

Darwin Initiative – Final Report

(To be completed with reference to the Reporting Guidance Notes for Project Leaders
(<http://darwin.defra.gov.uk/resources/reporting/>) -
it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

Darwin project information

Project Reference	17001
Project Title	Conserving Eden: participatory forest management in the Tien Shan region
Host Country/ies	Kyrgyzstan
UK contract holder institution	Bournemouth University
Host country partner institutions	BioResources
Other partner institutions	Fauna & Flora International (FFI) Botanic Gardens Conservation International (BGCI) Botanic Garden of the Kyrgyz National Academy of Sciences (BGNAS) Kyrgyz National Agrarian University (KAU) Osh Technical University (OTU), Kyrgyz State University (KSU); The Institute of Biosphere, National Academy of Science (IB); the Institute of Biology and Soil Science (IBSS); TAZA; the Regional Ecological Centre (REC); the State Forest Service of the Kyrgyz Republic (SFS)
Darwin Grant Value	£179,723
Start/end dates of project	1 April 2009 – 31 March 2012
Project Leader name	Prof. Adrian Newton
Project website	http://www.bournemouth.ac.uk/cceec/conserving-eden/index.html http://www.walnutforest.kg
Report authors, main contributors and date	Prof. Adrian Newton, Dr. Almaz Orozumbekov, Dr. Elena Cantarello, Liesje Birchenough, Joachim Gratzfeld 29th June 2012

1 Project Background

The project study area is in the west of Kyrgyzstan, close to the Ferghana valley and encompassing the lower slopes of the Tien Shan mountain range (Figure 1). The project has particularly focused on Sary Chelek Biosphere Reserve, established in 1978 and covering an area of 23,868 ha. This reserve contains distinct tree species assemblages dominated by walnut (*Juglans regia*) and containing many other fruit- and nut-bearing trees, including a high diversity of apple (*Malus*), pear (*Pyrus*), cherry and plum (*Prunus*) species (Figure 2). Socio-economic and field survey research activities have taken place in the villages and forest units in and around the Biosphere Reserve, and the additional areas of Kara Alma and Kyzyl Unkor.



Figure 1. Google Earth image with study area marked in blue (red pin).

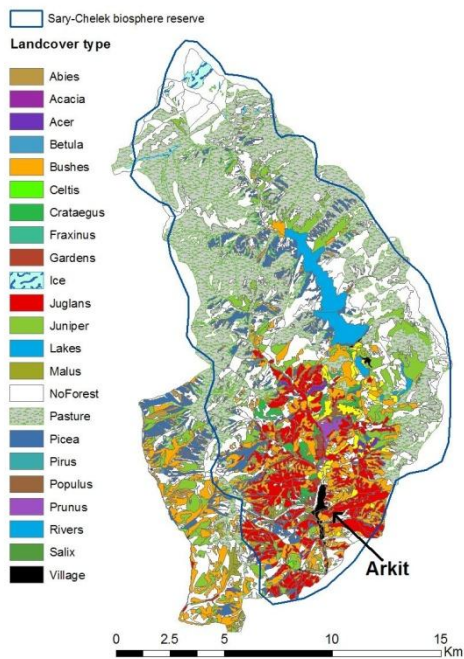


Figure 2. Sary-Chelek biosphere reserve boundary was downloaded from World Database on Protected Areas, <<http://www.wdpa.org/Download.aspx>> (record 4 of the GISdatabase_Kyrgyz.xls). Land cover types were derived from rlp_region.shp (record 20 of the GISdatabase_Kyrgyz.xls) provided by the Forestry Planning Office in Bishkek (version in Russian).

The fruit and nut forests of Kyrgyzstan have declined by 50% in area over the last 50 years, and remaining forests have become increasingly degraded, primarily as a result of unsustainable land use practices. As a result, globally important genetic resources have been diminished, and 44 endemic tree species are now threatened with extinction (IUCN Red List 2009). Unsustainable land use involving livestock grazing is thought to be responsible for the rapid recent decline in the volume of fruits and nuts available for harvesting, which is threatening local livelihoods. This problem was identified by the National Biodiversity Strategy and Action Plan (NBSAP), which was produced by the government of the Kyrgyz Republic in 1996, to implement the Convention on Biological Diversity.

Our project aimed to address this issue through an improvement in the conservation status of threatened fruit and nut tree species and improved sustainability of rural livelihoods in southern Kyrgyzstan. The research was designed to identify fruit and nut harvesting thresholds and grazing management approaches that are sustainable, to reduce rates of forest loss and degradation and reduce extinction risk of tree species, while supporting rural livelihoods. Monitoring protocols have been developed that are appropriate for implementation by local communities, and so that an adaptive management strategy can be implemented by local people. Such a participatory approach is required, because traditional top-down approaches to forest management have failed to prevent extensive loss and degradation of this globally important forest type. This reflects the failure of traditional approaches to involve local communities in the management process and to provide them with appropriate tools to manage forest resources sustainably.

2 Project support to the Convention on Biological Diversity (CBD)

This project focused on sustainable use, one of the three main objectives of the CBD, and Goal 4 of the Expanded Programme of Work on Forest Biological Diversity. Provision of training and capacity building is also a central element of this Programme. The project was aimed directly at implementing the ecosystem approach, the primary framework for action under the Convention, which was addressed by supporting the development of forest management strategies that promote conservation and sustainable use in an equitable way. The integral role of humans in these ecosystems was addressed through the development of participatory management approaches, with the active involvement of local communities. The project was designed specifically to address Strategic Component C ('Sustainable Use') of the National Biodiversity Strategy and Action Plan (NBSAP), which was developed to implement the CBD in the Kyrgyz Republic. The project contributed to achieving at least 28 of the priority activities listed in the NBSAP. Specifically the project addressed Strategic Component C ('Sustainable Use') of the NBSAP, and thereby directly contributed to the fulfilment of national obligations under the CBD, strengthening capacity in the process.

Owing to the recent political upheaval in Kyrgyzstan, it proved very difficult to develop a relationship with the national CBD focal point. Although contact with the focal point was made at the outset of the project, the individual concerned was removed from his post as a result of the political situation, and it remained vacant for some time. Elections for a new parliamentary democracy took place in October 2010, but the outcome was uncertain, with no clear majority. All ministers were approved by the Government only in early 2011. Prof Toktoraliev (who was formally associated with the project) was nominated as acting CBD focal point at that time, providing the project with a direct link with the office of Government responsible for CBD implementation. Later in August 2011 Prof Toktoraliev was appointed as Director of the State Agency of Environmental Protection and Forestry. This is a very senior appointment, which further strengthened the links between the project and the national government. This enabled project workshops to include senior participants from the Government, and ensured that the project activities were communicated to senior Government levels. However in November 2011, Prof Toktoraliev left his position, following the presidential election. Nevertheless, Toktoraliev continued to be kept closely informed of project activities by both the Kyrgyz and UK project partners, and regularly provided feedback; he was of great value in developing policy recommendations, and in communicating these to the government.

3 Project Partnerships

The partnership between UK and overseas institutions developed throughout the project largely as planned, supported by regular email contact and a series of exchange visits. Formal MOUs were established between partners, outlining each partner's role. Eleven separate visits to Kyrgyzstan have been made by UK partners to assist with project management and implementation, supported by regular email contact and management meetings held in-country. Bournemouth University (BU) was the lead institution, with overall responsibility for managing and implementing the project. BU also took prime responsibility for coordinating and implementing the research and technical elements of the project, in collaboration with overseas partners. The principal collaborators in the UK were Fauna & Flora International (FFI) and

Botanic Gardens Conservation International (BGCI). FFI took prime responsibility for integrating research results with community forest management plans, and for community outreach activities, with their Kyrgyz team working in partnership with local Forest Service units and NGOs. BGCI provided assistance in capacity building and environmental education, particularly to the Botanic Garden of the National Academy of Sciences (BGNAS), and took responsibility for developing and establishing interpretation resources to be hosted at the Botanic Garden in Bishkek, focusing on threatened fruit and nut trees. The main overseas partner was BioResources, a Kyrgyz NGO, who took overall responsibility for implementing research and outreach activities in Kyrgyzstan, in collaboration with other national and regional partners.

As planned on the original proposal, a Steering Committee was formally constituted in 2009, but as previously reported two of the three members subsequently lost their positions as a result of recent political upheaval in Kyrgyzstan. A new government was elected in October 2010. Following the presidential election on the 30th October 2011, the previously acting CBD focal point Prof Toktoraliev, Director of the State Agency of Environmental Protection and Forestry, who acted as an external Steering Committee member for the project, also left his position. Meetings with Prof Toktoraliev and the Kyrgyz project staff were being held regularly until the presidential election. Efforts were made to reappoint a Steering Committee, but the unstable political situation made this task unfeasible.

