disease resistance and productivity (as demonstrated by ongoing plant breeding research undertaken in Madagascar).

At the same time, Uganda's forests require more effective conservation. A tangible demonstration of the value of these natural forests (as the source of coffee sector sustainability, for local and national stakeholders) will serve to strengthen conservation policy.

## **Q12. Biodiversity Conventions, Treaties and Agreements**

### **Q12a. Your project must support the objectives of one or more of the agreements listed below.**

**Please indicate which agreement(s) will be supported and describe which objectives your project will address and how.**

- Convention on Biological Diversity (CBD)
- Nagoya Protocol on Access and Benefit Sharing (ABS)
- International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)
- Convention on Climate Change (CCC)
- Global Goals for Sustainable Development (SDGs)

### **Q12b. Biodiversity Conventions**

**Please detail how your project will contribute to the objectives of the agreement(s) your project is targeting. You should refer to Articles or Programmes of work here.**

National Biodiversity Conventions

The project supports numerous national directives, including the Ugandan National Development Plan, the

Green Growth Development Strategy, Vision 2040, the National Agricultural Policy (2013), and the National Biodiversity Strategy and Action Plan [NBSAP] (2014). The Ugandan National Development Plan clearly identifies coffee as central to Uganda's economic sustainability and development. For example: the contribution of Traditional Exports (TEs) to overall formal export earnings decreased from 31.4 percent in 2011 to 25.1 percent in 2012. The TEs notable decrease in share is due to a notable decline in coffee earnings.

The National Biodiversity Strategy and Action Plan (NDSAP) has been ratified by the CBD and is held by them as country-level (CBD) documentation for Uganda. Importantly, the NBSAP demonstrates the central role played by coffee in Uganda's economy, and identifies mainstreaming biodiversity as a key strategy for success.

#### Convention on Biological Diversity (CBD)

The project covers numerous articles of the Convention on Biological Diversity. In particular, the project will:

Art 10(e) "Encourage cooperation between its governmental authorities and its private sector in developing methods for sustainable use of biological resources."  
This is central to the Outcome of the project. Our project will directly engage with key government agencies and the private sector (coffee producers and purchasers) in the sustainable use and benefits of Uganda's biological resources (coffee natural capital).

Art 11 "...adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity."  
This is a key objective of the project: to incentivise conservation of coffee natural capital and natural forests by demonstrating that they are fundamental to the economic sustainability of the coffee sector, which includes the livelihood security of c. 4.2 million people. Moreover, the project will actually use Uganda's biological diversity for economic and social benefit, and sustainable use.

Art 13(a) "Promote and encourage understanding of the importance of biodiversity, as well as its propagation through media,..."  
The project will serve as an excellent example of the importance of biodiversity, through the direct employment of natural capital (biodiversity) as a means of ensuring sustainability for the country's nationally important coffee sector (coffee farming provides livelihood income for c. 4.2 million Ugandans; and generates c. 25% of export earnings). Coffee is of immense media interest. Kew's most recent coffee press release on the importance of coffee natural capital (biodiversity) reached more than 1 billion people; the associated research article (Davis et al. 2019) was one of the most widely reported science outputs of 2019, with an Altimetric score of 1939 (putting it in the top 5% of all research outputs scored by Altimetric, and the top 1% High Attention Score compared to outputs of the same age). The Darwin project will serve as an excellent example of the importance of biodiversity for economic and social security, climate change adaptation/resilience, ecosystem functioning and biodiversity conservation.

### **Q12c. Is any liaison proposed with the CBS / ABS / ITPGRFA / CITES / CMS / Ramsar / CCC focal point in the host country?**

Yes

#### **If yes, please give details.**

Yes, project team member Prof. J. Kalema (Makerere University) will be in direct liaison via his committee

membership of the (CBD ratified) National Biodiversity Strategy and Action Plan (NDSAP) for Uganda. We will actively engage with the NDSAP committee to discuss the objectives and activities of the project (and coffee natural capital), and build feedback for steering project improvements and M&E.

## **Q12d. Global Goals for Sustainable Development (SDGs)**

### **Please detail how your project will contribute to the Global Goals for Sustainable Development (SDGs)**

United Nations Sustainable Development Goals (SDGs)

The project will cover nine SDGs, but focus on:

SDG 12 Responsible consumption and production.

We will demonstrate the potential for economic improvement, climate resilience, biodiversity enhancement, and preservation of key ecosystem services, through the use of indigenous natural resources (native coffee species (coffee natural capital) and forest landscapes), via specific interventions within the value chain, at the farm/community and national level.

The Ugandan government has ratified a directive (by the Coffee Development Authority (UCDA) and Uganda Cooperative Alliance (UCA)) to increase coffee production in Uganda from 4 million bags to 20 million bags per year, by 2025.

SDG 13 (and Convention on Climate Change) Climate Action.

Affordable adaptation is essential for the sustainability of the Ugandan coffee sector, given that climate change is already having an impact and that we are unlikely to keep warming below 2°C. We will demonstrate the benefits of new/underutilized climate resilient crop species and hybrids, compared to other resiliency options (household migration and farm adaptation).

SDG 15 Life on land.

We will demonstrate ecosystem benefits of the coffee agroforestry system, and the immense value of forests/biodiversity for sustainable development, economic and social wellbeing.

Nagoya Protocol on Access and Benefit Sharing (ABS) and International Treaty on Plant Genetic Resources for Food and Agriculture.

This project is unique, in that Uganda will be the direct beneficiary of its own plant genetic resources: we will be using Uganda's coffee natural capital to sustain and develop the Ugandan coffee sector.

## **Section 8 - Method, Change Expected, Gender & Exit Strategy**

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### **Q13. Methodology**

**Describe the methods and approach you will use to achieve your intended Outcome and Impact.**

**Provide information on:**

- How you have analysed historical and existing initiatives and are building on or taking work already done into account in project design. Please cite evidence where appropriate.
- The rationale for carrying out this work and a justification of your proposed methodology.
- How you will undertake the work (materials and methods).

- **How you will manage the work (roles and responsibilities, project management tools, etc.).**

Work already undertaken

We have undertaken a considerable amount of pre-project work, including: (1) Three scoping (field) visits (two to Uganda [2016 and 2017]; and one to Madagascar [2019]). (2) Engagement with a range of private and public sector industry representatives, in Uganda and the UK. (3) Three years of project development with our partners. (4) Laboratory, desk-based work, literature and herbarium surveys. These activities are summarized in the Supporting Documentation PDF file.

