Darwin Initiative Main Project Annual Report

Important note: *To be completed with reference to the Reporting Guidance Notes for Project Leaders: it is expected that this report will be no more than 10 pages in length, excluding annexes*

Submission Deadline: 30 April

Darwin Project Information

Project Reference	20-021
Project Title	Forest Futures: Livelihoods and sustainable forest management in Bolivian Amazon
Host Country/ies	Bolivia
Contract Holder Institution	Royal Botanic Gardens, Kew (RBG Kew)
Partner institutions	Herencia, Cobíja, Bolivia; Museo de História Natural Noel Kempf Mercado (MHNNKM), Santa Cruz, Bolivia; Universidad Amazónica de Pando (UAP), Cobíja, Bolivia
Darwin Grant Value	£ 220,063
Funder (DFID/Defra)	DFID
Start/end dates of project	October 1st 2013 – September 30th 2016
Reporting period (e.g., Apr 2015 – Mar 2016) and number (e.g., Annual Report 1, 2, 3)	April 2015 – March 2016, Annual Report 3
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Project website/blog/Twitter	http://www.kew.org/science/tropamerica/pando/ http://museonoelkempff.org/museo/antecedentes/ http://www.herencia.org.bo/index.php?q=noticias_novedades Project blog http://tropicalbotany.wordpress.com
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1. Project Rationale

Sixty-nine percent of the forest-dependent population of Pando Department are unable to satisfy their basic needs and 34% live in extreme poverty. The Millennium Development Goals (MDG) for Bolivia and the Bolivian Amazon aim to reduce extreme poverty to 24% by 2015. Immigration to Amazonia, driven by economic, political and environmental factors, has placed increasing pressure on forests (an issue identified through consultation with community organisations and governmental/ NGO bodies in Bolivia). Pando forests support a large forest-dependent population (40% of the total), are important for biodiversity and ecosystem services and constitute important buffers for the eastern Andean catchments from predicted impacts of climate-change. Forest loss will reduce Bolivia's ability to meet its CBD/MDB obligations and increase vulnerability to climate change among the poor.

Mitigating these threats demands sustainable practices that reduce forest conversion, coupled with

skills and knowledge of forest values for addressing poverty. Based in Cobija and working with 'agroextractive' forest communities in the Department of Pando, the project aims to address these priorities in three principal ways:

1: It is expected that diversification and expansion of forest product production will see the number and quantity of traded plant species increased, with improved household incomes and financial stability for harvesters in the long term. Crucially this will make harvesters'/growers' livelihoods less vulnerable to market and productivity fluctuations and climate change. Information will be more accessible to the forest communities, helping harvesters react to market changes and opportunities.

2: Adaptation of *Inga* agroforestry techniques, their promotion and adoption by four pilot communities, and subsequent outreach among forest communities in Pando, will increase capacity of the rural poor to meet their basic needs sustainably. In the long term this is expected to result in reduction in forest conversion through slash-and-burn subsistence agriculture among participating communities, with increased agricultural productivity derived from agroforestry.

3: Awareness of biodiversity and ecosystem service values of natural forest (including carbon stock, forest products) will be raised amongst rural communities and policy-makers. In parallel with increased awareness of options for sustainable forest management and strategic engagement with regional programmes to ensure long-term impact, this will create incentives for reducing deforestation within the region.

2. Project Partnerships

- Herencia: the relationship with Herencia has been good although they have needed a lot of support with planning. Our DI and associated innocent foundation funds are now the sole source of income for this NGO which is of concern with respect to project legacy.
- innocent foundation: we have received the second year of funding and have begun incorporating the seedlings whose production they have funded into two of our agroforest plots.
- New communities: we have signed agreements and developed management plans with an additional three communities, Jerico, Monte Sinai and Remanzo bringing an additional three community partners into the project.
- UAP: This partnership has stalled with respect to Output and Activities 2, and we have decided not to pursue it further given the number of overtures we have made to them and the lack of return on these. The partner did, however, provide two thesis students for the Biodiversity and Ecosystem Services component; and the Herbarium at UAP receives a duplicate of collections made by the project.
- MHNNKM: The project has had a well-functioning relationship with the project staff employed for two years on the project. The nature of the Museum, as a Bolivian governmental institution, has nevertheless meant that relationship with the Museum's finance department has been complicated. Accounting has usually been delayed and the project staff has spent long periods of time without a contract or salary because of bureaucratic finance system.

3. Project Progress

3.1 Progress in carrying out project activities

Output 1 – Increased diversity of forest products

NB – as previously reported this output has been substantially remodelled following the withdrawal of Freeworld Trading and the in-kind counterpart funding that it had committed to the proposal. In this context we are necessarily reporting against activities that have been supported by counterpart funding from other sources (e.g. innocent foundation, W.A Cadbury Charitable Trust) which were specifically raised to support the delivery of this output. These activities form part of the Forest Futures project

part-funded by the Darwin Initiative, and we thus consider it appropriate to include them in the reporting.

Activity 1.1 (Identification and resource inventory). The identification process was completed in Yr2. However, in 2015 a detailed resource inventory was completed by the MHNNKM team in seasonally flooded forest at the Palacios community. The primary objective was to gather quantitative data on wild cacao populations in order to support an assessment of production viability. Additional NTFP species were also included in the inventory, and a detailed report is available (see Annex 17). The data will also be prepared for publication in the scientific journal Acta Amazonica. An evaluation was conducted in October, with support from a staff member from innocent drinks, of the potential viability of increased production of asaí (Euterpe spp.) in the region (see Annex 18).

Activity 1.2 (NTFP production testing). Following the identification of wild cacao as a potential NTFP for development in the region, arrangements were made for a visit from the UK-based company Chocolution. Ruairidh Wilkinson, supported by the project under an internship, undertook a fact-finding mission to Tranquilidad in January 2016, where Volker Lehmann has been successfully developing wild Beni chocolate. He then proceeded to Cobija in February to train members of the Palacios community (who had expressed interest in the project) in processing beans to export standard. The intention was to develop a sample for product testing by Chocolution in the UK (see report Annex 19), but due to unusual lack of rain and delayed flooding there were very few fruits available. He will return in April. Meanwhile Chocolution have tested a sample of Beni beans (which are likely to have similar properties) supplied by Lehmann, and produced very high-quality chocolate which was tasted by visitors to Kew's Easter Festival. They remain keen to develop a product from Pando.

We have reinitiated contact with Floriano Pastore of the University of Brasília over the potential for developing small-scale FDL rubber production in one or more communities. This system, which produces high-quality rubber for a range of applications, offers the potential for greater revenue than traditional rubber processing (subject to fluctuating market forces, and has been developed successfully in Acre (Brazil). He will planning a reconnaissance/scoping visit in May 2016. Alongside this, a Bolivian project volunteer has been working to train communities in plant-based handicraft production (Annex 8).

Activity 1.3 (dissemination). It is too early for dissemination of information on the above products. However, we are in the process of finalising the fruit tree/NTFP manual, based on species selection developed through consultation with communities and experts. Text and images are complete for all the species (see Annex 4 for draft), and the introduction is currently being drafted. We hope to be in a position to publish by May 2016.

Activity 1.4 (establish fruit tree nurseries). Our fruit tree production project, designed to complement work with NTFPs (see last report), is now up and running in six communities. Incorporation of the three new nurseries in the project was undertaken alongside the agroforest expansion, and necessitated in-depth community planning exercises (see Annex 6 for example report). Nurseries have been constructed and partially stocked with a range of Amazonian species, with a view to supplying agroforest plots and providing supplementary incomes. The nurseries comprise 4 to 6 seedling beds of brick construction with gravel/ grit drainage, two raised seed beds, all covered by a wooden frame with palm thatch roof. Each nursery is surrounded by a robust barbed-wire fence to keep out livestock. A nursery has also been established in Cobija in order to provide initial supplementary stock.

Activity 1.5 (training and capacity building for fruit tree production). Initial training was provided to 229 community participants alongside the establishment of the nurseries (Annex 34). Following the identification of skills gaps (specifically in germination of difficult species), training was provided to project staff by a local propagation specialist. Plans are under way for further training of community participants by the local specialist and Kew horticultural staff.

Output 2 – community agroforestry

Activity 2.1 (agreements, infrastructure and supply). Three new communities were integrated into the project through the process of community planning (see Activity 1.4 and Annex 6), with production capacity for *Inga* seedling production installed at each community.

Activity 2.2 (establishment of demo plots and trials). Community-based agroforest plots have received ongoing monitoring and support throughout the period. The Motacusal site has been performing very well and will be ready for crop planting before the end of the year. The other two sites (in less favourable conditions) have been slower to develop. We have made progress with incorporating new communities and establishing new plots in line with the project logframe despite severe flooding last year and El Niño this year. El Niño meant that the wet season / planting season arrived about two months late which pushed back the time at which we could pollard our first plots. In April 2016 we will begin planting fruit trees and annual crops.

Seedling production of both our agroforest tree and fruit trees for inclusion in the plot have gone well and communities have remained engaged. Of the two 'additional' farm-based plots, the Las Palmas site is performing well and has been planted with Citrus. We lost the other plot due to a change of circumstances for the farmer (increased pressure on land) and one of our plots on highly compacted ground is developing slowly. This could be seen as part of the risk being taken with adapting the system to a new environment and evaluating its application to highly damaged soils. It has shown us that *Inga* agroforest systems are ideal for rehabilitating abandoned slash-and-burn sites and can be developed on compacted sites albeit requiring a greater investment of time and labour. Community engagement has been good at five out of six communities.

