



## Darwin Initiative Main Project Annual Report

To be completed with reference to the "Writing a Darwin Report" guidance: (<http://www.darwininitiative.org.uk/resources-for-projects/reporting-forms>). It is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

**Submission Deadline: 30<sup>th</sup> April 2018**

### Darwin Project Information

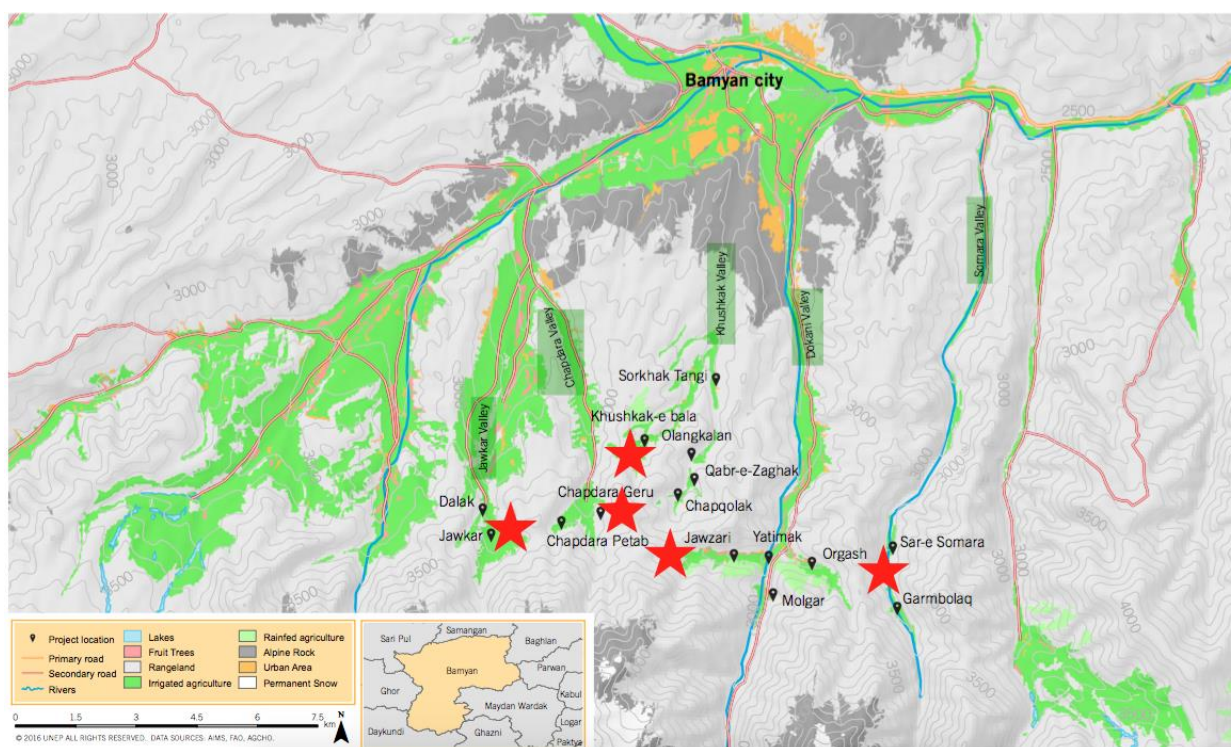
Project reference	23-025
Project title	Reducing environmental degradation through sustainable fuel interventions in Afghanistan
Host country/ies	Afghanistan
Contract holder institution	Royal Botanic Garden Edinburgh (RBGE)
Partner institution(s)	Ecology & Conservation Organisation Afghanistan (ECO-A formerly known as COAM) UN Environment
Darwin grant value	£304,386
Start/end dates of project	1 July 2016 – 31 March 2019
Reporting period (e.g., Apr 2017 – Mar 2018) and number (e.g., Annual Report 1, 2, 3)	Annual Report 2 1 April 2017 – 31 March 2018
Project Leader name	Tony Miller
Project website/blog/Twitter	<a href="http://afghanistan.cmep.org.uk/">http://afghanistan.cmep.org.uk/</a>
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## 1. Project rationale

A major threat to biodiversity identified in Afghanistan's Fifth National Report to the CBD (2014) is the unsustainable collection of woody plants for fuel. These are uprooted, preventing regeneration, and affecting the structure of the plant community and the biodiversity that depends upon it. Afghanistan is rich in biological diversity, with a flora comprising ~5000 native taxa of which ~24% are endemic. A severe lack of capacity means the scale of extractions, exactly which species are removed, and the effects on ecosystem services are poorly known.

Additionally, current heating and cooking facilities do not use fuel wood efficiently, and cause indoor air pollution that has been estimated by WHO to kill ~54,000 women and children annually in Afghanistan, plus the concomitant negative effects on household labour and finance. There is thus a clear link between environmental degradation, health and livelihoods in rural communities that can be addressed through simple interventions and monitoring.

These issues have been highlighted by the Government of Afghanistan, and its international environmental partners UN Environment. Through supporting local organisations, the provision of alternative and more efficient fuel sources has been developed: this project, based in five mountain communities in Bamyan Province (see map below) seeks to expand the provision of more efficient fuel sources and monitor the positive effects on biodiversity, livelihoods and health as well as raising awareness of the importance of sustainable use practices.



Map showing the location of the five communities that are the focus of this project: Chapdara, Jawkar, Jawzary, Khushkak and Somara.

## 2. Project partnerships

Prior to the start of this project, RBGE has been working in Afghanistan with both UN Environment and ECO-A (formerly known as COAM) for several years. As a result, a strong partnership and collaborative approach between all parties was already in place. The approach of UN Environment in Afghanistan has followed an “Afghan first” approach where international organisations and institutes have adopted a supporting rather than controlling or implementing role. As a result, this project was designed to outline the requirements of a successful Darwin Initiative project to our Afghan partners, and to support them to achieve project outcomes and outputs as necessary. In the first year of this project (9 months duration) this approach was largely successful due to excellent working relationships between all partners and the local expertise held by ECO-A in the target areas.

In year two of the project, the relationship between the three partners has remained strong in the face of difficulties in international finance transfers, variable internet connections in Bamyan affecting the ability to communicate regularly and effectively, and the retention of staff in a challenging environment. The demand to increase knowledge coupled with practical action to raise awareness of sustainable use and its benefits was always led by Afghan partners, and the supporting methods agreed at the outset. The ability of ECO-A to engage with local communities, local line ministry offices and Bamyan University has greatly strengthened the project through continual feedback locally.

Additional relationships have been established in year two as Bamyan University took on responsibility for conducting biodiversity surveys through training undergraduate students in field techniques, following on from training in Tajikistan in Year 1. Their systematic and collaborative approach in the face of complex requirements has been exemplary, with a few tweaks to approach and methodology required moving into Year 3. The desire to incorporate these exercises and trainings into the university curriculum, and to therefore contribute to long term resource development, capacity development, monitoring and awareness has been driven by the university. The idea to partner ECO-A and Bamyan University is an entirely Afghan led initiative, supported locally by NEPA.

*In situ* organisation and work has been largely self-determined – aside from working together to establish schedules, the expertise of RBGE has been confined to the identification of plants recorded and collected in Bamyan, which is now being developed into a learning, identification and monitoring resource which can be developed, modified and used locally at Bamyan University with the support of ECO-A and NEPA. Continual support between the James Hutton Institute and ECO-A on monitoring the livelihood and social impacts has resulted in regular re-evaluation of methods to build a representative picture of community life in Bamyan and how the project interacts with communities there.

Photographs of Bamyan University students integrating with communities and undertaken field exercises and training – with both genders represented and working together – are shown below in ANNEX 4A. Further collaborative work is shown in the training report in ANNEX 4E.

### 3. Project progress

#### 3.1 Progress in carrying out project Activities

##### Output 1. Biodiversity

1.1 Data collection on frequency and amount of woody taxa collected for fuelwood (including identification of species and relative quantity of each species collected).

Data acquired. As many as 17 genera have been identified as fuel plants, with several of these consisting of several distinct species bring the total number of plant species collected to over 20. These have been recorded within monitoring plots, and it is highly likely that many more species are used for fuel across the landscape. While “buta” was the preferred species – identified as *Ephedra*, and described as having good heat and little smoke – this is now rarely found and a mixture of different taxa are collected depending on their qualities and their availability. Collection varies seasonally – women collect daily during the spring, summer and autumn months with men stock piling prior to the onset of winter and again in spring when stocks have generally run out. Given that most wild collected fuel is used to start fires before moving on to other sources of fuel – most commonly animal dung – the amount collected annually amounts to many tonnes per community with distances travelled up to 10km on slopes between 45-60 degrees. See example reports in ANNEX 4B with additional information gathered during interviews with women, vegetation surveys, and student discussions with community members.

1.2 Vegetation survey conducted at sample fuelwood collection locations (and control sites) before and after alternative fuel interventions.