Other collaborations

The participatory management planning activity component was implemented by FFI in partnership with the Kyrgyz NGO called JFDF (Juniper Forest Development Fund), which is based at Osh Technological University. The Director of that NGO is Prof. Toktoraliev. This organisation was incorporated in the project as a partner, based on the fact that Prof. Toktoraliev is a renowned forestry expert in Kyrgyzstan, with experience of the practical application of participatory management approaches. JFDF also has a team with good capacity in this area. TAZA (another Kyrgyz NGO) were also involved in the project, producing particularly during the first year of the project. FFI also developed collaborative relationships with three grass roots partners, who are actively implementing education and outreach activities with schools, including the establishment of threatened tree species nurseries. Collaborative links were developed with the Regional Environmental Centre for Central Asia (CAREC), who were partners in a series of proposals that were submitted in the second year, for future collaborative work. A collaborative link was also developed with another Darwin Initiative project in the region, 'Building capacity and resilience within the conservation sector in Tajikistan'. This project, led by FFI, is developing and delivering a series of training courses on various aspects of conservation and the collaboration will lead to deployment of training materials on participatory forest management in Kyrgyzstan. The project also worked with Kamel Chorfi, a project researcher from the EU-JUMP project (2004 – 2006) on juniper forests of southern Kyrgyzstan, who was recruited to help provide training on participatory forest management and the use of Integrated Management Plans (IMPs), taking into consideration the local people's needs through the participation of local stakeholders. In the UK a link was established with the organisation 'Common Ground' to co-ordinate publicity about the project. A joint press release was produced with Common Ground during the second year of the project, and an on-line gallery focusing on fruit and nut trees was established with their collaboration. The press release was timed to coincide with Apple Day, an event founded by Common Ground now celebrating its 20th anniversary.

4 Project Achievements

4.1 Impact: achievement of positive impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

The primary objective of the project was to address the unsustainable use of fruit and nut forests and support a process towards more sustainable use. The project has delivered some significant steps towards this, through (i) research into identification of human activities and

their impacts on forest biodiversity, to inform the development of sustainable land use practices, and (ii) the development of participatory management processes that are aimed to deliver increased sustainability. We acknowledge that positive biodiversity impacts may take a number of years to become evident, but we are confident that the project has helped define with much greater precision the key elements and approaches that are required for sustainable forest use to be achieved in the study area.

4.2 Outcomes: achievement of the project purpose and outcomes

The main assumptions listed on the original logical framework were:

- Economic crisis of country does not worsen, intensifying pressure on forest resources
- External actors do not increase commercial exploitation of fruit and nut forests, without involving local communities.
- Government remains committed to sustainable development of forest resources.

These assumptions were not met. During the project, there was a major political crisis in the country. Throughout the first year of the project, there was serious political unrest in Kyrgyzstan, which culminated in armed conflict in April 2010. This led to serious loss of life, and major political instability, as the president was removed from power and an interim government installed. Subsequently, a new government was elected in October 2010 (in what was considered to be the first democratic elections held in the country). This led to the removal of a large number of senior government officials, which directly impacted the project (for example through loss of the Steering Committee members, and the CBD focal point). For the duration of the project, the situation remained tense and uncertain, and hindered project implementation, primarily by reducing engagement of state agencies and government institutions. The situation also impacted negatively on the research and training elements of the project. During the summer field season in 2010, there was ongoing armed conflict in the Osh region, in which the walnut-fruit forest is located. Field staff were understandably reluctant to visit field sites for some months, and the situation also affected the engagement with local communities that is a central element of the project. As a result, some of the field-based activities were curtailed, others were delayed, and some (such as the community-based training events) were cancelled. Visits of UK staff to the study area were also not possible, because of FCO guidance against non-essential travel to this part of Kyrgyzstan, which precluded travel insurance and permission to travel from UK employers. Despite the definite negative impact on the project, the principal objectives have nevertheless been achieved as planned, and overall the project delivered its principal outputs. The original field survey plans were however reduced somewhat in scope, and the Kyrgyz partners shouldered a greater share of responsibility for project delivery than was anticipated at the outset. As UK staff could visit the field sites after early 2010, greater emphasis was placed on using the visits of UK staff to Kyrgyzstan to provide support and capacity building for project planning, monitoring and evaluation.

In the current political climate, the fact that a successful workshop was held in Bishkek in October 2010 at which a wide range of stakeholder groups were represented, constitutes a major achievement. The direct involvement of Prof. Toktoraliev, who is a senior government figure, represents another significant achievement, which contributed greatly to ensuring that the project has an impact at the national scale. Prof. Toktoraliev and his colleagues were highly supportive of the project, as recognised by the formal recognition of the contribution being made by the project through formal awards to the UK staff, at the October workshop.

Although delayed by national elections, a final workshop was held in February 2012 in Osh, involving 38 participants and more than 10 organisations. Prof. Toktoraliev continued to be engaged and attended the workshop.

The first annual report referred to a greater lack of capacity than anticipated in budgetary planning and management, basic project management including planning and monitoring of implementation, reporting processes, and media / outreach. This is in addition to the lack of technical and institutional capacity referred to on the original proposal. These were successfully being addressed through support and training provided to the main project partner (BioResources), who continued to work hard to implement the project. Substantially better

progress was made by the Kyrgyz partners during the second and third year of the project than in the first year. A particularly successful venture was the deployment of four UK postgraduate students to Kyrgyzstan, together with a UK staff member, to work alongside staff and students in a field campaign. This achieved a high level of engagement and knowledge exchange, and undoubtedly had a significant positive impact on the ability and willingness of Kyrgyz staff and students to engage in field work of this nature. The joint field campaign has provided a solid basis for the research elements of this project, despite having been curtailed by the deteriorating political situation.

Development of formal collaborative links with other partners, especially Osh University, also made significant progress during the second and third year, reflected in the co-signature of a formal joint work programme focusing on socio-economic survey and participatory management planning. These elements of the project similarly made definite progress, despite again being negatively affected by the political situation. However the Director of the Kyzyl Unkor leshoz changed three times during the project, again causing problems in relation to continuity.

4.3 Outputs (and activities)

This section reports against the project outputs specified in the logical framework of the original proposal. More evidence of project achievement is reported in the Supplementary Materials (SM).

4.3.1 Output 1. Capacity strengthened for interdisciplinary research and education on sustainable forest management using participatory approaches

The first output indicator was that at least six senior staff receive training in the UK in research methods, especially sampling design, GIS, data analysis and modelling by end of project. The second output indicator was that at least 30 staff and students of partner organisations receive training in survey methods (including forest inventory, monitoring methods and data analysis), participatory management approaches, education and outreach through workshops in Kyrgyzstan, by end of project. The third output indicator was that a collaborative stakeholder network would be established between research institutes, government agencies and local community organisations in Kyrgyzstan. These three outputs were fully achieved as described below.

1.1 Training in UK on research methods

In the original proposal, the first exchange visit of Kyrgyz staff and students was planned for the first year of the project. However, owing to the delayed first visit of Kyrgyz partners to the UK (as explained in the first Annual Report), this took place during the second reporting period. The first visit by Dr Almaz Orozumbekov of Kyrgyz National Agrarian University (KNAU)/ BioResources took place from 26 April to 8 May 2010 (**Output1a, O1a_1** in SM). This visit provided specific training in GIS techniques, data collection methods and field survey techniques, and enabled project management discussions with the UK partner organisations. Several meetings were held with key project staff including visits to FFI and BGCI.

A second two-week visit took place from 25 March – 6 April 2011 (**Output1a, O1a_2** in SM). Training workshops were arranged for this visit focusing on data analysis, training in forest modelling software, analysis of socio-economic data and project management and budgeting. This visit included attendance at the BES Forests and Global Change conference at Cambridge University (28 – 30 March), a meeting with project partner FFI, and a project team meeting to review the year's activities and establish a workplan for Year 3. A trip to Kew gardens was also arranged to meet the herbarium curator, Dr David Mabberley and tour the herbarium. Discussions on the taxonomy of the *Malus* genus were held and the Gardens were updated on the project's progress.

Another training visit was planned for Umut Zholdoshova during March 2011. However, this was cancelled at the last minute because she changed her job to one that is no longer relevant

to the project's activities. This cancellation occurred too late in the year to arrange an alternative training visit during year 2 of the project (2010/2011).

A series of training visits to the UK were planned for postgraduate students from Kyrgyzstan. However, despite repeated applications, all entry visas were refused, in all three years of the project. This was the consequence of recent changes to UK border controls and the visa application process. Because of this difficulty we arranged for training to be provided in Austria instead. Gulmira Karimova was provided with a training course in Salzburg on GIS, for four months, from March 2011-June 2011. Part funding for this was obtained by a UNINET scholarship (a Pacific Asian research and education network). Project staff assisted with obtaining this scholarship; this therefore represents an example of the Darwin Initiative project acting as a catalyst for obtaining additional external funding. Similarly, Kanaat Musuraliev, a post graduate student affiliated with the project, was also successful in obtaining a UNINET scholarship, also assisted by project staff, to receive training in dendroecology in Boku University in Vienna, for six months from November 2010-May 2011.

Jarkyn Samanchina (FFI-Kyrgyzstan) received training at a Conservation, Livelihoods & Governance 'learning event' in Cambridge during April 11-15 2012. This was a good opportunity for sharing experiences and learning from other projects including a community forestry project in Tanzania. Jarkyn used the Darwin project during the exercises and produced a case study (**Output1a, O1a_3** in SM).

The third visit by Dr Almaz Orozumbekov of Kyrgyz National Agrarian University (KNAU)/ BioResources took place from 5-15 March 2012 (**Output1a, O1a_4** in SM). This visit provided specific training in forest modelling, data analysis, and enabled project reporting finalisation with the UK partner organisations.

