

Darwin Initiative – Final Report

(To be completed with reference to the Reporting Guidance Notes for Project Leaders
(<http://darwin.defra.gov.uk/resources/reporting/>) -

it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

Darwin project information

Project Reference	EIDPO 026
Project Title	A Forest Restoration Research Unit Facilitating Biodiversity Recovery in Cambodia
Host country(ies)	Cambodia and Thailand
UK Contract Holder Institution	Royal Botanic Gardens, Kew (RBGK)
UK Partner Institution(s)	
Host Country Partner Institution(s)	Forestry Administration Cambodia (FA) and FORRU, Chiang Mai, Thailand (FORRU-CMU)
Darwin Grant Value	£116,443
Start/End dates of Project	1 April 2009 to 31 March 2011, extended to 30 June, 2011
Project Leader Name	Kate Hardwick and David Blakesley
Project Website	
Report Author(s) and date	Kate Hardwick, David Blakesley, Stephen Elliott, Nup Sothea and Kim Sobon; September 20, 2011.

1 Project Background

This Post Project supported the Forestry Administration of Cambodia to implement their national FORRU (Forest Restoration Research Unit) plan, developed under the Main Project (14-010), based on the successful model developed by FORRU-CMU at Chiang Mai University, Thailand, using the 'Framework Species Method' of forest restoration (see also project 162/11/023).

The project has established the first FORRU for Cambodia, on the boundary of Phnom Kulen National Park, in Banteay Srey District, Siem Reap Province, which is located in northwestern Cambodia, on the shores of the Tonle Sap lake (see Fig. 1).

Outstanding achievements include: a Cambodian team trained in forest restoration techniques; a forest restoration research nursery, phenology trail and trial plot system established; original and practical information generated to facilitate the use of more than 50 native forest tree species for ecological restoration; a significant contribution towards a growing interest in forest restoration in Cambodia.

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

One of the key aims of this project was to build capacity within the Forestry Administration Cambodia to generate new data to enable it to meet its obligations under the CBD. The project and its workshops have enabled the host institute to develop effective techniques to restore forest ecosystems by adapting the frameworks species technique to enhance biodiversity recovery (CBD Article 8(f) and Article 10(d)). The project has fostered international technical and scientific co-operation (Article 18) between Cambodia, Thailand and the UK; and provided research and training (Article 12) leading to technology transfer (Article 16) and information exchange (Article 17).

