Darwin Initiative Main Project Annual Report

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

Submission Deadline: 30th April 2017

Darwin Project Information

Project reference	23-031
Project title	Science-based interventions reversing negative impacts of invasive plants in Nepal
Host country/ies	Nepal
Contract holder institution	Nepal Academy of Science and Technology (NAST)
Partner institution(s)	NAST, Department of Plant Resources, MoFSC, Central Department of Botany, Tribhuvan University, HELVETAS Swiss Interco-operation, Nepal
Darwin grant value	£ 293,585
Start/end dates of project	June 2016/May 2019
Reporting period (e.g., Apr 2016 – Mar 2017) and number (e.g., Annual Report 1, 2, 3)	June 2016 – April 2017 (Annual Report 1)
Project Leader name	Dr Mark Watson
Project website/blog/Twitter	www.invasiveplantsnepal.org; https://twitter.com/Darwin_Nepal
Report author(s) and date	Mark Watson, Bhaskar Adhikari, Birendra Karna, Lila Nath Sharma, Kalpana Devkota

1. Project rationale

The project is designed to develop the in-country capacity to tackle the increasing challenges from alien invasive plants in Nepal, and also to develop the methods to best utilize them to improve the livelihood of local people.

69% of people in Nepal are rural poor living in remote regions relying directly on plant resources to sustain livelihoods, and 1.9 m are climate vulnerable. Community-based Forest User Groups (CFUGS) strive to manage plants and habitats so that they continue to meet daily needs for food, fodder, shelter, fuel, medicine, etc. Project partner engagement with rural communities has shown that invasive plants threaten livelihoods and wellbeing as farmland and forests have become unproductive, and medicinal plants and NTFPs have been lost. Natural resource dependent people in the many districts in Nepal have requested help to control invasive, restore degraded lands and acquire technologies to convert waste biomass into bioenergy.

Government of Nepal (GoN) recognises the spread of invasive plants as a 'Key Challenge', damaging habitats, forests and farmland, and causing biodiversity loss. Nepal's *National Biodiversity Strategy and Action Plan*[1] emphasises the increasing emergence and fast spread of invasive plants as a major threat to forest biodiversity and an emerging issue in understanding impacts of climate change. In alignment with Aichi Targets 9 & 15, Bonn Challenge, and Sustainable Development Goal 15, GoN considers it a 'Strategic Priority' to control infestation and spread of invasives and restore degraded lands.[2]

Following site field visits, three districts (Central Nepal: Makwanpur; Western Nepal: Nawalparasi; Far Western Nepal: Bardia) were selected for the implementation of the project (see Doc.4 site report for details, and map below), and the priority actions include:

- Enhancing national capacity for detailed surveying and early detection,

- Building the knowledge base - filling gaps in botanical identification, appearance and characterisation,
- Producing multi-lingual manuals on recognition and control,
- Informing and filling policy gaps for better management of forest resources,
- Raising awareness of local people on identification of invasives and impacts,
- Providing technical assistance and involving local people in controlling/managing invasives,
- Making char, biochar and other low-emission bioenergy from invasives

[1] *National Biodiversity Strategy and Action Plan* (2014-2020) www.cbd.int/countries/?country=np

[2] NBSAPv2 and *5th CBD National Report* www.cbd.int/countries/?country=np

Fig. 1. Map of Nepal showing project sites

2. Project partnerships

The partners

The project is led by the Royal Botanic Garden Edinburgh, and the team is comprised of Project Leader, Dr Mark Watson, Project Deputy-Leader Dr Colin Pendry, Project Officer- Dr Bhaskar Adhikari and Dr Martin Pullan (Informatics). The host country partners and their roles and responsibilities are:

1. Nepal Academy of Science and Technology (NAST) (http://nast.gov.np/new/): NAST is the national organisation for the promotion of science and technology. It is the lead in-country partner for Flora of Nepal and has an active programme of primary and applied research on plants and plant products, including bioenergy and other development-related bio-resources.

***Roles and responsibility*:** NAST is the in-country lead organisation with responsibility for in-country co-ordination, reporting and general finance (including audited accounts). NAST hosts the Project Office in Nepal, oversee contracted staff, and provide leadership in bioenergy research and development, especially biochar technologies. NAST is responsible for liaison with the relevant Government Ministries and with the Nepal Steering Committee of the Flora of Nepal. The Chief of faculty of science also co-leads the project. Dr Kalpana Devkota was recruited as project officer at NAST(CV attached-Doc. 5). NAST officials Dr Shandesh Bhattarai (Botanist) and Dr Rabindra Dhakal (Bioenergy expert) are also working as a part of team.

2. Department of Plant Resources (DPR), Ministry of Forests and Soil Conservation (MoFSC) (www.dpr.gov.np): DPR is the National authority for plants and CITES. Established in 1964, DPR has an active programme of taxonomic and applied research, manages the National Herbarium (KATH) and the National Botanical Garden, and is a main partner on Flora of Nepal.

***Roles and responsibility*:** Leadership in biodiversity research and documentation (DPR is the in-country botanical authority for plant biodata), and restoration of degraded lands, especially relating to invasive plants and NTFPs. Liaison with Government of Nepal (Department of Forests and Department of National Parks and Wildlife Conservation, and other staff in MoFSC (especially CITES and CBD focal points). DPR will provide hot-desk facilities at KATH, and facilitate use of the herbarium, library and living collections. The Director General at DPR also co-leads the project. DPR nominated Botanist Subhas Khatri as a focal person for day to day correspondence for the project (Letter attached, in Nepali Doc.8).

3. Tribhuvan University, Central Department of Botany (TU-CDB) Nepal. (www.cdbtu.edu.np): TU-CDB is part of Tribhuvan University where botany has been taught since 1947. CDB is responsible for all academic programs of Botany within TU, it runs a postgraduate programme (MSc and PhD) and maintains an active research programme. TU-CDB has trained over 2000 M.Sc. (Botany) students since 1965. TU-CDB is a partner for Flora of Nepal and maintains the herbarium (TUCH). It is a centre of excellence for research on invasive plants, and involved in sustainable development programmes, especially relating to NTFPs. CDB-TU selected 3 MSc students to work on flora of three target district (see TU-CDB report, Annex 4). The Head of Department also co-leads the project. Assistant Professor Dr Bharat Babu Shrestha (expert in Invasion Biology in Nepal) (http://cdbtu.edu.np/dr-bharat-babu-shrestha/) is leading the CDB-TU component of the project.

4. HELVETAS Swiss Intercooperation, Nepal. (nepal.helvetas.org).

HELVETAS came to Nepal in 1956 and cooperates with many technical and social organizations in all 75 districts. HELVETAS aims to create an environment where people have new choices and become equipped with new skills and abilities to improve their livelihoods. It promotes the principles of decentralization and subsidiarity in decision-making, implementation and accountability for development. Environment and Climate is one of the organisation's working areas, and HELVETAS runs the EU-funded bioenergy project (http://bioenergy.org.np), up-scaling the production and consumption of bioenergy to reduce carbon emissions and enhance local employment in Nepal. Country Director Dr Bharat Pokharel co-leads the project, and Ms Moon Shrestha and Dr Dharam Uprety are key personnel for the project activities.

Other partners:

ForestAction (http://www.forestaction.org/) has been identified as implementing partner for all field activities. ForestAction (Forest Resource Studies and Action Team), established in 2000, is a Nepal-based non-governmental organization focused on research, policy dialogue and stakeholder engagement to achieve productive, sustainable and equitable forest management. Dr Lila Nath Sharma was appointed as project officer at ForestAction (CV attached, Doc. 6)

University of Tasmania (UTAS): The UTAS is supporting the project for Remote Sensing (RS) of invasive species and also to develop the RS algorithm to monitor the distribution/invasion of some invasive species in Nepal. Senior lecturer in Geography and Spatial Sciences, Dr Jagannath Aryal (http://www.utas.edu.au/profiles/staff/geography-environmental/jagannath-aryal) is involved on the RS part of the project.