Proposed methodology and its justification

Output 1. A critical survey of Uganda's coffee natural capital. Management: RBG Kew, Makerere University  
Field survey of all the coffee-holding forests, to collect vouchers, data (geo-location, habitat, vegetation, extinction threats), and living material (where required). The priority species are *C. liberica*, *C. canephora*, *C. eugenioides* and their wild hybrids. These data will be used to undertake climate profiling (species and populations) via GIS and modelling (training course included in project), and be incorporated into Output 5. A research paper will be provided via open access.

Output 2 Development of Liberica coffee production and establishment of a producer relationship at Luwero. Management: Kyagalanyi and Clifton Coffee.

Install coffee processing equipment, and provide training (equipment installation, harvesting, processing) with the aim of improving coffee quality (and thus marketability). There will be a dedicated Technical Commercial Assistant based in the area to work with the farmers on a daily basis and to mobilise the coffee. We will procure 5,000 kg of coffee, for sale in the UK. Data from this output will be used to demonstrate and guide scalability for Liberica coffee.

Output 3 Demonstration of ecosystem service and climate resiliency for Liberica coffee production. Management: RBG Kew, Makerere University, NARO.

We will undertake a soil water and climate survey by recording key variables, a pest/ disease survey, and biodiversity survey, at six farm sites; these normalized for soil type and altitude (etc). Ugandan team members and students/researchers to receive training. We will also undertake a drought-induced field trial for Liberica (vs. robusta coffee).

Output 4 Development of *C. eugenioides* as a high-value niche crop for forest-based communities. Management: Kew, NARO, Kyagalanyi Coffee and Clifton Coffee.

We will collect a range of native *C. eugenioides* genotypes (via cuttings and seeds) and install two trial plots (50 plants in each plot) one in Kampala and another at a higher elevation station. Following establishment, we will evaluate the early stages of agronomic success, via growth characteristics.

Output 5 Wild Coffee Resources Development Strategy document. Management: RBG Kew and all project partners.

We will assemble data and outcomes from Outputs 1–4 to produce a Wild Coffee Resources Development Strategy document, to include the potential for: increasing production, climate resilience, livelihood improvement and sustainability, ecosystem service provision, plant breeding strategies; and demonstrate the importance for forest and biodiversity conservation as part of a national growth strategy. The strategy will be professionally produced ( 200 copies) with easily assimilated information including infographics and maps, for dissemination to key stakeholders (hardcopy) and as a web-available PDF.

## **Q14. 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 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?**

Our project is designed to directly inform and influence the relevant public and private-sector stakeholders in Uganda, including policy and decision makers (Government and non-government, including those linked to the CBD and biodiversity conservation), the coffee sector (producers and buyers), academic (agricultural, social and biodiversity research) and intervention agencies (agricultural services). The project is designed in such a way that we will provide credible case studies as proof-of-concept for: upscaling (Liberica and eugenioides coffees), climate resilience, income and profitability improvement, ecosystems service provision, biodiversity enhancement, and long-term coffee development (via breeding strategies). This information will be summarized in the Wild Coffee Resources Development Strategy.

Two hundred hardcopies of our Wild Coffee Resources Development Strategy will be delivered to these stakeholders in Uganda, and the report will be made freely available via the Internet.

Within the project we have also built-in communication pathways (e.g. meetings) with key stakeholders, including CBD representatives via the National Biodiversity Action Plan for Uganda.

We will also run at least one major media campaign on the value of preserving coffee natural capital (wild coffee species) and their forest habitats, by demonstrating the value of priority coffee crop species. This will serve to raise awareness in Uganda and much further afield. Our most recent media release on the extinction threat of wild coffee species, and their importance to the global coffee sector, reached more than 1 billion people, alerting industry players and other stakeholders to take action on the global biodiversity crisis (e.g. a full page advert in National Geographic magazine by a major coffee company, which directly referenced our study of 2019 (Davis et al. 2019). We are already in discussion with the BBC to cover our Uganda project.

## **Q15. Capacity building**

**If your project will support capacity building at institutional or individual levels, please provide details of what form this will take and how this capacity will be secured for the future.**

Capacity building will be provided in five areas.

1. Farmer training and support in harvest and post-harvest coffee production techniques (300 people over the life of the project). The acquired knowledge and skills will be maintained as long as these communities continue to produce coffee and they are likely to be shared across the wider community, and to the next generation of coffee farmers. Our capacity building recipients will be five farms in the Luwero district.
2. Provision of GIS training for biological data records (two day course for 10–16 students/researchers). There is a strong demand for this training; and a substantial need as distribution data visualized via mapping systems is required to understand and interpret biodiversity (e.g. for conservation and biodiversity assessments). We will use the QGIS platform as this is free and can be maintained by students and academic institutes in Uganda. Our course attendees will be mostly from NARO/NACORI and Makerere University.
3. Provision of climate data collection and interpretation training. There is an strong demand for this

training; and a substantial need as agro- and bio-meteorology skills are required to understand and act on climate change. Project climate recording equipment will be left in Uganda; significant data already exists in Uganda (from weather stations). Training will be provided for NARO/NACORI and Makerere University project partners (6 researchers), including dedicated training in the UK

4. The Wild Coffee Resources Development Strategy, open access research paper, and project databases represent permanent resources, which can be built-on and developed in Uganda.

5. Capacity will be built for our in-country partners via the experience, skills and transfer of knowledge, gained during the project, and specific training in the UK. Stakeholder meeting attendees will also increase their capacity, in the areas of plant diversity, climate change, agronomy and value chain research/work.

## Q16. Gender equality

**All applicants must consider whether and how their project will contribute to reducing inequality between persons of different gender. Explain how your project will collect sex disaggregated data and what impact your project will have in promoting gender equality.**

Our farmer training courses at Luwero will include all members of the community, male and female. Failing this, equal numbers of places will be allocated to each gender. During the course of the training we will collect data on the control and use of income from coffee, specifically to understand the roles played by women and girls. Age data will also be recorded. With this baseline in place we will be better informed to guide on gender equality issues in coffee production as the project (and long-term vision) goes forward. We will promote gender equality as part of the coffee trading relationship. Project partner Kyagalanyi Coffee Ltd have considerable experience of gender and commercial development and we will be building in their country-specific expertise via an adaptive management approach.

Our academic training course will be offered as a set number of places for each gender; our project team has an almost equal gender allocation, across academic and private sector partners.

## Q17. Change expected

**Detail the expected changes this work will deliver. You should identify what will change and who will benefit a) in the short-term (i.e. during the life of the project) and b) in the long-term (after the project has ended).**

**Please describe the changes for biodiversity and for people in developing countries, and how they are linked. When talking about people, please remember to give details of who will benefit and the number of beneficiaries expected. The number of communities is insufficient detail - number of households should be the largest unit used. If possible, indicate the number of women who will be impacted.**

Short-term [baselines in brackets]

Output 1

Critical information on the wild coffee resources of Uganda (with a focus on the three crop priority species) gathered and disseminated to key stakeholders and wider community [present knowledge limited and access restricted]. Government and industry stakeholders (public and private) provided with detailed knowledge of Uganda's indigenous coffee genetic resources, its value and rationale for improving conservation measures. Twenty students/ researchers trained in GIS and species distribution modelling, for

biodiversity assessment work.

