



Tree Seed Policy Formulation



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An Overview of Biodiversity Conservation and Reforestation Activities in Cambodia

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**Tree Seed Policy Formulation : Minor Project on Policy Framework for the
Tree Seed Sector in Cambodia**

Executive Summary

The government reforestation programme has increased significantly, but policy and legal frameworks for the tree seed sector remain weak. An initiative to provide support to a policy formulation process has begun within the Department of Forestry and Wildlife, which will contribute to the ongoing forest reform process within the national forestry programme. A greater understanding of biodiversity conservation and reforestation programmes across a wider range of sectors is essential to ensure that the broad range of stakeholders is represented within the process.

Successful reforestation programmes and tree planting activities, within the forestry and other relevant sectors, are highly dependent on knowledge of the importance of using quality seeds, access to sources, and the ability/willingness to pay for good seed. Whilst moves towards this have been initiated, opportunities for forest genetic conservation are apparent through linkages to biodiversity conservation programmes within protected areas, which provide an opportunity for *in situ* conservation, research, identification and mapping of good tree stands, and seed collection. However, the effectiveness of the tree seed sector in assuring the supply of good quality seeds to reforestation programmes is severely constrained by the lack of planning by seed users. The success of government programmes is further limited by the lack of post planting maintenance and site management.

Other sectors with responsibility for, or interest in, tree planting and forest genetic conservation include fisheries, health, energy, and rural development. Some of these had identified priority conservation species appropriate for their areas of jurisdiction/responsibility. All faced similar difficulties in access to sufficient amounts of good quality seeds, the establishment of seed sources, and *ex situ* sites.

Abbreviations

BAT	British American Tobacco
CBD	Convention on Biological Diversity
CBNRM	Community Based Natural Resource Management
CCC	Co-operation Committee for Cambodia
CDM	Clean Development Mechanism
CGFP	Cambodian German Forestry Project
CTSP	Cambodia Tree Seed Project
CZM	Coastal Zone Management
DFW	Department of Forestry and Wildlife
DoE	Department of Energy
DoF	Department of Fisheries
EU	European Union
GEF	Global Environmental Facility
ITTO	International Timber Trade Organisation
IUCN	The World Conservation Union
LMR	Lower Mekong Region
JICA	Japanese International Co-Operation Agency
KFW	German Bank for Reconstruction
MAFF	Ministry of Agriculture, Forests and Fisheries
MIME	Ministry of Industry, Mines and Energy
MoE	Ministry of Environment
MoH	Ministry of Health
MRC	Mekong River Commission
MRD	Ministry of Rural Development
NCTM	National Centre of Traditional Medicine
NGO	Non-Governmental Organisation
NRM	Natural Resource Management
PFO	Provincial Forestry Office
PPAFFD	Phnom Penh Agriculture, Forestry and Fishery Department
RGC	Royal Government of Cambodia
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change

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1. Introduction

1.1 Background

The initiative to support a policy formulation process for the tree seed sector in Cambodia came from the Department of Forestry and Wildlife (DFW) and the Cambodia Tree Seed Project (CTSP), and receives funding from the Royal Danish Embassy in Phnom Penh.

The ongoing forestry reform process gives high priority to reforestation by the Department of Forestry and Wildlife (DFW) and the armed forces in the coming years, and recognition to the valuable contribution of local communities to tree planting. Whilst pre-requisites for successful tree planting are forest gene conservation and access to good quality seeds, knowledge of seed use and demand is limited, and policy and legal frameworks for the tree seed sector remain weak.

CTSP provides assistance to the national tree seed sector, based in DFW. To date, therefore, information collection has focused on areas under DFW jurisdiction. However, the development of recommendations towards a policy framework for the tree seed sector requires an understanding of ongoing and planned activities in relation to tree planting and forest genetic conservation within a wider range of governmental sectors, their partners and supporting organisations.

The development of recommendations for a policy framework for the tree seed sector is a pioneer activity that will form an essential element of the ongoing forest reform process within the national forestry programme. To accommodate the views and aspirations of those working within the tree seed sector it is essential that the diverse range of stakeholders are represented.

This paper presents an initial overview of biodiversity conservation and reforestation activities based on a series of interviews with government officials and representatives of supporting organisations, and highlights opportunities for collaboration.