A consultancy visit by Inga agroforestry experts Terry Pennington and Jaime Leon took place in October (see Annex 13). Our intern Lucy Dablin has completed the soil monitoring sampling (see Annex 14) and the samples have been sent for analysis in Santa Cruz.

We trained communities in pollarding (Annex 15) and have held several consultations to identify the crops and fruit tree species that would best suit each community (see planting plan examples, Annex 16). We then obtained seed of these species and produced seedlings for planting. Currently we have seedlings of 12 species of fruit tree and two of timber tree species stocked within either community or our central Cobija nursery ready for planting from April 2016 (see also Output 1).

Activity 2.3 (experience exchange with Peruvian Inga agroforestry). The experience exchange visit with Peru took place in April successfully (Annex 35). This gave members of the participating communities a clearer view of the potential benefits of Inga agroforestry. The experience has been disseminated as a Youtube video made by the project intern Lucy Dablin (Annex 7). A second visit, including members of the three communities recently integrated into the project, will take place in May.

Activity 2.4 (agroforestry guide). Following consultation on the initial draft in Bolivia, a second draft of an agroforest manual targeting rural communities has been produced and will go for design in May and printing in June.

Activity 2.5 (monitoring uptake). See Activity 4.4; these activities have been integrated.

Output 3 – Knowledge of ecosystem services, biodiversity and associated values in Pando forests

Activity 3.1. (Desk based review of ecosystem services). The review was completed at the end of Yr1, and has informed the actions relating to activities 3.2 and 3.3.

Activity 3.2. (Quantitative forest surveys of forest species composition, structure and biomass (generate quantified values for carbon stock). By the end of May 2015 the BES team had established a total of six permanent one-hectare plots, tagged 3,523 trees with diameter of 10 cm or larger, collected 1,470 vouchers and taken more than 15,000 photos, together with data on life form, crown type, biomass, state of decomposition, etc. For comparison, three plots were established in flooded forest and three in non-flooded. The plot and voucher data were entered into an Access database and analysed; and the results are forming the basis for three peer-reviewed manuscripts.

Whilst the vouchers were identified preliminarily against the Herbarium collections in MHNNKM, they are currently being verified at Kew. Once the results from the project have been published in peer-reviewed journals, the plot data will be added to four international networks of plot data (ADTN, BIEN, RAINFOR, and TEAM) to maximise the use of the data. In 2015, three students successfully defended their theses as part of the project: Lic. Biologia Universidad Amazonica de Pando: Ruperto Parada Arias (title - Biomass and carbon calculation: differences between varzea and terra firme forests) and Sahiury

Vargas Lucinto (title - Difference in plant species composition between varzea and terra firme forests); and MSc Anglia Ruskin University: Sara Edwards (title - Calculating Carbon Stocks in the Pando, Bolivian Amazon and Investigating Ways of Improving Methods of Calculation.

Activity 3.3. (Dissemination of above information tailored to project audiences: local communities, local policy makers, scientific community). Once voucher verification is completed, we will finalise the third manuscript on species composition and diversity of Pando's forests which we aim to submit to the peer-reviewed journal Acta Amazonica. The paper on new species records for Bolivia encountered during the project was published in Spanish in the open access Bolivian journal Kempffiana in December 2015 (Annex 26). The manuscript on biomass and carbon stock is currently in press in Kempffiana (Annex 30). During the Systematics Association Conference in Oxford August 2015 one poster presented the project results (Annex 29); and three posters were presented at the III Bolivian Botanical congress in October 2015 (Annexes 27, 28, 38). Dissemination activities tailored to other project audiences are described under Activity 4.1.

Output 4 – awareness of ecosystem service and biodiversity values

Activity 4.1 (publicity and dissemination). Information has been disseminated through the websites of the partners, blogs (Spanish/English), Twitter and Facebook posts and Youtube video (see Annex 7). A new 'Bosque de Los Niños' website was developed as a means of communicating knowledge and experience of the forest from the children's perspective www.bosquedelosninos.org. This content is in the process of integration into a redesign of the Herencia website, specifically designed to make the work of the Forest Futures project more visible and accessible. A Bolivian communications professional was engaged by Herencia in February 2015 to increase the visibility of the project and its outcomes more broadly. In the UK, the work of the project (and Amazonian ecosystem values) was promoted to visitors to Kew Gardens through the annual Easter Festival, which included interpretation panels, audiovisuals, and chocolate workshops referring specifically to the project. Following earlier delays with the production of the project's educational booklet (aimed at schools) on biodiversity and ecosystem services, the content is currently in the process of completion at MHNNKM and will be printed and distributed soon. The project has been covered by two local television interviews (Channel 15), one local radio notice (Radio Universitaria) and one local newspaper article in the Progreso (Annex 31).

Activity 4.2 (Workshops and capacity building, published guides, talks). Activities this year have focused primarily on strengthening the environmental education component of the project. This has included production and distribution of posters highlighting the importance of forest biodiversity and ecosystem services (Annex 5, Annex 37), urban-rural schools exchange visits from Cobija, and rural schools engagement/ education activities. These have been based around agroforestry, understanding soil ecology and sustainable land use at three communities, including planting of educational Inga plots and fruit trees, and development of 'knowledge paths' for useful forest trees at Motacusal and Palacios, implemented by experts from the Noel Kempff Natural History Museum (see Annex 9).

In addition, the work of the project was disseminated by Juan-Fernando Reyes (Director of Herencia) at the Foro MAP X. The MAP Forum is a tri-border Regional Forum (Madre de Dios, Peru; Acre, Brazil; Pando, Bolivia) held every two years to discuss environmental, economic and social problems. MAP X was held in Rio Branco from 9 to 11 November 2015 with the participation of 477 people from 150 institutions in the region (state institutions, universities, NGOs and social organizations). Juan Fernando participated in two sessions: the thematic panel "Economy and infrastructure" in which the following priority lines of action were defined (see Annex 32) [promoting diversification of sustainable forestry and agroforestry products (low emission) in the region MAP, through technological innovation and exchange of successful experience; promoting and strengthening family farming and community levels, characteristic of indigenous peoples and rural communities to ensure food security; promoting the industrialization of products from the forest (assai, Brazil nuts, cacao, camu camu etc.)] and a side event "workshop" with the theme of Integrated Management of Forests for Climate Change Mitigation (Annex 33) with the participation of 50 people.

A training workshop was given at the Colegio Héroes de la Distancia (36 pupils) on environmental services of the Amazon and options for sustainable production in the forest (speaking from experience with communities). See Annex 36.

Activity 4.3 (Annual press review, stakeholder review). See Activity 4.1.

Activity 4.4 (monitoring awareness). Awareness of forest biodiversity and ecosystem service values was monitored through questionnaires undertaken as part of the schools environmental activities (see 4.1) and through the community surveys (Annex 10) which are also designed to capture socioeconomic data and project engagement/perception. The surveys were completed in all six communities by Marianela Quisbert, but following her early departure at the end of 2015 it became necessary for Herencia to contract a local specialist to digitise the data and conduct analyses of the results. A further survey will be conducted at the end of the project.

3.2 Progress towards project outputs

Output 1:	Increased diversity of forest products in Pando, supported by locally adapted information resources and delivery mechanisms, promoting sustainable forest management practice.		Output 1.1 indicators are not on track for reasons previously explained, but every effort is being made to develop this aspect of the project.	
Indicator	**Baseline**	**Change recorded by 2016**	**Source of evidence**	**Comment**
1.1 Two NTFPs not currently traded from the Pando have been tested for viability (Yr 4).	0	0 (1)	Annex 17-19	Feasibility study for cacao under way; rubber in planning
1.2. Awareness of ecosystem and biodiversity values of local Amazonian forest increased among local farming and NTFP harvesting households, school children and local decision makers.	0 communities	Awareness raised in 3 communities through educational activities	Educational activity reports (Annex 9), monitoring survey (Annex 10)	Wider impact through distribution of poster
1.3. Capacity for production of Amazonian fruit trees for integration in agroforestry and trade increased in six forest communities.	0 communities	6 communities with nurseries and capacity building exercised	Community planning and engagement reports & surveys (Annex 10), Annex 21, Annex 22; training workshop attendance (Annex 34)	Fruit tree book in production (Annex 4)
Output 2:	Four community agroforestry pilot projects established, supported by technical research, generating increased uptake and agricultural output from locally appropriate systems promoting livelihoods and biodiversity.		Output 2 indicators are on track with the revised logframe. The exceptions being with monitoring forest cover which has been curtailed because of staff cuts at partner Herencia and with the establishment of baseline participative monitoring data which we only completed in 2015.	
Indicator	**Baseline**	**Change recorded by 2016**	**Source of evidence**	**Comment**
2.1: Number of families incorporating *Inga* agroforestry strategies on their land increases from 0 to 48 (Yr 3)	0 families	Currently work with 48 participating families / households.	Community planning and engagement reports & surveys (Annex 10), Annex 20	One of two cattle farmers, Itamar Subtil, has left the project.
2.2: Area of	0 ha, 0 communities	We currently have	Community	

agroforestry in pilot communities increased from 0ha to 8ha by Yr 3 and the number of participating communities increase from 4 to 6 during the course of the project (Yr 3)		8ha of agroforest plots and a commitment for an additional 3 ha. We have signed agreements with six communities	planning and engagement reports & surveys (Annex 10); consultant report (Annex 13)	
2.3: Surface area of *Inga* agroforestry in Bolivian Pando increases from current area. (Yr 3)	4 ha (from year 2)	We have increased to 8ha.	Community planning and engagement reports & surveys (Annex 10)	
2.4: Agroforestry system successfully adapted and at least 6 families in each of 4 communities trained in management and monitoring. (Yr 2)	0 families	Currently we are working with 48 families.	Community planning and engagement reports & surveys (Annex 10); training reports (Annex 15); Annex 24; Annex 35	
Output 3:	3: Knowledge of ecosystem services, biodiversity and associated values in Pando forests increased through six permanent survey plots, including species diversity, carbon stocks and provisioning services (useful and marketable plants).			
Indicator	**Baseline**	**Change recorded by 2016**	**Source of evidence**	**Comment**
3.1 Value of forest ecosystem services (carbon, NTFP, timber) from plot survey and appropriate metric communicated to Local Government, local families, schools, NGOs and media through printed, online and oral media. (Yr 4)	0 plots survey plots established = no evidence	Six 1 ha survey plots established, data collected and analysed. Access database containing plot and voucher data.	Peer reviewed publications, posters, presentations, online media (Annexes 5, 7, 8, 26-33, 36-38)	Educational booklet content in the process of being finalised.
3.2. Value of biodiversity of local forests to regional and global conservation plans communicated to Local Government, local families, schools, NGOs and media through printed, online and oral media as appropriate. (Yr 2, 3)		Knowledge, drawing on results from 3.1, available through a range of media and activities.	See Activity 3.1	