Vegetation surveys undertaken to determine species and their frequency of occurrence at monitoring plots representing past, present and future fuel collection sites (see example survey forms in ANNEX 4C and plant profiles in ANNEX 4D). It has been interesting to note that there are differences between the valleys in the species encountered – even within the same genus – and monitoring in Year 3 will no doubt uncover additional taxa missed through seasonality in Year 2. Two communities mentioned that their land was over-grazed – an additional cause of degradation – and in one of these areas was found *Peganum harmala* (Nitrariaceae) which is invasive and considered an indicator of over-grazing as it is unpalatable and poisonous to animals and is therefore avoided by them in preference for other taxa. Preliminary analyses of the state of different monitoring plots suggest that those sites formerly used for wood collection had much higher percentages of bare ground and vegetation cover was low. Realistically, it has been difficult to establish control plots as areas of little or no degradation are extremely rare, or so isolated that they are not representative. Changes in vegetation composition are unlikely to be noted within the time frame of the project, but the identification and monitoring tools developed and training undertaken will enable longer term monitoring of the plots. In Year 3, we will additionally trial a simple Degradation Index through recording some simple plot characteristics including both environmental and plant specific scores, and incorporating estimates of grazing intensity.

1.3 IUCN Red List Assessments for endemic species used for fuel extraction.

This item was removed from the project in change request dated 23.03.2017. However, it may be possible to make some preliminary assessments leading to recommendations for future more formal assessments based upon the acquisition of relevant distribution and threat data for some species. This will be affected by whether the species identified as used for fuel are local or national endemics, or more widespread regionally, and the amount of information available on distribution and threats.

1.4 Identification tool for fuelwood species developed, and used to collect detailed information on species distribution.

Tool in development with Bamyán University during final year of project. It will not be used during the project but will be incorporated into long term monitoring plans as part of the university curriculum. These plans may involve monitoring specifically identified indicator taxa,

more widespread botanical diversity measures, and continuing evaluation of regeneration within monitoring plots. Example photographs taken by Bamyan University students that can be incorporated into this tool are shown in ANNEX 4D.

1.5 Predictive modelling of ecosystem service replacement due to natural regeneration of woody taxa.

Planned for Year 3. Knowledge acquired about the taxa present will assist with this.

## **Output 2. Awareness and Capacity Development**

2.1 Inception and training workshops in Tajikistan: planning, design and training in sustainable use concepts for delivery to communities, planning M&E, field survey and plant collection and identification

This action was completed in Year 1. Planned workshops and follow up was not possible in Year 2 due to difficulties in obtaining visas for Afghan colleagues. A workshop is planned for Year 3 to be hosted at the Nezahat Gokyigit Botanic Garden in Istanbul, and will include analyses of livelihood and botanical diversity data towards project outputs as well as discussions on lessons learned and a post-project plan for sustainability.

2.2 Delivery of awareness raising sustainable use workshops in communities, delivery of training in field survey techniques and data collection.

Awareness raising activities were largely completed in Year 1, with additional actions and feedback planned for Year 3. However, with new students at Bamyan University in each academic year, in addition to the 27 students trained in field survey and community interview techniques in Year 2 additional students will be trained in Year 3. Due to visa restrictions preventing travel to Tajikistan, further technical instruction is being delivered through detailed presentations with imagery – for example in the use of mobile phones for taking identification images of plant species as opposed to supplying additional expensive cameras and associated equipment. A report on student training activities is given in ANNEX 4E and an example of the Dari adaptation of training methodologies given in ANNEX 4F.

2.3 Delivery of training in cook stove installation, use and monitoring to communities.

All communities trained in cook stove and other fuel technology interventions (see photograph of training workshop below). Monitoring is being carried out through community interviews, through CDCs, and through continual engagement with twenty families/households that are being followed in detail.

2.4 Project and stakeholder staff trained in M&E and applied.

ECO-A, NEPA, MAIL and MRRD staff have all engaged with the project, participated in field activities and in M&E throughout.



Community members receiving demonstration and training in the use of the new cook stoves.

### **Output 3. Livelihoods and Health**

3.1 300 households in four communities provided with cook stoves.

Achieved in Year 1.

3.2 Data collection on household fuel extraction time and distance.

Detailed information on fuel collection and use pre and post cook stove installation achieved, and ongoing into Year 3.

3.3 Community interviews and surveys to establish health and economic benefits.

Twenty households in three communities are being followed in detail in terms of self-rated health, daily schedules and more informal reporting on the use and impact of fuel interventions. Examination and analysis of these data are planned for 2018 with direct collaboration between the project socio-economic consultant and ECO-A staff at a workshop in Istanbul.

3.4 Data collection on indoor air quality.

In Year 1 six air quality monitors were installed and basic information acquired and downloaded. In Year 2 three of the monitors have malfunctioned (reason not known) so data collected is less and comparability is being assessed. Reductions in CO<sub>2</sub> have been recorded but any data recorded will not have statistical significance nor will it be very representative..

### **Output 4. Gender Equality and Equity**

4.1 Community interviews targeting data collection on health benefits for women and children.

Self-rated health and daily schedule monitoring being gathered in twenty households representing a range of wealth ratings in three communities, targeting primarily women and the children they care for. Informal responses are positive about the benefits of the cook stoves in reducing indoor air pollution. Monitoring planned for any associated behavioural changes associated with cook stove installation, and the effects of stove stacking. Other unforeseen benefits include novel uses of the stoves in the field with benefits for both male and female household members. For example report, see ANNEX G.

## 3.2 Progress towards project Outputs

### Output 1. Biodiversity

“Baseline and measurable reduction in extraction of woody species for fuelwood.”

Year 1 established the baseline amounts and frequency of collection of fuel wood through observational walks with households and communities, daily schedule profiling of households and monitoring of fuel stocks pre and post winter to assess fuel usage.

Year 2 has established which plant species are collected and used, and in what relative quantities. Post cook stove installation, a reduction in the use of fuel has been documented: however, winter stocks were collected in the same amounts and daily collections were generally just as frequent as households became used to the use and value of the cook stoves. Post winter stocks in Year 2 are higher revealing a decrease in fuel use over the winter, and the expectation is that daily collections and post and pre winter stock piling will reduce in Year 3.

The long term benefits of more sustainable fuel collection on biodiversity and ecosystem services will be monitored through the established plots using skills developed as part of the curriculum at Bamyan University. Detailed and specific monitoring schedules will be established and analysed beyond the life of the project, as the expectation of vegetation changes within the project time frame is unrealistic.

### Output 2. Awareness and Capacity Development.

“Basic awareness of concept of sustainable use of natural resources increased amongst participating communities.”

Project inception meetings with CDCs and with communities has increased awareness of sustainable use. Formal assessment with workshops with CDCs and communities will be conducted in Year 3 to monitor change.

“Capacity of local Afghans increased in surveying and monitoring plant species as a measure of environmental degradation and improvement.”

Project staff and 27 students at Bamyan University trained infield survey techniques, with further students to be trained in Year 3.

“Capacity developed in implementing cleaner and efficient fuel technologies.”

At the time of installation of alternative fuel sources, a significant number of community members were trained in uses, and also attended workshops on sustainable use. These awareness raising workshops and events will be expanded Year 3 when more results from the project itself are communicable.

### Output 3. Livelihoods and Health

“Community livelihoods improved through fuel accessibility and diversification and health benefits.”

300 households in five communities have been supplied with efficient clean cook stoves, with solar water heaters and bio-briquettes delivered as a shared community resource. The initial result of this is that those households who did not receive cook stoves – those in smaller villages or more isolated areas in the five valleys – are requesting them as they see the positive results especially from the reduction in indoor smoke and the efficiency of cooking and heating water by alternative means. There are also requests for cook stove demonstrations from neighbouring Daikundi Province.

Fuel diversification certainly has a seasonal perspective – for example the solar water heaters are less effective in the winter, and the cook stoves do not provide significant space heating during the winter. Discussions on how to ameliorate these issues in the harshest time of the year in remote communities are ongoing. For example, existing inefficient cook stoves have a larger capacity to bake bread which according to local sources tastes better – and as such many households still use them for this purpose alongside the new cook stoves. However, several independent sources have suggested setting up community bakeries with efficient fuel sources as this is cost effective and would remove another component of fuel use and pollution

from homes, as well as community benefits acquired through shared resources. While other cook stove solutions can improve space heating, they do not significantly reduce fuel wood collection, and as such winter space heating with biodiversity and ecosystem health benefits remains to be addressed.

While there is an expectation that a significant amount of time will be saved in reduced wood fuel collection, what this time can be used for remains conjectural. In fact in Year 2 little time was saved with fuel stock piling undertaken (at similar levels to Year 1) and this decrease is expected in Year 3 and beyond. However, interviews with women suggest that there are things they would do with additional time, including better cooking, sewing and time spent with children and family members.