Communication among partners

The team members are in regular contact via Skype, emails, and facebook messenger. Because of poor/no internet at field sites direct phone call is the only way of communication. Project officer at RBGE is in regular contact with project officers at NAST and ForestAction through email or skype at least once in a week, sometimes daily. The skype meetings among the concerned partners based on the activities are held when needed (for example, see attached minutes, Doc. 10). Key project persons in Nepal communicate through phone calls and face-to-face meeting, and update other partners through emails.

Project leader Dr Mark Watson and RBGE project officer Dr Bhaskar Adhikari visited Nepal in June for inception meeting (see details in doc 11 & 16-page 4) and in August for project updates, and in January to attend district level workshop at project sites and for face-to-face meetings with partners. Dr Bhaskar Adhikari spent two weeks in Nepal in April 2017 to work with partners for end of year 1 reporting.

Developing an effective partnership, communication understanding among the partner institutes and individuals has been an important element of Y1. This developing well, but we recognise some areas where we can improve. In particular, more regular updates on field activities among all the partners would be useful. Bringing together the diverse expertise of the different partners (both government and non-government) to address the problems of invasive plants and improve the livelihood of rural people is a new venture in Nepal and is already bearing fruit with active engagement of local people in the project workshops where the interactions with project experts is highly valued.

Partners have been involved in the writing of the supporting documents and this report. The RBGE Project Officer visited Nepal in early April to work with in-country partners on reporting and all participated in writing this report.

3. Project progress

Although the start of the project was delayed (agreed in a Change Request), and recruitment of project officers took longer than expected, progress of the project against deliverables has been good for the last year as explained below. There have been some financial challenges following the depreciation of the pound resulting from the BREXIT referendum. This effectively reduced by 15% the money available to support in-country work in Nepal. Delays in appointing project officers helped cope with the deficit in Y1,

but in-country project activities in Y2 and Y3 will need to be adjusted to meet the reduced funding available to support them. The logframe remains the same for year one and will be reviewed during the midterm review (September 2017). If necessary the Log Frame will be adjusted (with Change Requests) based on field activities, project results and feedback from Community Forest User Groups.

3 Progress in carrying out project Activities

Most of the planned activities of year one have been achieved, however, some activities which need to be addressed during particular months of the year (for example removal of invasive species) will be continued through year two to bring progress back on track.

Output 1: Capacity for managing and controlling invasive plants built, practical control methods employed, and restoration of land degraded by invasive plants into economically and environmentally beneficial habitats initiated in 15 CFUGS.
Activities:

1.1 Hold planning and stakeholder workshops, taking a participatory approach to providing training, enhancing the knowledge of local communities and raising awareness on the identification, impact, control and management of invasive plants.

Task: 1.1.1 Project initiation, task review and revision, finalisation of District and CFUGs participation. **Comments**: Completed: Project inception meeting was held on 22 June 2016 in Kathmandu Nepal to discuss and review the roles and responsibilities of partners (Doc. 11-Notes from planning meeting attached; Doc. 16- News in NAST communicator page 4, http://www.nast.gov.np/new/uploaded/publication/Nast__communicator__June__2016.pdf)

Task: 1.1.2 Annual District Workshops (3 x 3-5 people from each of 5 CFUG/district, 25 people per district): including training on awareness, CFUG management, adaptation methods and control of invasive plants. **Comments**: Completed for year one: First annual district workshops were held in three districts to raise awareness on invasive species, and to introduce project activities to local communities (Report attached-Doc 1-3). A brochure in Nepali language was produced and distributed to the local people which covers basic information on Invasive Alien Species (IAS), its impact and management practices (Doc 12-IAS_Brochure Nepali). More in-depth information and specialist training will be provided in workshops in year two and three.

1.2 Work with CFUGs to undertake effective practical action for the removal and on-going control of invasive plants, with training and support, and assess the impact of this work.

Task 1.2.1 Land surveys (what invasive species present, areas covered, etc.) and interviews to assess base lines and identify target areas for removal of invasive plants. **Comments**: Rapid land surveys were completed to record the most problematic species in each target district (see site report, Doc. 4). More detailed surveys are on-going (survey template attached, Doc. 13)

Task 1.2.2 Removal and management of invasive species on 15 community forests/private lands, including CFUG support field visits and write reports on progress. **Comments:** Removal of Invasive species has just been started in Makwanpur and Nawalparasi districts (see photos in project website), and will be continued to year 2.

1.3 Hold meetings with experts to agree on target species for replanting and work with government and local plant nurseries, and CFUGs, to undertake replanting of reclaimed lands with native, economically useful plants.

Task 1.3.1 Selection of 15 native economically and medicinally important plant species suitable for replanting in each district (online meetings) **Comments**: Initial consultation with CFUGs on selection of plants for replanting was done in Nawalparasi, and Makwanpur. The list will be finalized for midterm review. It was interesting to see in some parts of Nepal *Leucaena leucocephala* was recommended as fodder tree, and the communities in target districts also wants to plant this tree on reclaimed lands. *L. leucocephala* is considered as one of the 100 worst invasive species by the Invasive Species Specialist Group. This clearly shows the lack of awareness and knowledge gaps on IAS in Nepal.

Task 1.3.2 Nursery cultivation for each district/community and/or link to nearby DPR regional garden, for 15 native agro-economically and medicinally important plant species ca. 15 X 1000= average 15,000 per district, ca. 45,000 plants in total. **Comments**: Will start once the list has been finalized.

Task 1.3.3: Supply and plantation of 15 native and economically important plant species on reclaimed land at 15 CFUGs. **Comments:** Planned to start Y2- Q3

1.4 Research, build and disseminate a science-based knowledge resource for invasive plants, and take a participatory approach to incorporating into CFUG Management Plans the lessons learned in best practice in restoration of lands degraded by invasive plants.

Task 1.4.1 Production of guidelines on the management of invasive plants and replanting with native plants. **Comments**: Planned for Y2-Q3

Task 1.4.2 Bilingual photographic manual for identification and knowledge of economically important plant species published (print and electronic format. **Comments**: Planned for Y3 Q1, however collation of photographs and references has been started.

Task 1.4.3 CFUG Management Plans include control and management of invasive species. **Comments**: Planned for Y3, however the MoU was signed with CFUG, in which point no 8 is the agreement on incorporating control and management of invasive species in their management plans. (Doc 14. MoU, in Nepali).

Output 2: Weed species researched and evaluated and local community understanding of invasive plants enhanced. A national list of priority invasive plants established, supported by a bilingual identification manual and the raising of public awareness.
Activities:

2.1 Research, evaluate and publish inventories of the district-level weed flora in the study areas with fieldwork, sample collection and identification, enhancing reference collections, and training and capacity building of MSc students.

Task 2.1.1 Selection of 3 (or more) MSc students (Taxonomy/Forestry) as Research Assistants for the inventory of weed flora in 3 districts. **Comments: Completed.** 3 MSc students were selected for Darwin Initiative supported MSc project (see Doc. 9, CDB_TU Annual Progress Report)

Task 2.2.2 Two field trips to each district by each MSc Research Assistant with field assistants (other MSc and local person) to collect and record the weed flora, undertake interviews to assess living memory changes of increase/decrease of invasive plants and NTFPs in the area, prepare fieldwork reports. **Comments**: MSc students have started working on the inventory of the flora of 3 target districts, and completed their first field visits (see Doc 9, CDB-TU Annual Progress Report). Altogether 886 herbarium specimens were collected so far (see Doc. 17). An interview with local people is planned for the second field visit.

2.2 Research and evaluate a national list of priority invasive species, and submit a report through Government partners to inform Government of Nepal policy. **Comments:** Initial discussion has been initiated will be completed early in Y2.

2.3 Research, develop and publish a photographic identification manual (and other educational materials on a project website), tested by communities, to inform and raise awareness of invasive plants both at a local level with communities and nationally with the general public.