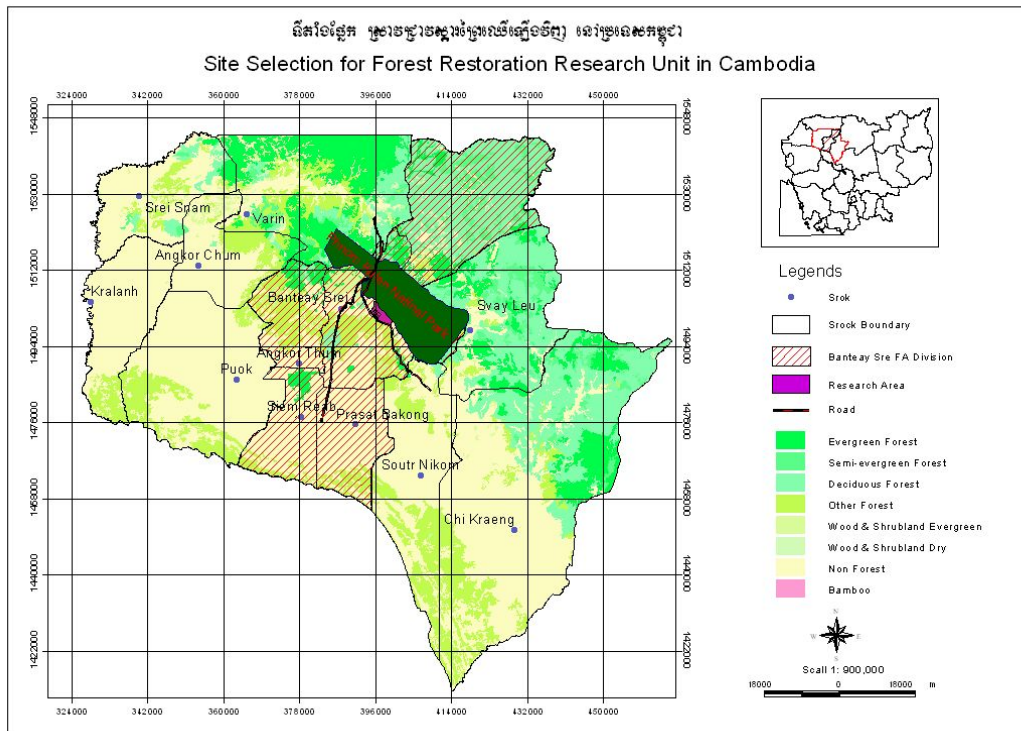


Figure 1: Location Map of the Project

3 Project Partnerships

This project is based on a partnership between the Royal Botanic Gardens, Kew (RBGK) and the Forestry Administration Cambodia (FA), working in collaboration with Wildlife Landscapes, UK and Chiang Mai University's Forest Restoration Research Unit, Thailand (FORRU-CMU); . A Memorandum of Collaboration was signed by RBGK and the FA. Project finances have been administered by George Sarkis (RBGK), who replaced the previous project accountants, Ruth Bartholomew and Andrew Garrod. The project has been led by Drs Hardwick (RBGK) and Blakesley in the UK, Dr Elliott in Thailand (training) and Nup Sothea in Cambodia (FORRU implementation). Kate Gold and Stephanie Miles of RBGK provided additional training on seed collection and storage, and RBGK carried out supplementary seed testing on selected species, to determine their viability and storage potential.

Following a series of face-to-face meetings early in the project, between the UK project leaders, staff at RBGK, and Dr Elliott, relationships were managed by telephone, email and Skype. The partnerships worked well, and in the second year, a training workshop was immediately followed by a round-table meeting at the Forestry Administration HQ, Phnom Penh, on 17 Sept 2010, to discuss the future of FORRU-Cambodia, following the end of Darwin funding in June 2011, responding to comments raised by the reviewer of the Annual Report concerning project continuance and legacy.

The meeting sought to i) involve a wider range of potential stakeholders in FORRU-Cambodia and ii) to establish mechanisms to spread the outputs of FORRU-Cambodia to other parts of the country. New potential partners represented at this meeting included the Royal University of Agriculture, the Royal University of Phnom Penh, WWF-Cambodia and Non-Timber Forest Products-Cambodia. Comments from the UK project leaders and the Darwin reviewer were also presented for discussion.

This was followed by a second meeting of potential partners at the FA HQ, on 5 Nov 2010, to further refine the concept note for the next phase of the project.

The second year ended with a successful workshop for project staff and future potential partners in Cambodia, on 14-15 Mar 2011. The achievements of the Darwin project were showcased at this event, which included visits to the nursery and demonstration field plots.

Following this, presentations were made by guest speakers from other organisations, and a discussion was held to plan a strategy for future joint projects building on the legacy of the Darwin project.

This workshop was followed by the second and final planting event in June 2011, for which an extension was granted by the Darwin Secretariat.

Minutes of all meetings are available on request.

4 Project Achievements

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

The knowledge-base accumulated during this project concerns the reproductive ecology and horticulture of more than 50 indigenous tree species. Usually in Cambodia, reforestation has been carried out with single species plantations, often of exotic species. The first version of the database (supplied) on more than 50 indigenous tree species of Siem Reap Province has been distributed on DVD and will enable greater use of native forest tree species in the future and hence more biodiverse tree planting projects. Working with the extension division of the FA means that the information is immediately available to community groups as part of the FA's regular extension program. Community groups participated in the tree planting events under this project and the NGO's that represent them also joined in all workshops and planning meetings. The growing network of organizations which attended the later workshops is testament to the demand for knowledge to enable use of more native forest tree species in reforestation programs (including REDD+ projects) in Cambodia and the ability of this project to provide it. The field trial plot system provides a visual statement of the effectiveness of the species and methods tested and an educational/research facility for further development and promotion of the use of native tree species in reforestation programs. The trial plots are already being used by one MSc student for his thesis research.

4.2 Outcomes: achievement of the project purpose and outcomes

The purpose of this project was to 'support the Forestry Administration of Cambodia to implement their national FORRU plan.' This involved establishing an experimental tree nursery, a phenology trail, the collection and storage of tree seeds, the development of effective tree propagation techniques, the establishment field trial plots and a strategy for securing funds to continue the project after the end of Darwin funding. All of these activities have been completed, and the project has achieved its purpose.