1.2 Training in Kyrgyzstan on survey methods and participatory management approaches

During the first year, Dr Niels Brouwers from BU provided three weeks of training on field methods during the fieldwork campaign in September - October 2009 for four Kyrgyz staff and students from partner institutions. This included standardised methods for forest surveys, data collection on tree species, measurement of tree height, diameter and regeneration plots, as well as instructional use of the handheld GPS. During this training course a detailed field survey protocol was developed, so that survey work could continue in 2010 without external help. Outputs from this training include a trip report and a GIS field manual (**Output1b, O1b_1** in SM).

Training on participatory management planning was delivered through a two-day workshop from 30-31 March 2010. There were 23 participants including staff members from six forest districts: Toskol-Ata, Kara-Alma, Kyzyl-Unkur, Urumbash, Arstanbap, and Achi, three representatives from the Jalal-Abad Regional Forestry Department, two heads of village government: Kara-Alma and Ortok villages, one teacher, and three representatives of the Osh Technical University. The event was organised by FFI with a consultant specialist (Kamel Chorfi) to deliver the actual training. Feedback from this event was positive. (**Output1b, O1b_2** in SM has a full workshop report in English and Russian along with the presentation that was given).

In addition, UK partners received training from an external expert on participatory forest management at a workshop organised by BU in order to pass this knowledge on to host country partners. This training was organised in response to suggestions made by an external reviewer of the project, to strengthen capacity of the UK partners in this area. This resulted in the production of draft 'best practice guidelines' for participatory approaches in Kyrgyzstan that was disseminated to the project team and incorporated into the project outputs (**Output1b, O1b_3** in SM has details of the workshop and best practice guidelines document).

A field campaign was held from 25 May – 21 June 2010, which continued the survey work that was initiated in October 2009 in the fruit-nut forests of Sary Chelek Biosphere Reserve. 32 field

plots in different forest stands were established throughout the reserve. In addition, targeted surveys of threatened tree species were also undertaken. The UK team consisted of four postgraduate students from Bournemouth University, accompanied by Jenny Birch, Researcher at Bournemouth University. Dr. Almaz Orozumbekov (Kyrgyz National Agrarian University / BioResources) was the host-country co-ordinator. Six research assistants from Kyrgyzstan universities took part in the field work and received training in field survey techniques over a period of 14 days. These students also contributed to the forest survey work, and received training in a wide range of field techniques, including plot demarcation, species identification, tree measurement, vegetation surveys, increment coring, GPS recording, data management (**Output1b, O1b_4** in SM).

Additional visits of UK staff to Kyrgyzstan took place as follows: Liesje Birchenough (FFI) 26 July – 7 August 2010 and 18 October - 4 November 2010, Adrian Newton (BU) 18 - 24 October 2010, Joachim Gratzfeld (BGCI) 4 – 17 September 2010. These visits included provision of training in project management and implementation, budget management, project monitoring and planning and forest modelling techniques.

During the third year of the project, training on survey methods was delivered from 22 – 28 May 2011 by Jenny Birch (BU). The purpose of this visit was to provide support to the Kyrgyz team (in particular Dr Almaz Orozumbekov, AO) in planning and implementing the field work over the summer of 2011. It was also intended to establish some clear project monitoring procedures to ensure that the remaining work was carried out in a timely manner during the final year of the project. During the visit, several meetings were held, as detailed in **Output1b, O1b_5** in SM.

A training course focusing on participatory forest management was delivered by FFI to 16 participants (forestry service staff and other relevant local stakeholders), during 26-30 July 2011 (**Output1b, O1b_6** in SM). In addition, FFI and JFDF produced two new practical manuals for monitoring forest pests and diseases and tree propagation and nurseries. The manuals were disseminated to forestry staff, village government representatives and local people at project sites (**Output1b, O1b_7** in SM).

1.3 Collaborative stakeholder network established between research institutes, government agencies and local community organisations

The project inception workshop was successfully held in July 2009, at which all key partners were represented, including six Kyrgyz institutions and representatives of all the UK partners (**Output1c, O1c_1** in SM). Formal MoUs were developed between Bournemouth University (BU) and other partners involved in the project, which were ratified by the legal department of the University, and subsequently signed by each partner. The MoUs specified roles and responsibilities of all partners during the project. Twelve organisations were identified for inclusion in the network:

1. Institute of nuts and horticulture, Jalal-abad (formerly known as the Institute of the Biosphere)
2. State Agency of Environmental Protection and Forestry
3. Osh Technological University
4. Kyrgyz Agrarian University
5. National Academy of Sciences
6. Innovation Centre of Phytotechnology
7. Institute of Forestry
8. Botanic Garden of the National Academy of Sciences
9. BioResources
10. TAZA (NGO)
11. Regional Ecological Centre (CAREC), Bishkek
12. Kyrgyz State University

The twelve organisations were invited to relevant project workshops and events, and to assist with dissemination of project outputs.

A project workshop was held during 22 – 23 October 2010, in Bishkek, organised by BioResources / Kyrgyz National Agrarian University (KNAU). More than 40 participants attended, including representatives from all of the organisations listed above, with the exception of TAZA, CAREC (the latter because of illness) and the Kyrgyz State University. In addition, a number of forest district (leshoz) representatives attended from the walnut-fruit forest area, enabling project results to be communicated directly to forest managers (**Output1c, O1c_2** in SM). UK staff (Newton, Birchenough) also participated to present project findings and were awarded an honorary diploma for high achievements in performing professional duty, responsible, conscientious and fruitful work. The meeting was chaired by Prof Toktoraliev, Director of the State Agency of Environmental Protection and Forestry. His involvement assisted in communicating project findings to the highest governmental levels concerned with forest management. In addition, the meeting was attended by Dr Turat Musuraliev (former Minister of Forest Service) and Mr Aitkul Buhanov (former Minister of Forest Service, and now Director of Forest and Land Users Association). The workshop effectively launched the collaborative stakeholder network relating to walnut-fruit forests of Kyrgyzstan. A website was established in Kyrgyzstan to assist in networking between network partners <<http://www.walnutforest.kg>>.

A final project workshop was held to communicate the main project results to stakeholders, and to provide a forum for discussion on the theme of “Conservation and Management of walnut-fruit forests of Tien- Shan”. The meeting was held at Osh Technological University (OshTU), Osh, Kyrgyzstan on 24th February 2012. Following FCO travel advice, BU staff could not attend the final workshop, although FFI staff were able to attend. Bioresources ensured that the project results were disseminated to 38 participants and more than 10 organisations (**Output1c, O1c_3** in SM).

4.3.2 Output 2. Information on sustainable management of fruit and nut forests produced and disseminated

The first indicator was for at least four research publications produced by end of year 3, supplemented by annual reports. This output was fully achieved as detailed by the activities below. The second indicator was the interpretation facility presenting results established at Botanic Garden by end of year 3. This output was also fully achieved and it is detailed under the activity 3.5 (i.e. Development of an interpretation facility at the national Botanic Gardens, supported by media campaign) in section 4.3.3 of this report.

2.1 Analysis of spatial distribution, stand structure, stand dynamics and current status of threatened fruit and nut tree species

Field survey activities focused on assessment of forest structure and dynamics in Sary Chelek Biosphere Reserve, one research area of the National Academy of Sciences NAS KR (Ak-Terek), one state conservation area – zakaznik (Dashman), one forest range area - leznichestvo (Urumbash), forest farms – lezhoses (Aletim, Arstanbap-Ata, Gaba, Kyzul-Unkur, Kara-Alma and Salamalik (Uzgen forest farm). A total of 122 field survey plots were established, in two field campaigns (summer 2010 and 2011). Within each plot, measurements were made of forest stand structure and composition. All data were entered into a database, and data analyses undertaken. Additional field surveys were undertaken on (i) seedling regeneration, (ii) human impacts on forest structure and composition, in relation to forest structure and composition. Results of the first field campaign were presented in four MSc theses, which were successfully examined (at Bournemouth University). Copies of all data and theses have been passed to the Kyrgyz partners. Data were also collected on tree ages determined from increment cores, which were processed in Kyrgyzstan, after training was provided to counterpart staff and students. Results of both campaigns have been written up for a book publication consisted of ten chapters (**Output2a, O2a_1** in SM). Two of these chapters will be amended for submission to peer-review journals.

2.2 Analysis of the impact of current land use practices on stand structure and composition of fruit and nut forest

Following the development of the survey form in the first year (**Output2a, O2a_1** in SM), socio-economic semi-structured interviews were conducted with the local community in Arkyt village, inside Sary Chelek reserve in June 2010 by Bolot Tagaev who has substantial experience of socio-economic methods. In total, 45 households were surveyed, out of approximately 180. Further socio-economic surveys were completed later in the year in two additional communities, namely Kara Alma and Arslanbob region (Jumhana, Dashman and Arslanbob villages). These were undertaken by Bolot Tagaev, Alima Kolbaikyzy and Almaz Orozumbekov. A total of 45 households were surveyed in Kara Alma and a further 45 in the Arslanbob region. Results of these surveys have been written up for publication (**Output2a, O2a_1** in SM). These represent the first such surveys in the region.