Output 4:	Awareness of ecosystem and biodiversity values of local Amazonian forest increased among local farming and NTFP harvesting households, school children and local decision makers.		2 indicators are on track with the revised logframe. The exceptions being with monitoring forest cover which has been curtailed because of staff cuts at partner Herencia and with the establishment of baseline participative monitoring data which we only completed in 2015.	
Indicator	**Baseline**	**Change recorded by 2016**	**Source of evidence**	**Comment**
4.1: Poverty and environmental sustainability indicators incorporated into the new Sustainable Development Objectives (ODS) which replaces the ODM (Yr 4)				In planning for year 4. See Annex 1.
4.2: Educational programmes promoting understanding of ecosystem service and biodiversity value of natural forest included in school activities. (Yr 2, 3)	0	Education programme delivered successfully in 3 communities, and rural school exchange. Educational poster distributed.	Education reports (Annex 9); poster (Annex 5), knowledge surveys (Annex 10).	Educational booklet in production – distribution planned for August.

3.3 Progress towards the project Outcome

Outcome: Sustainable forest management developed and practised in four pilot communities in Pando, Bolivia including: 1) diversification of forest products; 2) agroforestry adapted to regional socio-economic context, contributing directly to poverty alleviation and biodiversity conservation; 3) understanding of economic incentives for sustainable forest management and maintenance of ecosystem service values increased at a range of decision-making levels from community to governmental.				
	Baseline	Change by 2016	Source of evidence	Comments
0.1. Diversity of forest products in production, and capacity for production, increased in six forest communities by year 3.	0	Capacity for fruit tree production increased in six communities	Annex 21, 22	
0.2. Enhanced agricultural output in 4 pilot communities using Inga agroforestry systems adapted to the region, with proportion of basic food needs met by agroforestry increasing to 15% (from nil) by year 4 among 48 households.	0	Capacity for increased output increased in six communities through agroforest plots; however none of these plots have yet become productive and contributing to basic food needs	Annex 20, Annex 13	
0.3. Awareness of		Awareness has been	Annex 10, Annex	

forest ecosystem services values and sustainable forest management opportunities and incentives increased at, community, school, NTFP harvester and regional decision-making levels by year 3.		increased through educational and project activities. However, published outputs for wider dissemination are in the process of being completed	24, Annex 32-33	

3.4 Monitoring of assumptions

0.1. Pilot communities remain committed to sustainable forest management; micro-level (community-based) results influence macro-level (municipal/regional) strategies and decision-making. Risk minimised by focus on short-term delivery of benefits within a long-term strategy supporting regional coordination and cooperation, and multi-stakeholder engagement throughout the project life cycle.

The assumption is still considered reasonable but anecdotal evidence suggests that economic and social change may be influencing community-level commitment to sustainable forest management practices in the region. Nevertheless, data from our 2015 monitoring interviews (see Annex 10 – quantitative data) demonstrate a range of reasons for engagement in the project

Motivations for participation in the Inga project

55 respondents ranked their reasons for integration into the project.

% Importance	Reason
36	Better management of forests and benefits for the future
30	Access to additional benefits e.g. governmental help or cooperation agents
17	My obligation to protect the forest for the community and the future
10	To learn
6	Be respected and known as a responsible member of the community

0.2. Options and market demand remain in place for available forest products; resources available in commercially viable quantities for sustainable management; products meet standards for local/international markets. Risk will be minimized through diversification of NTFP options.

This is still considered to hold true; the challenge has been to develop these options in the absence of a key project partner.

0.3. Land ownership system and political context continue to allow forest product extraction and agroforestry by communities. Maintaining an open dialogue with regional policy and decision makers throughout the project will help minimize this risk.

This is still considered to hold true.

1.1. Of the potential species selected for initial market testing (*Plukenetia volubilis*, *Bertholletia excelsa* shells*,* wild *Euterpe sp,* wild *Theobroma cacao*) two will be successful or substitutable by successful alternatives.

Our surveys suggest that there is scope for developing Euterpe and Theobroma.

1.2. Functional trade links in the edible NTFP market are maintained between the EU market and Bolivian Amazon processors, wholesalers and cooperatives.

This is still considered to hold true.

2.1. There remains a need/demand amongst farmers to improve livelihoods (Pando has amongst the highest proportion of people vulnerable to poverty in Bolivia).

This is still considered to hold true.

2.2. Land remains available for agroforestry plots and trials, and agroforestry systems are not adversely affected by natural disasters.

Land remains available but unusual flooding and drought events have highlighted the risk from natural factors and in some cases have delayed project development.

3.1. Sites remain available for establishment of forest plots.
This is still considered to hold true.
3.2. Natural forest carbon stocks can be realistically estimated from data on species composition, associated wood anatomy and biomass.
This is still considered to hold true.
3.3. NTFP and timber value can be realistically estimated from species composition and biomass.
This is still considered to hold true.
3.4. Research and specimen export regulations allow Kew to support species diversity, sampling and mapping component.
This is still considered to hold true.
4.1. The "*El Bosque de los Niños*" programme and participating communities remain active and in collaboration throughout the project; community members (male and female), school children and NTFP harvesters happy to pass on knowledge. [Risk minimised by engagement workshops to define/agree shared vision/priority/product and the implementation of an integrated participatory monitoring and evaluation techniques as a learning tool].
This has not been the case. Herencia has limited resources available for this programme, and the education activities funded by the project have been supporting it. With the termination of this element of the project, the long-term legacy of this work is not certain.
4.2. Herencia's role in local community engagement and regional development strategy through Articulación Regional Amazonica (ARA) maintained (ARA is a transnational regional network of NGOs which seek to conserve Amazonian forests and ecosystems, biotic and cultural diversity, and the welfare of its inhabitants).
This is still considered to hold true.
4.3 Deforestation in Pando is driven by poverty and lack of existing alternative forest-based incomes.
This is partially true, but other drivers for deforestation have been accelerating in the region since the start of the project.

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

Achieving poverty alleviation and biodiversity conservation through the establishment of agroforestry systems and more sustainable forest management is a long-term process. The same is true of the process of achieving positive impact on biodiversity through awareness-raising and education. The pilot agroforestry sites are only now beginning to be planted with crops and fruit trees, and will not have a significant impact on poverty or food security until some months (or in the case of fruit trees, years) later. Our contribution towards this goal so far lies in the work that we have done to establish a framework that can deliver significant positive impact over time, both on biodiversity and poverty through its wider uptake in the region. However, we are only approaching the point where there is sufficient evidence from our work on the ground to stimulate such uptake.

4. Contribution to SDGs

The most relevant SDGs for the project are:

- 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

The project has made progress towards the development and implementation of systems aiming to increase agricultural productivity and implement resilient agricultural practices (2.3, 2.4), promote implementation of sustainable management of forests (15.2), integrate ecosystem and biodiversity values into national and local planning (15.9).

5. Project support to the Conventions, Treaties or Agreements)

The project will assist Bolivia in meeting its obligations under the CBD by addressing articles: 8. In-situ Conservation [promoting non-destructive forest management systems]; 10. Sustainable Use of Biodiversity [promoting sustainable forest product development]; 12. Research and Training [building

knowledge of forest biodiversity and ecosystem services, and in-country research capacity]; 13. Public Education and Awareness [developing education and outreach programmes], 16. Access to and Transfer of technology [emerging agroforestry systems]; 17. Exchange of Information and 18. Technical and Scientific cooperation. Principal Cross-Cutting Issues addressed by the project include: Biodiversity for Development; Communication, Education and Public Awareness; Ecosystem Approach; and Sustainable Use of Biodiversity. The current Bolivian Government has incorporated sustainable use of natural resources within the country's constitution and developed a new strategy to implement the CBD which was presented at COP 11. This consists of the Integrated Forest Management (IFM) concept that was legislated for within Bolivia in 2012 through the Mother Earth Law. This project is working to provide knowledge (NTFPs, agroforestry techniques, agroforestry species, restoration techniques, forest ecosystem services value, forest biodiversity value), skills (agroforestry techniques) and alternative incomes (NTFPs) that will directly support this strategy.