Direct health benefits in Year 2 have included informal evidence of better indoor air quality. Self-rated health assessments have given a base line of daily lives and these are now to be repeated to assess sustainable benefits in Year 3.

#### **Output 4. Gender Equality and Equity.**

Gender segregated interviews on the roles in fuel wood collection, and especially daily schedules and self-rated health, have been trialled and will be expanded. It is clear that benefits from reduced indoor pollution will benefit women and children far more than men, as they spend more time in the household and are responsible for cooking and heating water. Women also spend more time collecting fuel wood – typically up to 4 hours each day - so will benefit more from that reduction. Further, the provision of continual hot water through solar heaters will benefit women and children around the home, and potentially increase levels of hygiene – this was noted as important by some women during informal discussions. These will be monitored in years 2 and 3 post installation.

In summary, installation and preliminary data collection of many types has been achieved, and with further collection and analysis it is expected to achieve all outputs in the original application.

### **3.3 Progress towards the project Outcome**

“Environmental degradation reduced via sustainable fuel interventions in four communities (300 households, 3000 individuals) leading to a reduction in woody plant extraction and improved livelihoods, health and gender equality.”

The target 300 households have received all alternative fuel interventions. In simple terms, year two surveys show that while collection of fuel wood has remained the same (through tradition and through experience demonstrating that you cannot risk running out of fuel over the winter) the use of fuel has decreased dramatically in the subset of households for which regular fuel stock monitoring has taken place. With continued support, we expect that this will translate into reduced fuel collection during year three and monitoring systems are in place to demonstrate this. Caveats include households being nervous of not having enough fuel in case of a harsh or unpredictable winter, although this would apply only to pre-winter fuel stocking and we would expect to see significant decreases in daily collections throughout the summer – as recorded through daily schedule monitoring. Livelihood improvements are being documented through daily schedules and self-rated health, focusing on women as the main users of cooking facilities and the children they care for.

As such, the project expects to deliver its outcome through evidenced improvements despite additional complexities in the community system and novel and additional uses of cook stoves as detailed elsewhere in this report. We expect to deliver a report detailing these complexities and how they can be addressed for further improvements in the future, following a workshop scheduled for later in 2018 following summer data collection. This report will be circulated beyond the boundaries of the project to engage other communities, provinces and actors.



### 3.4 Monitoring of assumptions

Outcome Level Assumptions:

Assumption 1:

“Working partnership between communities and project staff established and maintained, in which ECO-A has extensive local experience.”

This assumption has been met, with communities remaining engaged through continual contact and dialogue, and through frequent visits for field surveys and community interviews.

Assumption 2:

“Reduction in woody species extraction leads to biodiversity status improvement and associated ecosystem services benefits (good scientific evidence for this, monitoring started with long term plan in place).”

Pathway to this on track, with final evidence in last year of project and beyond.

Assumption 3:

“Potential issue that new cook stoves will encourage increase in stove usage for cooking and heating, leading to increase in fuel wood collection balanced against reduction through increased stove efficiency.”

Data will be collected on levels of cook stove use alongside fuelwood collection (outputs 1.1 and 3.2) before/after installation in subset of households spanning socio-economic conditions, in order to monitor feedback. Solar heater installation will also ameliorate this issue. Data presented and evaluated in first/second year report to enable adaptive management as necessary in year three.

Stove stacking is certainly an issue and is certainly occurring. This was highlighted as a potential issue in the project reviews by the Darwin Committee, and while project partners felt it was unlikely to be a problem this opinion was formed based upon use for cooking as opposed to other uses such as heating. Stove stacking is occurring for two main reasons

- (a) while the new stoves are being used extensively for cooking with a concomitant reduction in fuel use, the old stoves are still being used to cook bread as they have a larger capacity and according to many reports the bread tastes better and has a “smoky” flavour favoured and appreciated by many people. There have been several suggestions as to how this scenario might be improved or alleviated, including setting up community bakeries that have proven cost effective, for example, in Bamyan City. This will be discussed further with communities and local actors.
- (b) Existing cook stoves provide heat around the house compared to the new cook stoves which were not designed to fulfil that function – although they do so in the immediate vicinity. This is especially an issue during the winter, which can be extremely cold and harsh. This has been flagged as a topic for discussion when considering moving forward with sustainable fuel interventions, the potential re-design of cook stoves or other technological solutions. Further information is being gathered from communities and from local organisations and ministry offices.

Despite this, a reduction in fuel use has been reported alongside other benefits, and as such we do not expect stove stacking to bring dis-benefits to the project outcome, and in fact will stimulate further discussion and developments to alleviate ongoing issues.

Assumption 4:

“Security and political situation is stable enough for in-country partners to undertake work. This has had less effect in Bamyan than in any other province to date, where project workers have worked safely and successfully for several years.”

Assumption currently met with security in Bamyan relatively stable.

#### Assumption 5:

“Communication methods are appropriate & take account of gender – workshops are gender-separated and appropriately led to allow women to participate fully, interview questions are sensitively worded and asked by appropriate team members. ECO-A and UNEP have extensive experience of this.”

Communication has been largely gender segregated, and conducted by gender specific staff (photographic evidence not available, as most mature women have requested that their photos are not used in project materials). Additional awareness-raising in gender segregated workshops planned for Year 3.

#### Assumption 6:

“Workshops and training materials can be accurately translated in a timely fashion; UN Environment have access to high-quality translators with specialities in environmental and sustainability material.”

Assumption generally met, although some delays in UK partners receiving material to assess although this has more to do with the unreliable internet connections than with translation.

#### Assumption 7:

“Stoves & solar heater installations are safe, sturdy, easy to maintain and appropriate to household; local experts will install the interventions & contact points will be established.”

Assumption met – continual contact with Design Lab through ECO-A for all fuel interventions, with additional skills acquired locally.

#### Assumption 8:

“Suppliers of stoves continue to stay in business and capable of fulfilling the orders; the stoves are made from easily sourced metal and will be supplied by a local enterprise to a design developed and tested by Bamyán artisans through several iterations, solar heaters and bio-briquettes are simple technologies and easy to repair.”

Assumption met. Individuals trained in ECO-A Design Lab has increased local skills and knowledge for manufacture and repair.

#### Assumption 9:

“ ‘Stove stacking’ (using the efficient stove in addition to traditional methods instead of as a replacement) will not occur – this could lead to no reduction in fuelwood usage or an increase; the local design & testing of stoves should prevent the need for this.”

Assumption under constant re-evaluation – see comments under Assumption 3.

#### Output Level Assumptions: Biodiversity

#### Assumption 10:

“Identification and survey tools must be accessible and usable for local staff and communities; these will be tested by project staff & necessary translations done.”

Change document dated 23.03.2017 removed identification tools from the project, but they are still being developed in discussion with project partners.

#### Assumption 11:

“Fieldwork in Bamyán possible due to political and environmental stability. Current situation is stable & NGOs are able to carry out work with local communities with no problems. UN Environment partnering will give access to high quality security information and logistical assistance as necessary.”

Assumption met.

#### Assumption 12:

“Changes in vegetation can be detected within project time-frame – this would be recorded in a follow-up survey outside project lifetime to assess lasting change and long-term project impact.”

Realistically, vegetation changes will be difficult to detect within project time frame, especially as in year 2 a reduction in fuel use has been recorded but will not translate to reduced collections until year three and beyond. The assumption will be ameliorated by setting up and continued monitoring of appropriate plots located in three valleys.

Assumption 13:

“Community engagement with project should ensure data gathered is representative & accurate; ECO-A local community expertise & UN Environment assistance in developing data collection methods will assist this.”

Assumption met.

Assumption 14:

“Communities and local landscapes will not be affected by ecological disasters such as flooding, landslides or fires.”

No evidence for this as yet.

Output Level Assumptions: Awareness and Capacity Development

Assumption 15:

“Fieldwork in Tajikistan possible due to political and environmental stability. For UK partners, CMEP will follow institutional guidelines drawing on FCO advice and information from colleagues in Tajikistan. For in-country partners, advice will be sought from governmental sources and UN sources.”

Assumption met – no security barriers to travel to Tajikistan in Year 2 of project.

Assumption 16:

“Afghan staff are able to obtain visas to visit Tajikistan.”

Assumption NOT met – Afghans were unable to obtain visas in 2017. This was due to the fact that obtaining Tajik visas in the Tajikistan Embassy in Kabul has been difficult due to financial matters. In 2016 visas were obtained at the small border consulate in Ishkshim, but with increased Taliban activity in this area in 2017 the consulate was closed. Close contact has been maintained with Tajik partners, and plans to meet in Istanbul in 2018 are being made. However, ongoing dialogue has meant that additional biodiversity field training has not been required.

Assumption 17:

“Possible to have field equipment and materials sent to Tajikistan for workshop.”

Assumption met in Year 1, and additional materials are being transported to Bamyan by UN Environment staff in 2018.