To explore the impacts of human activities on forest dynamics, a spatially explicit model of forest dynamics was used (LANDIS-II). This is the first time such an approach has been employed in the region. Field work data from forest plots were used to parameterise the model. These include spatial data describing the composition and distribution of forest stands in Sary Chelek, and ecological characteristics of individual tree species, identified through a systematic literature review. Results from the socio-economic surveys were used to develop scenarios of different degrees of human impact (e.g. livestock densities and cutting intensities), to explore their potential impacts on forest structure and composition. In this way, it is intended that this modelling approach will inform the development of participatory forest management plans. Results of modelling process have been written up for publication (**Output2a, O2a_1** in SM).

Another five research publications on the impact of current land use practices and pests on the dynamics of fruit and nut forest were produced by Almaz Orozumbekov (**Output2a, O2a_3** in SM). Lazkov G.A. also produced a scientific publication on a new species *Corydalis subverticillata* Lazkov from Kyrgyzstan (**Output2a, O2a_4** in SM).

2.3 Development and implementation of participatory approaches to forest management

A Kyrgyz organisation, JFJD (led by Prof Toktoraliev), was contracted to assist with this work at Kyzyl Unkor. A grant agreement was signed with detailed terms of reference. This included (i) constructive analysis of existing situation relating to forest and land use, current state of the leshoz, the use and needs of forest land and products by local people; (ii) three participatory workshops involving stakeholders, including representatives of local communities; (iii) drafting a management plan, consulting stakeholders, and producing the final version of the plan.

In April 2010, JFDF made their first official visit to Kyzyl Unkor at which the participatory management initiative was launched, in collaboration with local stakeholders. Meetings were held with the local Forest Service team, local village government and representatives of local communities. In May, a two week visit was undertaken; five villages were visited and a socio-economic survey was undertaken involving semi-structured interviews. The forest was visited with the Forest Service, with the aim of ground truthing and assessing changes since the previous formal forest inventory undertaken in 2002-2003. A substantive report was produced based on this assessment, which has been provided to the UK project team (**Output2a, O2a_5** in SM). Further information was gathered from local government on socio-economic characteristics of the local communities. In May / June a participatory workshop was held in Kyzyl Unkor with the villagers and other stakeholders, involving about 40 people. The participatory workshop provided a substantial body of information and ideas to feed into the Kyzyl-Unkur participatory management plan (see §3.1).

BioResources have continued with cultivating apple trees and planting them into community forest areas, with more than 1000 trees established to date.

4.3.3 Output 3. Plans for sustainable management of fruit and nut forests, involving participation of local communities, and informed by research findings, developed and disseminated

The first output indicator was that at least three management plans would be published by end of year 3. The second output indicator that interpretive and community outreach materials will be produced (website, leaflets, poster display, community newsletter) by end of year 3. The third output indicator was for policy recommendations to be published as a policy brief and disseminated at stakeholder workshop. These three outputs were achieved by the activities described below.

3.1 Development of plans for sustainable management of fruit and nut forest by local communities

The development of participatory management plans for one area (Kyzyl Unkur) was completed in 2012 (**Output3a, O3a_1** in SM). FFI implemented this activity through a formal linkage with the NGO JFDF (led by Prof Toktoraliev), which is linked with Osh Technological University. A second plan was also completed in a second area (Kara-Alma) (**Output3a, O3a_2** in SM) through an additional process of stakeholder consultation within the community concerned. A third study area was Sary Chelek. This is a very different context than the other areas, because it is a Biosphere reserve, with a very different management context. Human use of the forest resource is prohibited in the centre of the reserve. However such use occurs in the buffer zone and this falls under the jurisdiction of the neighbouring leshozes. The role of participatory management approaches in this particular land ownership context was explored. On the basis of discussions with stakeholders held in 2010, it was agreed that the most appropriate way forward was to present the results of the research to the management team and other stakeholders in Sary Chelek, together with some management recommendations. This was achieved as planned (**Output3a, O3a_3** in SM). A participatory approach as developed in other areas would not be applicable here, because of its distinctive land ownership and tenure arrangements, connected with its designation as a reserve. In addition, further work by project staff in this location was constrained by the social conflict in the area.

3.2 Identification of implications for policy-makers at both local and national scales

A set of preliminary policy recommendations were identified at the stakeholder workshop held in October 2010 in Bishkek. These were further developed during the final workshop of the project in February 2012 and were written up for publication and dissemination (**Output2a, O2a_1** in SM).

3.3 Development of community outreach programme

FFI were not able to run the full programme of village seminars that were originally planned, because of the social unrest and political uncertainty in the area. Instead, FFI started to work with schools in two different communities within the walnut-fruit forest area, to develop programmes including school nurseries of rare/ threatened tree species and associated environmental education activities such as field trips and eco-clubs. Grant agreements were signed for two projects with local partners, so that a precise programme of work was planned and budgeted. In one school, children made expeditions to the forest, with overnight stays, and collected seeds and fruits of threatened tree species. These were propagated in a nursery plot that was created at the school. Running alongside this, a wider set of eco-education activities were initiated that involved a wider group of children. For example, in Gumkhana an eco-club was created. Competitions, events and a 'March of the Parks' also took place.

3.4 Dissemination of policy recommendations through workshop and policy briefs

This activity took place in the final six months of the project and followed on from the various workshops and data analyses produced in the three years of the project, as outlined above. A policy brief was developed during the final workshop of the project (**Output3c, O3a_1** in SM).

3.5 Development of an interpretation facility at the national Botanic Gardens, supported by media campaign

Joachim Gratzfeld, BGCI attended an International Seminar on biodiversity conservation and plant introductions held at the Gareev Botanical Gardens 7 – 9 September 2010 (**Output2b, O2b_1** in SM). The seminar was attended by over 40 national and international participants, notably by Prof Toktoraliev, Director State Agency Environment Protection and Forestry, Kyrgyz Republic at that time. At this event Gratzfeld provided an overview of the international botanic garden community, the work of BGCI, the Darwin Initiative project, and the particular role of Gareev Botanical Garden in the project.

The production of eight high quality interpretation panels for individual threatened tree species was completed in March 2012. These will ultimately be displayed in both Kyrgyz and Russian languages at a prominent location at the entrance of the national botanic garden, and/or next to the respective species growing in the garden following an organised trail. The dates for the launch of the exhibition are currently being finalised in discussion with Gareev Botanical Gardens (**Output2b, O2b_2** in SM).

3.6 Preparation and submission of scientific publications

This activity has been previously described under the Output 2 section.

3.7 Development of website and other outreach materials

In addition to the project website developed in the UK <<http://www.bournemouth.ac.uk/cceec/conserving-eden/index.html>>, an additional website was designed and implemented in Kyrgyzstan, <<http://www.walnutforest.kg>>. The project activities were also disseminated via <<http://www.agrowebcee.net/>> which is hosted by FAO <<http://www.agrowebcee.net/apricot/events/>>. This relates to the nomination of the project partner (Dr Orozumbekov) as National Coordinator of Apricot Network, a new international initiative launched by FAO <<http://www.agrowebcee.net/awkg/forestry/>> and <<http://www.agrowebcee.net/index.php?id=2256>> Dr Orozumbekov was also nominated as the national coordinator of the Walnut Network in Central Asia and Caucasus, launched by FAO <<http://www.agrowebcee.net/nut/>> as well as forestry network coordinator in Kyrgyzstan, and IUFRO delegate in Kyrgyz Republic (in 2010) <<http://www.iufro.org/who-is-who/council/#kyrgyzstan>>.

BGCI also established a section on the project on its website <<http://www.bgci.org/ourwork/eden/>>.

An initial leaflet was written and designed by the BioResources team for distribution in Kyrgyzstan (**Output3b, O3b_1** in SM). A booklet focusing on educational outreach was written and disseminated by FFI and TAZA (**Output3b, O3b_2** in SM). A photo gallery was established at FFI, with the Global Trees Campaign: <<http://www.globaltrees.org/fruitandnut.htm>> and a press release was produced to publicise this web resource, in connection with Common Ground, to celebrate the 20th Anniversary of Apple Day on 21 October 2010 (**Output3b, O3b_3** in SM). The GTC facebook group also dedicated a running story to the photo gallery and made 'Malus niedzwetzkyana' tree of the week. To further promote the Darwin Initiative project and the role of Gareev Botanical Garden, BGCI produced a poster as well as a more detailed informational leaflet that was distributed at the International Seminar on biodiversity conservation at the Gareev Botanical Gardens meeting in September 2010. The poster and the leaflet have been translated into Kyrgyz and Russian and were made available at the project stakeholder meeting of 22 – 24 October, 2010 (**Output3b, O3b_4** in SM). BioResources also developed leaflets, a calendar and posters about the project, featuring the Darwin logo, as planned (**Output3b, O3b_4** in SM). These were disseminated at the stakeholder workshop held in October 2010. The leaflets were published in both English and Russian. A campaign in the national media was conducted following the workshop in October 2010, which generated some newspaper coverage (**Output3b, O3b_4** in SM). An article about the Darwin Initiative workshop was published in the State Agency of Environmental Protection and Forestry web page on 1 November 2010:

A final press release was produced by Prof. Toktoraliev to publicise the activities undertaken during the three year project in the local Osh TV and in the University's media service in Osh Technological University following the workshop in February 2012.

4.4 Project standard measures and publications

The standard output measures that are relevant to the project are reported below.