#### Output 2

Luwero (Liberica) coffee farming community (300 people) provided with the tools and knowledge (via specific training) to improve coffee quality, leading to improved income (via coffee prices) and access to market via the establishment of a trading relationship [current equipment and processing skills rudimentary; access to market volatile, inconsistent and risk laden]. Coffee nursery established as means of increasing income, providing replacement stock, and providing a costing baseline for Liberica coffee seedling production, in order to provide data on scalability costs [minimal equipment available for seed production and plant sales]. Farmers receive a price premium of 30% on unit price (kg) for all clean (exportable) coffee produced; leading to a 20-30 % increase in household/coffee income [no premiums; baseline data not available].

Output 3 The production of a metrics-based report on the cultivated climate ecosystem benefits of (Liberica) coffee farming, the climate resilience potential of Liberia coffee, and pest and disease incidence [little or no data available]. Supporting climate resilience data provided from common-field trials for Liberica coffee [no field trial data available].

Output 4 Agronomic case study provided for farming of (indigenous) eugenioides coffee, provided by field trials [no availability of agronomic data for this species]. Other data provided for this species from Output 1.

Output 5. Government and industry stakeholders (public and private) provided with detailed knowledge of Uganda's indigenous coffee genetic resources, its use and value for the coffee sector (including key agronomic information, climate resilience potential, and ecosystem service provision) and rationale for improved forest (biodiversity) conservation [present knowledge limited].

#### Long-term

Outputs 1 & 5 Wild coffee resources part of sustainability and livelihood improvement strategy for the Ugandan coffee sector, including the use of wild species as crop plants (*C. canephora*, *C. liberica* and *C. eugenioides*) and high performing (e.g. drought tolerant and productive) hybrids between these species. Indigenous coffee species used as a flagship and rationale for forest conservation.

Output 2 Liberica coffee scaled-up across lowland Uganda to: (1) supplement (robusta) coffee farming, diversify and temporally extend income (Liberica crops two months after robusta and thus provides potential to manage annual cash flows, via the off-season); (2) increase income (via better prices) and profitability (fewer losses through pests and diseases); (3) enhanced biodiversity and ecosystem services (incl. water and climate services); (4) improved climate resilience and decrease severity of climate shocks.

Output 4 *Coffea eugenioides* scaled-up to provide forest-adjacent communities with high-demand and high-value agroforestry product.

Output 5 See above. Other African countries with coffee natural capital develop similar initiatives for their coffee sectors.

## Q18. Pathway to change

**Please outline your project's expected pathway to change. This should be an overview of the overall project logic and outline how you expect your Outputs to contribute towards your overall Outcome and, longer term, your expected Impact.**

## Pre-project

- A. Scoping visits (2016, 2017, 2019) identify opportunities to develop the coffee natural capital of Uganda.
- B. Sensory and agronomic assessment of Liberica coffee (private-sector: established African coffee buyers) confirms commercial viability and market potential.
- C. Market demand for Liberica and eugenioides gathers momentum.

## Project

Output 1 Authoritative data on wild coffee species diversity is summarized in a high-profile research paper.

Output 2 Key agronomic, environmental, social and commercial data for Liberica coffee are produced from Luwero. This case study provides critical information and proof-of-concept for upscaling of Liberica coffee in Uganda. The Luwero community receive equipment, training and access to market; household income improves (feeding into the case-study). Nearby communities take up Liberica farming.

Output 3 Ecosystem service, biodiversity and climate resiliency benefits, of Liberica coffee are demonstrated to stakeholders, via published outputs (see 5).

Output 4 New data is gathered on the agronomy of *C. eugenioides* and used for its development as a high-value, conservation-enabling crop.

Output 5 The project engages key stakeholders (e.g. coffee sector, conservation community) from Year 1 onwards, which steers strategy documentation. The Wild Coffee Resources Development Strategy is published and demonstrates the value of wild coffee resources; forest conservation policies are influenced.

## Q19. 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 the benefits from the project. Where individuals receive advanced training, for example, what will happen should that individual leave?**

Most of the project deliverables have a finite end point, in that they represent either products or case studies. However, we see this project as part of ongoing work within the Ugandan coffee sector. Post-project we envisage that the relationship with the Luwero community will develop and prosper, and that Liberica coffee will be upscaled to other areas of lowland Uganda. If the *C. eugenioides* trial proves successful and scalable, we would seek further private and public sector funding to develop this crop species, although it may be the case that other organizations develop this crop based on our ground-work (we have seen this in Ethiopia: our last Darwin project was upscaled to other areas and we were able to provide advice from best practice and lessons-learned).

We are already in discussion with plant breeders at NIAB-EMR (UK) and NARO/NACOR regarding the development of an interspecies coffee breeding programme. We have submitted a project proposal to BBSRC (Industrial Partnership Award) for genomics research on Ugandan coffee. The Darwin project will substantially improve the efficiency and overall outcome of the genomics proposal and be essential for the success of the development of a pre-breeding programme.

Advocacy is key to long-term success.

**If necessary, please provide supporting documentation e.g. maps, diagrams, references etc., as a PDF using the File Upload below:**

 [Supporting document Uganda Coffe ADavis](#)

 05/12/2019

 14:50:37

 pdf 987.91 KB

## **Section 9 - Existing works, Ethics & Safeguarding**

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### **Q20a. Harmonisation**

**Is this a new initiative or a development of existing work (funded through any source)?**

**Please give details.**

This is a new initiative for Uganda, but one that builds on considerable work undertaken by Kew and partners in Ethiopia, particularly in the areas of climate resilience and biodiversity conservation through the mainstreaming approach. We have submitted a project proposal to BBSRC (Industrial Partnership Award) for genomics research on Ugandan coffee. The Darwin project proposed here will improve the reach and impact of the genomics proposal (if successful) and be essential for the success of the development of a coffee breeding programme in Uganda. Our pilot work in Uganda (2016 and 2017) and Madagascar (2019) was funded via private benefaction with the aim of developing impactful action on climate change and biodiversity conservation.

Kew has been working on the enumeration of coffee diversity for over 50 years (the PI for 20 years), and has published several landmark papers in this field, including the description of c. 1/3 of the world's coffee species diversity. This year we published a paper on extinction risk for the world's coffee species and what this means for the global coffee sector (Davis et. al. 2019). That paper identified priority species and countries, one of the most important countries is Uganda.