Task 2.3.1 Preparation of detailed bilingual photographic identification manual covering the national list of 30-40 priority species. This is a step towards a weed Flora and contributes to Flora of Nepal. **Comments:** Work has been started, first draft of three species completed (see website,under tab Plants)

Task 2.3.2 Yr2 and Yr 3 Annual Workshops with CFUGs incorporate new materials on invasive plants, and training undertaken on identification and used for the bilingual manual. CFUG Operational Plans updated. **Comments**: Planned for Y2 & Y3

Task 2.3.3 Establish a project website within Flora of Nepal to publish reports and other project documentation.**Comments: Completed** (see:www.invasiveplantsnepal.org).

Task 2.3.4 20 awareness-raising articles published by popular newspapers (e.g. Kantipur), and picture articles on popular online news sites (e.g.BBC nepali sewa) and the project website. **Comments**: Planned for Y2

2.4 Use the improved species distribution mapping to investigate the likely unrestricted spread of 10 current or potentially invasive plants using GIS niche modelling techniques, and undertake a Remote Sensing pilot study on one high-priority problem species, submitting papers for publication. **Comments**: Planned for Y2 and Y3, however discussion on methods and initial data collection started (see Doc 10- minutes of skype meeting)

Output 3. Charcoal densification technologies (e.g. beehive bio-briquettes and pellets) successfully introduced and densified charcoal products made from invasive plants and other waste biomass. DCPs used as an alternative to fossil fuels and firewood as a domestic fuel source, and small-scale women-run co-operatives derive alternative incomes from bio-briquettes/pellets.

Activities:

3.1 Hold workshops and meetings with community stakeholders to inform and train people in the use of invasive plant biomass, and other waste plant material (e.g. dead leaves, newspaper) to produce bio-briquettes/pellets.

Task 3.1.1 Introduction to charcoal densification technologies, methodologies and their application to produce alternative fuels during the first main Workshop. Engagement with communities to assess levels of interest to direct future, in-depth capacity building. **Comments**: Initial training completed, local people have started making char which they can sell directly to the market (see photos in project website). The cost of making bio-briquettes in terms of return is higher and the dynamics of supply and demand has changed since the formulation of the project. A detailed cost-benefit analysis is being conducted to find out which option will be most suitable for local people to adopt to improve their livelihoods and alleviate poverty.

Task 3.1.2 15 CFUGs and 7 women's groups provided with detailed information, equipment and practical training on species selection and use of invasive plants for producing bio-briquettes/pellets. **Comments:** 15 CFUGs were selected (see Doc. 4- site report). The detail practical training is planned for Y2 Q1-Q3.

3.2 Provide capacity building to local stakeholder groups in the formation of cooperatives for bio-briquette/pellet production, which have the necessary equipment, technological knowledge and practical experience.

Task 3.1.2 Formation of 3, small-scale cooperatives (10 people, mostly women, per cooperative) drawn from women from CFUG's and local women's groups. **Comments:** Progress has been made, and we are working with women-led CFUGs for this.

Task 3.1.3 Distribution of bio-briquettes/pellet making equipment to the cooperatives with additional training and support. **Comments:** Planned for Y2- Q1, although this maybe changed when the cost benefit analysis is completed (3.1.1).

3.3 Support local cooperatives in the production, distribution, marketing and use of bio-briquettes/pellets as an alternative source of fuel for cooking and heating. **Comments**: Initial trial of making char has been started (see photos in project website).

3.4 Undertake base line and monitoring socio-economic surveys to assess impact and benefits of introducing bio-briquette/pellet production on livelihoods and well-being, and incorporating best practice into CFUG Management Plans. **Comments**: Baseline survey completed (survey template attached, Doc 15). The data are being analysed.

Output 4. Biochar technologies successfully introduced, biochar manufactured locally and used to improve soil fertility of degraded land and to sequester carbon.
Activities:

4.1 Hold workshops and meetings with community stakeholders to inform and train people in the use of invasive plant biomass, and other waste plant material, to produce biochar

Task 4.1.1 15 CFUGs (740 rural households) introduced to biochar technologies, methodologies and their application to improve soil fertility during the main Workshops. Engagement with communities to assess levels of interest, directing more in depth capacity building. **Comments:** All 15 CFUGs are now familiar with biochar technology, which they haven't heard before (see workshop report). The level of interest in Biochar is very high among local people. The timing of application of biochar in Y2 is being finalized in consultation with local farmers.

4.2 Provide capacity building and support the establishment of low-tech pyrolysis methods for biochar production and the use of biochar to improve the soil fertility of land reclaimed from invasive weed infestations. **Comments:** Planned for Y2

4.3 Undertake base line and monitoring surveys to assess the impact and benefits of biochar production and its use in improving soil fertility, restoration of lands cleared of infestations and crop yields, incorporating best practice into CFUG Management Plans.

Task 4.3.1 Initial survey to show level of use of biochar/other soil improvers – baseline. **Comments:** Baseline survey completed (survey template attached, Doc 15). The data are being analysed.

Task 4.3.2 Mid-term review to monitor progress. **Task 4.3.3**. Final year survey to assess uptake of biochar technologies and effects of soil improvement activities on fertility (water retention, ph balance, organic matter content, nutrient availability), especially of restored lands, and crop yields, and incorporation of best practice into CFUG Management Plans. **Comments**: Reporting Y2 and 3.

3.1 Progress towards project Outputs

As mentioned above, most of activities which are planned for year 1 have been completed, and some are ongoing and will be completed in year 2 (mainly the removal of invasive species). All indicators remains appropriate for year one.

Output 1. Capacity for managing and controlling invasive plants built, practical control methods employed, and restoration of land degraded by invasive plants into economically and environmentally beneficial habitats initiated in 15 CFUGS. First Y1 workshops were completed in three district. Participants were very enthusiastic and engaged, all targeted CFUGS expressed the need of support to help with control and management of IAS. Local CFUGs who were unaware of IAS are now fully conscious on the impact of IAS in their daily life. CFUGs now willing to incorporate control and management of invasive species in their management plans, with MoUs between implementing partner ForestAction and CFUGs cementing this agreement (Doc 14, in Nepali). The baseline survey was completed, and the data are being analysed. Work on selection and plantation of economically beneficial plant species on reclaimed land has started and will continue over the next reporting period.

Output 2. Weed species researched and evaluated and local community understanding of invasive plants enhanced. A national list of priority invasive plants established, supported by a bilingual identification manual and the raising of public awareness. An excellent progress has been made towards output 2. Three MSc students collected 886 herbarium specimens during their first field visits, and 25 invasive alien plant species have already been identified from the project sites (Doc 9, CDB_TU Annual Progress Report). A project website has been established to publish reports and awareness materials (www.invasiveplantsnepal.org). The work on bilingual identification manual has been started and draft versions for three species are available in web form for testing (see www.invasiveplantsnepal.org under the tab Plants Work on weed research will continue for Y2, and identification manuals for more invasive species will be uploaded to the website in Y2.

Output 3. Charcoal densification technologies (e.g. beehive bio-briquettes and pellets) successfully introduced and densified charcoal products made from invasive plants and other waste biomass. DCPs used as an alternative to fossil fuels and firewood as a domestic fuel source, and small-scale women-run co-operatives derive alternative incomes from bio-briquettes/pellets. Interest in char as alternative source of income and soil improver was higher than expected in the workshops, and production of char has already started at Nawalparasi and Makwanpur districts (see photos in website). Poor and disadvantaged people are involved in char production, and will be selling to the market soon. The work will continue and be strengthened over the Y2 and Y3. The economics of producing bio-briquettes has changed in the last year, and it is no longer worthwhile for them to be manufactured on a small scale. We are undertaking a review and cost/benefit analysis of producing char and bio-briquettes to inform our work in Y2 and Y3. Initial results indicated that selling char to companies which produce bio-briquettes on industrical scale is more beneficial for local people rather than making bio-briquettes themselves. The baseline socio-economic survey has been completed (Doc. 15 survey template), and changes will be monitored for next reporting period.