Table 1 Project Standard Output Measures

Code No.	Description	Total by end of year 3	Total planned during the project
4C	Number of UK postgraduate students undertaking fieldwork and training	4	0
4D	UK postgraduate fieldwork training weeks	16	0
6A	Number of Kyrgyz partner staff, research assistants and students trained on field survey methods and/or participatory approaches in Kyrgyzstan	42 19(field surveys) 23(particip. forest mgmt)	30
6B	Kyrgyz training weeks	Forest surveys: 120 (4 x 3 weeks, 6 x 3 weeks, 9 x 10 weeks) Participatory methods: 11.5 (0.5 week)	60
7	Number of training materials produced for use by host country (leaflet, field manual, participatory methods manual)	9	9
8	Weeks spent by UK project staff on project work in the host country (including workshops, field work and meetings)	30 (Brouwers, Newton, Birch, Gratzfeld, Birchenough and Hinsley)	30
9	Number of management plans (or action plans) produced for Governments, public authorities, or other implementing agencies in the host country	3	3
11A	Number of papers published in peer reviewed journals	6	4
11B	Number of papers submitted to peer reviewed journals	0	0
12A	Number of computer based databases established and handed over to host country	4	2
13A	Number of species reference collections to be established and handed over to host country(ies)	3	3
14A	Number of conferences/seminars/ workshops to be organised to present/disseminate findings	8	8
14B	Number of conferences/seminars/ workshops attended at which findings	3	2

	from Darwin project work will be presented/ disseminated.		
15A	Number of national press releases in host country(ies)	1	1
15B	Number of local press releases in host country(ies)	1	1
15C	Number of national press releases in UK	2	2
15D	Number of local press releases in UK	2	1
16A	Number of newsletters to be produced	1	1
16B	Estimated circulation of each newsletter in the host country(ies)		
16C	Estimated circulation of each newsletter in the UK		
17A	Number of dissemination networks to be established	1	1
18A	Number of national TV programmes/features in host country(ies)	1	1
18C	Number of local TV programmes/features in host country(ies)	1	1
19A	Number of national radio interviews/features in host country(ies)	1	1
19C	Number of local radio interviews/features in host country(ies)	1	1
20	Estimated value (£) of physical assets handed over to host country	£6,100	£0
21	Number of permanent educational/training/research facilities established and to be continued after Darwin funding ceases	5 (tree nurseries)	3
22	Number of permanent field plots to be established during the project and continued after Darwin funding has ceased	122	30
23	Value of resources raised from other sources (ie in addition to Darwin funding) for project work	£88,631	£88,631
New -Project specific measures	Parameterised model provided to Kyrgyz partners, providing a decision support tool for sustainable forest management	1	1

Table 2 Publications

Type (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
*Leaflet (Eng, Rus, Kyr)	Conserving Eden: Participatory forest management in the Tien Shan region of Kyrgyzstan, BGCI 2010	BGCI, London	BGCI, London	Free
*Poster	Conserving Eden: Participatory forest management in the Tien Shan region of Kyrgyzstan, BGCI 2010	BGCI, London	BGCI, London	Free

*Conference proceedings	Forest Rehabilitation in Kazakhstan, Valeriy V. Meshkov, Sabit B. Baizakov, Anastasia V.Yeger, Almazbek Orozumbekov. 2009	IUFRO	IUFRO (Output2_O2a_3 in SM)	Free
*Conference proceedings	Rehabilitating degraded forest landscapes in west and central asia A Synthesis Michael Kleine, Alper H. Colak, Simay Kirca, Khosro Sagheb-Talebi, Almazbek Orozumbekov and Don K. Lee. 2009	IUFRO	IUFRO (Output2_O2a_3 in SM)	Free
*Conference proceedings	Forest Rehabilitation in Kyrgyzstan Almazbek Orozumbekov, Turatbek Musuraliev, Biimirza Toktoraliev, Askat Kysanov, Bakytbek Shamshiev, Ormon Sultangaziev. 2009	IUFRO	IUFRO (Output2_O2a_3 in SM)	Free
*Journal	Gypsy moth (Lepidoptera: Lymantriidae) in Central Asia. Almazbek A.Orozumbekov, Andrew M. Liebhold, Vasily I.Ponomarev, and Patrick C. Tobin. 2009	American Entomologist	American Entomologist (Output2_O2a_3 in SM)	Unknown
*Journal	G.A. Lazkov. A new species of the genus <i>corydalis</i> (fumariaceae) from Kyrgyzstan. 2010	Turczaninowia	Turczaninowia (Output2_O2a_3 in SM)	Unknown
*Calendar	2011	Bioresources, KNAU, Bishkek	KNAU	Unknown
Website article,	State Agency on Environment Protection and Forestry, 1 November 2010	State Agency on Environment Protection and Forestry, Bishkek	http://www.nature.kg/index.php?option=com_content&view=article&id=298%3A2010-11-01-04-25-47&catid=32%3ALatest-news&Itemid=59&#9001;=ru	Free
Website material	A.Orozumbekov, 2010	A.Orozumbekov, Bishkek	http://www.walnutforest.kg/index.html	Free

Fruit and nut forest photo gallery	Photo Gallery, GTC, 2010	GTC, Cambridge	http://www.globaltrees.org/fruitandnut.htm	Free
*Conference proceedings	A.Orozumbekov. The natural heritage and conservation of Tien Shan forests. 2011	IUFRO World Series Volume 26 Traditional Forest Related Knowledge, Biodiversity Conservation and Sustainable Forest Management in Eastern Europe, Northern and Central Asia	IUFRO (Output2_O2a_3 in SM)	Free
*8 high quality interpretation panels for individual threatened tree species	BGCI and Gareev Botanical Gardens, 2012	BGCI and Gareev Botanical Gardens,	The panels will ultimately be displayed at a prominent location at the entrance of the national Gareev Botanical Gardens (Output2b, O2b_2 in SM).	Free
*Management plan	FFI, National Academy of Sciences KR. Management of Walnut fruit forests in the Kyzyl-Unkur forestry unit. 2012	FFI, Osh	FFI (Output3a, O3a_1 in SM)	Unknown
*Management plan	FFI, Osh Technological University, National Academy of Sciences KR, Kyrgyz Agrarian University. Integrated Management Plan of Kara-Alma Forestry Unit. 2012	FFI, Bishkek	FFI (Output3a, O3a_2 in SM)	Unknown

4.5 Technical and Scientific achievements and co-operation

A collaborative research programme was developed focusing on the sustainable management of fruit- and nut-forest. This involved:

(i) Analysis of spatial distribution and stand structure of threatened fruit and nut tree species. This was undertaken throughout the range of fruit- and nut-forest in Kyrgyzstan, through a programme of field surveys. This has enabled the conservation status of threatened fruit and nut tree species to be assessed, and priorities for action to be identified.

(ii) Analysis of the impact of current land use practices on the structure and composition of fruit- and nut-forest, with a particular focus on examining the potential impacts of harvesting and livestock grazing. This was achieved by field survey supported by modelling of forest dynamics at the landscape scale, to identify sustainable harvesting thresholds and management

recommendations. Research on this component focused on a single study area, Sary Chelek biosphere reserve.

(iii) Analysis of patterns of human use of fruit- and nut-forest. This was achieved through a programme of socio-economic surveys conducted in three different regions, which identified patterns of harvesting and extraction of different forest products by local people. Results informed the development of participatory management plans, and the identification of land use practices that are consistent with sustainable use. In addition, the research supported the development of monitoring methods and indicators appropriate for implementation by local communities.

Details of the research activities, and the outputs produced, are presented in the attached annexes. It is important to emphasize that the research was entirely novel; very few investigations have been undertaken previously either of the ecological characteristics of fruit- and nut-forest, or of patterns of human use. Research has therefore provided a deeper understanding of the ecology of fruit and nut forests in the region, and the role of human activities in forest dynamics. Observations suggest that human activities, specifically browsing by livestock, may in fact play a central role in the dynamics of the forest. The prevailing view, that all human impacts on these forests are likely to have negative ecological consequences, may therefore be too simplistic. Rather, the fruit- and nut-forest may be better viewed as a cultural landscape, in which traditional human activities are an integral part. This conclusion represents a major shift in how these forests are viewed and values, and has major implications for how they are managed, strengthening the case for participatory management approaches involving local people.

4.6 Capacity building

As detailed elsewhere in this report, capacity building was a central element of this project. At the outset, it was noted that capacity to undertake research within Kyrgyzstan is severely limited. In particular, academic institutions have little experience of undertaking inter-disciplinary research integrating biophysical with socio-economic approaches. This was addressed through developing and implementing a programme of collaborative research, supported by creation of a stakeholder network involving research institutes, government agencies and local community organisations, to foster information exchange and identification of best practice. This information exchange was achieved through a series of project workshops.

This project has left a legacy in terms of strengthened capacity within Kyrgyzstan to manage biodiversity resources sustainably, while improving local livelihoods and reducing poverty. Specifically this was achieved by strengthening the capacity of partner organisations to conduct inter-disciplinary research, monitoring and participatory management planning, by (i) developing sustainable forest management plans using participatory approaches, (ii) undertaking an inter-disciplinary research programme, (iii) developing a stakeholder network to support development of participatory management approaches throughout the study area, (iv) identifying policy recommendations and communicating them at a ministerial level through a workshop and publications.