1.2 Objectives

This review was undertaken to gain an understanding of activities related to reforestation and biodiversity conservation within forestry, environmental and other relevant sectors. In addition, the first steps were taken in identifying stakeholders to participate in the process of policy formulation for the tree seed sector. Activities included:

- a review of ongoing and planned biodiversity conservation activities
- a review of the reforestation sector, its past, present and future
- a review of tree planting and/or biodiversity conservation activities within other relevant sectors

1.3 Structure of the Report

The results of the study are outlined in distinct sections below. The review of biodiversity conservation (Section 3) focuses on activities within protected areas, linked to the Ministry of Environment, and protected forests, linked to MAFF/DFW. Section 4 provides an overview of the reforestation sector covering past, ongoing and planned activities of DFW, the military, and communities. Section 5 examines related activities within other relevant sectors, such as fisheries, energy, and traditional medicine, and their implications for policy formulation.

2. Methodology

Most of the information obtained during this study was gathered during interviews with relevant government officials and representatives of their partners and supporting organisations. Those people who participated in the interviews are listed in Appendix 3.

Interviews began with government officials to learn of sectoral plans for biodiversity conservation or tree planting activities. In general, implementation is reliant on external funding and technical support, and appropriate representatives were identified during this initial stage.

An interview guideline was developed for representatives of supporting organisations to ensure a consistent format and collection of comparable information. Interview topics included project objectives, location, timeframe, activities, level of community participation, implementation experiences, future expectations, and scope for collaborative activities. The results of these interviews are detailed in Appendix 1.

In addition, a number of non-governmental organisations contribute a great deal to tree planting activities, as discussed in Section 4. Those registered with the Co-operation Committee for Cambodia (CCC), and having links to natural resource management are identified in Appendix 2, but were not interviewed within this study.

3. Overview of Biodiversity Conservation

The Royal Government of Cambodia considers forest resource management, environmental protection and biodiversity conservation as priority activities. The Ministry of Environment (MoE) is mandated to manage 23 protected areas, covering about 18% of the total land area, and including 7 national parks, 10 wildlife sanctuaries, three protected landscapes, and three multiple use areas. The establishment of these areas is significant for biodiversity conservation, the core zones are for research only, but within buffer zones, special areas can be set-aside for specific purposes, including seed sources. However, challenges remain in increasing and extending levels of interest, which requires linkages to other institutions and initiatives, including DFW.

3.1 Convention of Biological Diversity

Cambodia ratified the Convention on Biological Diversity (CBD) in 1995. Its objectives are:

- Conservation of biological diversity
- Sustainable use of its components (ecosystems, species, and genes)
- Fair and equitable sharing of benefits from utilization of genetic resource

MoE has responsibility for monitoring compliance with obligations under international conventions such as the CBD and the United Nations Framework Convention on Climate Change (UNFCCC). In respect of the CBD, MoE works closely with MAFF, on forest genetic conservation in particular, and with other relevant Ministries (MoE, 2001).

3.2 National Biodiversity Strategy and Action Plan

The National Biodiversity Strategy and Action Plan was developed in April 2002, by a multi-sectoral team, which included representatives from the Ministries of Environment, Agriculture Forestry and Fisheries, Rural Development, Planning, and Water Resources and Meteorology (MoE, 2002). Major themes of the strategy related to the tree seed sector include protected areas, endangered species, ex situ conservation, forest and wild plant resources, energy, and climate change and biodiversity.

3.3 Roles and Activities of Supporting Organisations

3.3.1 Background

Whilst the management of protected areas focuses on conservation, the selection and implementation of activities depend upon the priorities of supporting organisations. MoE has been supported extensively by a number of donor-assisted projects, including (Baines, 1998):

- UNDP Cambodia Environmental Advisory Team
- UNDP Environment Technical Advisory Project
- Cambodian Environmental Management Program
- EU Support Program for Environment in Cambodia.

Supporting NGOs have tended to identify activities and locations according to their own conservation priorities (often at a species level), with little overlap, but the focus is changing towards a more integrated approach. For example, priority areas for biodiversity conservation within the forests of the Lower Mekong Region (LMR) were identified according to individual taxonomic assessments (mammals, birds, butterflies, vegetation and plants, amphibians and reptiles). Those landscapes identified as critical, acute or high priority were mapped, and overlays indicate areas of significant importance for a number of taxonomic groups and will be used to guide future planning of biodiversity conservation within LMR (Baltzer *et al.*, 2001). A landscape approach to biodiversity conservation has been adopted by some major funding organisations, for example, the Global Environment Facility (GEF).