Assumption 18:

“Communities and staff are engaged with project and will attend workshops; ECO-A will work with community leaders and members of the CDCs (Community Development Councils) to inform them of the project as soon as it is confirmed, developing a partnership with each community, identifying enthusiastic and influential members who can build networks as well as assisting project staff in workshop design and logistics to allow greatest participation such as selecting times where many community members are not required to graze livestock or harvest crops, or encouraging vulnerable members to contribute.”

Assumption met. Community engagement through CDCs has been effective, and some evidence collected that CDCs are actively involved in environmental decision making locally..

Assumption 19:

“Presumes women will be culturally comfortable attending field training workshops. If this does not prove to be the case, women could be trained in theoretical survey methods and data collection, with training on how to collate, curate and analyse survey data instead of collecting it. Project staff and associates will feel engaged, supported and confident enough to deliver

high-quality training locally in-country; project partners will provide additional support as necessary, with time spent at Tajikistan course covering how to deliver training. Remote assistance in difficult vegetation identifications and data quality control will be given by CMEP.

As yet, communities have not been engaged directly in survey and data gathering, rather project staff have accompanied community members on collecting trips. Both female and male community members have engaged with project staff, in gender segregated discussions. With students at Bamyán University, female and male students are comfortable working in the field, and working together.

Assumption 20:

“Recruiting staff and associates to the project will be possible and not create delays in project operations.”

Assumption partially met. Most project staff were working with ECO-A anyway, but adding additional staff has proved difficult for various reasons. As this project is the major work programme for ECO-A now this has not been detrimental to the project. Changes in liaison officers during Year 2 led to some communication delays and inefficiency but this has now been resolved.

Assumption 21:

“Hired and trained staff will remain with project throughout project lifetime; encouragement and support will be given to project staff remotely and via face-to-face project meetings where feasible, encouraging retention of knowledge and skills for project duration.”

Assumption largely met. ECO-A staff and colleagues at Bamyán University have remained in position and are expected to do so beyond the life of the project.

Output Level Assumption: Livelihoods

Assumption 22:

“Assumes no barriers to installation and primary use of efficient stoves in each household or community, ameliorated by ECO-A expertise in community engagement.”

Assumption largely met. A small number of households did not want to be involved in the project. The reasons for this will be explored over the course of Year 3 when the effects of alternative fuel installations are more apparent to non-participating households, some of whom have already requested cook stoves and will benefit from solar heaters and bio-briquettes as community resources.

Assumption 23:

“Assumes wood will not be cut for fuel and sold to other communities instead, data collected to verify this.”

No evidence for this as yet, but explicit monitoring planned for Year 3.

Assumption 24:

“Stove stacking (use of efficient stoves additional to, not instead of original stoves) may increase fuel use, however it is expected that occurrence of this will be minimal as a result of local design and community testing of various models to ensure their features are appropriate for a wide range of home uses such as cooking, baking, heating water and heating the home.”

See comments under Assumption 3.

Assumption 25:

“Fuelwood collectors who earn their livelihood through sale of collected wood may be disadvantaged through reduction of income caused by reduced fuel requirements due to more efficient stoves; assessments should be made of risk of potential loss of livelihood. Assessment & community discussion of how to include fuelwood collectors in workshops & training where possible to diversify their skills and potentially lead to other sources of income should be carried out.”

See comment under Assumption 23 above.

#### Output Level Assumptions: Gender Equality

##### Assumption 26:

“Within Afghanistan, cultural practices (particularly in rural areas) mean that inclusion of women in project design needs to be sensitive and appropriately handled. Female staff at ECO-A and UN Environment will take responsibility for gender equity and for ensuring all data collection methods, training and engagement are sensitively designed to allow full, active and appropriate participation of women with the project.”

Assumption met. Mixed gender staff assume responsibility for engaging with communities appropriately, although in some joint workshops it has been noted that there are fewer female attendees and that they do not participate as fully as when they are engaged in a gender segregated way. This has not been observed to be an issue with students at Bamyan University who generally work together irrespective of gender.

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

Fuel wood collections will reduce over the course of the project, and simple modelling will allow an estimate of benefits over wider areas in the face of sustainable efficient fuel interventions. Direct biodiversity benefits are yet to be reported but are expected by the end of Year 3. Awareness of the sustainable use of biodiversity has increased through CDCs and community workshops.

Positive benefits from the fuel interventions are already being reported. Comments generally indicate that the cook stoves are clean and more efficient, and that less fuel is being used. Novel uses of the new fuel technologies are also being reported. Further benefits and monitoring of these is expected.

## **4. Contribution to the Global Goals for Sustainable Development (SDGs)**

This project is actively supporting progress towards achieving several Sustainable Development Goals.

SDG 3. Ensure healthy lives and promote well-being for all at all ages.

Installation of efficient cook stoves and other alternative fuel sources will increase health benefits due to improved air quality. This will directly address SDG 3.9. “By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination”. Further, well-being through reduced time and effort spent collecting fuel wood and access to hot water for washing through solar water heaters is now operating in Bamyan.

SDG 5. Achieve gender equality and empower all women and girls.

This project does not directly address sub-goals under SDG5 but see Section 7 for a report on gender equality issues addressed in this project.

SDG7. Ensure access to affordable, reliable, sustainable and modern energy for all.

While the alternate and efficient fuel sources installed as part of this project cannot be deemed “modern” they are sustainable, reliable, and more affordable for the mountain communities involved. They also diversify the fuel sources available to communities. These fuel sources have been installed during the first year of this project. Discussion about further developments post-project in this area are under way.

SDG 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Sustainable use of natural resources is at the heart of this project, and awareness raising alongside alternative fuel sources has been conducted in five mountain communities. The following two sub-goals are especially pertinent in this regard, and the installation of efficient fuel sources will go some way to reduce degradation in the mountain communities of Bamyan.

15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.

15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.

## **5. Project support to the Conventions, Treaties or Agreements**

Following alternative fuel interventions and a documented reduction in fuel use, it is expected that fuel collection will reduce in Year 3 and beyond, thus contributing to the sustainable use of natural resources under CBD Article 10 and GSPC Target 12. This reduction in use will ultimately lead to a reduction in degradation (Aichi Target 5) and in situ conservation of wild plants and habitats (CBD Article 8) as well as conservation of ecosystem services provided (Aichi Target 14).

Identification and monitoring of effects is ongoing through training and students at Bamyan University (CBD Article 7) with a collaborative approach and information shared (CBD Article 17).

Education and Awareness has been increased through staff and student training and community sustainable use workshops, with more planned in Year 3 (CBD Article 13).

## **6. Project support to poverty alleviation**

Better indoor air quality is being reported through self-rated health assessments, and this has the potential to reduce healthcare costs – although with the caveat that some households report never using healthcare professionals as they cannot afford it. Therefore the air quality improvements are taken as a direct benefit.

Installation of cook stoves is being reported by communities as requiring less fuel. While in the first year after installation they still collected and stock piled the same amounts as previously, they were often left with significant amounts after the winter – which they expect to mean they will collect less this year. The effects of this in terms of time consuming field collections will be monitored closely and should be a long term sustainable benefit.

Access to regular and affordable hot water for washing and cleaning from solar water heaters was highlighted as a component of the project communities were particularly keen on. The effects of these are being monitored in communities.

## **7. Project support to gender equality issues**

Gender discrimination is not being addressed directly in this project, but it is rather addressing gender inequality due to the roles played by different genders in Afghan communities. As the vast majority of wood collection and cooking is done by women and girls, inequality in negative health aspects will be rectified during the course of the project. Further work needs to be done, during this project, to ascertain the roles of females and whether these could be changed to further benefit and empower them. For example, although women do all cooking, only 25% of attendees at cook stove training and sustainability workshops were women, and they tended to participate less directly than when gender aggregated workshops were held. It is hoped to address this imbalance in Years 2 and 3. Further, from community interviews and walks, it appears that the majority of fuel collection is done by men – however, this in fact is the case only for annual stocking with daily requirements done by women. There is a cultural reluctance to admit that women are undertaking a range of essential physical roles. This will be addressed by further gender-segregated interviews and daily work plans in years 2 and 3.

However, the novel use of cook stoves that are taken into the mountains on the back of a donkey, to enable men to cook for themselves while looking after livestock, was noted by those men as a benefit for their wives as they would no longer have to expend time and energy bringing food to the mountains for the shepherds.

## **8. Monitoring and evaluation**

UN Environment in Afghanistan work under the approach that all government ministries and agencies are involved in project approval, and are included in workshops, meetings and project monitoring and evaluation. As such, MAIL, MRRD and NEPA have all been involved directly in monitoring this project on a routine basis against outputs. This approach has been successful thus far, and is strengthening relationships between local actors in Bamyan province. NEPA have been especially active in this regard, and have attended trainings and participated in several project activities across the project.