Output 4. Biochar technologies successfully introduced, biochar manufactured locally and used to improve soil fertility of degraded land and to sequester carbon. All 15 CFUGs in 3 districts have been well informed on Biochar technologies (workshop report), and user groups are very keen to use char in their farm lands. Biochar production will be continued over the Y2 and Y3. Baseline data collection completed. Establishment of trial plots are underway to monitor the increase in production.

3.2 Progress towards the project Outcome

Outcome: Increased knowledge, awareness and effective management of invasive plants in Nepal. Safeguarding and restoring biodiversity, creating climate smart alternative sources of bioenergy and soil improvement, and enhancing livelihoods and wellbeing.

Progress on activities in Y1 clearly indicates that the project is likely to achieve the outcome by the end of the project, however, it is too early to assess the direct impact in less than a year. The baseline has been established and the progress will be regularly monitored against this - the measurable indicators are still appropriate. Based on the partners recommendations, field visits and and stakeholder meetings, Bardia and Makwanpur districts were chosen instead of Dailekh and Bajura. The depreciation of the pound (ca. 15% against the Nepalese Rupee), if sustained, will have a marked impact on in-country activities in Y2 and Y3. We will be looking to reduce some activities in Nepal in order to remain within budget. The situation will be assessed during the mid-term review (Sept 2017) and proposed changes agreed with Change Requests.

3.3 Monitoring of assumptions

Assumptions 1: The political situation in Nepal remains stable to permit work, and that earthquakes, landslides and other natural disasters present no more than short-term obstacles. **Comments**: Though the political situation is not stable at the moment, it doesn't seem to affect the any project activities. The local elections in May/June 2017 might affect some activities in the field but partners are well aware of the situation and planning ahead to minimize the impact.

Assumptions 2: Local communities actively engage with the activities of the project. **Comments**: The interest showed by local communities clearly indicates that they will be fully engaged through the project. The MoU signed with local CFUGs also endorses this (Doc 14, in Nepali)

Assumption 3. Local communities recognise the economic, health and environmental benefits from management practices and technologies and decide to adopt them. **Comments**: The assumptions still hold true, but it is too early to evaluate.

Assumption 4. Household members (particularly women) recognise the benefits to themselves and the environment, and are self-motivated to adopt bioenergy and change from traditional fuel sources (wood) to bioenergy alternatives, and using biochar. **Comments:** To make them self-motivated, a trial plot will be established for biochar implementation to show the increase in productivity. It is likely that the local communities will benefit more by selling char than bio-briquette. After the cost-benefit analysis, a change request will be made.

Assumptions 5. Partners involved remain committed to the project. **Comments**: Partners are fully committed to the project and this is seen as priority work within their organisations. The assumption is expected to be hold true throughout the project.

Assumptions 6. The recent fuel crisis in Nepal caused severe transport problems and critical shortages of gas for cooking and heating. A benefit has been the raised awareness for alternative bioenergy sources, demand for bio-briquettes and pellets has far outstripped demand. Furthermore, wood was imported into Kathmandu (under rationing) putting forests under pressure. **Comments**: Demand of bio-briquettes is limited to certain regions and the cost of making bio-briquettes is rising. Instead selling char directly to companies would be more beneficial to the poor communities. The change in output 3 will be requested once the cost-benefit analysis has been completed.

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

It is too early to assess the direct impact on biodiversity and poverty alleviation. However, the awareness of local people to the impact of invasive plants on the forest as well as human and animal health has been raised and they are motivated to action. Disadvantage and marginalised poor people have already started deriving extra income by selling Char (see photos in website). Participation by women has been very encouraging, with at gender balance being at least 50:50. Local women groups have been encouraged to participate in the project, and have become confident to be involved in project activities.

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

SDG 1 No poverty: Rural poor groups are already deriving additional income from producing and selling char. In future year's poverty will be alleviated through improved productivity of land infested by invasive plants.

SDG 5 Gender Equality: Involvement of women in the project – women's groups and individuals have participated actively in the project, with at least 50:50 gender balance.

SDG10 Reduced inequalities: Involvement of disadvantage and marginalised groups. We are working in some of the poorest areas of Nepal, and marginalised groups are already participating (e.g. Dalits)

SDG15 Life on land: Management of Invasive species. Lands infested by invasive species are being cleared and the path to restoration has started.

SDG16 Partnership: Partnership between local and both government- nongovernmental organizations is strong, bringing together diverse expert groups to tackle the problem of Invasive alien plants and the negative effect these have on biodiversity and local people.

5. Project support to the Conventions, Treaties or Agreements

This project primarily supports the CBD. In Year 1 the following are relevant and will be strengthened and extended in years 2 and 3. The Nepalese CBD focal point is within our Government project partner and so included in internal discussions.

Art 7 – capacity to identify and monitor species has been highlighted during workshops, and the University staff and students have been actively engaged in fieldwork collecting, recording and identifying invasive plant species in the project areas. This will also inform conservation measures needed and sustainable use. [Aichi Target 9]

Art 8 – local community groups now understand the importance of biodiversity, and threats from invasive plants, and have agreed to incorporate biodiversity (including invasive plants and restoring degraded lands) in their management plans. [Aichi Target 5 & 7]

Art 10 - government and private sector project partners working together to raise awareness and empower local people (through workshops and follow on activities) to conserve biodiversity and use it sustainably. [Aichi Target 1]

Art 12 - capacity has been built both within project partners and with participants on the project, through working together and sharing experiences in workshops and other project activities. This has included international collaborations to address real issues with invasive plants in Nepal [Aichi Target 19].

6. Project support to poverty alleviation

A major part of the project is aimed at supporting poverty alleviation, and the local communities we are working with are all from poor areas of Nepal (these are documented earlier in this report). It is too early to show direct evidence, but it is noticeable that at the local level, disadvantaged (Dalit) women are already involved in the production and sale of char. HELVETAS Nepal helped the community by linking the product to the market, and they will soon be selling char to companies' involved making pellet and bio-briquette. A more detail socio-economic report on income generation and other aspects of poverty alleviation will be available for next reporting period.

7. Project support to gender equality issues

The lead partner organisations and implementing partners all have gender equality as a core value, and we actively encourage women to be involved in the project. This mirrors the Government of Nepal's focus on addressing gender inequality. Many women have commitments to their families and so, wherever possible, we timetable activities to minimise conflicts with these commitments and facilitate their participation. Two of the community forest user groups selected for project interventions are led by a women-only team (see site report), and the participation of women in the first round of workshops was also high (Nawaliparasi 33%, Bardia 43%,and Makwanput 40%, see workshop report). In addition we are paying local womens groups to help with the logistical arrangements (e.g. providing catering), which is promoting inclusion in project activities and increasing the income of these groups and not just individuals.

8. Monitoring and evaluation

The overall progress is monitored and evaluated regularly by Team Leader Dr Mark Watson and RBGE project officer (Bhaskar Adhikari). Within Nepal, CDB-TU formed their own project management committee to monitor the progress (see Doc. 9. CDB-TU report). NAST also have project management committee which meets every 3 months, sometimes more frequently if needed. RBGE appointed in-country part-time M & E consultant Dr Bhima Dhungana (CV attached Doc. 7) to oversee the overall project activities, and we are awaiting her first report. Financial monitoring in RBGE is provided by RBGE finance officer. Bhaskar Adhikari spent two weeks in Nepal in early April working with partners to discuss monitoring and evaluation, particularly with respect to Annual Reporting as required by the Darwin Initiative. This cemented the requirement for regular reports on activities to provide evidence of achievements and monitor progress. A mid-term review will be undertaken with all project partners in Nepal in September, and any changes to the log frame agreed by partners and then submitted as Change Requests.