**Q20b. Are you aware of any other individuals/organisations/projects carrying out or applying for funding for similar work?**

No

### **Q21. Ethics**

**Outline your approach to meeting the Darwin Initiative's key principles for research ethics as outlined in the [Guidance](#).**

We will adhere to the strict ethics (and PIC) policies of RBG Kew, the UK, and the host country, and respect any conditions imposed on us by communities, landholders, and in-country partners. RBGK has stringent mechanisms in place to safeguard health and safety of project staff.

Utilization of genetic resources

The project is directly involved with the utilization of (coffee) genetic resources. Our project is among very few examples where a major coffee producing country houses and utilizes its indigenous (and endemic) coffee genetic resources for supporting its coffee sector. So far in Uganda, this has been limited to robusta coffee, but it is now evident that there is enormous potential for Liberica and eugenioides coffee, and

hybrids between these three species.

In summary, we will be using Uganda's coffee natural capital (genetic resources) for the benefit of Uganda. Uganda will directly benefit. This goes beyond standard benefit sharing scenarios. Despite the focus on Uganda, other Africa countries stand to benefit from the project in terms of lessons learnt and technologies transferred (but not genetic resources).

The project will not encounter any issues connected with the Nagoya protocol or other legislation governing the use and movement of genetic resources, although Uganda may want to enter into specific agreements of their own accord.

During the project we will not be collecting germplasm or genetic resources for transfer to the UK or any other destination outside Uganda. We will collect a range of data sets and herbarium vouchers, but these resources will be bound by use rights and transfer agreements in place at RBG Kew and the conditions stipulated by the Ugandan authorities (e.g. under material transfer agreements).

## Q22. Corruption

**Explain how you have considered any risk of corruption that may affect the success of this project, and how you plan to manage this.**

We consider the risk of corruption and misappropriation of funds in all our projects. We minimize the risk by working only with reputable partners, suppliers and recipients. Transfer of funds is undertaken through reliable payment methods and is allocated to specific activities rather than as mass transfers to any one organization. As part of the M&E system, payments are made per activity and on short timescales (i.e. on a quarterly basis) so that we can monitor and evaluate progress and achievement before further funds are allocated.

Clifton Coffee and Kyagalanyi Coffee Ltd. are already in an established and trusted working relationship. Kyagalanyi Coffee Ltd., who will be responsible for the purchase of coffee processing equipment, household training, and value chain relationship (via an on-the-ground Technical Commercial Assistant (TCA)), have strict anti-corruption mechanisms in place.

## Q23. Safeguarding

**Projects funded through the Darwin Initiative must fully protect vulnerable people all of the time, wherever they work. In order to provide assurance of this, projects are required to have appropriate safeguarding policies in place. Please confirm the lead organisation has the following policies in place and that these can be available on request:**

<b>We have a safeguarding policy, which includes a statement of your commitment to safeguarding and a zero tolerance statement on bullying, harassment and sexual exploitation and abuse</b>	Checked
<b>We keep a detailed register of safeguarding issues raised and how they were dealt with</b>	Checked
<b>We have clear investigation and disciplinary procedures to use when allegations and complaints are made, and have clear processes in place for when a disclosure is made</b>	Checked
<b>We have shared our safeguarding policy with downstream partners</b>	Checked

**We have a whistle-blowing policy which protects whistle blowers from reprisals and includes clear processes for dealing with concerns raised** Checked

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**We have a Code of Conduct in place for staff and volunteers that sets out clear expectations of behaviours - inside and outside the work place - and make clear what will happen in the event of non-compliance or breach of these standards** Checked

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## Section 10 - Funding and Budget

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### Q24. Funding and budget

**Please complete the appropriate Excel spreadsheet, which provides the Budget for this application. Some of the questions earlier and below refer to the information in this spreadsheet. Note that there are different templates for projects requesting over and under £100,000 from the Darwin budget.**

- [Budget form for projects under £100,000](#)
- [Budget form for projects over £100,000](#)

-  
**Please refer to the [Finance for Darwin/IWT Guidance](#) for more information.**

**N.B: Please state all costs by financial year (1 April to 31 March) and in GBP. The Darwin Initiative cannot agree any increase in grants once awarded.**

**Please upload your completed Darwin Budget Form Excel spreadsheet using the field below.**

 [R26 Darwin Budget over £100K FINAL Uganda  
Coffee A.Davis](#)  
 05/12/2019  
 11:55:49  
 xlsx 59.64 KB

### Q25. Value for Money

**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.**

Cost effectiveness

The project represents excellent value for money, as 34% of the costs will come from match-funding (co-financing) via our private-sector partners (Clifton Coffee (UK). and Kyagalanyi Coffee Ltd. (Uganda). Importantly, the partnership removes the need for an expensive coffee training consultant, and associated expenses (flights, visas, accommodation etc.), because Kyagalanyi Coffee Ltd. already have dedicated staff for these activities and are based in Uganda. Our community site (outcome 1) is close Kampala, where Kyagalanyi Coffee are based. In addition, Kyagalanyi Coffee work with dedicated suppliers at scale, keeping

the costs of equipment purchases to a minimum.

#### Budget production

Our budgets are very carefully costed, in close collaboration with the Finance Department of RBG Kew and our in-country partners. Costs for coffee training (etc.) for the Luwero community will be provided by Kyagalanyi Coffee Ltd, based on their longstanding, Uganda-wide coffee training programme.

#### RBG Kew (UK)

We have close relationships with all our suppliers, who often provide discounts and product support. A cost-cutting opportunity has arisen for the chemical analysis as we will have a dedicated coffee chemistry intern in 2020/21.

#### Uganda

Our costs for Uganda are based on careful discussion with our partners, and their institute leads. Costings for wages are cross-validated against existing or previous projects, where we are working with the same or similar project partners. Most of the on-the-ground costs (e.g. car hire, fuel, accommodation) are based on first-hand experience, gained during our scoping visits (2016 and 2017). We do not advocate budget car travel, as there is a substantial safety risk, should transport (cars and drivers) not be of a sufficiently high standard. Hotel accommodation will be in the low (for field work) to mid-price range (towns and cities).

## Q26. Capital items

**If you plan to purchase capital items with Darwin funding, please indicate what you anticipate will happen to the items following project end.**

Capital items represent less than 10% of total project costs.

The main capital items, e.g.. the coffee processing equipment, and climate recording equipment, (1) portable coffee roaster, will remain in-country after the project has finished. The coffee processing equipment has a lifespan of c. 10 years. The climate recording equipment should be useable for at least 6 years, and can be used post-project by our partners, either for new projects or for teaching purposes.