We have not had further direct contact with the CBD focal point in Bolivia. However, in October 2015 Alex Monro met with Director of Autoridad Plurinacional Madre y Tierra, Julio Gutierrez Cahuaya, and Director of the Conjunto Ejecutivo Department Julian Gutierrez Achosollo, for a briefing of the work of Forest Futures and related activities. The Conjunto Ejecutivo Department has strong interest in Pando, including NTFP development (wild cacao, asaí, rubber) and were interested in further information. APMT reports to the Minister of the Environment and Water. In addition, a meeting was held with the Autoridad de Fiscalización y Control Social de Bosques y Tierra in Santa Cruz in October 2015, where the work of the Forest Futures project was dfiscussed alongside Kew's emerging TIPAS programme.

6. Project support to poverty alleviation

Tools, skills and knowledge to alleviate poverty sustainably are developed and applied in the Bolivian Amazon, improving livelihoods and reducing deforestation

This project has been designed to contribute directly towards poverty alleviation within forest communities in Pando. Adaptation of *Inga* agroforestry techniques, their promotion and adoption by four pilot communities, and subsequent outreach among the forest communities in Pando, will increase capacity of the rural poor to meet their basic needs sustainably. This should result in reduction in forest conversion through slash-and-burn subsistence agriculture among participating communities, with increased agricultural productivity derived from agroforestry. The first of the mature agroforest plots is now ready for planting. This will start to have an impact within the next twelve months, with follow-up in the other participating communities.

It is expected that diversification and expansion of forest product (including fruit tree) production from Pando will see the number and quantity of traded species increased, with improved household incomes and greater financial stability for growers/harvesters. Crucially this can make harvesters' livelihoods less vulnerable to market and productivity fluctuations and climate change. Information will be more accessible to the forest communities constituting 40% of Pando's population, helping harvesters/ growers react to market changes and opportunities. The fruit tree production component, which has been initiated with matching funds, will contribute to household incomes and food security through food provision and potential future sales of fruit products and saplings.

7. Project support to Gender equity issues

Whilst furtherance of gender equality is not among the project's specific primary objectives (the project was developed after May 2014), we are working to ensure that equal opportunity for participation in all community project activities is given to women. Both women and men in three communities took part in the initial baseline survey. The result of the survey and others that are currently being undertaken will reflect the perceptions and values of a mixed gender members of the community. Our analysis of mid-term monitoring questionnaires will provide some further insight into the extent to which we have been successful in engaging women. No direct gender equality impacts are foreseen from the agroforest development. However, evidence suggests (see www.worldagroforestry.org/downloads/Publications/PDFS/OP16988.pdf) that agroforestry can benefit women in various ways, e.g. through facilitated access to fuelwood or marketable fruit products. In the Biodiversity component two Bolivian

female students have now completed their Licenciado and MSc projects as part of the Darwin project in forest biodiversity and ecology - a field dominated by men.

8. Monitoring and evaluation

Project monitoring has followed the protocol described in detail in the Yr2 annual report. Whereas we adjusted Kew staff input early into the project in order to assign M&E activities to an additional team member, this person was no longer available following Kew's institutional restructure in 2016, presenting additional challenges for project delivery. Monitoring of project outputs, impact and perspectives has been continued through the socioeconomic, engagement and awareness surveys (see Activity 4.4 and Annex 10). Whilst the approach is considered suitable, this process has, throughout the project, been significantly hampered by turnover of the responsible staff at Herencia.

For internal project management we have continued to work against a GANTT chart prepared during the mid-term review, with regular discussions of progress. This approach to 'remote' management is limited by its nature, and very much dependent on maintenance of a clear project vision (including priorities and timelines) by all partners, coupled with effective and regular reporting. Verbal agreements on timelines and priorities from our Skype or telephone meetings are not effective without written follow-up. As requested in the last review, examples of written communications are provided in Annex 25. In retrospect it would have been more effective to employ a project manager full-time in Herencia rather than in-country technical component managers under the management of a director with many other priorities and calls on his time. We found that the presence of an intern on the project, albeit temporary, helped to bridge this gap and facilitate monitoring. We noted the comment of the reviewer (Y2) on the need for strict and positive project management for the third year of the project.

9. Lessons learnt

Many of the variables determining the success or otherwise of our project are not under our control. For example, rural communities in the Pando are being buffeted by a number of socioeconomic forces: extensive oil exploration SINOPEC in the east of our study area and by a large road building programme in the centre. This has generated extensive paid employment for community members, taking them out of their communities and making them less dependent on subsistence farming. This has somewhat reduced the value of our project in their eyes. This makes it all the more important that projects are closely integrated and connected to the communities that they work with. Something that we have been able to do through our association with Herencia and the integration of our work plan into the community's development plans.

It is important to evaluate potential NGO partners as dispassionately as possible and to obtain a list of projects and funding timelines. Herencia fitted our project needs perfectly when the project was first proposed in 2010 at which it time it had 20 to 30 staff and received funds from USAID and NORAID. Since that time both agencies have withdrawn or been expelled from Bolivia as the Bolivian Government cracks down on NGOs, regulating them more closely and excluding them from Government initiatives. The impact of this on Herencia has been severe with only this project and the innocent Foundation funds that we obtained supporting the NGO. This is not a healthy situation. Whether it could have been foreseen in 2012 is doubtful, although by 2013 it was apparent.

From our experience with the withdrawal of Freeworld Trading (see Yr2 report) we have learned the dangers of relying on a partner whose contribution is largely in kind. We will be continuing to address this through development of complementary activities with the support of matching funds captured by the project after its initiation.

The contracts of the two project staff employed by the MHNNKM ended after Yr 2 in October 2015. Although it was originally envisaged that the preparation of research papers would have been completed by this stage, delays in fieldwork prevented this. As a result we still needed input from these partners to complete the peer-reviewed papers and for the conference participation in October 2015, meaning that the project relies on the goodwill of the ex-project staff to complete and publish the planned manuscripts. In hindsight, budgeting for one project staff in the MHNNKM for c. 20% in Yr3 of the project would have given us greater flexibility.

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

With recent fundraising, it needs to be clear what can be attributed to Darwin and what now makes up part of a larger programme from another funder.

- See section 3.1. The project was part-funded by Darwin from the beginning, and it is not considered realistic within this context to report only on the activities directly relating to the Darwin funding component (with the exception of finance reporting). Forest Futures remains a single, integrated project with multiple components and multiple sources of funds.

More attention should be placed on the current work towards poverty reduction and biodiversity conservation - what has been achieved/put in place so far?

- Our work towards supporting poverty reduction through development of forest products and fruit trees is outlines above. We are fully conscious of the importance of achieving tangible benefits within the lifetime of the project, and this is most likely to be achievable through the fruit tree production capacity and the eventual agroforest output. The latter will be limited within the lifetime of the project, however. Nevertheless, the fact that we have captured sufficient funds (through the innocent foundation) to maintain our presence and collaboration for a further 12 months will allow us to provide ongoing low-level support to the agroforest development, strengthening potential long-term impact.

Provide an update on the replacement of FWT, whether a new partnership or an amalgamation of efforts from different programmes, to ensure continued work under output one.

- This is reported in detail in Section 3.1.

Output 1: Importantly, the report does not link to any evidence to support this output- although many documents were submitted with the report. It is important that the report is cross-referenced

- Evidence has been provided with this report.

It would be useful to supply an updated logframe that states when these activities will now be delivered.

- The logframe has been updated and approved (change form Annex 23).

First drafts of peer-reviewed papers on biomass and carbon stocks and biodiversity are in the process of being completed. It would be useful to know where these are intended to be published, will they be open access? How will they be disseminated?

- The biomass paper has been submitted to Kempffiana, which is open access. The biodiversity and NFTP papers will be submitted to Acta Amazonica, which is also open access via SCIELO.

The project should revisit the best way to disseminate knowledge, and state how the radio interviews will be replaced to be beneficial to the project; it is expected this will take the form of publications such as newsletter articles and blogs.

- The project has been using blogs (see Annex 7) and we have contracted a local specialist (February) specifically to increase project visibility within Bolivia through television, web presence and newspaper coverage.

It should not be too challenging for the project to collect gender disaggregated data, for example, workshop attendance sheets, and data from participation in agroforestry activities.

- This is being done – see for example Annex 15.

11. Other comments on progress not covered elsewhere

Further delays to some project activities have been caused by uncontrollable circumstances, including the run-up to the Bolivian election which delayed the process of negotiating agreements with new communities. However, this has been undertaken successfully, working through Herencia's community engagement and planning procedures. Marianela Quisbert decided to leave Herencia in December, presenting a challenge for ongoing monitoring and educational activities (resolved by contracting a local specialist. Whilst the fruit tree project has been established successfully, there were initial challenges

in the germination of some of the fruit trees, reflecting a lack of technical competence in this area by the staff member contracted by Herencia to develop these activities. We therefore made arrangements to contract specialist expertise and training in this area. Slower development (growth) than originally envisaged (based on experience in Peru) with some of the agroforestry plots, compounded with seasonal risks associated with El Niño, precipitated delays in development of the sites and, as a consequence, the agroforest manual. Whilst these cumulative issues are not expected to have a significant budgetary impact, they do have an impact on the timetable for project delivery of outputs.

The Pando is going through rapid and major changes at the moment: paved roads are being built to La Paz and Cochabamba (building work is well underway); big oil concessions have been awarded to the Chinese company Sinopec which has already begun seismic exploration; there is a lot of dredging for gold starting up on the Madre de Dios and the Governor has stated that he wants the Pando to be a significant soya producer. The impact of these changes on the success of the project is hard to predict, but it is recognised that the context within which the project was originally designed has shifted.

Whilst in 2015 we reported funds raised from the Sabin Foundation, this had been pledged but not paid to Kew. For reasons that remain unclear, the Foundation changed their minds and these funds have not been received. Whilst the Kew Foundation remains in discussion with Sabin over this, it does not look likely that we will receive them. This has placed the project under unexpected financial pressure since the budgeting for 2015-6 was based on the assumption of the availability of these resources.