Two of the purpose level indicators in the project's current logframe have been monitored and there is evidence of this in the various reports and documents submitted with this Final Report (and the earlier First Annual Report). The partners have also made good progress towards the third indicator (securing research grants by the end of the project), although funding has not yet been secured. New potential partners who have attended one or more of three meetings on expanding the project in the future, include, the Royal University of Agriculture, the Royal University of Phnom Penh, WWF-Cambodia, PACT, GTZ, and Non-Timber Forest Products-Cambodia. Interest has been shown in expanding the FORRU programme to new sites at:

- Chiphat, Cardamom Mnts, Koh Kong province (in collaboration with Wildlife Alliance);
- Kampong Chhnang, Takeo, part of Kg. Speu (with the RUA School of Forestry);
- REDD+ project in Otdor Meancheay province (with PACT);
- REDD project in Seima (with WCS);
- Proposed REDD+ project at Prey Long forest complex in Kratie, Stung Treng, and Kampong Thom Provinces (with Conservation International-FA).

Potential funding sources which are being targeted include JICA-Japan, ITTO, RECOFT and the Blue Moon Foundation. Overall, the project has progressed well and was well managed and supported.

4.3 Outputs (and activities)

Overall, the project successfully met its outputs (and activities) as listed in the logical framework. The first year activities consisted of the establishment of a nursery, the initiation of species trails and a series of training events to support that work. There was some variation in the timetabling of these activities, mainly due to factors outside of the project leaders' control. There was also some adjustment of the focus for the training due to the low level of scientific knowledge among the nursery staff. Reports of the workshops along with more practically orientated documents such as phenology and germination recording sheets were included with the First Annual Report submission package. Species trials continued throughout the second year, when the first planting trials were undertaken (June 2010). A second planting trial was set up in June 2011 (a three month extension to accommodate this event was agreed with the Darwin Secretariat). One major outcome from the workshops has been an increase in interest in setting up similar research units in other parts of Cambodia (see section 4.2). Reports on workshops held in Year 2 are included in this Final Report package.

4.4 Project standard measures and publications

Annex 4 and Annex 5 completed.

4.5 Technical and Scientific achievements and co-operation

Technical research was carried out by FA staff, in collaboration with local villagers and with training from FORRU-CMU. It included: i) collection of phenology information from tree species along trails in remnant forest, to determine optimal seed collection times; ii) seed germination trials; iii) seedling growth trials in the nursery and; iv) tree performance monitoring after planting out in degraded areas. The methodologies followed for all these experiments were those developed under the previous Darwin project and published in "Research for Restoration Tropical Forest Ecocystsems" (Khmer language edition). The main research findings amount to optimum methods to propagate and plant more than 50 indigenous forest tree species. Results from all experiments were integrated into a database system, so that anyone interested in growing/planting these indigenous forest tree species now has much of the information required to do so. The FA team were trained in the use and expansion of the database and, since key persons are in the Extension Division of the FA (responsible for outreach activities), they are in a good position to distribute the information and encourage its use.

FA staff and FORRU-CMU staff are currently collaborating on a scientific paper "Selection of framework tree species for restoring W. Cambodia's forest ecosystems". A meeting is planned for late 2011 to review field data from this year's plots.

4.6 Capacity building

The capacity of host country partners in Cambodia has been significantly increased throughout the Darwin project. This has been achieved through a series of training workshops, many of which were additional to those planned at the outset. These workshops have covered a range of topics, from the setting up of phenology trails and seed handling, through to the organisation of planting events, the involvement of local communities and the analysis of data. The host country partner is now in a strong position to lead further research and development projects in this area, with the involvement of new partners who attended the workshops on future projects held in the second year.

This project was one of the first to be undertaken to meet RBGK's 'habitat restoration' objective, under the Breathing Planet Programme, launched in 2008. Involvement in the project has given valuable experience to the RBGK staff involved in project management, seed management training and seed testing, and has led to discussions on supporting further tropical forest restoration and REDD+ projects elsewhere in Asia, Africa and South America.

4.7 Sustainability and Legacy

The project has trained many staff members to a level where they can train other workers. One of the workshops involved a range of Cambodian FA personnel from other parts of the country who indicated their interest in establishing forest restoration research units within their own areas. The project has also worked with representatives of other organisations in Cambodia

(see Section 4.2) and officials from other departments within the FA, such as the Gulf Inspectorate, Climate Change Office, Forestry Administration Triage, the Forest Wildlife Office and various Forestry Administration Cantonments. This is an indication that the skills learned within the project will be applied and are being disseminated in other parts of Cambodia. Whether this will continue to happen beyond the timeframe of the project depends on further funding being raised or the unit and its work being fully incorporated, supported and funded within the FA. The lead partner in the UK, RGB Kew are continuing to work closely with the host country partner in Cambodia in an effort to secure further funding for the project, and are keen to support the project in the future. Training and support will continue to be available from FORRU-CMU in Thailand.