9. Lessons learnt

As mentioned earlier, the delay to the start of the project coupled with a longer than expected recruitment process for in-country project officers has meant that we were later than planned in starting the field activities. Most of this time has now been made up, and we will be back on track by the end of Y2 Q2. The delays in recruiting were partly caused by some complex administrative procedures of in-country partners, initially poor number of applicants resulting in re-advertising and better promotion of the jobs, and also problems with sending money transfers to Nepal. Sending money by electronic transfer has become more stringent in recent times and lessons were learnt by our finance department. We are now sending money well in advance of when it is needed and have a better system of recruitment in place. Budget difficulties have been caused by the loss of value of the pound, resulting in ca. 15% reduction in the money available in Nepalese Rupees for payment of activities in Nepal. This has affected Y1 activities, but the loss of income has been offset by reduced spend on the project officers. The loss of income will be more keenly felt in Y2 and Y3 (assuming the rate does not alter significantly) and we will need to look at reducing activities in Nepal to fit the revised budget. Lastly, the economics and interest in bio-briquettes has altered significantly in the last 18 months in Nepal, and it looks likely that we will reduce activities in this area and increase focus on char and biochar. A cost benefit analysis with local people is being undertake to assess the situation and develop a programme that best fits their needs and interest. All projects need to keep monitoring the needs and interest of the local stakeholders and be agile in their approach, adapting activities to make them more appropriate and ultimately more successful. These lessons learned will be reflected upon during the mid term review (Sept 2014) and built into the second half of the project.

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

Not applicable.

11. Other comments on progress not covered elsewhere

All aspects have been fully covered in the report.

12. Sustainability and legacy

Invasive Alien Plants are a common problem in forest ecosystems in Nepal. This project is first of its kind ever carried out in Nepal, and there is increasing interest, particularly with local communities (as seen in active participation and feedback during workshops). The management and utilization of invasive plants is now being incorporated into community forest operational plans to ensure a sustained legacy, and other community forest groups from adjacent areas will be involved in awareness raising to promote the activities. The project website will provide free and open access to project outputs. The planned exit strategy is still valid but will be monitored regularly, particularly in the mid-term review. Building capacity and knowledge transfer within project partners and within the local communities is key to ensuring a sustained legacy, along with embedding biodiversity conservation and sustainable use within management plans.

13. Darwin identity

This is a stand-alone project with clear identity, with major funding from the DI. This is recognised in all aspects of the project, and the role of the UK Government in supporting the DI is clearly made. The Darwin Initiative (DI) logo is used in all workshops banners, and printed materials (see attached supporting documents). A logo sticker has been produced to label all the equipment bought through DI funds. The Government of Nepal and other organizations are very familiar with Darwin Initiative from several high profile DI funded projects in Nepal, and the support of the UK Government, through the Darwin Initiative, is widely understood. The Team Leader Dr Mark Watson also gave a presentation on DI during the first planning meeting in June 2016 in Kathmandu.

Twitter, Facebook and Flickr accounts have been set up, and now linked with the project website. Because of Internet problem in some places in Nepal, the in-country use of these has started slowly, but we are discussing how to make these more effective and reach more people.

14. Project expenditure

Table 1: Project expenditure during the reporting period (1 April 2016 – 31 March 2017)

Project spend (indicative) since last annual report	2016/17 Grant (£)	2016/17 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs			-0.6	
Consultancy costs				
Overhead Costs			0	
Travel and subsistence			3.9	
Operating Costs			0	
Capital items (see below)			-0.4	
Others (see below)			-2.4	
Monitoring and Evaluation			0	
TOTAL			**0**	

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2016-2017

Project summary	Measurable Indicators	Progress and Achievements April 2016 - March 2017	Actions required/planned for next period
Impact Reduction and ultimate eradication of invasive plants in forests, farmland and wild habitats in Nepal: improving biosecurity, safeguarding globally significant biodiversity, and improving livelihoods and wellbeing of natural resource-dependent people.		It is too early to demonstrate tangible impacts, but the steps towards this have been put in place. Local communities have increased awareness of invasive plants and the negative effects they have on productivity of the land, natural resource availability, biodiversity and livelihoods. Communities have committed to action with reduction and eradication of invasive plants being incorporated into management plans. Eradication has begun, and so has the production and selling of char.	
Outcome Increased knowledge, awareness and effective management of invasive plants in Nepal. Safeguarding and restoring biodiversity, creating climate smart alternative sources of bioenergy and soil improvement, and enhancing livelihoods and wellbeing.	**0.1** 15 CFUGS (representing 750 households/3750 people - of which 2000 are women) in 3 VDCs in 3 districts in Western, Mid-Western and Far Western Development Regions of Nepal (Nawalparasi, Dailekh and Bhajura) engaged in capacity building activities and provided with a clear understanding of invasive plants and climate reliance/adaptation methodologies by Year 1, actively implementing invasive plant management guidelines by Year 2. **0.2** 30% of invasive species-dominated forest areas (both natural and managed, total area of infested forests in 3 VDCs established in Year 1 baseline survey) restored, with the management of regrowth of native species undertaken, and nursery areas for replanting established or linked with 15 Community Forests and private lands by Year 3.	**0.1** 15 CFUGS were selected (representing 4977 household/27,814 people). Working MoU signed with all 15 CFUGs. Y1 workshops completed in three districts. **0.2** Area identified, the baseline survey completed. The removal of invasive species has started in Nawalparasi and Makwanpur districts. **0.3** Three MSc students completed their first field work (see Doc. 9 CDB_TU report; Doc 17 list of specimens) on flora of three districts. **0.4.** The production of bilingual manual for the identification of invasive species has been started. Three species were uploaded in the web for trial. **0.5.** Baseline socio-economic survey data collection completed (template	0.1 More intensive practical training and workshops are planned for Y2 & 3. 0.2. Removal of invasive species and restoration activities planned for Y2 and Y3. 0.3. Second field trip is planned for Y2. Identification of all collected samples will be complete by the end of Y2. 0.4. Awareness raising articles will be published in Y2. 0.5. Change will be monitored in Y2

	0.3 Establishment of a comprehensive science-based knowledge-base for weed species in Community Forests and agricultural ecosystems in 3 districts of Nepal, including horizon scanning for potential future invasive plants, by Year 2. **0.4** Public awareness raised of the 20 nationally most problematic invasive plants in Nepal; 15 CFUGS capable of identifying all local invasive plants and reporting new plant invaders in their local area; and 750 rural households (disaggregated by gender) empowered with knowledge on uses of invasive plants to improve livelihoods by Year 3. **0.5** With reference to Government of Nepal 2011 Census data and Year 1 baseline socio-economic survey data, a 30% increase in the use of alternative bioenergy sources in 750 rural households (disaggregated by gender), and 30% reduction reported in the use of wood as the primary fuel by end of Year 3, and contributing to enhanced wellbeing of household members. **0.6** 3 local women's groups (including people from ca. 30 households) with enhanced livelihoods by producing and deriving incomes from charcoal densified products (e.g. bio-briquettes, pellets) by end of Year 3. **0.7** Low-tech, local biochar manufacture facilities established in 3 VDCs, 15 CFUGS using biochar to increase soil fertility and sequester carbon in restored lands by Year 3.	attached, Doc 15) **0.6.** Women groups were identified in all three districts. The market has been linked in Makwanpur and Nawalparasi districts. 0.7. Bio-char technology has been introduced in 15 CFUGs (see workshop reports Doc. 1-3).	0.6. Support women group for production of Char and monitor the progress. 0.7. Intensive practical training on Bio-char production and it's application on farmlands is planned for Y2. Some trail plots will be established to quantify the effect of biochar on the production.