As detailed elsewhere in this report, senior staff of partner organisations received training in the UK on research methods. UK staff also provided training overseas in forest survey techniques, monitoring and participatory management approaches, to staff of partner organisations and of the forestry service. Evidence of these activities is provided in the attached outputs.

It should be noted that this was the first externally funded project in which the project partners had engaged. As such, the partners were unfamiliar with many of the basic elements of project management, including budgetary management, project planning, and project monitoring and evaluation. The lack of capacity in these areas did not become evident until the project actually commenced. As a result, much greater emphasis was placed on capacity building in these areas than was originally envisaged. The evidence of its impact is that by the final year of the programme, the Kyrgyz partners were successfully able to plan, implement and monitor a major field campaign, without requiring substantial support from UK partners. This represents substantial progress. The Kyrgyz partners are therefore now in a much stronger position to undertake interdisciplinary projects of this nature. A second key area where capacity was

strengthened was in undertaking field-based research, both on ecological and socio-economic aspects. Again, technical skills and experience in these areas were very limited at the outset, but following the provision of training, the Kyrgyz staff were able to complete substantial field surveys to a high standard, and to write up the results for publication. Again this represents a significant step forward. Finally, the Kyrgyz partners also received substantial support for international networking and proposal development, and are now actively seeking further financial support for their research and development activities.

The experience of participating in the project has also undoubtedly strengthened the capacity of the UK partners to engage in interdisciplinary projects of this nature, providing invaluable experience of developing and implementing collaborative research and management approaches in what is a very different cultural context. In addition, the UK partners organised and received training in participatory management approaches from a UK specialist, during the project.

4.7 Sustainability and Legacy

The aim, as indicated on the original proposal, was to achieve sustainability through the development of proposals to fund future work after the completion of the project. One of the principal mechanisms to achieve this was to help the Kyrgyz partners become integrated into international networks, to overcome their academic isolation. This process was highly successful. Project partners have become formal members of BGCI, and the IUCN SSC Global Trees Specialist Group, as was indicated on the original proposal. In addition, the in-country project coordinator (Orozumbekov) has become the principal Kyrgyz representative in two international networks established by FAO, focusing on walnut and apricot respectively. These activities have already helped in developing international collaborative partnerships, to assist the process of developing proposals to fund future work. Two such proposals were submitted in the second year (led by FFI), namely: (a) a proposal submitted to the EU 'Non-state Actors in Development' fund, for community collaborative forest management. This focused on increasing the role of local communities and stakeholders in forest management. This was not successful. (b) The Big Lottery Fund. A proposal focused on involving local people in forest management and promoting sustainable alternative livelihoods. This was also unsuccessful. Further support has been given to the principal host country project worker on project management and budgeting skills, as well as preparation of proposals. During his visits to the UK he has had meetings with a number of potential donors (eg Rufford Foundation, Christensen Fund), and one of the activities of the UK staff in the third year was to provide additional support to proposal development. In addition, the focus on developing participatory approaches to forest management, which can be implemented by local communities, is aimed at ensuring long-term sustainability of forest management without strong dependence on external financial support.

5 Lessons learned, dissemination and communication

As envisaged on the original proposal, project results and activities were disseminated in the following ways:

- (i) a community outreach programme to be developed in the study area;
- (ii) workshops supported by the development of policy briefs, to present policy recommendations to relevant stakeholders, including national government agencies and CBD national focal point;
- (iii) development of an interpretation facility at the national Botanic Gardens, supported by a campaign in the national media, leaflets and poster displays, with the aim of providing education to the public regarding fruit and nut forests and their role in supporting livelihoods, thereby raising public awareness;
- (iv) scientific publications;
- (v) a dedicated internet site aimed at raising public awareness and disseminating research results;

- (vi) a media campaign aimed at national television, radio and newsprint; a campaign at the national level has generated some newspaper coverage this year.

The process of dissemination and communication has been described in detail under section 4.3 (i.e. Outputs and activities).

The principal lesson learned related to the lack of capacity within Kyrgyzstan for managing externally funded projects of this nature. Compared to many other countries, there has been very limited experience among organisations of receiving external aid to support in-country activities. For the principal project partners, this was the first externally funded project that they had been involved in. The UK partners became rapidly aware that basic skills in project management were lacking, including elements such as budgetary management, project planning, monitoring and reporting. For this reason capacity strengthening in these areas became one of the principal activities of the project.

A further key lesson was the difficulty of finding staff and students with appropriate field skills. There appears to be little tradition, or culture, of undertaking field-based research projects. This extended to postgraduate students as well as senior staff. It became evident that for field campaigns to be successful, they would have to be undertaken as joint activities between UK and Kyrgyz staff, and for this reason UK staff and students were seconded to work alongside Kyrgyz partners during the initial phases of the fieldwork. This was a great success in communicating not only technical approaches to field study, but in building an understanding of the value of fieldwork and what it entails in practice. There would seem to be great scope for improving field-based education and research within Kyrgyzstan, at all levels of education; opportunities for field-based activities appear to be very limited at present.

5.1 Darwin identity

The project has employed the Darwin Initiative logo on all of its outreach materials, including calendar and leaflets, educational materials, and publications. The Darwin Initiative was also actively promoted at the project's stakeholder workshops, by distributing materials provided by the Initiative for this purpose, including distribution of lapel pins and pens to all delegates. The Darwin Initiative logo was affixed to the project's field vehicle. The support from the Darwin Initiative was recognised as a distinct project with a clear identity; it did not form part of a larger programme. This is reflected by the fact that an independent office for the project was created for the exclusive use of project staff, for the duration of the project, which was labelled and advertised using the Darwin Initiative name and logo. At the outset of the project, knowledge of the Darwin Initiative was totally lacking among project stakeholders, including those at senior levels within Government, including the CBD focal point. We believe that the project has achieved a substantial improvement in this regard, as the project and by association the Initiative have had quite high profile within the country, at least among those involved in the forest sector.

6 Monitoring and evaluation

Many of the key points have been referred to above. The principal method of monitoring progress was through the direct engagement of the UK project coordinator, who in collaboration with project partners developed a formal project work plan, listing a series of action points. The coordinator subsequently continuously monitored progress towards delivery of each of these action points, in collaboration with project partners. This was achieved primarily by email contact, supported by telephone conversations and face-to-face meetings. As noted in the previous annual reports, the frequency and duration of overseas visits by UK staff was increased, to assist with project monitoring. Again as noted previously, the project coordinator requested regular progress reports from overseas partners, against an agreed set of action points. Although such basic project management was novel to the Kyrgyz partners, they learned to appreciate the need for detailed regular reporting of activities. Budgetary management by Kyrgyz partners also improved significantly over the first year, having been very deficient at the outset, but continued to be supported throughout the project by guidance provided by the UK project staff. The most notable achievement was that the Kyrgyz partners increasingly demonstrated increased ownership of the project, both in terms of technical content and in terms of the monitoring and evaluation process. As an example of this, during

the final year, the Kyrgyz partners were able for the first time to develop and budget for a complete field programme, which was implemented by them in the third year of the project. This provides clear evidence that capacity to undertake projects such as this has been strengthened.

All of the project outputs were delivered on time. Helpfully, the participants of the stakeholder workshop clearly identified the kind of output that would be most useful: a formal report, to be published in Russian, profiling the activities of the project and its key findings and recommendations. For the final year of the project, production of this report was therefore identified as a key objective, and the Kyrgyz partners have expressed enthusiasm in taking responsibility for its preparation and delivery.

Problems with obtaining visas for Kyrgyz nationals, particularly students, continued throughout the project. The senior Kyrgyz partner was granted a one year, academic visa, so the situation was solved for him. However two students had their visa repeatedly refused, and therefore the project has organised alternative training in Austria, as detailed elsewhere. This was achieved by project staff securing additional external funds to support these training placements, providing an example of the project catalysing the capture of external financial support.

6.1 Actions taken in response to annual report reviews

Reviewer comments from 2010: “Given the scope for continued civil and political unrest in Kyrgyzstan, it would be useful if the project leader could keep LTS up-to-date and informed about any disruptions to project implementation, or other changes in the Kyrgyz situation that might affect project progress, as they become apparent”.

The UK project staff have kept in close contact with LTS, both through the six-month report and additional email contact. As noted above, while the situation has been serious and has negatively impacted project activities, overall the disruptions have not been so severe as to require a change to the log frame.

7 Finance and administration

7.1 Project expenditure

Project expenditure from the start to the end of the project (1 April 2009 to 31 March 2012).