5 Lessons learned, dissemination and communication

The Framework Species Technique has been developed in Cambodia for the first time. Both the FORRU-Cambodia team and local foresters have learned a lot about the various steps of the technique, from their experiences working with this project. Work in Cambodia started with the establishment of a phenology trial, and included seed collecting, seed germination, seedling growth experiments in the nursery and tree planting in the field. This work was undertaken with a wide range of different tree species. The project has also delivered new silvicultural expertise to the Cambodian participants. Finally, Cambodian partners have learnt more about the collection of field data, and the management and processing of data, including statistical analysis.

Much of the information achieved during the project was disseminated and applied in the final workshop of the project in March, 2011. The target audience who participated included officers and trainees from Institute of Forest and Wildlife Research and Development, local foresters, Siem Reap FA cantonment, University (Royal University of Agriculture and Royal University of Phnom Penh), FAO, Recoftc from Bangkok, GTZ – handy craft project base in Siem Reap province and JICA.

Although the Darwin project has officially been completed, the dissemination of information will continue. Further funding is required to continue the project activities and to maximise the achievements of the framework tree species method, and the partners are actively seeking this funding.

5.1 Darwin identity

This has always been clearly recognised as a distinct Darwin Initiative project. The project, and the Darwin Initiative's involvement, have been referred to in Kew publications, including *Kew Scientist* (21 September, 2009) and *Samara* (Issue 21 – in press), and will be cited as a case study in the DI-funded book, *Restoring Tropical Forests: a Practical Guide* (to be published in 2012 by Kew Publishing). Future work in Cambodia, including a masters thesis by Mr Sobon will continue to recognise and acknowledge the involvement of the Darwin Initiative.

6 Monitoring and evaluation

No further changes were made to the logframe following the submission of the second half year report in 2010.

The mentoring visits made by Steve Elliott and his assessment of nursery records, were very effective for evaluating the developing research skills of the project staff (Output 1) and led to four additional training sessions in the first year (see Annex 6); the early workshop reports provided evidence of progress towards Output 2 (developing a research plan), while the monthly reports provided by FA project staff (available, but not appended) were helpful for monitoring progress in the various research areas (Output 3). This shared knowledge of progress enabled all project participants to work together to ultimately meet the research objectives, despite an initial slow start in some areas.

6.1 Actions taken in response to annual report reviews

Following the training workshop held in September 2010, a roundtable meeting was held at the Forestry Administration HQ, Phnom Penh to discuss the future of FORRU-Cambodia, after the end of Darwin funding in June 2011. This was in response to comments raised by the reviewer of the Annual Report concerning project continuance and legacy. The meeting sought to i) involve a wider range of potential stakeholders in FORRU-Cambodia and ii) to establish mechanisms to spread the outputs of FORRU-Cambodia to other parts of the country (potential partners listed in Section 4.2). The scope of future work was discussed, together with plans for the preparation of funding proposals to support the extension of the Darwin programme. Several potential funding sources were identified. Shortly thereafter, at a regional workshop in Chiang Mai (run by FAO on linking communities with the voluntary carbon market), FORRU-CMU initiated discussions with further potential partners, mostly from REDD projects, which could put to good use the forestry techniques developed by a FORRU. The Forestry Administration Cambodia held a further meeting on 5 November 2010 to discuss joint proposals with a wider range of potential partners, and this was followed up during the Final Workshop held in March 2011. See also Section 4.7.

Also in response to the reviewer's comments, contact was made with another Darwin post project in Cambodia (EIDPO028; Phase II - Building University Capacity to Train and Support Cambodian Conservationists). As a result, the Royal University of Phnom Penh was included in the stakeholder meetings and discussions were held with Mr. Rath Sethik of RUPP about the possibility of involving Conservation Biology MSc students in the research programme.

The reviewer suggested that a duplicate set of Herbarium specimens be stored in the Royal University of Phnom Penh herbarium. However, since this suggestion was made, the FA has now set up its own herbarium and duplicate specimens will be stored there.

7 Finance and administration

7.1 Project expenditure

Costs for Year 2:

Current Year's Costs	2010/11 Grant (£)	2010/11 Total actual Darwin Costs (£)	Variance %	Comments (please explain any variance)
Staff costs (see below)				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items				
Others (see section 9)				
TOTAL				

Breakdown of staff costs for Year 2:

Staff employed (Provide name and position)	Date work commenced and finished in 2010/11	Proportion of this time spent on this work	Cost (£)
Dr. Stephen Elliott (Thailand co-ordinator)	1/4/2010-31/3/2011		
“	1/4/11-30/6/2011*		
Dr. Sutthathorn Chairuangstri (Thailand co-ordinator)	1/4/2010-31/3/2011		
Mrs. Kwankhao Sinhaseni & Mr. Suracheat Wongtewon (Thai Education Team)	1/4/2010-31/3/2011		
Mr. Nup Sothea (Cambodian co-ordinator)	1/4/2010-31/3/2011		
Mr. Kim Sobon (Cambodian admin assistant)	1/4/2010-31/3/2011		
Mr. Oun Sam Ol (Cambodian Reasearch Assistant: germination trials)	1/4/2010-31/3/2011		
Mr. Kann Meang (Cambodian Research Assistant: nursery)	1/4/2010-31/3/2011		
“	1/4/11-30/6/11*		
Mr. Teang Kong (Cambodian Research Assistant: nursery)	1/4/2010-31/3/2011		
Mr Mong Bunlim (Cambodian Research Assistant: phenology)	1/4/2010-31/3/2011		
Mr Heang Soknang + student (Cambodian Research Assistant: phenology)	1/4/2010-31/3/2011		
Mrs Neang Cheam & Mr Khun Bros (Nursery staff for 3-month project extension)*	1/4/11-30/6/11*		
Dr. David Blakesley (UK co-leader)	1/4/2010-31/3/2011		
Miss Ros Fraser (Lab work**)	1/4/2010-31/3/2011		
Dr Tim Marks (Lab work**)	1/4/2010-31/3/2011		
Dr Kate Hardwick (Lab work**)	1/4/2010-31/3/2011		
Dr Peter Toorop (Lab work supervision**)	1/4/2010-31/3/2011		
TOTAL			

Total project costs 2009-2011

Costs	Total Grant (£)	Total actual Darwin Costs (£)	Variance %	Comments (please explain any variance)
Staff costs*				
Overhead Costs				
Travel and subsistence				
Operating Costs*				
Capital items				
Others (see section 9)				
TOTAL				

7.2 Additional funds or in-kind contributions secured

£150 from Australian Government to fund AYAD volunteer to do training at Workshop 2.

£3,400 from John Ellerman Foundation to cover Kew project leader's time spent on project.

7.3 Value of DI funding

Before the establishment of the FORRU at Siem Reap, there was very little information available to guide the restoration of native forest to achieve high levels of biodiversity, a point highlighted by staff at the PACT REDD+ project in Odtor Meanchey. This project not only provides initial data that can be put to immediate use in reforestation initiatives, but also lays the groundwork for a wider programme of FORRU-based research, to meet the national need for such information. There is no doubt that, without DI funding, none of this would have been achieved.

The funding has also enabled RBG Kew to launch the habitat restoration element of the Breathing Planet Programme, as explained in 4.6.

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

Project summary	Measurable Indicators	Progress and Achievements April 2009 - June 2011	Actions required/planned for next period
<p>Goal: To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve</p> <ul style="list-style-type: none"> • The conservation of biological diversity, • The sustainable use of its components, and • The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources 		(report on any contribution towards positive impact on biodiversity or positive changes in the conditions of human communities associated with biodiversity eg steps towards sustainable use or equitable sharing of costs or benefits)	Not applicable
<p>Purpose To identify and test a suitably wide range of indigenous species for the framework approach to forest biodiversity recovery and restoration and to develop skills leading to a sustainable cohort of expertise in this.</p>	<p>Research plan delivered and progress reported</p> <p>Staff have technical expertise to formulate and conduct research</p> <p>FORRU-Cambodia securing research grants by End of Project</p>	<p>Progress essentially as described in Outputs. As far as we are aware, all the important purpose level assumptions and measurable indicators held true throughout the project.</p> <p>Reports for Workshops 1 and 2 (2009/10) submitted in First Annual Report; those for Workshops 3 and 4 (2010/11) attached to this submission.</p>	Project completed
<p>Output 1. Physical and human capacity at FORRU-Cambodia built to effective levels.</p>	<p>Nursery operational and effective by month 6</p> <p>Personnel acquire and utilise skills through personal training plans and identified training events</p>	Indicator entirely appropriate. Good progress was made in Year 1, and this was sustained throughout most of Year 2, with nursery staff effectively recording data on phenology and germination.	
<p>Activity 1.1 FORRU-Cambodia nursery constructed and put into use</p>		The nursery was constructed in Year 1, and was used throughout the project, and will continue to be used beyond the project end.	
<p>Activity 1.2 Training needs assessments conducted and training plans developed</p>		In Year 1, the number of training sessions was increased from two to six following assessment of needs at May '09 kick-off meeting; in Year 2, two workshops were held as planned.	
<p>Activity 1.3 Identified training events delivered, monitored and impact assessed, including final skills assessment of trainees</p>		<p>Six training events were delivered in Year 1, following the May '09 kick-off meeting. Participant evaluation was completed for Workshops 1 and 2. Dr Elliott assessed impact of training during visits in October and December 2009.</p> <p>In Year 2, training workshop was undertaken on 25-26th June 2010 on planting</p>	