The Bolivian project staff MHNNKM had to reapply for their jobs in January 2015 and only received their second one-year contract in May 2015. Fortunately kept working despite the lack of contract and payment, but dealing with the Bolivian bureaucracy remains time-consuming.

12. Sustainability and legacy

The profile of the project has been promoted within Bolivia through a combination of media, meetings and events (see Section 3.1, Output 4). We have some evidence of increasing local interest through the successful engagement of new communities in the programme, and through interest expressed by Autoridad Plurinacional Madre Terra (see above). Also, we have been approached by NGO Arbolivia with regards to the possibility of implementing our approach elsewhere in the country. We expect levels of interest to gain more momentum over the next six months once the outcomes of our activities (e.g. agroforestry production) become more tangible, and with the distribution (and associated events) of the publications currently in production.

Our planned exit strategy remains valid, though delays in demonstrable impact from the agroforest plots will likely limit the rate at which the system will be taken up more widely through spontaneous, evidence-based uptake. However, we recognise that there are challenges to leaving a sustained legacy in the context of agroforestry systems (and forest product trade), partly due to the time gap between their establishment and fruition. The fact that not all components have stable endpoints was recognised in the original project proposal. Working to influence sustained change in land-use practices is a complex process that requires strong, convincing evidence coupled with positive engagement and sustained support.

Our planned approach to achieving this in the communities with which we are working has been through integration of project activities within a structure (BONI) that is integrated into community statutes. However, this is a time-consuming process and the current lack of a clear future for the BONI programme through Herencia (due to funding limitations) may have a negative impact on the project legacy. Nevertheless, our investment in supporting community development planning within the three communities integrated into the project this year will help to achieve sustainable outcomes. Meanwhile, thanks to counterpart funds captured by the project, we will be in a position to provide ongoing support to project activities (for a further 12 months beyond the end of Darwin funding. This will be provided by Inga agroforest expert Terry Pennington, and will also help to promote a sustainable legacy.

In the context of wild cacao production, if the trial proves positive we still hope to be able to leave a sustainable legacy of a direct trade connection between forest communities and a UK producer, which is in line with our original strategy. Failing this, the fact that the increased capacity for fruit tree

production (not originally envisaged) is directly linked with agroforest development has the potential to enhance the sustainability of both elements.

13. Darwin Identity

Efforts have been made to publicise the support of the Darwin Initiative through use of the name and logo on all project outputs and communications (including blog posts) as well as the project vehicle, often with direct reference to UK government funding.

The Darwin Initiative project (Forest Futures) has been, and continues to be, recognised as a specific project, although its scope and the range of funding sources has expanded slightly in the course of capturing matching funds.

14. Project Expenditure

Table 1 Project expenditure during the reporting period (1 April 2015 – 31 March 2016)

Project spend (indicative) since last annual report	2015/16 Grant (£)	2015/16 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)			1.94	
Consultancy costs			9.73	
Overhead Costs			0	
Travel and subsistence			-13.37	Cost sharing with funds from innocent foundation
Operating Costs			1.04	
Capital items (see below)				
Others (see below)			-0.97	
TOTAL				

Highlight any agreed changes to the budget and **fully** explain any variation in expenditure where this is +/- 10% of the budget. Have these changes been discussed with and approved by Darwin?

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2015-2016

Project summary	Measurable Indicators	Progress and Achievements April 2015 - March 2016	Actions required/planned for next period
Impact Locally viable sustainable forest management systems are adopted by the expanding rural population of the northern Bolivian Amazon contributing to poverty alleviation, maintenance of forest ecosystem services and biodiversity conservation		Continued progress towards development and implementation of sustainable land use practices contributing towards poverty alleviation and biodiversity conservation	
Outcome Sustainable forest management developed and practised in four pilot communities in Pando, Bolivia including: 1) diversification of forest products and marketing; 2) agroforestry adapted to regional socio-economic context, contributing directly to poverty alleviation and biodiversity conservation; 3) understanding of economic incentives for sustainable forest management and maintenance of ecosystem service values increased at a range of decision-making levels from community to governmental.	1. Diversity of forest products in production, and capacity for production, increased in six forest communities by year 3. 2. Enhanced agricultural output in 4 pilot communities using Inga agroforestry systems adapted to the region, with proportion of basic food needs met by agroforestry increasing to 15% (from nil) by year 4 among 48 households. 3. Awareness of forest ecosystem services values and sustainable forest management opportunities and incentives increased at, community, school, NTFP harvester and regional decision-making levels by year 3.	No collection or trade in additional products to date. Surveys conducted and training in wild cacao (and possibly rubber subject to feasibility study) planned. Assessment undertaken for asaí. Capacity for fruit tree production increased in six communities (infrastructure and training). Framework established in 6 communities. One community commencing planting of crops and fruit trees. Others to follow. Agricultural output not yet measurable Awareness raised in three forest communities/schools and one urban school through education programme and applied project activities. Evidence base limited by delays in surveys but will be captured by final survey.	**Indicator 1**: complete wild cacao harvesting/production trial/training with Chocolution. Continue training and support for fruit tree production and evaluate capacity for sale of seedlings alongside integration in agroforest. Undertake rubber production feasibility visit (University of Brasilia) and, if feasible, production trial/training. Print and distribute agroforest guide. **Indicator 2**: continue to support establishment of productive crops in agroforest trials and monitor productivity and agroforest development in the 3 'new' communities. Expand agroforest area in existing communities. **Indicator 3**: Complete, publish and disseminate the fruit tree manual & educational booklet. Hold stakeholder workshop. Final survey.

Output 1. Increased diversity of forest products in Pando, supported by locally adapted information resources and delivery mechanisms, promoting sustainable forest management practice.	1 Two NTFPs not currently traded from the Pando have been tested for viability (Yr 4). 2. Awareness of ecosystem and biodiversity values of local Amazonian forest increased among local farming and NTFP harvesting households, school children and local decision makers. 3. Capacity for production of Amazonian fruit trees for integration in agroforestry and trade increased in six forest communities.	**Indicator 1**: Wild cacao trial initiated. Rubber trial in the process of being explored. **Indicator 2**: This has been advanced in community schools through the BONI programme. Educational booklet for biodiversity and ecosystem services in the process of being finalised at MHNNKM. Final survey will allow more complete assessment of awareness raising but 2015 survey data demonstrate understanding of agroforestry which was previously absent. **Indicator 3**: Capacity built in six communities through training and infrastructure development.
Activity 1.1. Identification & resource inventory of potential NTFPs incorporating field, desk-based and market components.		Quantitative field NTFP inventory conducted at Palacios, focusing on wild cacao and other important species identified through the 2015 research. Resource/market analysis of asaí conducted.
Activity 1.2. Production testing of two selected NTFPs.		Our main focus is now on the development of community capacity for fruit tree production (through activities funded by innocent Foundation). The aim is to support communities in the production of resources that can: be integrated into agroforest; provide fruits and fruit pulp for market; provide seedlings for sale. With this aim we have established and stocked seven fruit tree nurseries and are working with six communities. These have selected the species they would like to grow and we are planting fruit tree seedlings in two of our agroforest plots in April 2016 (Palacios & Motacusal). We have also arranged training in processing and a small-scale production trial for wild cacao (to be completed April 2016).
Activity 1.3. Disseminate findings through Brazil experience exchange, workshop and production of 'One-stop guide' to fruit trees.		We are attempting to set up a Brazil training and capacity building visit for wild rubber production. The guide to fruit trees is in the process of being finalised.
1.4. Establish nursery infrastructure for fruit tree production in six communities		Nursery infrastructure established in six communities and one in Cobija. Upgrade of facilities in progress.
1.5. Provide training and capacity building for fruit tree production in six communities		Initial training provided in six communities. Follow up training workshop and training visit by Kew horticultural specialist to be delivered in next six months.

Output 2. Four community agroforestry pilot projects established, supported by technical research, generating increased uptake and agricultural output from locally appropriate systems promoting livelihoods and biodiversity.	1. Number of families incorporating *Inga* agroforestry strategies on their land increases from 0 to 48 (Yr 3) 2. Area of agroforestry in pilot communities increased from 0ha to 8ha by Yr 3 and the number of participating communities increase from 4 to 6 during the course of the project (Yr 3) 3. Surface area of *Inga* agroforestry in Bolivian Pando increases from current area of 0ha to 8ha. (Yr 3) 4. Agroforestry system successfully adapted and at least six families in each of four communities trained in management and monitoring. (Yr 2)	**Indicator 1**. Currently we are working with 48 families. Of the two farmers that we were working with, one of them, Itamar Subtil, has left the project as he was short of land to graze his cattle on and could no longer spare 4ha for our plot. **Indicator 2**. We currently have 8ha of agroforest plots. We also have a commitment for an additional 3 ha after the project ends. This should bring the total to 11 ha. In the 2015/16 financial year we increased the number of participating communities from 3 to 6. **Indicator 3**. We currently have 8ha of agroforest established and a commitment for a further 3 ha at the project end. **Indicator 4**. Currently we have circa eight families in each of the six communities with whom we work trained in the establishment of agroforest. From April the families in two of the communities and the farmer will be trained in the use and management of the agroforest system. The community families with whom we work have actively been trained in all stages of the Inga seedling production and plot preparation and maintenance.
Activity 2.1. Establish agreements, infrastructure and pipeline for the seed acquisition, propagation, and distribution of tree seedlings to supply demo plots and community uptake.		We have signed agreements with six communities, seven seedling nurseries and have produced over 9,000 Inga seedlings. We have also produced 11,540 seedlings of fruit trees for the agroforest plots.
Activity 2.2. Establish four community and one university *Inga* agroforestry demo plots and experimental growth trials including native *Inga* species and requisite agreements (prior informed consent, ABS etc).		University site not established. Have tried to sign an MOU with Centro de Investigacion y Produccion de la Amazonia, Amador Apaza but they have not signed it and given no reason. We identified a potential site with them for the plot and provided them with 700 seedlings in January 2016. Returned twice to help set up the plot but were not available. CIPA then changed the technician in charge who has not established the site.
Activity 2.3. Experience exchanges with Peruvian *Inga* agroforestry programme (Yr 3, Yr 4).		Was undertaken in April 2015. The trip went to plan and has been documented by our intern Lucy Dablin through a short film. Feedback from participants and from the Peruvian hosts was very positive and we are planning another trip for May 2016.
Activity 2.4. Analyse data from experimental trials, combine with experiences in Honduras and Peru to produce agroforestry guide for Amazonian Bolivia.		Soil monitoring undertaken, samples being analysed by UTALAB in April 2016. Second draft of agroforestry guide produced
Activity 2.5. Use the agroforestry plots to apply participatory monitoring and evaluation techniques and assess effectiveness of training activities to build local awareness, capacity and uptake in the use of *Inga* agroforestry techniques.		Baseline data collected, digitised and analysed.
Activity 2.6. Monitor uptake of agroforestry practices by local farmer community.		See above (2, 2.2, 2.5)