Item	Budget	Expenditure	Variance	Comments
UK partners				
Prof A Newton				Adrian Newton salary has increased significantly since project application
Anita Diaz				Budget reflects the approved transfer of £1893.50 from Operating costs to Staff costs in Year 3
Duncan Golicher				
Niels Brouwers				
Sarah Douglas				
Jenny Birch				
Dr Elena Cantarello				

L. Birchenough, FFI		Original £7,500 in year 3 plus £3,987 from Bioresources funding
J. Gratzfeld, BGCI		Original £3,000 in year 3 plus £3,500 from Bioresources funding
FFI in-country team		
Kyrgyz partners		
Dr A. Orozumbekov		
Research assistants		
Dr G. Lazkov		
Dr K. Shalpiykov		
Dr I Soodembekov		
Dr S. Kenjebaev		
Overhead costs		
Travel and subsistence		This reflects funding reallocation requesting to transfer £7,582 not allocated to Bioresources in Year 3 to cover expenditure by FFI and BGCI
Operating costs		This reflects the approved transfer of £1893.50 from Operating costs to Staff costs in Year 3
Fee for training overseas staff in UK		
Office costs (eg postage, telephone, stationery)		
Conferences, seminars, etc		
Capital items/equipment		This reflects funding reallocation requesting to transfer £7,582 not allocated to Bioresources in Year 3 to cover expenditure by FFI and BGCI
Laptop, Field equipment and books		
Others (please specify)		This reflects funding reallocation requesting to transfer £7,582 not allocated to Bioresources in Year 3 to cover expenditure by FFI and BGCI
Others: Consultancy		
Others: Printing		
Total		

7.2 Additional funds or in-kind contributions secured

Additional contributions were received in the form of in-kind contributions, including four months work from each of four MSc students registered at Bournemouth University.

FFI secured additional funds of £7,500 from the Global Trees Campaign and Disney Friends for Change for outreach activities, particularly the school tree nurseries and eco-education activities.

7.3 Value of DI funding

The funding enabled Kyrgyz partners to undertake a series of ecological and socio-economic field surveys, which they would otherwise have been unable to do. This generated new knowledge on the ecological characteristics of fruit- and nut-forest, which will inform plans for their conservation and sustainable management. The project brought together a group of stakeholders with an interest in these forests for the first time, enabling them to share information and best practice. The Kyrgyz and UK partners were enabled to engage in a collaborative research project, which will deliver outputs of an international standard, including publications in international refereed journals. This has not happened previously, and the type of research conducted is entirely new to Kyrgyzstan. The UK and Kyrgyz partners were able to engage with a wide range of local community organisations and forest service staff, who are directly involved in management and use of these forests; this also is unprecedented. As intended, the project has also raised awareness within the country of the importance of these forests, which should contribute to their improved management and conservation. There have been very few links previously between Kyrgyz and UK academic institutions, so in many ways this project was pioneering, enabling a variety of new collaborative links to be established.

Annex 1 Report of progress and achievements against final project logframe for the life of the project

Project summary	Measurable Indicators	Progress and Achievements April 2009- March 2012	Actions required/planned for next period
<p>Goal: To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve</p> <p>⇒ The conservation of biological diversity,</p> <p>⇒ The sustainable use of its components, and</p> <p>⇒ The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</p>		<p>i) development of participatory management plans completed, (ii) research defined approaches to forest use that are sustainable</p>	
<p>Purpose Strengthened national and local capacity applied to improve the sustainability of management of the fruit and nut forests of the Tien Shan region of Kyrgyzstan</p>	<p>Reduced rate of decline in production of fruits and nuts detected within 5 years of project implementation indicated by and field surveys and market data.</p> <p>Number of participatory management plans developed by end of project.</p> <p>Recommendations for sustainable management of fruit and nut forests incorporated in local and national policy initiatives.</p>	<p>Baseline surveys of forest structure and composition completed in three study area (Completed field surveys documenting the status and distribution of threatened tree species; completed data analysis and modelling activities, to identify sustainable forest use approaches)</p> <p>Socio-economic surveys completed in three study areas</p> <p>Participatory management approaches developed in two study area (Completed participatory management planning process)</p> <p>Disseminated outputs, through stakeholder workshop</p>	
<p>Output 1. Capacity strengthened for interdisciplinary research and education on sustainable forest management using participatory approaches</p>	<p>(a) At least six senior staff receive training in UK in research methods, especially sampling design, GIS, data analysis and modelling by end of project</p> <p>(b) At least 30 staff and students of</p>	<p>(a) Six staff have now received training.</p> <p>(b) 33 staff and students have so far received training in Kyrgyzstan</p> <p>(c) Collaborative stakeholder network established</p>	

	<p>partner organisations receive training in survey methods (including forest inventory, monitoring methods and data analysis), participatory management approaches, education and outreach through workshops in Kyrgyzstan, by end of project</p> <p>(c) Collaborative stakeholder network established between research institutes, government agencies and local community organisations in Kyrgyzstan</p>	
Activity 1.1 Training in UK on research methods		<ul style="list-style-type: none"> (i) Training provided to one staff member in UK (ii) Training provided to two other Kyrgyz postgraduate students in Austria, using funds leveraged by Darwin Initiative project (iii) Training provided to two other staff
Activity 1.2 Training in Kyrgyzstan on survey methods and participatory management approaches		<ul style="list-style-type: none"> (i) Training provided in Kyrgyzstan to six counterpart staff and students, on survey methods (ii) Additional, week-long training event on participatory management approaches held in 2011
Activity 1.3 Collaborative stakeholder network established between research institutes, government agencies and local community organisations		<ul style="list-style-type: none"> (i) Stakeholder network established, supported by website in-country, and through a participatory workshop held in October 2010 (ii) Workshop organized in February 2012
Output 2. Information on sustainable management of fruit and nut forests produced and disseminated	<p>(a) At least four research publications produced by end of year 3, supplemented by annual reports</p> <p>(b) Interpretation facility presenting results established at Botanic Garden by end of year 3.</p>	<ul style="list-style-type: none"> (i) Six publications published, another three submitted for publication (ii) Other publications were produced during 2011, including a formal report profiling project activities and findings, to be published in Kyrgyzstan in response to request from stakeholder network (iii) Interpretation facility established during 2012
Activity 2.1 Analysis of spatial distribution, stand structure, stand dynamics and		<ul style="list-style-type: none"> (i) Field campaign conducted throughout forest areas, to identify status

current status of threatened fruit and nut tree species		(ii) and distribution of threatened tree species Results of survey work written up for publication
Activity 2.2 Analysis of the impact of current land use practices on stand structure and composition of fruit and nut forest		(i) Socio-economic surveys completed in three study areas (ii) Parameterisation of forest model completed (iii) Results written up for publication, including development of scenarios of human use based on results obtained, and using the model of forest dynamics
Activity 2.3 Development and implementation of participatory approaches to forest management		(i) Development of draft plans completed, involving participatory process with local communities (ii) Further exploration with local stakeholders completed, to enable them to be finalised (iii) Results of these activities written up for publication
Output 3. Plans for sustainable management of fruit and nut forests, involving participation of local communities, and informed by research findings, developed and disseminated	(a) At least three management plans published by end of year 3. (b) Interpretive and community outreach materials produced (website, leaflets, poster display, community newsletter) by end of year 3. (c) Policy recommendations published as a policy brief and disseminated at stakeholder workshop in year 3.	(i) Two plans produced (ii) Plan for the third study area (Sary Chelek) provided in the form of a series of management recommendations, based on results obtained (iii) Interpretive materials produced, including website, leaflets, poster display (iv) Policy recommendations published as a policy brief and disseminated at stakeholder workshop in year 3.
Activity 3.1 Development of plans for sustainable management of fruit and nut forest by local communities		(i) Two plans produced (ii) Plan for the third study area (Sary Chelek) provided in the form of a series of management recommendations, based on results obtained
Activity 3.2 Identification of implications for policy-makers at both local and national scales		(i) Results of research analysed and written up for publication
Activity 3.3 Development of community outreach programme		(i) Community outreach programme continued until end of project
Activity 3.4 Dissemination of policy recommendations through workshop and policy briefs		(i) Policy recommendations identified at project workshop in October 2010

	(ii) Further policy recommendations identified through analysis of research results, and disseminated at an additional workshop in February 2011, as well as through project publications
Activity 3.5 Development of an interpretation facility at the national Botanic Gardens, supported by media campaign	(i) During 2011, development of the interpretation facility continued (ii) In 2012, the interpretation facility was completed and installed
Activity 3.6 Preparation and submission of scientific publications	(i) One publication was completed and published in 2010; a further publication was submitted for publication (ii) Additional publications completed during 2011 and 2012
Activity 3.7 Development of website and other outreach materials	(i) An additional website was developed and implemented in Kyrgyzstan (ii) Other outreach materials were produced and disseminated, including leaflets, calendar, poster (iii) Additional outreach materials was produced till the end of the project

Annex 2 Annex 2 Project's final logframe, including criteria and indicators

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Goal:</p> <p>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.</p>			
<p>Sub-Goal:</p> <p>Reduction in the rate of forest biodiversity loss in the Tien Shan region of Kyrgyzstan through an increase in the sustainability of land use practices, as identified in the NBSAP.</p>	<p>Reduced rate of decline in biodiversity as indicated by national biodiversity indicators</p> <p>Improvement in indicators of human well-being including poverty indices, health status and income levels</p>	<p>Biodiversity assessments undertaken at regional and national scale by state agencies</p> <p>Socio-economic surveys undertaken by national government</p>	
<p>Purpose</p> <p>Strengthened national and local capacity applied to improve the sustainability of management of the fruit and nut forests of the Tien Shan region of Kyrgyzstan</p>	<p>Reduced rate of decline in production of fruits and nuts detected within 5 years of project implementation, indicated by and field surveys and market data.</p> <p>Number of participatory management plans developed by end of project.</p> <p>Recommendations for sustainable management of fruit and nut forests incorporated in local and national policy initiatives.</p>	<p>National reports, for example to the Global Forest Resources Assessment</p> <p>Surveys of management plans undertaken by project partners within the study area</p> <p>Policy documents developed by Kyrgyz Republic relating to forests</p>	<p>Economic crisis of country does not worsen, intensifying pressure on forest resources</p> <p>External actors do not increase commercial exploitation of fruit and nut forests, without involving local communities.</p> <p>Government remains committed to sustainable development of forest resources.</p>