		<p>methods and post-planting monitoring. Second training workshop on Sept. 14-16th 2010 on information handling and data analysis.</p> <p>See Annexes 6, 7 and 8.</p>
<p>Output 2. Research protocols developed and agreed; research plan discussed, developed and agreed amongst partners</p>	<p>Research protocols written up and being applied</p> <p>Research plan developed in a participatory way</p>	<p>Research plan was developed and agreed in Year 1, and implemented in Years 1 and 2.</p>
<p>Activity 2.1 Research protocols developed together with partners and appointees, written up, and revised as required.</p>		<p>Research protocols discussed during Workshop 1. Methodologies translated into Khmer and appropriate Khmer datasheets drawn up.</p>
<p>Activity 2.2 Research plan discussed and outline developed specifying priorities and information needs</p>		<p>Research plan discussed, and protocols revised in Year 1, during Dr Elliott's visits in October and December 2009.</p>
<p>Activity 2.3 Detailed research plan developed encompassing all proposed experiments in accordance with agreed protocols</p>		<p>Overall research plan was largely as per the project proposal, with adjustments made to timing of events during the course of the project.</p>
<p>Output 3. Research programme undertaken to identify candidate species, followed by nursery and phenology studies leading to field trails established</p>	<p>Validated list of candidate species</p> <p>18 months of phenology studies written up</p> <p>Nursery studies on 50 species completed and written up</p> <p>Initial field plots successfully established</p> <p>Initial recommendations prepared by End of Project</p>	<p>Output achieved and revised indicators appropriate</p> <p>A provisional list of 43 candidate species compiled by FORRU-Cambodia and validated by Dr Maxwell.</p> <p>Phenological data collection started in October 2009 and continued to June 2011, representing 21 months data, including 50 species.</p> <p>By the end of June 2011, 58 species were undergoing germination and seedling growth trials.</p>
<p>Activity 3.1 Survey of indigenous forest tree species undertaken and candidate species identified, based on literature and local knowledge</p>		<p>A provisional list of candidate framework species discussed during the May 2009 meeting organised by FORRU-Cambodia. Further species were identified in the second year (Annex 5 of Year 1 Project Report).</p>
<p>Activity 3.2 Selection of candidate framework tree species</p>		<p>Species validated by Dr Maxwell in July 2009.</p>
<p>Activity 3.3 Phenology studies laid out, data collected, analysed and utilised, studies to continue beyond project</p>		<p>A phenology trail was set up by Dr Maxwell during his training visit in July 2009, and work to identify and label all the trees was completed by December 2009. In total, 250 trees of approximately 50 species were labelled. The trees continued to be monitored throughout the project. See Annex 12.</p> <p>A member of FORRU-Cambodia staff was trained in specimen collection methods and phenology scoring. Data collection continued until the end of the second year, when the full dataset was analysed.</p>

<p>Activity 3.4 Nursery experiments on germination and seedling growth implemented leading to tree species propagation protocols</p>	<p>Germination experiments on 58 species carried out between October 2009 and June 2011. Twenty-one species propagated and suitable for planting trials.</p> <p>Germination testing of 24 species and desiccation tolerance testing of 18 species carried out by RBG Kew; recommendations on seed storage protocols made, based on the results.</p> <p>See Annex 12.</p>
<p>Activity 3.5 Field trial plots laid out, established, assessed to give preliminary results and long term security assured as far as possible</p>	<p>First planting event held on June 25, 2010, when 9 candidate frameworks species were planted. Second planting event held on June 24, 2011, when a further 10 species planted.</p> <p>See Annexes 9, 10 and 11.</p>
<p>Activity 3.6 Initial recommendations for effective forest restoration practices developed, reviewed and disseminated</p>	<p>See Annexes 11 and 12. Scientific paper in preparation.</p>