Output 1. Capacity for managing and controlling invasive plants built, practical control methods employed, and restoration of land degraded by invasive plants into economically and environmentally beneficial habitats initiated in 15 CFUGS.	**1.1** 15 CFUGS in 3 districts of Nepal are engaged in training and provided with management guidelines, training and supervision, and practical guidance in managing and controlling invasive plants by Year 1. Best practices incorporated into CFUGS management plants **1.2** 15 CFUGS engaged in practical control measures for invasive plants undertaken in 15 Community Forests and private lands by Year 2, and effective management of regrowth/seedlings of invasive plants undertaken by Year 3. **1.3** Selection and documentation of 15 native, economically and/or environmentally important plants which are suitable for use in restoring degraded habitats (e.g. cleared of invasive plants) by Year 1. Nursery areas established in or existing nurseries linked with 15 CFUGS by Year 3. **1.4** 15 CFUGS engaged in initiating forest restoration plans, including replanting of native species in 15 areas cleared of invasive plants by Year 3.	1.1 Project inception meeting and workshops in three districts completed (evidence provided insection 3.1, Doc 1-3, 11). MoU signed with CFUGs to include control and management of IAS on Forest operational Plan (see Doc 14, In nepali) 1.2 Char production has been started in Makwanpur and Nawalparasi district (see photos in project website) 1.3 Prioritization and selection of species has started in consultations with forest user group. CFUGs in Nawalparasi preferred fodder species. 1.4 Planned for Y2 and Y3	
Activity 1.1 Hold planning and stakeholder workshops, taking a participatory approach to providing training, enhancing the knowledge of local communities and raising awareness on the identification, impact, control and management of		Planning meeting and workshops in three districts completed for Y1 (Workshop report attached, Doc 1-3). To raise awareness on invasive species a brochure in Nepali language was produced and distributed to the local people (Doc 12).	

invasive plants.		Invasive species removal is now being incorporated under CFUG operational plans. Removal of IAS has just started progress report under way.
Activity 1.2 Work with CFUGs to undertake effective practical action for the removal and on-going control of invasive plants, with training and support, and assess the impact of this work.		Removal of Invasive species has been started recently in Makwanpur and Nawalparasi districts (see photos in the project website), and will be continued to year 2. Rapid survey to identify invasive species completed (see site report Doc 4). More detailed survey is on-going (survey template attached, Doc 13)
1.3 Hold meetings with experts to agree on target species for replanting and work with government and local plant nurseries, and CFUGs, to undertake replanting of reclaimed lands with native, economically useful plants.		The initial consultation with CFUGs completed. The work is underway to finalize the list of economically useful plants.
1.4 Research, build and disseminate a science-based knowledge resource for invasive plants, and take a participatory approach to incorporating into CFUG Management Plans the lessons learned in best practice in restoration of lands degraded by invasive plants.		Most of the activities has been planned for Y2 and Y3.
Output 2. Weed species researched and evaluated and local community understanding of invasive plants enhanced. A national list of priority invasive plants established, supported by a bilingual identification manual and the raising of public awareness.	**2.1** Science-based inventory of weed species in 3 districts of Nepal completed in Year 2, highlighting known invasive plants and spotlighting potential future problematic species. At least 20 MSc students trained in fieldwork techniques. **2.2** 15 CFUGS with enhanced understanding of local invasive plants and skills in identifying new invasive and potentially problematic plants, and CFUG Management Plans updated by Year 3. **2.3** Evidence-based national list of 30-40 priority invasive species compiled and documented, and submitted to Government of Nepal to underpin policy decisions by Year 2. **2.4** GIS niche modelling of 10 potentially invasive species undertaken, and horizon scanning reported to Government of Nepal by Year 3. Pilot study applying Remote Sensing methodologies to detect *Lantana camara* and two other invasive	2.1 Three MSc students collected 886 herbarium specimens during their first trip, and 25 invasive alien plant species have already been identified from the project sites (see CDB_TU Annual Progress Report, doc 9). 2.2. Work has been started, planned for Y2 and 3. 2.3. Planned for Y2 2.4. Planned for Y2 and 3. Initial consultation and data collection started. 2.5. The work on bilingual identification manual has been started and three of them are available in web for testing (www.invasiveplantsnepal.org). Publication of awareness materials planned for Y2 and 3. 2.6. The website has been developed to disseminate knowledge and share project reports, and will be updated frequently in Y2 and Y3

	species completed by Year 3. **2.5.** Bilingual identification manual covering the national priority invasive plant species published and 20 monthly newspaper and online popular articles featuring invasive plants published by Year 3. **2.6** Project website established in Year 1 and used to give free and open access to project reports and other outputs during the project.	
Activity 2.1. Research, evaluate and publish inventories of the district-level weed flora in the study areas with fieldwork, sample collection and identification, enhancing reference collections, and training and capacity building of MSc students.		MSc students have started working on the inventory of the flora of 3 target districts, and completed their first trip (see CDB-TU Annual Progress Report, Doc 9). Altogether 886 herbarium specimens were collected so far (see Doc. 17).
Activity 2.2. Research and evaluate a national list of priority invasive species, and submit a report through Government partners to inform Government of Nepal policy.		Initial discussion has been started will be ready for Y2 reporting
Activity 2.3 Research, develop and publish a photographic identification manual (and other educational materials on a project website), tested by communities, to inform and raise awareness of invasive plants both at a local level with communities and nationally with the general public.		Work has been started, first draft of three species completed (see www.invasiveplantsnepal.org)
Activity 2.4 Use the improved species distribution mapping to investigate the likely unrestricted spread of 10 current or potentially invasive plants using GIS niche modelling techniques, and undertake a Remote Sensing pilot study on one high-priority problem species, submitting papers for publication.		Planned for Y2 and Y3, however discussion on methods and initial data collection started (see Doc 10, minutes of skype meeting)
Output 3. Charcoal densification technologies (e.g. beehive bio-briquettes and pellets) successfully introduced and densified charcoal products made from invasive plants and other waste biomass. DCPs used as an alternative to fossil fuels and firewood as a domestic fuel source, and small-scale women-run co-operatives derive alternative incomes from bio-briquettes/pellets.	**3.1** 15 CFUGS and 7 Women's Groups, representing ca. 4000 individuals (at least half of which are women or girls), provided with information resources and engaged in practical training on the species selection and use of invasive plants and other waste biomass (e.g. fallen leaves, newspaper) for producing bio-briquettes/pellets by Year 1 **3.2** 30 women from local women's groups recruited for training in bio-	3.1 Women groups were identified. Practical training is planned for Y2. 3.2 Char production has just started at Nawalparasi and Makwanpur districts (photos in project website). Poor and disadvantaged people are involved in char production, and will be selling to the market soon. See 3.2 for more detail on bio-briquette production. 3.3 Planned for Y2 and Y3.

	briquette/pellet manufacture, at least 3 co-operatives/enterprises set up with employment to 21 people (women/target community), which produce and market ca. 120,000 bio-briquettes/pellets using 45 metric tons of charcoal by Year 3. This represents ca. 45 metric tons generating extra income and enhancing livelihoods of poor communities. **3.3** 250 rural households (30% increase from 2011 census baseline) adopting bio-briquettes/pellets as at least a partial alternative to fossil fuels and firewood, improving wellbeing by reducing time spent collecting firewood by Year 3.	
Activity 3.1 Hold workshops and meetings with community stakeholders to inform and train people in the use of invasive plant biomass, and other waste plant material (e.g. dead leaves, newspaper) to produce bio-briquettes/pellets.		Initial workshop completed, local people have started making char which they can sell directly to the market (see project website). See 3.1 for more detail on bio-briquette production. The detail practical training is planned for Y2 Q1-Q3.
Activity 3.2 Provide capacity building to local stakeholder groups in the formation of cooperatives for bio-briquette/pellet production, which have the necessary equipment, technological knowledge and practical experience.		Progress has been made, CFUGs with only women has been identified. Practical training is planned for Y2
Activity 3.3 Support local cooperatives in the production, distribution, marketing and use of bio-briquettes/pellets as an alternative source of fuel for cooking and heating.		Initial trial of making char has been started (see photos in project website). Market has been linked in Nawalparasi and Makwanpur districts. More intensive practical training is planned for Y2.
Activity 3.4 Undertake base line and monitoring socio-economic surveys to assess impact and benefits of introducing bio-briquette/pellet production on livelihoods and well-being, and incorporating best practice into CFUG Management Plans.		Baseline survey completed (survey template attached, Doc 15). The data are being analysed.
Output 4. Biochar technologies successfully introduced, biochar manufactured locally and used to improve soil fertility of degraded land and to sequester carbon.	**4.1** 15 CFUG, representing 750 rural households, provided with information resources and practical training on the	4.1. All 15 CFUGs in 3 districts have been well informed on Biochar technologies (workshop report), and user groups are very keen to use char in their farm lands. Practical training planned for Y2 when the field is ready for crop plantation. 4.2. More in-depth practical training on Biochar production will be conducted over the Y2 and Y3. 4.3. Baseline data completed (Questionnaire template, Doc. 15)