During Year 2, M&E has focused on delivering activities and assessing the information acquired against expected outcomes. Where these have been partially but not fully met, or novel outcomes have occurred, then re-evaluation has been routine and discussed with all partners. Examples include the unexpected complexity of fuel uses, the ways it is collected, and local resource management through CDCs which shows marked differentiation among communities. Another example would be the expected reduction in fuel wood collection in Year 2 not occurring as simply telling communities they will require less is no substitute for their own experience, which we envisage will be realised in Year 3. Balancing indicators for stock piling (no reduction) with daily collections (more immediate reductions expected) requires additional data gathering, for example. While the basic indicators are still valid, it has been necessary to consistently evaluate and add to our data collection methods, and this has been done through dialogue with partners in Bamyan.

## **9. Lessons learnt**

The difficulty of transferring money to Afghanistan and Tajikistan (the latter for training costs) was not foreseen to be as problematic as it was. This was due to international banking inefficiency and a local banking problem in Tajikistan, and the unreliable nature of some banks regionally. We have had to use different accounts with different institutes at times, and ECO-A have now established a more reputable account that is proving easier to transfer finance to.

It was impossible to predict extreme variations in exchange rates brought about by the UK Brexit referendum, and this has led to the belief that potential variation in exchange rates should be included in applications at a much higher rate in the future, perhaps building in a contingency fund to future applications. Paradoxically, exchange rates have now improved, allowing a re-budget to be planned for Year 3 allowing for additional meetings and workshops.

Generally, all activities (including reporting) have been as efficient and successful as expected, but due to the vagaries of the weather and communications in remote Afghanistan, a more relaxed approach to timetabling would be beneficial. UK expectations in this regard are rarely met in Afghanistan due to a variety of factors. This has been particularly true of transferring and sharing documents with weak and often absent internet connections. This will be borne in mind when transfers of photographs (large memory requirement) and shipping of duplicate plant specimen collections to the UK for identification purposes.

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

Four comments were made after the review of the Y1 report requiring a response at the next annual report, and although these were mentioned in a response attached to the Y2 half year report they are dealt with again here.

### Reviewers Comment #5

Response required for next Annual Report

Project to provide more information on the provision of solar water heaters and bio-briquettes including details of how these were installed, how many technicians are trained etc. Furthermore a much higher number of these technologies (75 SWH and 25 BB) were installed as against the earlier planned 4 biogas plants and so how does the overall value of money change in terms of benefits derived and fuel consumption.

#### **Response:**

In fact, in each of the five communities, 20 solar water heaters and 5 bio-briquette units were installed as a community resource (total 100 SWH, 25 BB). In terms of numbers, the bio-gas installations were to have been major installations and were originally designed to test the effects on individual households – albeit those with access to enough animal manure to enable the technology *in situ*. Only the four households with installations would benefit directly. For solar water heaters, these will benefit multiple households for a routine daily requirement to boil water without having to light fires and use unsustainably collected fuel wood. Provision of hot water for hand washing has additional health and hygiene benefits predominantly for women and children. The installations are outdoors and can be used by multiple households in each community, with locations determined through the CDCs. Bio-briquette machines fulfil a similar community level function, to allow for more efficient burning of animal manure. Therefore, the greater numbers of new installations have a far wider benefit in communities and – it is anticipated – in the wider environment. Some negative reports about the use of bio-briquette units – which often mix animal manure with agricultural residues thus impoverishing the land – mean that additional monitoring will be required.

### Reviewers Comment #6

Response required for next Annual Report

Indicator 2.2 is not very specific or clear. Suggested to change indicator 2.2 to 'X number of sustainable use workshops and X number of awareness raising activities conducted to raise awareness amongst at least 1,000 individuals by the end of the project'.

#### **Response:**

This recommendation will be added to a change request to be submitted shortly, to enable more specific monitoring in Year 3.

### Reviewers Comment #7

Response required for next Annual Report

Are the Bamyán University students a short term solution to filling the biodiversity monitoring role and is community participation envisaged? If not, is the university keen to participate in the longer term?

#### **Response:**

As UN Environment are giving direct support to Bamyán University in terms of curriculum development and sustainability in their course provision, we anticipate long term university and student involvement. The university is keen to develop a curriculum plan around long term monitoring and the learning benefits for students, and the project will actively develop learning tools based upon the data gathered by students during the final year of the project, with a long



term plan in place. Discussions with local stakeholders as to the level of community monitoring that could be achieved will also be reported on at a later date.

#### Reviewers Comment #8

Response required for next Annual Report

Provision of repair and maintenance is mentioned as a free component to be provided during the project period. How is this likely to continue sustainably post the project?

#### **Response:**

Eight additional technicians were trained in the ECO-A Design Lab as part of this project (see ANNEX 4H). This has increased the number and skills available locally for manufacture and maintenance of cook stoves and other fuel interventions. During year three, a more formal appraisal of how this will work and any costs involved will be made.

### **11. Other comments on progress not covered elsewhere**

The main additional risk that the project faces would be the inability to establish long term monitoring through curriculum development and funding at Bamyar University. The former is unlikely to be an issue, but funding for routine field work will require special consideration over the long term. This will form an explicit component of discussion at the workshop planned for later in 2018.

### **12. Sustainability and legacy**

The project plans to concentrate further on this during the final year of the project, as any information from communities following fuel interventions informs potential awareness campaigns beyond the communities directly involved. The project website is now established and online, and site visits will be monitored. ECO-A are already discussing the most appropriate methods for media locally to increase visibility about the multiple benefits for communities in addressing sustainable fuel options.

The proposed exit strategy remains valid. In terms of the lifetime of individual fuel interventions, there will be a greater number of people with skills to install and repair these. Monitoring of savings in health and fuel costs will be set against potential repair and replacement costs.

### **13. Darwin identity**

Project partners are aware of the Darwin Initiative and that it is funded by the UK Government, and all presentations given about the project make mention of this. However, as this is the first Darwin Main Project in Afghanistan, the funding route is not widely appreciated in Afghanistan as many potential applicants are put off by security concerns. We hope to promote this project more explicitly in terms of the fact that with excellent in country partners, projects that do not physically visit an area that is potentially insecure can still be successful. This will be an added benefit.

The project website is established and online, albeit still developing content. The Darwin Initiative logo and links to the websites are in place. Website activity will be monitored in Year 3.

Occasional use of social media has been linked to DI channels. Realistically this must increase in the final year of the project as impacts become easier to define and articulate.

## 14. Project expenditure

**Table 1: Project expenditure during the reporting period (1 April 2017 – 31 March 2018)**

Project spend (indicative) since last annual report	2017/18 Grant (£)	2017/18 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)			-7%	Saving due to over-estimate of staff costs and retirement of PI
Consultancy costs			0%	na
Overhead Costs			-11%	Saving due to reduced staff costs as overheads are calculated as a % of that cost
Travel and subsistence			+17%	Additional costs for fieldwork due to inaccurate estimate
Operating Costs			+71%	Additional costs for fieldwork due to inaccurate estimate
Capital items (see below)			0%	na
Monitoring & Evaluation (M&E)			-11%	Saving due to reduced staff costs as M&E calculated as a % of that cost
Others (see below)			+100%	Charges not included in original budget
<b>TOTAL</b>			<b>-2%</b>	

While several budget lines differ by significant percentages from the original budget, these were not discussed with Darwin due to the relatively small amounts involved and the fact that the project is well within budget overall. Some differences have been due to conservative estimates regarding exchange rates, whereas in fact exchange rates have improved when transferring from GBP to USD over the last 12 months.

At the end of year one (financial year 2016-2017) the project was £1,335 in deficit. At the end of year two (financial year 2017-2018) with an under spend of £1,651 the project overall is within budget with a nominal underspend of £316. A slight re-budget will be submitted to Darwin with revised exchange rate estimates ensuring that the project will remain on budget with no impact on the current work programme.

## Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2017-2018

Project summary	Measurable Indicators	Progress and Achievements April 2017 - March 2018	Actions required/planned for next period
<p><b>Impact</b> Environmental degradation reduced in upland rangelands, with livelihoods, health and fuel security improved in rural mountain communities.</p>		<p>Following alternative fuel interventions in year one, Year 2 surveys demonstrate that less fuel is being consumed. We expect this reduction to increase with the further use of solar water heaters and that reduction in use translates to reduction in collection amount and time in Year 3 and beyond. Long term monitoring protocols established will confirm this.</p>	
<p><b>Outcome</b> Environmental degradation reduced via sustainable fuel interventions in four communities (300 households, 3000 individuals) leading to a reduction in woody plant extraction and improved livelihoods, health and gender equality.</p>	<p>1 Baseline data gathered on woody plant extraction (species, amount, distance, frequency) by end of Year 1 and reduction in extraction after alternative/efficient fuel intervention (end of Year 2 &amp; end of Year 3). 2 Awareness and capacity increased at community level (reaching at least 1000 individuals in participating communities) and at a more detailed level for at least 25 individuals attending gender-separated training courses and workshops, relating to sustainable use, links to livelihoods, and technical capacity in survey and monitoring by end of project. 3 Livelihoods of 300 participating households improved through: (a) alternative and diversified fuel sources, (b) reduction in labour required in fuel collection, (c) reduction in health costs due to decreased indoor smoke,</p>	<p>1 Bamyán University students, under the expert direction of Prof Nawrozi, have gathered data on the plants collected for fuel with more than 20 species identified. The qualities and preferences of plants collected, percentage used, and information about plants previously collected but no longer seen has been documented to give a detailed picture of fuel collection and use in Bamyán. In Year 2, rather than an immediate reduction in fuel wood collection, similar collection amounts and frequencies have been reported. After winter, this resulted in stockpiling and in a surplus after the winter demonstrating a reduction in fuel use compared to Year 1. We expect this to translate into a reduction in collection amount and time in Year 3. 2 Bamyán University has trained 27 students in Year 2 in survey techniques, following a collaborative and interactive approach with</p>	<p>Plan and implement modelling of reduction in collection effects on vegetation structure. Expand awareness of project and benefits through demonstration of positive results. M&amp;E of project objectives and outputs by partners and stakeholders.</p>

	<p>(d) support of local business involved in manufacture and installation of stoves.</p> <p>4 Improvement in health and wellbeing for women in participating households as a result of measured decrease in indoor smoke by end of project compared with pre-intervention baseline (end of year 1)</p>	<p>communities. Female and male students worked collaboratively together.</p> <p>3 300 households in five communities have received efficient cook stoves, and a smaller selection of solar water heaters and bio-briquette tools for use at community level.</p> <p>CO and particulate matter are being measured, although 3 of the 6 air quality monitors did not survive the winter. Self-rated health of women – and by proxy their children – show anecdotal evidence of an improvement in air quality and health. However, health costs difficult to quantify as several households report that they never have enough money to pay doctor's fees.</p> <p>4 Baseline data on indoor air quality collected in subset of households. Self-rated health questionnaires have given an estimate of health for women and children, indicating poor health especially during the winter months.</p>	
<p><b>Output 1. Biodiversity</b> Baseline and measurable reduction in extraction of woody species for fuelwood</p>	<p>1.1. Data collected on species, quantity and location of fuelwood extraction for four communities before (end of Year 1 baseline) and after alternative fuel source intervention (end of Year 2, end of Year 3) with intervention resulting in 50% decrease in average fuelwood extraction in Kg/month by end of project</p> <p>1.2. IUCN Red List assessments of 20 woody species used by the communities involved for fuelwood produced and submitted to IUCN by end of project</p> <p>1.3. Replicated vegetation surveys before and after alternative fuel source interventions to determine potential</p>	<p>1.1. &gt;20 species identified with % uses and collections noted. Usage reduced, collection reduction expected in Year 3.</p> <p>1.2. Assessments removed from project in change request dated 23.03.2017</p> <p>1.3. Permanent monitoring plots identified, vegetation survey training completed, Year 2 surveys undertaken successfully. Differences between plots and valleys noted, but this does not appear to follow a linear pattern against the past-present-future collection sites as the system of selecting collection sites is not a linear system but has a more informal rotation component. Application of a semi-formal degradation index is being developed. Over-grazing indicator species noted. Differences in resource management noted.</p> <p>1.4. Not applicable in Year 2. Data collection targeted to achieve this by end of project.</p>	

	species, vegetation and diversity changes, with plans implemented for long term monitoring 1.4. Model projections for the effects of reduced woody extractions on ecosystem services and vegetation changes.	
<b>Activity 1.1.</b> Data collection on frequency and amount of woody taxa collected for fuelwood (including identification of species and relative quantity of each species collected)		Locations and photographs obtained of taxa used for fuel, across five valleys. Identification ongoing but differences between valleys in taxa used and amounts used has been identified.
<b>Activity 1.2.</b> Vegetation survey conducted at sample fuelwood collection locations (and control sites) before and after alternative fuel interventions		Permanent survey plots identified and vegetation surveys completed in Year 2.
<b>Activity 1.3.</b> IUCN Red List Assessments for endemic species used for fuel extraction		Assessments removed from project in change request dated 23.03.2017
<b>Activity 1.4.</b> Identification tool for fuelwood species developed, and used to collect detailed information on species distribution		Not applicable in Year 2. However, photographic evidence will allow development of simple monitoring and identification tools, and establish a wider resource development for the future.
<b>Activity 1.5.</b> Predictive modelling of ecosystem service replacement due to natural regeneration of woody taxa		Not applicable in Year 2
<b>Output 2. Awareness &amp; capacity development</b> Basic awareness of concept of sustainable use of natural resources increased amongst participating communities Capacity of local Afghans increased in surveying and monitoring plant species as a measure of environmental degradation and improvement Capacity developed in implementing cleaner and efficient fuel technologies (efficient stoves and biogas).	2.1. Ten project staff and community leaders trained and successfully delivering sustainable use workshops in local communities by end of project 2.2. At least 1000 individuals more aware of sustainability through sustainable use workshops and other awareness raising activities such as participatory mapping, by end of project 2.3. Fifteen people trained in field identification and vegetation survey at field courses delivered in Tajikistan. These attendees will also be instructed and supported in how to deliver this training course to others. 2.4. Twenty-five people trained locally in-country by those project staff who attended field training course in Tajikistan. These locally trained people will be trained to carry out vegetation	2.1. Not applicable in year 2. 2.2. In addition to year 1 meetings and workshops reaching .200 community members, the installation of alternative fuel sources was coupled with discussions on why they would have both direct (household) and indirect (habitat) values. Target to be re-defined in change request at suggestion of reviewer. 2.3. Seven project staff trained in Tajikistan in August 2016. Training not possible in Year 2 due to visa constraints. 2.4. 27 students at Bamyan University trained and implemented by Bamyan University staff that attended training in Tajikistan. Additional students to be trained in Year 3. 2.5. >200 people trained in installation, maintenance and use of cook stoves (breakdown by use and by gender not yet available). Eight smiths trained in cook stove manufacture and maintenance (see ANNEX 4H). 2.6. NEPA, MAIL and MRRD involved directly in project through M&E, and have routinely accompanied project staff on field activities.

	<p>survey and data collection in participating communities.</p> <p>2.5. 30 people trained in installing and using efficient stoves, solar heaters and bio-briquettes. Five young metal smiths will be trained in the basics of stove construction.</p> <p>2.6. Capacity in government departments increased (NEPA, MAIL, MRRD) in the role of sustainable technology of promoting community resilience through participation in training workshops in Tajikistan and participation in monitoring and evaluation exercises (6 staff)</p>	
<p><b>Activity 2.1.</b> Inception and training workshops in Tajikistan: planning, design and training in sustainable use concepts for delivery to communities, planning M&amp;E, field survey and plant collection and identification</p>		<p>Training was undertaken in Tajikistan in August 2016 (Year 1).</p>
<p><b>Activity 2.2.</b> Delivery of awareness raising sustainable use workshops in communities, delivery of training in field survey techniques and data collection</p>		<p>Community project inception and awareness raising undertaken in March 2017 at time of alternative fuel delivery (see report). Field survey training undertaken WITH Bamyán University in Year 2.</p>
<p><b>Activity 2.3.</b> Delivery of training in cook stove installation, use and monitoring to communities</p>		<p>Completed in March 2017.</p>
<p><b>Activity 2.4.</b> Project and stakeholder staff trained in M&amp;E.</p>		<p>Staff from MRRD, MAIL and NEPA trained and participating in project M&amp;E with framework developed.</p>
<p><b>Output 3. . Livelihoods &amp; Health</b> Community livelihoods improved through fuel accessibility and diversification and health benefits</p>	<p>3.1. At least 300 households (~3000 individuals) in four communities provided with a combination of efficient stoves, solar heaters and bio-briquettes, with logistical support &amp; training in use provided to users, particularly women.</p> <p>3.2. At least 30% reduction in average time spent and distance travelled to collect fuel wood by end of project compared to historical and pre-installation 2016 baseline, recorded through fuelwood data collection and participatory community mapping.</p> <p>3.3. 10% reduction in average health expenditure per person by end of project compared to historical and pre-</p>	<p>3.1. 300 households in five communities supplied with cook stoves, solar water heaters and bio-briquettes. Training provided in installation, use and maintenance. Feedback on cook stoves has been positive, and the addition of solar water heaters was especially popular as it takes the pressure off the cook stoves for continually boiling water for tea and for hand washing.</p> <p>3.2. Reduction in fuel use in Year 2 expected to lead to reduction in collection in Year 3. Monitoring will be built into community feedback.</p> <p>3.3. Health expenditure difficult to quantify as several households have explained that they never have money to pay medical fees. Further information about any treatments will be built into feedback, as will contact with healthcare professionals in Bamyán City.</p> <p>3.4. Trials in workshop and households demonstrate reductions in indoor smoke pollution. However, a distinct seasonal difference has been detected that will be addressed through re-evaluation during Year 3.</p>