Project's final logframe, including criteria and indicators

NB Changes were made to the logframe in April 2010 in accordance with the advice of Darwin consultant Patrick Hardcastle. Edited text is indicated in bold.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Goal:</p> <p>Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.</p>			
<p>Sub-Goal: To assist the Forestry Administration of Cambodia to establish an effectively functioning forest restoration research unit with well-trained staff.</p>	<p>Key stakeholders in Cambodia actively support FORRU-Cambodia</p> <p>Active forest restoration <u>research programme based on capacity building</u></p>	<p>Forest policy, strategy and development plans</p> <p>Validated research publications</p>	<p>Policies of the Cambodian Government continues to support forest restoration</p> <p>Continued support of the project goals by FA</p> <p>High quality staff can be found for recruitment and training to run the research facility</p>
<p>Purpose To identify and test a suitably wide range of indigenous species for the framework approach to forest biodiversity recovery and restoration and to develop skills leading to a sustainable cohort of expertise in this.</p>	<p>Research plan delivered and progress reported</p> <p>Staff have technical expertise to formulate and conduct research</p> <p>FORRU-Cambodia securing research grants by End of Project</p>	<p>Workshop evaluation submitted to Darwin</p> <p>Reviewed plans and publications</p> <p>Annual and HY Darwin reports</p> <p>Success in securing research grants</p>	<p>Biodiversity conservation remains a priority in reforestation policies in Cambodia.</p> <p>FORRU-Thailand continues to receive core funding for its other facilities and can deliver training required</p> <p>Local demand for expertise and training continues</p> <p>Adequate external competitive funding opportunities continue to exist</p>
<p>Outputs</p>			
<p>1. Physical and human capacity at FORRU-Cambodia built to effective levels.</p>	<p>Nursery operational and effective by month 6</p> <p>Personnel acquire and utilise skills through personal training plans and identified training events</p>	<p>Regular visits to nursery, nursery records</p> <p>Assessment of skills acquisition through training reports, mentoring visits and assessment of research undertaken by trainees</p>	<p>All partners remain in post, and motivated towards the project</p>
<p>2. Research protocols developed and agreed; research plan discussed, developed and agreed amongst partners</p>	<p>Research protocols written up and being applied</p> <p>Research plan developed in a participatory way</p>	<p>Report of research plan development and workshop proceedings</p>	<p>Research protocols are consistently applied</p>

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>3. Research programme undertaken to identify candidate species, followed by nursery and phenology studies leading to field trails established</p>	<p>Validated list of candidate species</p> <p>Nursery studies on 50 species completed and written up</p> <p>18 months of phenology studies written up</p> <p>Initial field plots successfully established</p> <p>Initial recommendations prepared by End of Project</p>	<p>List of species and selection rationale</p> <p>Nursery study reports fully detailed and peer reviewed</p> <p>Phenology studies reported and results made available</p> <p>Field plots correctly established in accordance with protocols</p> <p>Recommendations peer reviewed and available</p>	<p>Propagation nursery and field trial sites are secure and remain dedicated to agreed purpose</p>
<p><u>Project management</u></p> <p>Steering committee formed and functioning by month 2</p> <p>Project management procedures defined and agreed by month 3</p> <p>FORRU-Cambodia staff recruited by month 3</p>	<p>Composition of Steering Committee and level of engagement</p> <p>Short document defining procedures approved by Steering Committee</p> <p>Staff of appropriate background in place</p>	<p>Minutes of meetings, reported in HY and Annual Reports</p> <p>Document, approval by SC, reported in HY and Annual Reports</p> <p>Records, report in HY/Annual report</p>	<p>Partners maintain level of interest and remain supportive</p> <p>Project can attract and retain personnel of right calibre</p> <p>Appointees continue to be motivated and active and remain in post</p>

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Activities (details in workplan)</p> <p>Output related activities</p> <p>1.1 FORRU-Cambodia nursery constructed and put into use</p> <p>1.2 Training needs assessments conducted and training plans developed</p> <p>1.3 Identified training events delivered, monitored and impact assessed, including final skills assessment of trainees</p> <p>2.1 Research protocols developed together with partners and appointees, written up, and revised as required</p> <p>2.2 Research plan discussed and outline developed specifying priorities and information needs</p> <p>2.3 Detailed research plan developed encompassing all proposed experiments in accordance with agreed protocols</p> <p>3.1 Survey of indigenous forest tree species undertaken and candidate species identified, based on literature and local knowledge</p> <p>3.2 Selection of candidate framework tree species</p> <p>3.3 Phenology studies laid out, data collected, analysed and utilised, studies to continue beyond project</p> <p>3.4 Nursery experiments on germination and seedling growth implemented leading to tree species propagation protocols</p> <p>3.5 Field trial plots laid out, established, assessed to give preliminary results and long term security assured as far as possible</p> <p>3.6 Initial recommendations for effective forest restoration practices developed, reviewed and disseminated</p> <p>Project management activities</p> <p>Steering committee formed, project management procedures defined and agreed, reviewed and amended as required</p> <p>FORRU-Cambodia staff of right profile located and recruited</p>			
<p>Monitoring activities: Kew and Wildlife Landscapes will be involved in monitoring all indicators, particularly those reported from Outputs 2 and 3. FORRU-CMU will also contribute to monitoring the outputs, and take special responsibility for Outputs 1 and 3.</p>			