species selection and use of invasive plants for producing biochar by Year 1. **4.2** Local biochar production facilities, using appropriate low-tech technologies, established and manufacturing biochar in 3 VDCs by Year 2, and making 90 metric tons of biochar by end of Year 3. **4.3** 15 CFUGS using biochar to increase soil fertility and sequester carbon, and 20% of households using biochar for soil improvement, with estimated increase in crop yields of 20% by end of Year 3 improving livelihoods and income generation potential	
Activity 4.1 Hold workshops and meetings with community stakeholders to inform and train people in the use of invasive plant biomass, and other waste plant material, to produce biochar	All 15 CFUGs now well familiar with Biochar technology (see workshop report Doc 1-3). The level of interest in Biochar is very high among local people.
Activity 4.2 Provide capacity building and support the establishment of low-tech pyrolysis methods for biochar production and the use of biochar to improve the soil fertility of land reclaimed from invasive weed infestations.	Planned for Y2 when the farm is ready for plantation.
Activity 4.3 Undertake base line and monitoring surveys to assess the impact and benefits of biochar production and its use in improving soil fertility, restoration of lands cleared of infestations and crop yields, incorporating best practice into CFUG Management Plans.	Baseline survey completed. The data are being analysed. The trail plot will be established in Y2 for the quantitative analysis of the impact of biochar application on the production of crops.

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
Impact: Reduction and ultimate eradication of invasive plants in forests, farmland and wild habitats in Nepal: improving biosecurity, safeguarding globally significant biodiversity, and improving livelihoods and wellbeing of natural resource-dependent people. (30 words, maximum 30)			
Outcome: Increased knowledge, awareness and effective management of invasive plants in Nepal. Safeguarding and restoring biodiversity, creating climate smart alternative sources of bioenergy and soil improvement, and enhancing livelihoods and wellbeing. (30 words, maximum 30) CFUGS = Community-based Forest User Groups VDC = Village Development Committee	**0.1** 15 CFUGS (representing 750 households/3750 people - of which 2000 are women) in 3 VDCs in 3 districts in Western, Mid-Western and Far Western Development Regions of Nepal (Nawalparasi, Dailekh and Bhajura) engaged in capacity building activities and provided with a clear understanding of invasive plants and climate reliance/adaptation methodologies by Year 1, actively implementing invasive plant management guidelines by Year 2. **0.2** 30% of invasive species-dominated forest areas (both natural and managed, total area of infested forests in 3 VDCs established in Year 1 baseline survey) restored, with the management of regrowth of native species undertaken, and nursery areas for replanting established or linked with 15 Community Forests and private lands by Year 3. **0.3** Establishment of a comprehensive science-based knowledge-base for weed species in Community Forests and agricultural ecosystems in 3 districts of Nepal, including horizon scanning for potential future invasive plants, by Year 2. **0.4** Public awareness raised of the 20 nationally most problematic invasive plants in Nepal; 15 CFUGS capable of identifying all local invasive plants and reporting new plant invaders in their	**0.1** VDC annual reports, interviews with CFUGS, project reports on workshops, training and invasive plant management guidelines. **0.2** VDC annual reports, interviews with CFUGS, photographs, land-use survey project reports. **0.3.** Fieldwork and weed survey project report, project publications. **0.4.** Media articles, invasive plant manual, interviews with CFUGS, household socio-economic survey reports. **0.5.** Household socio-economic survey project reports, interviews with women's groups, women's group records/annual reports. **0.6** VDC annual reports, bioenergy project reports. **0.7** District Forest Officer annual report verifies progress of change of CFUG members livelihoods.	**1.** The political situation in Nepal remains stable to permit work, and that earthquakes, landslides and other natural disasters present no more than short-term obstacles. ***Mitigation:*** Partners are not politically aligned and have been able to work effectively under past regimes. Similarly, partners are experienced in coping with extreme environmental conditions and can schedule work to minimise impact. **2.** Local communities actively engage with the activities of the project. ***Mitigation:*** We will work with local communities within the established MSFP network as trust and effective, two-way communication are already set up and proven successful. **3.** Local communities recognise the economic, health and environmental benefits from management practices and technologies and decide to adopt them. ***Mitigation:*** Local communities will be deeply involved in training and information sharing events, promoting engagement and understanding. **4.** Household members (particularly women) recognise the benefits to themselves and the environment, and

	local area; and 750 rural households (disaggregated by gender) empowered with knowledge on uses of invasive plants to improve livelihoods by Year 3. **0.5** With reference to Government of Nepal 2011 Census data and Year 1 baseline socio-economic survey data, a 30% increase in the use of alternative bioenergy sources in 750 rural households (disaggregated by gender), and 30% reduction reported in the use of wood as the primary fuel by end of Year 3, and contributing to enhanced wellbeing of household members. **0.6** 3 local women's groups (including people from ca. 30 households) with enhanced livelihoods by producing and deriving incomes from charcoal densified products (e.g. bio-briquettes, pellets) by end of Year 3. **0.7** Low-tech, local biochar manufacture facilities established in 3 VDCs, 15 CFUGS using biochar to increase soil fertility and sequester carbon in restored lands by Year 3.		are self-motivated to adopt bioenergy and change from traditional fuel sources (wood) to bioenergy alternatives, and using biochar. ***Mitigation:*** Heads of households will be engaged and informed on the personal livelihood and wellbeing benefits of switching fuel, in addition to the wider environmental benefits. Partners provide information with engaging audio-visual aids and technology with good coordination. **5.** Partners involved remain committed to the project. ***Mitigation:*** Partners have an excellent track record in collaborative projects, and this will be maintained through regular communication and involvement in monitoring and evaluation. **6.** The recent fuel crisis in Nepal caused severe transport problems and critical shortages of gas for cooking and heating. A benefit has been the raised awareness for alternative bioenergy sources, demand for bio-briquettes and pellets has far outstripped demand. Furthermore, wood was imported into Kathmandu (under rationing) putting forests under pressure. ***Mitigation:*** partners are experienced in working during periods of fuel shortages and adapt workplans to cater for restrictions.