	<p>intervention baseline at end of year 1 in participating communities.</p> <p>3.4. 50% reduction in indoor smoke in community households after installation of efficient stoves compared with pre-installation baseline data.</p>	
<b>Activity 3.1.</b> 300 households in four communities provided with cook stoves		Achieved, with addition of solar water heaters and bio-briquettes in place of biogas installations.
<b>Activity 3.2.</b> Data collection on household fuel extraction time and distance		Data collected through fuel stock surveys throughout the year, demonstrating a reduction in fuel use. Monitoring of collection time and distance planned across Year 3.
<b>Activity 3.3.</b> Community interviews and surveys to establish health and economic benefits		Self-rated health and daily schedules acquired for a subset of communities. Repeat surveys ongoing, learning from existing surveys to establish livelihood changes.
<b>Activity 3.4.</b> Data collection on indoor air quality		Subset of households with CO and particle monitors installed, although three are no longer functioning. Indoor smoke effects included in self-rated health assessments.
<p><b>4. Gender Equality &amp; Equity</b></p> <p>Improved livelihood and health benefits for women, empowerment and engagement through inclusion in training and</p>	<p>4.1. &gt;500 women benefitting from reduced indoor smoke, increased time spent outdoors using solar water heaters, better access to hot water for washing, and reduced time spent collecting firewood.</p> <p>4.2 Women participating in project training sessions perceive benefit through learning skills and improving knowledge, and increased feelings of empowerment through inclusion, compared to before involvement measured through survey of participants.</p>	<p>4.1. 300 households now have access to cook stoves, solar water heaters and bio-briquettes. Self-rated health assessments suggest reductions in indoor smoke. Daily schedules established and repeated in years two and three assessing changes.</p> <p>4.2. Women participating in cook stove training and sustainable use workshops. Complex nature of household relationships suggests that many more men attend workshops than women, but women report informally that the cook stoves are highly appreciated. Additional cook stove uses – for example shepherds carrying them to the mountains when herding in the summer – has a knock on benefit for women who no longer have to bake bread and carry to the mountains as the shepherds take ingredients and make dough and bake on the hillside directly. This has been a popular development, and due to outdoor cooking and solar heaters does not impact indoor smoke quality during the summer months.</p>
<b>Activity 4.1.</b> Community interviews targeting data collection on health benefits for women and children		Gender segregated interviews ongoing, based upon the assumption that women spend far more time in the home and kitchen leading to associated health improvements.

## Annex 2: Project’s full current logframe as presented in the application form (unless changes have been agreed)

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p><b>Impact:</b> (Max 30 words)</p> <p><b>Environmental degradation reduced in upland rangelands, with livelihoods, health and fuel security improved in rural mountain communities.</b></p>			
<p><b>Outcome:</b> (Max 30 words)</p> <p>Environmental degradation reduced via sustainable fuel interventions in four communities (300 households, 3000 individuals) leading to a reduction in woody plant extraction and improved livelihoods, health and gender equality.</p>	<p>1 Baseline data gathered on woody plant extraction (species, amount, distance, frequency) by end of Year 1 and reduction in extraction after alternative/efficient fuel intervention (end of Year 2 &amp; end of Year 3).</p> <p>2 Awareness and capacity increased at community level (reaching at least 1000 individuals in participating communities) and at a more detailed level for at least 25 individuals attending gender-separated training courses and workshops, relating to sustainable use, links to livelihoods, and technical capacity in survey and monitoring by end of project.</p> <p>3 Livelihoods of 300 participating households improved through:</p> <ul style="list-style-type: none"> <li>(a) alternative and diversified fuel sources,</li> <li>(b) reduction in labour required in fuel collection,</li> <li>(c) reduction in health costs due to decreased indoor smoke,</li> <li>(d) support of local business involved in manufacture and installation of stoves and construction of biogas.</li> </ul>	<p>0.1 Peer reviewed article, basic yearly summary statistics released on project website, project report</p> <p>0.2 Training and workshop materials, lists of attendees, radio programming materials, photographs of workshops, summarised awareness survey results, project report</p> <p>0.3 Community interviews and record keeping presented in project reports:</p> <ul style="list-style-type: none"> <li>(a) proportion and amount of fuel sources (before/after installation);</li> <li>(b) time/distance spent gathering fuel wood (before/after installation);</li> <li>(c) financial outlay on medical services quantified;</li> <li>(d) number of people trained/employed in construction, installation and training.</li> </ul> <p>Baseline currently not quantified, hence year one baseline data gathered, with changes post installation monitored in years two and three.</p>	<p>Working partnership between communities and project staff established and maintained, in which COAM has extensive local experience.</p> <p>Reduction in woody species extraction leads to biodiversity status improvement and associated ecosystem services benefits (good scientific evidence for this, monitoring started with long term plan in place).</p> <p>Potential issue that new cook stoves will encourage increase in stove usage for cooking and heating, leading to increase in fuel wood collection balanced against reduction through increased stove efficiency. Data will be collected on levels of cook stove use alongside fuel wood collection (outputs 1.1 and 3.2) before/after installation in subset of households spanning socio-economic conditions, in order to monitor feedback. Solar heater installation will also ameliorate this issue. Data presented and evaluated in first/second year report to enable adaptive management as necessary in year three.</p> <p>Security and political situation is stable enough for in-country partners to undertake work. This has had less effect in Bamyán than in any other province to date, where project workers have</p>



	<p>4 Improvement in health and wellbeing for women in participating households as a result of measured decrease in indoor smoke (plus improved sanitation and access to covered passive solar area in households with biogas installations) by end of project compared with pre-intervention baseline (end of year 1)</p>	<p>0.4 Data gathered through community interviews and average medical cost survey results presented in project report.</p>	<p>worked safely and successfully for several years.</p> <p>Communication methods are appropriate &amp; take account of gender – workshops are gender-separated and appropriately led to allow women to participate fully, interview questions are sensitively worded and asked by appropriate team members. COAM and UNEP have extensive experience of this.</p> <p>Workshops and training materials can be accurately translated in a timely fashion; UNEP have access to high-quality translators with specialities in environmental and sustainability material.</p> <p>Stoves &amp; solar heater installations are safe, sturdy, easy to maintain and appropriate to household; local experts will install the interventions &amp; contact points will be established.</p> <p>Suppliers of stoves continue to stay in business and capable of fulfilling the orders; the stoves are made from easily sourced metal and will be supplied by a local enterprise to a design developed and tested by Bamyan artisans through several iterations, solar heaters and bio-briquettes are simple technologies and easy to repair.</p> <p>‘Stove stacking’ (using the efficient stove in addition to traditional methods instead of as a replacement) will not occur – this could lead to no reduction in fuelwood usage or an increase; the local design &amp; testing of stoves should prevent the need for this.</p>
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<p><b>Outputs:</b></p> <p><b>1. Biodiversity</b></p> <p>Baseline and measurable reduction in extraction of woody species for fuelwood</p>	<p>1.1 Data collected on species, quantity and location of fuelwood extraction for four communities before (end of Year 1 baseline) and after alternative fuel source intervention (end of Year 2, end of Year 3) with intervention resulting in 50% decrease in average fuelwood extraction in Kg/month by end of project</p> <p>1.2 IUCN Red List assessments of 20 woody species used by the communities involved for fuelwood produced and submitted to IUCN by end of project</p> <p>1.3 Replicated vegetation surveys before and after alternative fuel source interventions to determine potential species, vegetation and diversity changes, with plans implemented for long term monitoring</p> <p>1.4 Model projections for the effects of reduced woody extractions on ecosystem services and vegetation changes.</p>	<p>1.1 Peer reviewed article, identification tools available, project report</p> <p>1.2 IUCN Red List Assessments submitted</p> <p>1.3 Project report, community interviews</p> <p>1.4 Peer reviewed article, project report</p>	<p>Identification and survey tools must be accessible and usable for local staff and communities; these will be tested by project staff &amp; necessary translations done</p> <p>Fieldwork in Bamyan possible due to political and environmental stability. Current situation is stable &amp; NGOs are able to carry out work with local communities with no problems. UNEP partnering will give access to high quality security information and logistical assistance as necessary.</p> <p>Changes in vegetation can be detected within project time-frame – this would be recorded in a follow-up survey outside project lifetime to assess lasting change and long-term project impact.</p> <p>Community engagement with project should ensure data gathered is representative &amp; accurate; COAM local community expertise &amp; UNEP assistance in developing data collection methods will assist this.</p> <p>Communities and local landscapes will not be affected by ecological disasters such as flooding, landslides or fires.</p>
<p><b>2. Awareness &amp; capacity development</b></p> <p>Basic awareness of concept of sustainable use of natural resources increased amongst participating communities</p> <p>Capacity of local Afghans increased in surveying and monitoring plant species</p>	<p>2.1 Ten project staff and community leaders trained and successfully delivering sustainable use workshops in local communities by end of project</p> <p>2.2 At least 1000 individuals more aware of sustainability through</p>	<p>2.1 Project report, list of attendees at community workshops, workshop photographs.</p> <p>2.2 Project report, list of attendees of field training and community workshops,</p>	<p>Fieldwork in Tajikistan possible due to political and environmental stability. For UK partners, CMEP will follow institutional guidelines drawing on FCO advice and information from colleagues in Tajikistan. For in-country partners, advice will be sought from governmental</p>