Output 3. Knowledge of ecosystem services, biodiversity and associated values in Pando forests increased through six permanent survey plots, including species diversity, carbon stocks and provisioning services (useful and marketable plants).	1 Value of forest ecosystem services (carbon, NTFP, timber) from plot survey and appropriate metric communicated to Local Government, local families, schools, NGOs and media through printed, online and oral media. (Yr 4) 2. Value of biodiversity of local forests to regional and global conservation plans communicated to Local Government, local families, schools, NGOs and media through printed, online and oral media as appropriate. (Yr 3, 4)	**Indicator 1**. A peer-reviewed paper in Spanish is in press in the Bolivian journal Kempffiana. Results presented in a conference poster and communicated in an educational poster and online. Educational booklet (aimed at schools) on biodiversity and ecosystem services is currently in the process of completion at MHNNKM and will be printed and distributed thereafter. **Indicator 2**. One peer-reviewed paper in Spanish was published in December 2015 on the new species records discovered during the plot surveys, and presented in poster at the III Botanical Congress in Bolivia in October 2015. Another manuscript on the diversity and structure of the Pando forests will be submitted to the journal Acta Amazonica by summer 2016. See above for additional dissemination.
Activity 3.1. Desk based review of ecosystem services (carbon stock related to wood density, wood density related to species, biodiversity value, NTFPs etc).		The results from the desk-based reviews, draft text from the qualitative and quantitative forest surveys for peer-reviewed publications, and text on biodiversity and ecosystem services for the lay-person have been submitted for use in dissemination material to the project audiences: Local Government, local families, schools, NGOs and media.
Activity 3.2. Quantitative forest surveys of forest species composition, structure and biomass (integrated with 3.1 to generate quantified values for carbon stock, NTFPs etc).		Six one ha survey plots were established, data were collected and analysed. An Access database contains the plot and voucher data, and forms the basis for the analyses.
Activity 3.3. Dissemination of above information tailored to project audiences: local communities, local policy makers, scientific community.		See above under **Indicators 1 and 2.**
Output 4. Awareness of ecosystem and biodiversity values of local Amazonian forest increased among local farming and NTFP harvesting households, school children and local decision makers.	1. Poverty and environmental sustainability indicators incorporated into the new Sustainable Development Objectives (ODS) which replaces the ODM (Yr 4) 2. Educational programmes promoting understanding of ecosystem service and biodiversity value of natural forest included in school activities. (Yr 2, 3)	**Indicator 1.** Juan Fernando Reyes is part of a network called the Network of Sustainable Development Solutions for the Amazon. This consists of leaders from academia, NGOs and civil society organizations from 6 Amazonian countries and includes the the "Amazon Solutions Lab" initiative that aims to review the indicators used to evaluate the Sustainable Development Goals (ODS) through a debate among experts based on best practice and success stories related to sustainable development. The result will be viable indicators for the ODS in the Amazon region. For 2016 the focus of work will be the ODS # 15 having to do with "Protect, restore and promote the sustainable use of terrestrial ecosystems, sustainable management of forests, combating desertification, arrest and reverse land degradation and stop biodiversity loss". It is planned for August 2016 to develop a technical document of recommendations to the UN of indicators to measure this goal. They will then will work with the ODS # 12

		relating to sustainable production, expecting to have a document by December. **Indicator 2**. Schools programme delivered successfully as planned in 2015. Educational poster printed and distributed. Educational booklet being finalised.
Activity 4.1. Publicity & dissemination through YouTube, Twitter, other social media, website and local media (print), national press releases, and conference participations.		A live interview with project staff (Alex Monro & Rolman Velarde) was broadcast on breakfast television on Canal 15 on April 13. In addition an interview was given to the local newspaper, Frontera for publication. Intern Lucy Dablin produce a short film documenting the Peru exchange visit which is available on YouTube. There have been 14 project blog posts (Spanish and English). Results of the project were communicated at the Bolivian Botanical Congress in October.
Activity 4.2. Annual press review; independent stakeholder review.		We have reviewed coverage in the press (above) but have not been able to commission an independent stakeholder review.
Activity 4.3. Workshops and capacity building of farmers, local government officials, published guides, talks		A second draft of the Agroforest manual aimed at rural communities and extension workers / NGOs has been produced and a designer and printer contacted and quote obtained and accepted. We trained representatives of all communities in how to pollard and mulch agroforest plots. Training of project staff in nursery construction/design and fruit tree seed germination undertaken. Community training workshop for fruit tree production planned. Local farmers we trained in survey plot installation techniques during the Final field survey, while employed as casual workers (tree climbing, trail cutting, plot installation) on the BES team. School children in all communities were introduced to the plots and the useful species, some were taught how to calculate carbon content using wood samples, and explained the value of their forest.
Activity 4.4. Monitoring impact as awareness of environmental and economic value the forests of Pando amongst the project audiences: local communities, local policy makers, local scientific community.		Following a baseline survey among communities in the beginning of the project, we developed a protocol to measure the impact of awareness level increase among the communities about the value of the local Pando forest. This was completed after some delays by Marianela Quisbert in December 2015. Results have been digitised and analysed. Wider monitoring of awareness has not been carried out.
Activity 4.5. Development and delivery of schools programme and educational materials.		Marianela Quisbert delivered the educational programme in participating communities during 2015, including schools workshops and an urban/rural school visit. We have printed and distributed poster and are finalising the development of an educational booklet in 2015-6.

Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Goal: Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.			
Sub-Goal/IMPACT: Locally viable sustainable forest management systems are adopted by the expanding rural population of the northern Bolivian Amazon contributing to poverty alleviation, maintenance of forest ecosystem services and biodiversity conservation			
Purpose/OUTCOME Sustainable forest management developed and practised in four pilot communities in Pando, Bolivia including: 1) diversification of forest products; 2) agroforestry adapted to regional socio-economic context, contributing directly to poverty alleviation and biodiversity conservation; 3) understanding of economic incentives for sustainable forest management and maintenance of ecosystem service values increased at a range of decision-making levels from community to governmental.	1. Diversity of forest products in production, and capacity for production, increased in six forest communities by year 3. 2. Enhanced agricultural output in 4 pilot communities using Inga agroforestry systems adapted to the region, with proportion of basic food needs met by agroforestry increasing to 15% (from nil) by year 4 among 48 households. 3. Awareness of forest ecosystem services values and sustainable forest management opportunities and incentives increased at, community, school, NTFP harvester and regional decision-making levels by year 3.	1. Pilot community annual collection and trade records. Baseline data on agricultural output submitted as part of first Half Year Report. 2. Annual yield records from pilot agroforestry plots maintained by agriculture extension workers, school children, teachers, men and women in the four pilot communities. Households interviewed to establish the proportion of basic food needs met by their community agroforestry plots. 3. Baseline data and results of annual monitoring of awareness of ecosystem value of forest collected through value/culture surveys of communities and their leaders, schools and regional decision-makers.	1. Pilot communities remain committed to sustainable forest management; micro-level (community-based) results influence macro-level (municipal/regional) strategies and decision-making. Risk minimised by focus on short-term delivery of benefits within a long-term strategy supporting regional coordination and cooperation, and multi-stakeholder engagement throughout the project life cycle. 2. Options and market demand remain in place for available forest products; resources available in commercially viable quantities for sustainable management; products meet standards for local/international markets. Risk will be minimized through diversification of NTFP options. 3. Land ownership system and political context continue to allow forest product extraction and agroforestry by