Output 1 Capacity for managing and controlling invasive plants built, practical control methods employed, and restoration of land degraded by invasive plants into economically and environmentally beneficial habitats initiated in 15 CFUGS.	**1.1** 15 CFUGS in 3 districts of Nepal are engaged in training and provided with management guidelines, training and supervision, and practical guidance in managing and controlling invasive plants by Year 1. Best practices incorporated into CFUGS management plants **1.2** 15 CFUGS engaged in practical control measures for invasive plants undertaken in 15 Community Forests and private lands by Year 2, and effective management of regrowth/seedlings of invasive plants undertaken by Year 3. Checks on active cultivation of alien species as a bioenergy source undertaken in Years 2 and 3. **1.3** Selection and documentation of 15 native, economically and/or environmentally important plants which are suitable for use in restoring degraded habitats (e.g. cleared of invasive plants) by Year 1. Nursery areas established in or existing nurseries linked with 15 CFUGS by Year 3. **1.4** 15 CFUGS engaged in initiating forest restoration plans, including replanting of native species in 15 areas cleared of invasive plants by Year 3.	**1.1** Project workshop reports, guideline documents, CFUGS interviews and management plans. **1.2** CFUGS interviews, fieldwork surveys, project reports. **1.3** Replanting guidelines project report, Government policy brief. **1.4** Interviews with CFUGS and households, photographs, fieldwork surveys, project reports.	Assumptions as above, especially 2 & 3.
Output 2 Weed species researched and evaluated, and local community understanding of invasive plants enhanced. A national list of priority invasive plants established, supported by a bilingual identification manual and the raising of public awareness.	**2.1** Science-based inventory of weed species in 3 districts of Nepal completed in Year 2, highlighting known invasive plants and spotlighting potential future problematic species. At least 20 MSc students trained in fieldwork techniques. **2.2** 15 CFUGS with enhanced understanding of local invasive plants	**2.1** Annotated inventory of weed species project report, fieldwork reports. **2.2** Interviews with CFUGS, project workshop reports. **2.3** National priority invasive plant report submitted to Government of Nepal.	Assumptions as above, especially 2 & 3.

	and skills in identifying new invasive and potentially problematic plants, and CFUG Management Plans updated by Year 3. **2.3** Evidence-based national list of 30-40 priority invasive species compiled and documented, and submitted to Government of Nepal to underpin policy decisions by Year 2. **2.4** GIS niche modelling of 10 potentially invasive species undertaken, and horizon scanning reported to Government of Nepal by Year 3. Pilot study applying Remote Sensing methodologies to detect *Lantana camara* and two other invasive species completed by Year 3. **2.5.** Bilingual identification manual covering the national priority invasive plant species published and 20 monthly newspaper and online popular articles featuring invasive plants published by Year 3. **2.6** Project website established in Year 1 and used to give free and open access to project reports and other outputs during the project.	**2.4** Invasive plant species horizon scanning project report, research paper submitted to international peer-reviewed journal. **2.5** Published identification manual, articles in national newspapers and online (e.g. project website). **2.6** Project website.	
Output 3 Charcoal densification technologies (e.g. beehive bio-briquettes and pellets) successfully introduced and densified charcoal products made from invasive plants and other waste biomass. DCPs used as an alternative to fossil fuels and firewood as a domestic fuel source, and small-scale women-run co-operatives derive alternative incomes from bio-	**3.1** 15 CFUGS and 7 Women's Groups, representing ca. 4000 individuals (at least half of which are women or girls), provided with information resources and engaged in practical training on the species selection and use of invasive plants and other waste biomass (e.g. fallen leaves, newspaper) for producing bio-briquettes/pellets by Year 1 **3.2** 30 women from local women's	**3.1** Interviews with CFUGS and Women's Groups, workshop reports, bioenergy project report. **3.2** Interviews with Women's Groups, Women's Group records, photographs, project reports and socio-economic survey. **3.3** Household socio-economic survey, photographs, project report.	Assumptions as above, especially 2, 3 & 4.

briquettes/pellets.	groups recruited for training in bio-briquette/pellet manufacture, at least 3 co-operatives/enterprises set up with employment to 21 people (women/target community), which produce and market ca. 120,000 bio-briquettes/pellets using 45 metric tons of charcoal by Year 3. This represents ca. 45 metric tons generating extra income and enhancing livelihoods of poor communities. **3.3** 250 rural households (30% increase from 2011 census baseline) adopting bio-briquettes/pellets as at least a partial alternative to fossil fuels and firewood, improving wellbeing by reducing time spent collecting firewood by Year 3.	**3.4** District Forest Officer annual report verifies progress of change of CFUG member's livelihoods.	
Output 4 Biochar technologies successfully introduced, biochar manufactured locally and used to improve soil fertility of degraded land and to sequester carbon	**4.1** 15 CFUG, representing 750 rural households, provided with information resources and practical training on the species selection and use of invasive plants for producing biochar by Year 1. **4.2** Local biochar production facilities, using appropriate low-tech technologies, established and manufacturing biochar in 3 VDCs by Year 2, and making 90 metric tons of biochar by end of Year 3. **4.3** 15 CFUGS using biochar to increase soil fertility and sequester carbon, and 20% of households using biochar for soil improvement, with estimated increase in crop yields of 20% by end of Year 3 improving livelihoods and income generation potential.	**4.1** Interviews with CFUGS, workshop reports, project reports. **4.2** VDC annual report, workshop reports, photographs, bioenergy project report. **4.3** VDC annual report, photographs, project report.	Assumptions as above, especially 2, 3 & 4.

Activities

Output 1. Invasive plants controlled and degraded lands restored

1.1 Hold planning and stakeholder workshops, taking a participatory approach to providing training, enhancing the knowledge of local communities and raising awareness on the identification, impact, control and management of invasive plants.

1.2 Work with CFUGs to undertake effective practical action for the removal and on-going control of invasive plants, with training and support, and assess the impact of this work.

1.3 Hold meetings with experts to agree on target species for replanting and work with government and local plant nurseries, and CFUGs, to undertake replanting of reclaimed lands with native, economically useful plants.

1.4 Research, build and disseminate a science-based knowledge resource for invasive plants, and take a participatory approach to incorporating into CFUG Management Plans the lessons learned in best practice in restoration of lands degraded by invasive plants.

Output 2, Weed species evaluated and communicated

2.1 Research, evaluate and publish inventories of the district-level weed flora in the study areas with fieldwork, sample collection and identification, enhancing reference collections, and training and capacity building of MSc students.

2.2 Research and evaluate a national list of priority invasive species, and submit a report through Government partners to inform Government of Nepal policy.

2.3 Research, develop and publish a photographic identification manual (and other educational materials on a project website), tested by communities, to inform and raise awareness of invasive plants both at a local level with communities and nationally with the general public.

2.4 Use the improved species distribution mapping to investigate the likely unrestricted spread of 10 current or potentially invasive plants using GIS niche modelling techniques, and undertake a Remote Sensing pilot study on one high-priority problem species, submitting papers for publication.

Output 3. Bio-briquette technologies successfully implemented

3.1 Hold workshops and meetings with community stakeholders to inform and train people in the use of invasive plant biomass, and other waste plant material (e.g. dead leaves, newspaper) to produce bio-briquettes/pellets.

3.2 Provide capacity building to local stakeholder groups in the formation of cooperatives for bio-briquette/pellet production, which have the necessary equipment, technological knowledge and practical experience.

3.3 Support local cooperatives in the production, distribution, marketing and use of bio-briquettes/pellets as an alternative source of fuel for cooking and heating.

3.4 Undertake base line and monitoring socio-economic surveys to assess impact and benefits of introducing bio-briquette/pellet production on livelihoods and well-being, and incorporating best practice into CFUG Management Plans

Output 4. Biochar technologies successfully implemented

4.1 Hold workshops and meetings with community stakeholders to inform and train people in the use of invasive plant biomass, and other waste plant material, to produce biochar.

4.2 Provide capacity building and support the establishment of low-tech pyrolysis methods for biochar production and the use of biochar to improve the soil fertility of land reclaimed from invasive weed infestations.

4.3 Undertake base line and monitoring surveys to assess the impact and benefits of biochar production and its use in improving soil fertility, restoration of lands cleared of infestations and crop yields, incorporating best practice into CFUG Management Plans

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								
2	Msc Thesis	1 M, 2 F	Nepali		3			3
10	Identification manuals for Invasive Species				15	15		30
7	IAS awareness leaflet			1				1
10	Identification manuals for economically useful species				10	10		20
11A	Niche modelling and Remote sensing paper					2		2
14A	District level workshops			3	3	3	3	9
14B	Seminar RBGE				1	1		2
20	Computers, scanners, cameras			£9200				
23	Other sources including contribution inkind			£66922				

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)

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

Please find the attached supplementary documents- Doc 1-17

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Checklist for submission

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