<p>Outputs</p> <p>1. Capacity strengthened for interdisciplinary research and education on sustainable forest management using participatory approaches</p>	<p>(a) At least six senior staff receive training in UK in research methods, especially sampling design, GIS, data analysis and modelling by end of project</p> <p>(b) At least 30 staff and students of partner organisations receive training in survey methods (including forest inventory, monitoring methods and data analysis), participatory management approaches, education and outreach through workshops in Kyrgyzstan, by end of project</p> <p>(c) Collaborative stakeholder network established between research institutes, government agencies and local community organisations in Kyrgyzstan</p>	<p>(a) Training secondment and study programme reports</p> <p>(b) Training workshop reports and educational materials</p> <p>(c) Reports of network meetings produced quarterly</p>	<p>Staff that have received training as part of the project, and facilities developed, remain in position and are able to maintain an on-going commitment to study area</p>
<p>2. Information on sustainable management of fruit and nut forests produced and disseminated</p>	<p>(a) At least four research publications produced by end of year 3, supplemented by annual reports</p> <p>(b) Interpretation facility presenting results established at Botanic Garden by end of year 3.</p>	<p>(a) Annual project reports, and research papers published in scientific journals</p> <p>(b) Interpretive facility featuring poster boards and leaflets on display, with associated press releases</p>	<p>Research successfully identifies interventions that can contribute to increased sustainability of management of fruit and nut forests</p>
<p>3. Plans for sustainable management of fruit and nut forests, involving participation of local communities, and informed by research findings, developed and disseminated</p>	<p>(a) At least three management plans published by end of year 3.</p> <p>(b) Interpretive and community outreach materials produced (website, leaflets, poster display, community newsletter) by end of year 3.</p> <p>(c) Policy recommendations published as a policy brief and disseminated at stakeholder workshop in year 3.</p>	<p>(a) Plans published</p> <p>(b) Annual reports produced and copies of interpretive materials produced (website, leaflets, poster display, community newsletter); use by local communities verified by participatory surveys of communities in study area</p> <p>(c) Workshop report and policy brief produced.</p>	<p>Partners involved in developing forest management plans receptive to interventions proposed for increasing sustainability identified by research component</p>

Activities (details in workplan)

- 1.1 Training in UK on research methods
- 1.2 Training in Kyrgyzstan on survey methods and participatory management approaches
- 1.3 Collaborative stakeholder network established between research institutes, government agencies and local community organisations
- 2.1 Analysis of spatial distribution, stand structure, stand dynamics and current status of threatened fruit and nut tree species
- 2.2 Analysis of the impact of current land use practices on stand structure and composition of fruit and nut forest
- 2.3 Development and implementation of participatory approaches to forest management
- 3.1 Development of plans for sustainable management of fruit and nut forest by local communities
- 3.2 Identification of implications for policy-makers at both local and national scales
- 3.3 Development of community outreach programme
- 3.4 Dissemination of policy recommendations through workshop and policy briefs
- 3.5 Development of an interpretation facility at the national Botanic Gardens, supported by media campaign
- 3.6 Preparation and submission of scientific publications
- 3.7 Development of website and other outreach materials

Monitoring activities:

- Indicator 1 Repeat surveys of the quantity of fruit and nuts harvested from local forests
- Indicator 2 Repeat surveys of the number of participatory management plans established with local communities
- Indicator 3 Repeat assessments of implementation of management plans and monitoring protocols by local communities

Annex 3 Project contribution to Articles under the CBD

Project Contribution to Articles under the Convention on Biological Diversity

Article No./Title	Project %	Article Description
6. General Measures for Conservation & Sustainable Use	5	Develop national strategies that integrate conservation and sustainable use.
7. Identification and Monitoring	5	Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities that have adverse effects; maintain and organise relevant data.
8. In-situ Conservation	10	Establish systems of protected areas with guidelines for selection and management; regulate biological resources, promote protection of habitats; manage areas adjacent to protected areas; restore degraded ecosystems and recovery of threatened species; control risks associated with organisms modified by biotechnology; control spread of alien species; ensure compatibility between sustainable use of resources and their conservation; protect traditional lifestyles and knowledge on biological resources.
9. Ex-situ Conservation	5	Adopt ex-situ measures to conserve and research components of biological diversity, preferably in country of origin; facilitate recovery of threatened species; regulate and manage collection of biological resources.
10. Sustainable Use of Components of Biological Diversity	15	Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial actions; encourage co-operation between governments and the private sector.
11. Incentive Measures	0	Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.
12. Research and Training	20	Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components; promote research contributing to the conservation and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations).
13. Public Education and Awareness	10	Promote understanding of the importance of measures to conserve biological diversity and propagate these measures through the media; cooperate with other states and organisations in developing awareness programmes.
14. Impact Assessment and Minimizing Adverse Impacts	0	Introduce EIAs of appropriate projects and allow public participation; take into account environmental consequences of policies; exchange information on impacts beyond State boundaries and work to reduce hazards; promote emergency responses to hazards; examine mechanisms for re-dress of international damage.
15. Access to Genetic Resources	0	Whilst governments control access to their genetic resources they should also facilitate access of environmentally sound uses on mutually agreed terms; scientific research based on a country's genetic resources should ensure sharing in a fair and equitable way of results and benefits.

Article No./Title	Project %	Article Description
16. Access to and Transfer of Technology	5	Countries shall ensure access to technologies relevant to conservation and sustainable use of biodiversity under fair and most favourable terms to the source countries (subject to patents and intellectual property rights) and ensure the private sector facilitates such assess and joint development of technologies.
17. Exchange of Information	25	Countries shall facilitate information exchange and repatriation including technical scientific and socio-economic research, information on training and surveying programmes and local knowledge
19. Bio-safety Protocol	0	Countries shall take legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities and to ensure all practicable measures to promote and advance priority access on a fair and equitable basis, especially where they provide the genetic resources for such research.
Other Contribution		Smaller contributions (eg of 5%) or less should be summed and included here.
Total %	100%	Check % = total 100

Annex 4 Darwin Contacts

Ref No	17001
Project Title	Conserving Eden: participatory forest management in the Tien Shan region
UK Leader Details	
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Role within Darwin Project	Project Leader
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Other UK Contact (if relevant)	
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Partner 1	
Name	Dr. Almaz Orozumbekov
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Partner 2	
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Partner 3	
Name	Joachim Gratzfeld
Organisation	Botanic Gardens Conservation International (BGCI)
Role within Darwin Project	Project partner

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Annex 5 Supplementary material

Note: this has been sent separately on a CD.

Output 1a. At least six senior staff receive training in UK in research methods, especially sampling design, GIS, data analysis and modelling by end of project

O1a_1_April 2010 study visit to UK report, photos, and training materials

O1a_2_March_2011_visit_to_UK

O1a_3_FFI_April2011_UKtraining_JS

O1a_4_March_2012_visit_to_UK

Output 1b. At least 30 staff and students of partner organisations receive training in survey methods (including forest inventory, monitoring methods and data analysis), participatory management approaches, education and outreach through workshops in Kyrgyzstan, by end of project

O1b_1_October_2009_training in Kyrgyzstan

O1b_2_March_2010_training_FFI_on Participatory forest management

O1b_3_March_2010_training_at Bournemouth University on Participatory forest management

O1b_4_June_2010_field_campaign

O1b_5_Training_May_2011_Kyrgystan

O1b_6_July2011_FFI_training_Osh

O1b_7_2011_FFI_JFDF_manuals_forestry (in Russian)

Output 1c. Collaborative stakeholder network established between research institutes, government agencies and local community organisations in Kyrgyzstan

O1c_1_July_2009_meeting_ Kyrgyzstan

O1c_2_October_2010_National_workshop

O1c_3_Final_Workshop_240212_Osh

Output 2a. At least four research publications produced by end of year 3, supplemented by annual reports

O2a_1_Project_report_publication (to be translated in Russian by Bioresources)

O2a_2_Socio-economic_survey_2010

O2a_3_Orozumbekov_publications

O2a_4_Lazkov_publication

O2a_5_JFDF_report

Output 2b. Interpretation facility presenting results established at Botanic Garden by end of year 3.

O2b_1_BGCI visit report September 2010

O2b_2_BGCI_ConservingEden2_panels

Output 3a. At least three management plans published by end of year 3.

O3a_1_Integrated Management Plan of Kyzyl-Unkur_Final

O3a_2_Integrated Management Plan of Kara-Alma Forestry Final3

O3a_3_Sary Chelek Management Recommendations

Output 3b. Interpretive and community outreach materials produced (website, leaflets, poster display, community newsletter) by end of year 3.

O3b_1_Leaflets_2009

O3b_2_Report_TAZA_FFI_2009

O3b_3_Articles and Press Releases

O3b_4_Publicity materials_2010

Output 3c. Policy recommendations published as a policy brief and disseminated at stakeholder workshop in year 3.

O3c_1_policy_brief