			communities. Maintaining an open dialogue with regional policy and decision makers throughout the project will help minimize this risk.
Outputs (add or delete rows as necessary) 1: Increased diversity of forest products in Pando, supported by locally adapted information resources and delivery mechanisms, promoting sustainable forest management practice.	1 Two NTFPs not currently traded from the Pando have been tested for viability (Yr 4). 2. Awareness of ecosystem and biodiversity values of local Amazonian forest increased among local farming and NTFP harvesting households, school children and local decision makers. 3. Capacity for production of Amazonian fruit trees for integration in agroforestry and trade increased in six forest communities.	1.1. Evaluation reports from trials and analyses submitted Y3 & final reports 1.2 'One-stop guide' to fruit trees (sample and distribution records sent with Final Report); community survey data (knowledge/ awareness). 1.3 Fruit tree nursery production figures; training & capacity building records; community survey data	1. Of the potential species selected for initial market testing (*Plukenetia volubilis*, *Bertholletia excelsa* shells, wild *Euterpe sp,* wild *Theobroma cacao*) two will be successful or substitutable by successful alternatives. 2. Functional trade links in the edible NTFP market are maintained between the EU market and Bolivian Amazon processors, wholesalers and cooperatives.
2: Four community agroforestry pilot projects established, supported by technical research, generating increased uptake and agricultural output from locally appropriate systems promoting livelihoods and biodiversity.	1 Number of families incorporating *Inga* agroforestry strategies on their land increases from 0 to 48. (Yr 3) 2 Area of agroforestry in pilot communities increased from 0ha to 8ha by Yr 3 and the number of participating communities increase from 4 to 6 during the course of the project (Yr 3) 3. Surface area of *Inga* agroforestry in Bolivian Pando increases from current area of 0ha to 8ha. (Yr 3) 4. Agroforestry system successfully adapted and at least six families in each of four	2.1. Annual yield from demonstration *Inga* agroforestry plots documented and submitted as part of Annual and Final Reports. 2.2. Mapping and quantification of *Inga* agroforestry, non-productive disturbed vegetation (e.g. degraded pasture) and natural forest using remote sensed data. Documented in a peer-reviewed publication, Annual Reports, local workshops and schools programme by Year 3. 2.3. Number of families adopting *Inga* agroforestry techniques recorded as part of annual surveys.	1. There remains a need/demand amongst farmers to improve livelihoods (Pando has amongst the highest proportion of people vulnerable to poverty in Bolivia). 2. Land remains available for agroforestry plots and trials, and agroforestry systems are not adversely affected by natural disasters.

	communities trained in management and monitoring. (Yr 2)	2.4. Field training/work attendance records by participating groups. 2.5. Observation of practical field work, recordings in diaries, scrap books in projects activities and feedback from participating groups. 2.6. Control trial (agroforestry and native *Inga*) experimental reports. 2.6. Community Focus Group reports document awareness, understanding and motivation to adopt agroforestry techniques by Year 3. 2.7. Biodiversity value of agroforestry systems documented and disseminated in a peer-reviewed publication, local workshops and schools programme by Year 4. 2.8. *Inga* agroforestry booklet. Sample sent with Year 3 report.	
3: Knowledge of ecosystem services, biodiversity and associated values in Pando forests increased through six permanent survey plots, including species diversity, carbon stocks and provisioning services (useful and marketable plants).	1 Value of forest ecosystem services (carbon, NTFP, timber) from plot survey and appropriate metric communicated to Local Government, local families, schools, NGOs and media through printed, online and oral media. (Yr 4) 2. Value of biodiversity of local forests to regional and global conservation plans communicated to Local Government, local families, schools, NGOs and media	3.1. Press releases, project websites and blog, social media, online clips, and face to face activities documented and included in Annual and Half Year Reports. 3.2. Ecosystem and biodiversity value of natural forests documented in peer-reviewed publication. 3.3. Forest biodiversity and ecosystem services booklet. Sample sent with Year 3 report.	1. Sites remain available for establishment of forest plots. 1. Natural forest carbon stocks can be realistically estimated from data on species composition, associated wood anatomy and biomass. 2. NTFP and timber value can be realistically estimated from species composition and biomass. 3. Research and specimen export regulations allow Kew to support species diversity, sampling and mapping component.

	through printed, online and oral media as appropriate. (Yr 2, 3)		
4: Awareness of ecosystem and biodiversity values of local Amazonian forest increased among local farming and NTFP harvesting households, school children and local decision makers.	1. Poverty and environmental sustainability indicators incorporated into the new Sustainable Development Objectives (ODS) which replaces the ODM (Yr 4) 2. Educational programmes promoting understanding of ecosystem service and biodiversity value of natural forest included in school activities. (Yr 2, 3)	4.1. Pre-project and annual awareness and value/culture surveys with schools, community leaders and regional decision-makers. 4.2. Annual press review; independent stakeholder review. 4.3. Copy of education materials and activity timetables included in Annual and Final Reports. 4.4. Assessment of remote-sensed data published in peer-reviewed publication and included in Final Report. 4.5. Poverty and environmental sustainability indicators incorporated into the new Sustainable Development Objectives (ODS) which replaces the ODM submitted as annex to the Final Report.	1. The "*El Bosque de los Niños*" programme and participating communities remain active and in collaboration throughout the project; community members (male and female), school children and NTFP harvesters happy to pass on knowledge. [Risk minimised by engagement workshops to define/agree shared vision/priority/product and the implementation of an integrated participatory monitoring and evaluation techniques as a learning tool]. 2. Herencia's role in local community engagement and regional development strategy through Articulación Regional Amazonica (ARA) maintained (ARA is a transnational regional network of NGOs which seek to conserve Amazonian forests and ecosystems, biotic and cultural diversity, and the welfare of its inhabitants). 4. Deforestation in Pando is driven by poverty and lack of existing alternative forest-based incomes.

Activities (details in workplan)

Output 1

Increased diversity of traded, sustainably harvested non-timber forest products (NTFPs) in Pando, promoting sustainable forest management practice.

1.1. Identification & resource inventory of potential NTFPs incorporating field, desk-based and market components.

1.2. Production testing of two selected NTFPs.

1.3. Disseminate findings through Brazil experience exchange, workshop and production of 'One-stop guide' to fruit trees.

1.4. Establish nursery infrastructure for fruit tree production in six communities

1.5. Provide training and capacity building for fruit tree production in six communities

Output 2

Four community agroforestry pilot projects established, supported by technical research, generating increased understanding, uptake and increased agricultural output from locally appropriate systems promoting livelihoods and biodiversity.

2.1. Establish agreements, infrastructure and pipeline for the seed acquisition, propagation, and distribution of tree seedlings to supply demo plots and community uptake.

2.2. Establish four community and one university *Inga* agroforestry demo plots and experimental growth trials including native *Inga* species and requisite agreements (prior informed consent, ABS etc).

2.3. Experience exchanges with Peruvian *Inga* agroforestry programme (yr 3, yr 4).

2.4. Analyse data from experimental trials, combine with experiences in Honduras and Peru to produce agroforestry guide for Amazonian Bolivia.

2.5. Use the agroforestry plots to apply participatory monitoring and evaluation techniques and assess effectiveness of training activities to build local awareness, capacity and uptake in the use of *Inga* agroforestry techniques.

2.6. Monitor uptake of agroforestry practices by local farmer community and.

Output 3

Knowledge of local forest ecosystem services, biodiversity and associated values assessed through eight permanent survey plots, including species diversity, carbon stocks and provisioning services (useful and marketable plants).

3.1. Desk based review of ecosystem services (carbon stock related to wood density, wood density related to species, biodiversity value, NTFPs etc).

3.2. Quantitative forest surveys of forest species composition, structure and biomass (integrated with 3.1 to generate quantified values for carbon stock, NTFPs etc).

3.3. Dissemination of above information tailored to project audiences: local communities, local policy makers, scientific community.

Output 4

Awareness of ecosystem and biodiversity values of local Amazonian forest increased among local farming and NTFP harvesting households, school children and local decision makers.

4.1. Publicity & dissemination through YouTube, Twitter, other social media, website and local media (print), national press releases, and conference participations.

4.2. Annual press review; independent stakeholder review.

4.3. Workshops and capacity building of farmers, local government officials, published guides, talks.

4.4. Monitoring impact as awareness of environmental and economic value the forests of Pando amongst the project audiences: local communities, local policy makers, local scientific community.

4.5. Development and delivery of schools programme and educational materials.

Annex 3 Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Gender if relevant	Nationality if relevant	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Total planned during the project
2	UK MSc student to undertake Masters project			0	(1)	1		1	0
4 A	Capacity building of Bolivian UAP undergraduate students			2	62	2		64	4
4B	Training in plot survey and plant identification skills of UAP students			6		2		6	0
4C	UK MSc student to receive training			0	1	1		1	0
4D	Training in data analysis methods of forest plot data for BES evaluation			0	3	2		3	0
5	Training of project technical staff (agroforestry, plot surveys)			6	1	3		8	6
6 A	Number of trainees in agroforestry techniques, forest plot research			114	114	124		124	48
6 B	Training person/weeks as above			342	200	62		604	432
7	Training materials produced (3 manuals, one poster, one survey methodology)			1	0	1		2	5
8	Weeks spent by project staff in host country			19	13	18		50	64
11A	Papers published peer review journals			0	0	1		1	3
11B	Papers submitted peer review journals			0	0	1		1	3
12A	Specimen and plot databases established in Bolivia			2	0	0		2	2
12 B	Specimen databases enhanced in Bolivia			3	3	3		3	3
13 B	Bolivian species reference collections enhanced (botanical collections)			3	3	3		3	3
14A	Conferences/seminars/workshops organised to disseminate findings			3	1	1		5	6
14B	Conferences/seminars attended to disseminate findings			1	4	2		7	8
15	National press releases in Bolivia and UK			2	0	1		3	8
16	Newsletters (including web-based blog posts, and website news items)			12	28	14		42	56
18	National TV programmes Bolivia and UK, including YouTube video			1	2	2		5	4
20	Estimated value (£'s) of physical assets to be handed over to host country			3,500	700			4,200	3,500
22	Permanent field plots established			2	3	1		6	6