## Q27. Match funding (co-financing)

**Are you proposing co-financing?**

Yes

### Q27a. 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, as well as any your own organisation(s) will be committing.**

Donor Organisation	Amount	Currency code	Comments
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Clifton Coffee Roasters	██████	£	Staff time over the course of the project; travel and accommodation, photography, and marketing
Kyagalanyi Coffee Ltd	██████	£	Staff time and associated cost, over the duration of the project
RBG Kew	██████	£	Overheads, over the duration of the project
<i>No Response</i>	0	<i>No Response</i>	<i>No Response</i>

### Q27b. 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. This should also include any additional funds required where a donor has not yet been identified.**

Date applied for	Donor Organisation	Amount	Currency code	Comments
<i>No Response</i>	<i>No Response</i>	0	<i>No Response</i>	<i>No Response</i>
<i>No Response</i>	<i>No Response</i>	0	<i>No Response</i>	<i>No Response</i>
<i>No Response</i>	<i>No Response</i>	0	<i>No Response</i>	<i>No Response</i>
<i>No Response</i>	<i>No Response</i>	0	<i>No Response</i>	<i>No Response</i>

**Do you require more fields?**

No

## Section 11 - Open Access and Financial Risk Management

### Q28. Outputs of the project and Open Access

**Please describe the project's Open Access plan and detail any specific funds you are seeking from Darwin to fund this.**

Our open access plan comprises two outputs:

1. An open access research paper sent to a leading, peer-reviewed journal. The provisional title is: The wild coffee species diversity of Uganda, and its value for coffee sector sustainability. This will be published in Year 3 (within the project time-line, but submitted at the end of Year 2, or the first quarter of Year 3). We have allocated £[REDACTED] for this output, the going rate for open access in a high impact journal. Recent open access coffee research papers produced by RBG Kew authors have received incredible view and download metrics, at the journal site alone (e.g. Davis et al. 2012: 84, 501 views; Davis et al. 2019: 41,470).

2. Printing and dissemination of 250 hardcopies of the professional produced report Wild Coffee Resources Development Strategy for Uganda [title may change]. Based on the dissemination of a similar report in Ethiopia, 200 hardcopies will be sufficient for Ugandan stakeholders. A pdf will be made freely available via Kew and partner websites, and via Research Gate (our Ethiopian report of 2017 retains high read metrics on Research Gate). We have allocated £[REDACTED] for the cost of the report (design, printing, shipping and delivery).

## Q29. Financial Risk Management

**Explain how you have considered the risks and threats that may be relevant to the success of this project, including the risks of fraud or bribery.**

Please see Q22. Corruption. We do not identify or anticipate any financial risks from causes such as fraud or bribery. In all cases such activities would be counterproductive to our partners and beneficiaries.

## Section 12 - Logical Framework

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### Q30. Logical Framework

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

#### Impact:

Sustainability of the Ugandan coffee sector for environmental (biodiversity, ecosystem services, climate resilience, conservation of forest and genetic resources) and livelihood benefit (increased household income, reduced risk, social improvement).

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Project summary	Measurable Indicators	Means of verification	Important Assumptions
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**Outcome:**

A resilient and sustainable coffee sector supported by the use of coffee natural capital, demonstrating the value of native forests and improving their long-term conservation.

0.1 The production of a survey of Uganda's coffee natural capital  
0.2 Production and procurement of Liberica coffee production and establishment of producer-purchaser relationship at Luwero.  
0.3 Production of ecosystem service and climate resiliency data, for Liberica coffee farming.  
0.4 Production of agronomy data for C. eugenioides via field trials  
0.5 Production of a Wild Coffee Resources Development Strategy document.

0.1 Publication of 1 open access research paper published, authored by project team.  
0.2a Set of accounts/records for purchase of equipment.  
0.2b Set of accounts for purchase of 5,000 kg (2,500 kg per year) of coffee of Liberica coffee from the Luwero community. 0.2c Audit of training for 600 recipients. 0.2d Accounts/records for sales of coffee seedlings.  
0.3a Availability of at least two years of climate data (including soil water) captured from 6 sites. 0.3b Availability of two years field trial data for climate resilience (Liberica coffee).  
0.4 Availability of at least one year's agronomy field trial data (2 field trial plots) for C. eugenioides.  
0.5 Publication of Wild Coffee Resources Development Strategy; dissemination to key stakeholder and free availability via open access

0.1 Uganda's coffee natural capital (wild coffee species and their populations) have considerable potential for livelihood improvement (quality, agronomic performance and productivity, pest and diseases resistance), biodiversity and ecosystem service enhancement, and climate resilience (heat and drought tolerance).  
0.2a Relatively low cost investments in coffee processing equipment and training elevates coffee quality and hence price. A marketable product (quality coffee), direct trading relationship, with value chain clarity, ensures a sustainable and mutually beneficial trading relationship.  
Uganda Liberica coffee has clear market potential. 0.21b Coffee upscaling is exponential. Once a farm has a small number of seedlings they produce their own seed stock and are then able to sell to other farmers  
0.3 Proving climate data and understanding the plants response to climate is essential for understanding climate change adaptation.  
0.4 There is a substantial market demand (and high price paid) for C. eugenioides. Forest reserve communities (and the forest reserves) could be

benefit (economically and environmentally) from farming this indigenous species. 0.5 Public and private-sector stakeholders in Uganda are unaware (or not fully aware) of the extent and value of wild coffee genetic resources/natural capital. Identifying forests with important coffee natural capital/crop wild relatives (CWRs) increases the value of forest reserves and further justifies their preservation (as demonstrated in Ethiopia for Arabica coffee). Decision makers require a summary of key information in a compelling and concise format.

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**Output 1:**

A critical survey of Uganda's coffee natural capital (wild species diversity).

1.1 The completion of 1 multi-field database (Access), containing all field survey and herbarium data.

1.2 Delivery of 1 two-day training course on GIS data collection and QGIS and basic species distribution modelling (SDM).

1.3 Production of 1 critical survey of Uganda's coffee natural capital (wild species diversity).

1.1 Receipt of database by NARO and Makerere, with e-mail or letter confirming receipt and correct functioning (Year 3)

1.2 Register of attendance for training courses (with equal gender allocation for 16-20 students/researchers). Year 1.

1.3 Publication of an open access research paper: The wild coffee species diversity of Uganda, and its value for coffee sector sustainability. (Year 3; submitted in the first quarter of Year 3).