Annex 2 Project contribution to Articles under the CBD

Project Contribution to Articles under the Convention on Biological Diversity

Article No./Title	Project %	Article Description
6. General Measures for Conservation & Sustainable Use		Develop national strategies that integrate conservation and sustainable use.
7. Identification and Monitoring		Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities that have adverse effects; maintain and organise relevant data.
8. In-situ Conservation	40%	Establish systems of protected areas with guidelines for selection and management; regulate biological resources, promote protection of habitats; manage areas adjacent to protected areas; restore degraded ecosystems and recovery of threatened species ; control risks associated with organisms modified by biotechnology; control spread of alien species; ensure compatibility between sustainable use of resources and their conservation; protect traditional lifestyles and knowledge on biological resources.
9. Ex-situ Conservation		Adopt ex-situ measures to conserve and research components of biological diversity, preferably in country of origin; facilitate recovery of threatened species; regulate and manage collection of biological resources.
10. Sustainable Use of Components of Biological Diversity	15%	Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial actions ; encourage co-operation between governments and the private sector.
11. Incentive Measures		Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.
12. Research and Training	40%	Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components; promote research contributing to the conservation and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations) .
13. Public Education and Awareness		Promote understanding of the importance of measures to conserve biological diversity and propagate these measures through the media; cooperate with other states and organisations in developing awareness programmes.
14. Impact Assessment and Minimizing Adverse Impacts		Introduce EIAs of appropriate projects and allow public participation; take into account environmental consequences of policies; exchange information on impacts beyond State boundaries and work to reduce hazards; promote emergency responses to hazards; examine mechanisms for re-dress of international damage.
15. Access to Genetic Resources		Whilst governments control access to their genetic resources they should also facilitate access of environmentally sound uses on mutually agreed terms; scientific research based on a country's genetic resources should ensure sharing in a fair and equitable way of results and benefits.

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

Annex 3 Standard Measures

Code	Description	Totals (plus additional detail as required)
Training Measures		
6a	Number of people receiving other forms of short-term education/training (ie not categories 1-5 above)	66 people trained, with a further 31 participants at the final outcomes workshop
6b	Number of training weeks not leading to formal qualification	8 x 5-day weeks (40 days)
7	Number of types of training materials produced for use by host country(s)	Two (posters and data CD)
Research Measures		
8	Number of weeks spent by UK project staff on project work in host country(s)	1 week x 2 pers
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	1
13a	Number of species reference collections established and handed over to host country(s)	2 (Thailand and Cambodia)
Dissemination Measures		
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	2 (17/10/10 and 14-15/3/11)
15c	Number of national press releases or publicity articles in UK	2 (<i>Kew Scientist</i> and <i>Samara</i> , an international publication)
18a	Number of national TV programmes/features in host country(s)	1 (first planting event videoed for Khmer national TV)
Physical Measures		
21	Number of permanent educational/training/research facilities or organisation established	1
22	Number of permanent field plots established	2
23	Value of additional resources raised for project	£3,550 (see 7.2)
Other Measures used by the project and not currently including in DI standard measures		

Annex 4 Publications

Type *	Detail	Publishers	Available from	Cost
(eg journals, manual, CDs)	(title, author, year)	(name, city)	(eg contact address, website)	£
CD*	Database of native tree species of Siem Reap Province, FA, 2011 (v1 included; v2 ongoing).	Distributed free	FA extension division	Free
Journal article	Selecting framework tree species for restoring forest ecosystems of W. Cambodia, Nup Sothea, Sobon, S Elliott G Pakkad, in prep			

Annex 5 Darwin Contacts

Ref No	EIDPO 026
Project Title	A Forest Restoration Research Unit Facilitating Biodiversity Recovery in Cambodia
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Annex 6 Summary of all workshops, meetings, training sessions and planting events FORRU-Cambodia, April 2009 - June 2011

See attached file.

Annex 7 Data Analysis workshop programme, September 2010

See attached file.

Annex 8 Final Outputs workshop report, March 2011

See attached file.

Annex 9 Planting plan, June 2010

See attached file.

Annex 10 Planting plan, June 2011

See attached file.

Annex 11 Preliminary recommendations for framework species for Siem Reap Province, Cambodia

See attached file.

Annex 12 Results database

See accompanying CD.