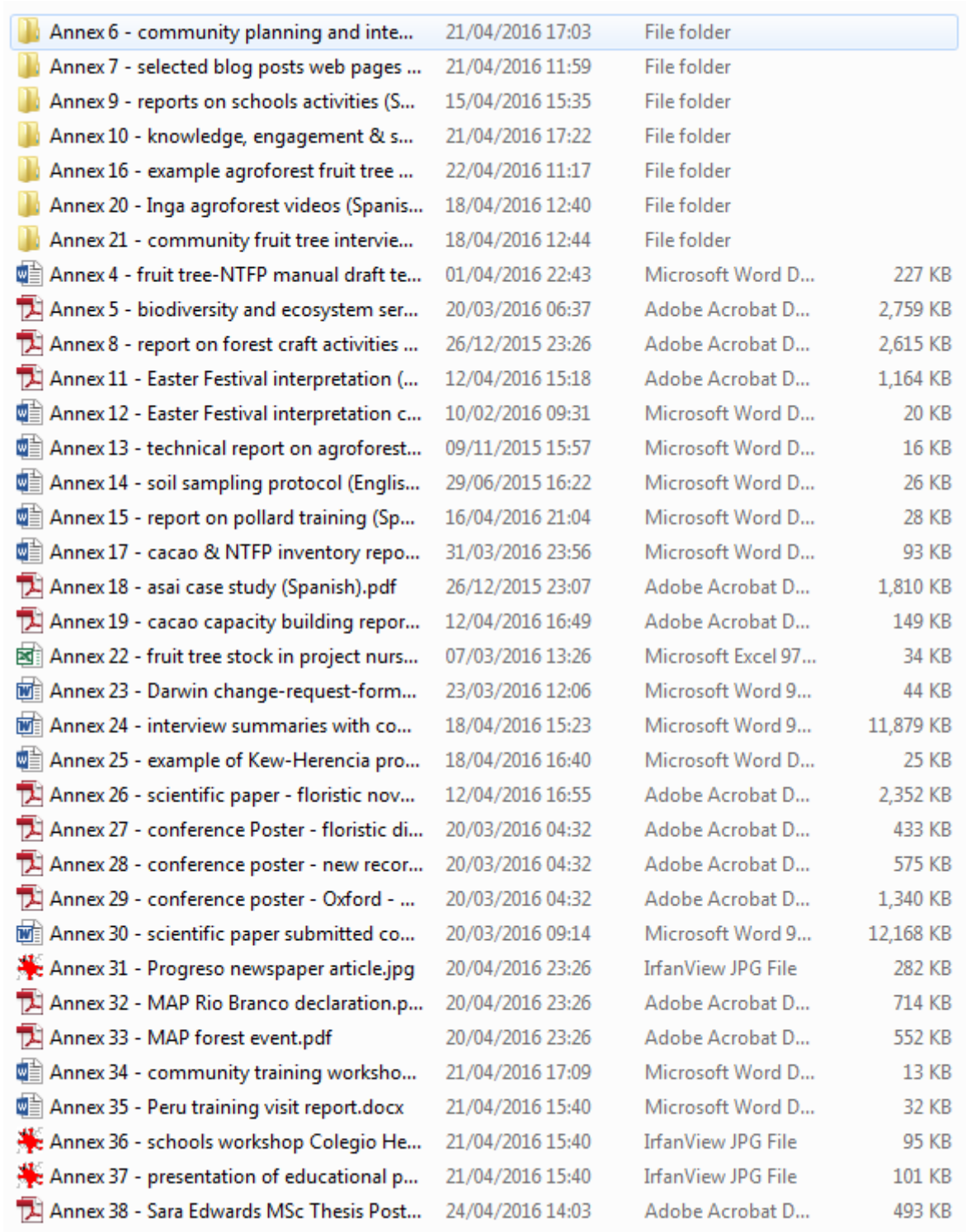
Code No.	Description	Gender if relevant	Nationality if relevant	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Total planned during the project
23	Value of resources raised Bentham Moxon Trust Innocent Foundation William A Cadbury Charitable Trust Total			1,630 **1,630**	4,620 90,000 25,000 **119,620**			**121,250**	6,000 6,000

Table 2 Publications

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g.weblink or publisher if not available online)
NOVEDADES FLORISTICAS PARA LA FLORA DE BOLIVIA	Bolivian peer-reviewed journal article in Spanish	Ana María Carrión Cuellar, Maira Tatiana Martinez, Elenir Vaca Zema, Karen Amelia Flores Ajuacho, Bente B. Klitgård, W. Milliken & Alejandro Araujo-Murakami (2015)	Female	Bolivian	Kempffiana, Museo de Historias Naturales, Noel Kempff Mercado, Santa Cruz, Bolivia	Journal website: http://museonoelkempff.org/sitio/Informacion/KEMPFFIANA/kempffiana11(2)/1_Carrion-Cuellar.pdf Researchgate profiles of authors, library journal exchange; Kew website
BIOMASA Y CARBONO EN LOS BOSQUES AMAZÓNICOS DE TIERRA FIRME E INUNDABLE (VARZEA) EN EL OESTE DE PANDO	Bolivian peer-reviewed journal article in Spanish	Alejandro Araujo-Murakami, Ana María Carrion-Cuellar, Sahuiry Vargas-Lucindo, Ruperto Parada-Arias, William Milliken & Bente Klitgård in press (2016)	Male	Bolivian	Kempffiana, Museo de Historias Naturales, Noel Kempff Mercado, Santa Cruz, Bolivia	Journal website: http://museonoelkempff.org/sitio/Informacion/KEMPFFIANA Researchgate profiles of authors, library journal exchange; Kew website

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

See additional folder



Annex 6 - community planning and inte...	21/04/2016 17:03	File folder	
Annex 7 - selected blog posts web pages ...	21/04/2016 11:59	File folder	
Annex 9 - reports on schools activities (S...	15/04/2016 15:35	File folder	
Annex 10 - knowledge, engagement & s...	21/04/2016 17:22	File folder	
Annex 16 - example agroforest fruit tree ...	22/04/2016 11:17	File folder	
Annex 20 - Inga agroforest videos (Spanis...	18/04/2016 12:40	File folder	
Annex 21 - community fruit tree intervie...	18/04/2016 12:44	File folder	
Annex 4 - fruit tree-NTFP manual draft te...	01/04/2016 22:43	Microsoft Word D...	227 KB
Annex 5 - biodiversity and ecosystem ser...	20/03/2016 06:37	Adobe Acrobat D...	2,759 KB
Annex 8 - report on forest craft activities ...	26/12/2015 23:26	Adobe Acrobat D...	2,615 KB
Annex 11 - Easter Festival interpretation (...	12/04/2016 15:18	Adobe Acrobat D...	1,164 KB
Annex 12 - Easter Festival interpretation c...	10/02/2016 09:31	Microsoft Word D...	20 KB
Annex 13 - technical report on agroforest...	09/11/2015 15:57	Microsoft Word D...	16 KB
Annex 14 - soil sampling protocol (Englis...	29/06/2015 16:22	Microsoft Word D...	26 KB
Annex 15 - report on pollard training (Sp...	16/04/2016 21:04	Microsoft Word D...	28 KB
Annex 17 - cacao & NTFP inventory repo...	31/03/2016 23:56	Microsoft Word D...	93 KB
Annex 18 - asai case study (Spanish).pdf	26/12/2015 23:07	Adobe Acrobat D...	1,810 KB
Annex 19 - cacao capacity building repor...	12/04/2016 16:49	Adobe Acrobat D...	149 KB
Annex 22 - fruit tree stock in project nurs...	07/03/2016 13:26	Microsoft Excel 97...	34 KB
Annex 23 - Darwin change-request-form...	23/03/2016 12:06	Microsoft Word 9...	44 KB
Annex 24 - interview summaries with co...	18/04/2016 15:23	Microsoft Word 9...	11,879 KB
Annex 25 - example of Kew-Herencia pro...	18/04/2016 16:40	Microsoft Word D...	25 KB
Annex 26 - scientific paper - floristic nov...	12/04/2016 16:55	Adobe Acrobat D...	2,352 KB
Annex 27 - conference Poster - floristic di...	20/03/2016 04:32	Adobe Acrobat D...	433 KB
Annex 28 - conference poster - new recor...	20/03/2016 04:32	Adobe Acrobat D...	575 KB
Annex 29 - conference poster - Oxford - ...	20/03/2016 04:32	Adobe Acrobat D...	1,340 KB
Annex 30 - scientific paper submitted co...	20/03/2016 09:14	Microsoft Word 9...	12,168 KB
Annex 31 - Progreso newspaper article.jpg	20/04/2016 23:26	IrfanView JPG File	282 KB
Annex 32 - MAP Rio Branco declaration.p...	20/04/2016 23:26	Adobe Acrobat D...	714 KB
Annex 33 - MAP forest event.pdf	20/04/2016 23:26	Adobe Acrobat D...	552 KB
Annex 34 - community training worksho...	21/04/2016 17:09	Microsoft Word D...	13 KB
Annex 35 - Peru training visit report.docx	21/04/2016 15:40	Microsoft Word D...	32 KB
Annex 36 - schools workshop Colegio He...	21/04/2016 15:40	IrfanView JPG File	95 KB
Annex 37 - presentation of educational p...	21/04/2016 15:40	IrfanView JPG File	101 KB
Annex 38 - Sara Edwards MSc Thesis Post...	24/04/2016 14:03	Adobe Acrobat D...	493 KB

Checklist for submission

	Check
Is the report less than 10MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	No
Is your report more than 10MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	Yes
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Yes
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number.	No
Have you involved your partners in preparation of the report and named the main contributors	Yes
Have you completed the Project Expenditure table fully?	Yes
Do not include claim forms or other communications with this report.	