1.1 & 1.3 There is an urgent need for the production of a survey of Uganda's coffee natural capital. No such survey has ever been undertaken; the last review was in 1936. These data should be incorporated in national biodiversity action plans and country-level development strategies. Uganda's coffee natural capital (wild coffee species and their populations) have considerable potential for livelihood improvement (quality, agronomic performance and productivity, pest and diseases resistance), biodiversity and ecosystem service enhancement, and climate resilience (heat and drought tolerance).  
1.2 There is a need and strong demand for GIS training in Uganda, especially as it supports data gathering and interpretation of CBD implementation.

**Output 2:**

Development of Liberica coffee production and establishment of producer-purchaser relationship at Luwero. Demonstration of Liberica as an important third coffee crop species for Uganda.

2.1 Provision of coffee drying beds (wooden posts; fine wire mesh, nails, plastic sheet), and associated equipment (tools), for five farms. 10 drying bed units per farm  
2.2 Provide training in coffee harvesting, processing, value chain management and basic agronomy (300 community members; five farms)  
2.3 Ensure pre-shipment processing (milling, sorting and grading), evaluation, and export to UK, for 5,000 kg of clean, quality coffee.  
2.4 Distribution of farmer payments (premium of 15-30% per unit price) for participating farmers.  
2.5 Sensory evaluation of Liberica coffee, to include caffeine and basic chemical analysis, and consumer feedback  
2.6 Provide nursery set-up and training to establish a Liberica seedling nursery for Luwero. Record sale of seedlings. Sale of 200 seedlings over course of project [i.e. 5 farms supplied with replacement stock].

2.1 Bills of sale for drying bed and associated equipment (50 units), and signed document of receipt from 5 farms. Year 1.  
2.2 Attendance data for training courses (with gender disaggregation, and record of age). Years 1-3.  
2.3 Copies of at least 2 procurement and export documents, for 2,500 kg clean coffee per year (avg. 500 kg per farm per year). Years 2 & 3.  
2.4 Receipts from 5 farms of coffee sold and premiums paid to them. Years 2 & 3.  
2.5a Cupping (taste and aroma) and defects reports of 10 samples, from Clifton Coffee. Years 2 & 3.  
2.5b Chemistry report (RBG Kew) on 10 samples. Year 2  
2.5c Consumer feedback via freshly roasted coffee samples (Feedback from with 100 public tasters in Uganda; and 100 public tasters in UK). Years 2 & 3.  
2.6a Bills of sale/receipt for potting bags and other materials. Years 1 & 2.  
2.6b Records for sales (number and price) of seedlings. Years 2 & 3.

2.1 Relatively low-cost investments in coffee processing equipment elevates coffee quality (and hence price) and forms the basis of a workable producer-buyer relationship.  
2.2 Training in harvesting and processing techniques, with quality control checks, has a substantial impact on coffee quality, price and ensures a sustainable trading relationship.  
2.3 Free on Board (FOB) and other documents provide evidence of final coffee purchase price.  
2.4 Farmer receipts provide evidence that farmers have received quality premium. Premiums and direct payment incentivises farmers and reduces risk. Scaling up of Liberica coffee production will only be successful if it is profitable and sustainable.  
2.5 Coffee quality is assessed on taste/aroma and number of defects, and this sets the price point. Low caffeine is a desirable trait and may increase purchase and retail price.  
2.6 Farmers are selling seedlings, but we need to know how many and to whom. Activity will establish potential for additional income source and can be used

to monitor scaling-up.

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**Output 3:**

Demonstration of biodiversity value, ecosystem service and climate resiliency for Liberica coffee production

3.1 Provide agrometeorological survey (Liberica cultivation vs. non-forest crops).  
3.2. Provide soil water variable survey, (Liberica cultivation vs. other crops) and over a depth gradient.  
3.3 Provide pest and diseases survey (Liberica vs. canephora coffee).  
3.4 Undertake drought-induced field trials for Liberica vs. robusta coffee.  
3.5 Provide data on biodiversity differences (survey) between coffee and non-coffee producing farming areas.

3.1 & 3.2 Production of climate and soil water data database, plus graphs and analyses, with results summarized in 1 summary report (10 pages). Years 2 & 3.3  
Production of 1 pest and diseases survey for 5 farms, plus wider household survey across Luwero region.  
Production of 1 short report (5 pages). Years 1 & 2.  
3.4 Production of 1 field trial data and report (5 pages). Photographs of plots. Receipts for plot expenses (materials and labour). Year 3.  
3.5 Production of 1 biodiversity survey report (5 pages). Photographs of plots. Receipts for transect expenses (materials and labour). Year 3

Agroforestry systems are more biodiverse than single-crop system and those not utilizing shade trees; and provide habitats for key predators.  
3.1 Metrics (climate data) are required to provide evidence of climate resilience and ecosystem benefit (also for 3.2).  
3.2 That agroforestry systems improved essential water recycling capacity, compared to non-agroforestry crops.  
3.3. and 3.5 Biodiversity and ecosystem services enhancement is essential for sustainability, and may leverage improved profitability (e.g. fewer pests and less disease) and income through certification (e.g. via demonstration of environmental benefit).

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**Output 4:**

Provide data for C. eugenioides as a high-value niche crop for forest-based communities.

4.1 Provision of 2 trial plots for eugenioides coffee, in 2 locations/elevations.  
4.2 Provide base-line agronomic data for eugenioides coffee

4.1 Photographs of plots. Receipts for plot expenses (materials and labour). Years 2 & 3.  
4.2 Production of 1 field trial report (5 pages). Year 3.

Forest communities are interested in pursuing forest coffee production (proof-of-concept: forest coffees have been offered to coffee buyers in Kampala), and require training. Coffea eugenioides was exported to the UK (pre 1950)  
Quality, unique sensory experience and rarity drives high prices (proof-of-concept: C. eugenioides is in high demand, and currently selling for \$175 -- \$700 per kg.  
This coffee is exceptionally low in caffeine and has a unique and excellent taste; when initial high prices fall, these attributes will maintain long-term demand.  
4.1 Trial plots are necessary to gauge agronomic feasibility.  
4.2 Optimization of basic agronomic practice is essential for evaluating profitability and hence farmer/community uptake.

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**Output 5:**

Production of Wild Coffee Resources Development Strategy for Uganda document

5.1 Meetings held (one per year) with public and private sector strategy steering committee and stakeholders.  
5.2 Project data assembly and outcomes from Outputs 1–4  
5.3 Production of maps and other GIS resources  
5.4 Production of a professionally produced publication: Wild Coffee Resources Development Strategy for Uganda (report 250 copies; c. 30 pages, with one page summary of major take-homes statements).  
5.5 Dissemination of 200 hardcopies in Uganda (50 in UK and elsewhere) and placement of freely available pdf on the Internet (via Kew and partner websites; and Research Gate).