<p>as a measure of environmental degradation and improvement</p> <p>Capacity developed in implementing cleaner and efficient fuel technologies (efficient stoves and biogas).</p>	<p>sustainable use workshops and other awareness raising activities such as participatory mapping, by end of project</p> <p>2.3 Fifteen people trained in field identification and vegetation survey at field courses delivered in Tajikistan. These attendees will also be instructed and supported in how to deliver this training course to others.</p> <p>2.4 Twenty-five people trained locally in-country by those project staff who attended field training course in Tajikistan. These locally trained people will be trained to carry out vegetation survey and data collection in participating communities.</p> <p>2.5 30 people trained in installing and using efficient stoves, solar heaters and bio-briquettes. 5 young metal smiths will be trained in the basics of stove construction.</p> <p>2.6 Capacity in government departments increased (NEPA, MAIL, MRRD) in the role of sustainable technology of promoting community resilience through participation in training workshops in Tajikistan and participation in monitoring and evaluation exercises (6 staff)</p>	<p>workshop photographs, participatory mapping exercise attendee list, household questionnaire responses</p> <p>2.3 List of Tajikistan field course attendees, field course training outcomes, field survey course materials, project report.</p> <p>2.4 List of in-country field course attendees, field course training outcomes, project report</p> <p>2.5 List of attendees from installation training workshops project report</p> <p>2.6 Workshop attendees list, workshop outline, project report.</p>	<p>sources and UN sources.</p> <p>Afghan staff are able to obtain visas to visit Tajikistan</p> <p>Possible to have field equipment and materials sent to Tajikistan for workshop.</p> <p>Communities and staff are engaged with project and will attend workshops; COAM will work with community leaders and members of the CDCs (Community Development Councils) to inform them of the project as soon as it is confirmed, developing a partnership with each community, identifying enthusiastic and influential members who can build networks as well as assisting project staff in workshop design and logistics to allow greatest participation such as selecting times where many community members are not required to graze livestock or harvest crops, or encouraging vulnerable members to contribute.</p> <p>Presumes women will be culturally comfortable attending field training workshops. If this does not prove to be the case, women could be trained in theoretical survey methods and data collection, with training on how to collate, curate and analyse survey data instead of collecting it. Project staff and associates will feel engaged, supported and confident enough to deliver high-quality training locally in-country; project partners will provide additional support as necessary, with time spent at Tajikistan course covering how to deliver training. Remote assistance in difficult vegetation identifications and data</p>
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<p><b>3. Livelihoods &amp; Health</b></p> <p>Community livelihoods improved through fuel accessibility and diversification and health benefits</p>	<p>3.1 At least 300 households (~3000 individuals) in four communities provided with a combination of efficient stoves, solar heaters and bio-briquettes, with logistical support &amp; training in use provided to users, particularly women</p> <p>3.2 At least 30% reduction in average time spent and distance travelled to collect fuel wood by end of project compared to historical and pre-installation 2016 baseline, recorded through fuelwood data collection and participatory community mapping</p> <p>3.3 10% reduction in average health expenditure per person by end of project compared to historical and pre-intervention baseline at end of year 1 in participating communities</p> <p>3.4 50% reduction in indoor smoke in community households after installation of efficient stoves compared with pre-installation baseline data</p>	<p>3.1 Project report</p> <p>3.2 Project report, community maps, recorded data, community interviews with fuelwood collectors</p> <p>3.3 Community interviews, survey of health service providers, project report</p> <p>3.4 Indoor air quality monitoring report, community interviews, project report, peer reviewed article on indoor air quality improvement</p>	<p>Assumes no barriers to installation and primary use of efficient stoves in each household or community, ameliorated by COAM expertise in community engagement.</p> <p>Assumes wood will not be cut for fuel and sold to other communities instead, data collected to verify this.</p> <p>Stove stacking (use of efficient stoves additional to, not instead of original stoves) may increase fuel use, however it is expected that occurrence of this will be minimal as a result of local design and community testing of various models to ensure their features are appropriate for a wide range of home uses such as cooking, baking, heating water and heating the home.</p> <p>Fuelwood collectors who earn their livelihood through sale of collected wood may be disadvantaged through reduction of income caused by reduced fuel requirements due to more efficient stoves; assessments should be made of</p>

			risk of potential loss of livelihood. Assessment & community discussion of how to include fuelwood collectors in workshops & training where possible to diversify their skills and potentially lead to other sources of income should be carried out.
<b>4. Gender Equality &amp; Equity</b>			
Improved livelihood and health benefits for women, empowerment and engagement through inclusion in training and	<p>4.1 &gt;500 women benefitting from reduced indoor smoke, increased time spent outdoors using solar water heaters, better access to hot water for washing, and reduced time spent collecting firewood.</p> <p>4.2 Women participating in project training sessions perceive benefit through learning skills and improving knowledge, and increased feelings of empowerment through inclusion, compared to before involvement measured through survey of participants.</p>	<p>4.1 Community interviews, project report</p> <p>4.2 Case studies, community interviews, workshop/training feedback and evaluation survey</p>	<p>Within Afghanistan, cultural practices (particularly in rural areas) mean that inclusion of women in project design needs to be sensitive and appropriately handled. Female staff at COAM and UNEP will take responsibility for gender equity and for ensuring all data collection methods, training and engagement are sensitively designed to allow full, active and appropriate participation of women with the project.</p>
<p><b>Activities</b> (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1)</p> <p>1.1 Data collection on frequency and amount of woody taxa collected for fuelwood (including identification of species and relative quantity of each species collected)</p> <p>1.2 Vegetation survey conducted at sample fuelwood collection locations (and control sites) before and after alternative fuel interventions</p> <p>1.3 IUCN Red List Assessments for endemic species used for fuel extraction</p> <p>1.4 Identification tool for fuelwood species developed, and used to collect detailed information on species distribution</p> <p>1.5 Predictive modelling of ecosystem service replacement due to natural regeneration of woody taxa</p> <p>2.1 Inception and training workshops in Tajikistan: planning, design and training in sustainable use concepts for delivery to communities, planning M&amp;E, field survey and plant collection and identification</p> <p>2.2 Delivery of awareness raising sustainable use workshops in communities, delivery of training in field survey techniques and data collection</p> <p>2.3 Delivery of training in cook stove installation, use and monitoring to communities</p> <p>2.4 Project and stakeholder staff trained in M&amp;E and applied</p> <p>3.1 300 households in four communities provided with cook stoves</p> <p>3.2 Data collection on household fuel extraction time and distance</p> <p>3.3 Community interviews and surveys to establish health and economic benefits</p> <p>3.4 Data collection on indoor air quality</p> <p>4.1 Community interviews targeting data collection on health benefits for women and children</p>			

## Annex 3: Standard Measures

**Table 1 Project Standard Output Measures**

Code No.	Description	Gender of people (if relevant)	Nationality of people (if relevant)	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
Established codes								
4A	Undergraduate students to receive training	Inclusive	Afghan	0	22	0	22	20
4B	Number of weeks of training provided	na	na	0	4	0	4	2
7	Training materials provided	na	na	2	0	0	2	4
10	Field guides	na	na	0	0	0	0	1
11B	Papers submitted	na	na	0	0	0	0	1
13B	Species collections enhanced	na	na	0	45	0	45	200
20	Value of assets handed over	na	na	£5981.18	0	0	£5981.18	£2,000
22	Field plots/sites established permanently	na	na	9	0	0	9	9

**Table 2 Publications**

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)
Darwin Initiative Afghanistan	Website					<a href="http://afghanistan.cmep.org.uk/">http://afghanistan.cmep.org.uk/</a>

## Checklist for submission

	Check
<b>Is the report less than 10MB?</b> If so, please email to <a href="mailto:Darwin-Projects@ltsi.co.uk">Darwin-Projects@ltsi.co.uk</a> putting the project number in the Subject line.	YES
<b>Is your report more than 10MB?</b> If so, please discuss with <a href="mailto:Darwin-Projects@ltsi.co.uk">Darwin-Projects@ltsi.co.uk</a> about the best way to deliver the report, putting the project number in the Subject line.	NA
<b>Have you included means of verification?</b> You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	YES
<b>Do you have hard copies of material you want to submit with the report?</b> If so, please make this clear in the covering email and ensure all material is marked with the project number.	NA
Have you involved your partners in preparation of the report and named the main contributors	YES
Have you completed the Project Expenditure table fully?	YES
Do not include claim forms or other communications with this report.	