5.1 Attendance lists and accounts for 3 meetings, Years 1, 2 and 3.  
5.2 & 5.3 Hardcopy of draft text and other materials for Wild Coffee Resources Development Strategy available and sent to co-authors (e-mails to acknowledge receipt). End Year 2.  
5.4 Invoice and final payment documents for production (design, printing and delivery) of Strategy. Year 3.  
5.5. Delivery receipt form (signed by receiving institutes and organizations in Uganda). Year 3.

Uganda's coffee natural capital (wild coffee species and their populations) have considerable potential for livelihood improvement (quality, agronomic performance and productivity, pest and diseases resistance), biodiversity and ecosystem service enhancement, and climate resilience (heat and drought tolerance).  
5.1 Key public and private-sector stakeholders in Uganda are unaware (or not fully aware) of the extent and value of wild coffee genetic resources/natural capital  
5.2 Identifying forests with important coffee natural capital/crop wild relatives (CWRs) increases the value of forest reserves and further justifies their preservation (as demonstrated in Ethiopia for Arabica coffee), and this supporting biodiversity conservation.  
5.3 Maps and infographics convey information more effectively than text.  
5.4 & 5.5 Policy-makers and decision-makers are more likely to read short, to-the-point summaries, then detailed reports.

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**Do you require more Output fields?**

**It is advised to have less than 6 Outputs since this level of detail can be provided at the Activity**

## level.

No

## Activities

**Each activity is numbered according to the Output that it will contribute towards, for example, 1.1, 1.2, 1.3 are contributing to Output 1.**

### Output 1

1.1 Gather and collate field survey data for all the coffee-holding forests of Uganda, with the collection of vouchers (and living material, where required), and ground observations (geo-location, habitat, vegetation, soil type, local extinction threats), for the species *C. liberica*, *C. canephora*, *C. eugenioides* and *C. neoleroyi* and their wild hybrids. Survey work will be based on a pre-survey review of herbarium collections.

1.2 Organize and run two day course on GIS (QGIS), basic species distribution modelling (SDM), and conservation metric producing programmes (GeoCAT), at a dedicated venue for 16 to 20 Ugandan researchers/students.

1.3 Collate and analyse data from Activity 1.1, write paper and produce figures (maps and graphs) in collaboration with project partners. Send research paper to high impact journal for open access publication.

### Output 2

2.1 Purchase, deliver and install drying beds and associated equipment, for 10 farms.

2.2 Train 600 community members (over 10 farms) in coffee harvesting, processing, value chain management and basic agronomy; revisit farms to consolidate and monitor uptake and success of training. This to be followed up and monitored by dedicated by a Technical Commercial Assistant (TCA), based in the area to work with the farmers on a daily basis and to help mobilise the coffee.

2.3 Undertake the logistics and management required to ensure pre-shipment processing (milling, sorting and grading), evaluation (grading), and export to UK, for 5,000 kg of clean, quality coffee. This activity also supported by the TCA.

2.4 Revisit farms post-export to pay 15-30% quality premium; payments made directly to community members supplying elevated quality coffee (on a per unit basis, i.e. per kg produced).

2.5a Undertake quality evaluation using industry standard procedures (sensory characteristics (taste and aroma) and number and type of defects for 10 Liberica coffee samples from Luwero.

2.5b Undertake laboratory survey of caffeine content and basic coffee chemistry for 10 samples of Liberica coffee; these to be compared with sensory evaluation (2.5a).

2.5c. Roast coffee samples in Uganda and UK using the programmable Ikwawa roaster, and serve to public (100 in Uganda and 100 in UK) to produce consumer feedback and guide optimum roasting and brewing.

2.6 Establish and maintain (within project lifetime) a Liberica coffee nursery at Luwero.

Record number of seedling produced and sold, and all costs/income. This to provide income, planting stock and data for scaling up Liberica coffee in Uganda.

### Output 3

3.1 Install agrometeorological survey equipment (soil moisture, ambient air temp., humidity) for six farms/sites (Liberica cultivation vs. non-forest crops) using the latest logger and probe technology. Provide short report.

3.2. Extend agrometeorological survey equipment to measure soil moisture at a range of soil depths, and measure soil water potential at six sites (Liberica cultivation vs. other crops) and over a depth gradient. Provide short report.

3.3 Undertake pest and diseases survey at the six farm sites by regular measurement of pest and disease incidence and severity, recording for a (Liberica vs. canephora coffee). Provide short report.

3.4 Construct a drought-induced field trial for Liberica coffee (vs. robusta) in Kampala and record growth and stress metrics (at early stage development). Provide short report.

3.5 Undertake malaise trapping survey of invertebrates (with a focus on key invertebrate groups); and botanical transects for six farm sites. Provide short report.

#### Output 4

4.1 Set up two trial plots for eugenioides coffee, one in Kampala (1500 m asl) and another at second NARO research station at higher elevation (1700–2000 m asl). Each plot to contain 50 plants.

4.2 Record visual growth and stress metrics (at early stage development) and pest and disease incidence.

#### Output 5

5.1 Set up and hold three half day meetings (one per year) with government, NGO and private-sector stakeholders, at a neutral locality (e.g. hotel or conference room) to discuss project vision, activities and direction (Year 1), progress (Year 2) and outputs and advocacy (Year 3). Feedback from meetings used as part of M&E for adaptive management processes.

5.2 Assemble project data and outcomes from Output 1–4 and write draft strategy text. Send to partners/co-authors for review and comment.

5.3 Produce maps and other GIS outputs, graphs and infographics. Send to partners/co-authors for review and comment.

5.4. Send all materials (draft strategy) to publishers (GoAgency, UK) for design and production. Co-authors to review pdf, comment and provide revisions and edits; send marked up draft back to publishers.

Publishers to update, provide version for sign off, and then print hardcopies and provide low and high resolution pdfs.

5.5. Organize and undertake shipping to Uganda, and then delivery to stakeholders in Uganda. Upload pdf to ResearchGate and partner institute websites (etc.).

## Section 13 - Implementation Timetable

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### Q31. Provide a project implementation timetable that shows the key milestones in project activities

**Provide a project implementation timetable that shows the key milestones in project activities. Complete the Excel spreadsheet template as appropriate to describe the intended workplan for your project.**

#### Implementation Timetable Template

**Please add/remove columns to reflect the length of your project. For each activity (add/remove rows as appropriate) indicate the number of months it will last, and fill/shade only the quarters in which an activity will be carried out. The workplan can span multiple pages if necessary.**

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 [Darwin R26 - Stage 2 - Implementation Time table Ugandan Coffee](#)

 04/12/2019

 19:20:43

 xlsx 12.58 KB

## Section 14 - Monitoring and Evaluation

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## Q32. Monitoring and evaluation (M&E) plan

**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 project's 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. Additionally, please indicate an approximate budget and level of effort (person days) to be spent on M&E (see [Finance Guidance for Darwin/IWT](#)).**

The PI (Aaron Davis) and Co-I (Aisyah Faruk) will be responsible for M&E, with 10% (each) their time (over three years) dedicated to this activity. We estimate that at least 10% of the travel and subsistence in Uganda will be used for M&E purposes.

The key components of our M&E strategy are:

1. M&E Plan (part 1). Aisyah Faruk will construct a spreadsheet (Excel) version of the logical framework (including narrative, time-lines, progress boxes and comments) and send to the project partners. This will make it clear how the different elements of the project fit together.
  2. M&E Plan (part 2). Aisyah Faruk will construct a second spreadsheet for each project partner, with only their activities (and roles and responsibilities) included, to provide a clear indication of what needs to be done (measurable indicators with evidence) by when (a quarterly time-frame) and how (the budget allocation will be included in this spreadsheet).
  3. M&E Plan (part 3). Science data (field trials, ecosystem services, biodiversity, climate variable data, coffee species diversity field survey) will be archived and evaluated on a six monthly basis to ensure consistency, quantity and quality targets are being met. This part of the M&E will be led by A. Davis, and will include a data gathering and quality/quantity record spreadsheet to ensure all the relevant data is being collected.
- The three-part M&E plan will be constructed in the Qtr 1, Year 1. The M&E plan will be updated on a yearly basis, so that overall project progress can be monitored and evaluated by all project partners and any external assessors.
4. Aisyah Faruk will request that project partners provide quarterly updates on their activities and evidence (using the M&E plan), during those periods when project partner activity is ongoing (i.e. according to the implementation timetable). Reminders by e-mail will be sent on a quarterly basis; follow up meetings in-person (in Uganda) will be made twice a year (by A. Davis and A. Faruk) for all project partners.
  5. Two field visits (led by Aaron Davis) will be undertaken per year, to M&E on-the-ground progress at the projects field sites: (1) the five farms of the (Luwero) Liberica production area, and their associated (ES, biodiversity, climate) field study plots/transects; (2) Liberica field trial plot in Kampala; (3) eugenioides coffee field trial plots in Kampala and an additional NARO research station.

6. Aaron Davis and Aisyah Faruk will use data and other information gathered from 1–5 to review and evaluate project progress on a six monthly basis. We will also use these monitoring resources to understand what is working and why, and what might not be working so well, and to identify any opportunities for improvement and leveraging additional outcomes. We will be adopting an adaptive management approach for the project, which will include providing feedback to the Darwin Initiative, and our project partners and stakeholders. Data from the M&E plan, and other activities will be used as the

basis for yearly (and the final) Darwin progress report writing.

<b>Total project budget for M&amp;E in GBP (this may include Staff, Travel and Subsistence costs)</b>	£ [REDACTED]
<b>Number of days planned for M&amp;E</b>	60
<b>Percentage of total project budget set aside for M&amp;E (%)</b>	4

## Section 15 - FCO Notifications

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### Q33. FCO Notifications

**Please state whether 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.**

No

**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)

## Section 16 - Certification

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### Q34. Certification

**On behalf of the**

Trustees

**of**

Royal Botanic Gardens, Kew

**I apply for a grant of**

£200,050.00

**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.**

(This form should be signed by an individual authorised by the applicant institution to submit applications and sign contracts on their behalf.)

- I have enclosed CVs for key project personnel, letters of support, budget and project implementation timetable (uploaded at appropriate points in application).

- Our last two sets of signed audited/independently verified accounts and annual report are also enclosed.

Checked

<b>Name</b>	Professor Alexandre Antonelli
<b>Position in the organisation</b>	Director of Science
<b>Signature (please upload e-signature)</b>	 <a href="#">Darwin Certification page Uganda</a>  04/12/2019  13:30:13  pdf 59.3 KB
<b>Date</b>	04 December 2019

## Section 17 - Submission Checklist

### Checklist for submission

	<b>Check</b>
<b>I have read the Guidance, including "Guidance Notes for Applicants" and "Finance Guidance".</b>	Checked
<b>I have read, and can meet, the current Terms and Conditions for this fund.</b>	Checked
<b>I have provided actual start and end dates for the project.</b>	Checked
<b>I have provided my budget based on UK government financial years i.e. 1 April - 31 March and in GBP.</b>	Checked
<b>I have checked that our budget is complete, correctly adds up and I have included the correct final total at the start of the application.</b>	Checked
<b>The application been signed by a suitably authorised individual (clear electronic or scanned signatures are acceptable).</b>	Checked
<b>I have included a 1 page CV or job description for all the key project personnel identified at Question 10, including the Project Leader, or provided an explanation of why not.</b>	Checked
<b>I have included a letter of support from the the Lead Organisation and main partner organisation(s) identified at Question 9, or an explanation of why not.</b>	Checked
<b>I have included a cover letter from the Lead Organisation, outlining how any feedback received at Stage 1 has been addressed where relevant.</b>	Checked
<b>I have been in contact with the FCO in the project country/ies and have included any evidence of this. If not, I have provided an explanation of why not.</b>	Checked

**I have included a signed copy of the last 2 annual report and accounts for the Lead Organisation, or provided an explanation if not.** Checked

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**I have checked the Darwin website immediately prior to submission to ensure there are no late updates.** Checked

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**I have read and understood the Privacy Notice on GOV.UK.** Checked

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### **We would like to keep in touch!**

**Please check this box if you would be happy for the lead applicant (Flexi-Grant Account Holder) and project leader (if different) to be added to our mailing list. Through our mailing list we share updates on upcoming and current application rounds under the Darwin Initiative and our sister grant scheme, the IWT Challenge Fund. We also provide occasional updates on other UK Government activities related to biodiversity conservation and share our quarterly project newsletter. You are free to unsubscribe at any time.**

Checked

### **Data protection and use of personal data**

Information supplied in this application form, including personal data, will be used by Defra as set out in the latest copy of the Privacy Notice for Darwin, Darwin Plus and the Illegal Wildlife Trade Challenge Fund available [here](#). This Privacy Notice must be provided to all individuals whose personal data is supplied in the application form. Some information, but not personal data, may be used when publicising the Darwin Initiative including project details (usually title, lead organisation, location, and total grant value) on the GOV.UK and other websites.

Information relating to the project or its results may also be released on request, including under the 2004 Environmental Information Regulations and the Freedom of Information Act 2000. However, Defra will not permit any unwarranted breach of confidentiality nor will we act in contravention of our obligations under the General Data Protection Regulation (Regulation (EU) 2016/679).