3.3.2 Current Activities

A number of projects and NGOs that currently support biodiversity conservation have strong linkages to forest genetic conservation and are summarised in Table 1, with further detail provided in Appendix 1.

Activities are operational within national parks (e.g. Virachey), wildlife sanctuaries (eg. Phnom Aural), coastal zones (e.g. Koh Kong), wetlands (eg. Tonle Sap), and protected forest (e.g. Cardamom Mountains, under the jurisdiction of DFW). Their focus ranges from species conservation and protected area management planning to broader integrated approaches including community based natural resource management. Community participation is encouraged, for example, in research, planning for biodiversity conservation, the management of selected sites, and the identification of alternate livelihood options. A sample of projects and NGOs are further outlined below.

In general, biodiversity conservation activities do not include tree planting, but may have a potential to provide access to good quality seeds of species desired by planting programmes. A wealth of information exists related to flora and fauna in selected areas, which could contribute significantly to the development of a policy framework for the tree seed sector. Other areas for collaboration were identified as research, *in situ* conservation, identification and mapping of good tree stands, and seed collection.

- *Biodiversity and Protected Areas Management Project* encouraged community participation in the development of a 5-year plan for Virachay National Park. Lessons learnt from the process are fed to the national level, with a possibility for replication of concepts in other protected areas. Whilst seed sources are not currently a research priority, it is likely in the future that *in situ* conservation activities will be included in park management planning.

- *Cambodia Tree Seed Project* is developing a forest genetic conservation strategy, and a gene-ecological zoning system, for priority indigenous tree species, in co-operation with a range of stakeholders. A network of tree seed sources is being established *in situ* and *ex situ*, in various ecological zones, which will be developed into gene conservation stands. Where appropriate, community based management will be promoted for these stands (refer also to Section 4.2.4).
- *Coastal Zone Management* encourages the integration of a range of community development projects along the coast. A main function of the project is co-ordination, but with a focus on NRM and environment. It is expected that mangrove replanting will extend as much as possible along the coast.
- *Participatory Management of Mangrove Resources* focuses on community development/sustainable livelihoods and biodiversity conservation through CBNRM within Peam Krasaop Wildlife Sanctuary. It works in collaboration with the Coastal Zone Management project outlined above.
- *Wildlife Conservation Society* operates in the Northern Dry Plains, and Southern Mondulkiri, both set aside by MAFF as conservation areas for forest and wildlife genetic conservation. The latter is a unique area of Cambodia, supporting evergreen forest with characteristics more similar to populations along the spine of the Annamite range, in Vietnam and Laos PDR. It is an area of forest under heavy threat of loss.
- *WorldWide Fund for Nature* operates at ecosystem level within the Lower Mekong Region, and in Cambodia will focus on the dry forest eco-region.
- *Flora and Fauna International* has recently begun the Cardamom Mountains Wildlife Sanctuaries Project, focusing on Phnom Samkos (evergreen) and Phnom Aural (dry dipterocarp). Activities will include community participation.

3.3.3 Planned Activities

A number of projects are still in the planning stages, and others were in the process of negotiation with funding agencies for project extensions, or for new landscape level projects.

- *Biodiversity and Sustainable Use of the Mekong Basin* is a regional project focusing on wetland resources. In Cambodia the project site is the Stung Treng Rasmar Site.
- *Tonle Sap Environmental Management Project* is one of a number under the ‘Tonle Sap umbrella’, each with different sources of funding. It will be managed by a multi-sectoral steering committee and project responsibilities will fall under relevant jurisdictions

Table 1
Support to Reforestation and Biodiversity Conservation

Name of Project	Ongoing/Planned Activities	Time-frame	Location and Map	Future Expectations for Assistance	Scope for Collaboration
Biodiversity and Protected Areas Management Project	Biodiversity conservation National park management	2000 - 2003	Virachey National Park	Unknown – a proposal for project extension is under preparation	<i>In situ</i> conservation activities
Coastal Zone Management	Integrated management	1997 - 2007	Kampot, Kep, Sihanoukville, Koh Kong	Discussions are underway with the government for funding after Phase III	Mangrove conservation and replanting
Participatory Management of Mangrove Resources	Community development Biodiversity protection	1997 - 2003	Peam Krasaop Wildlife Sanctuary	Integrated into CZM, so possibility of funding from Danida	Mangrove conservation and replanting
Biodiversity and Sustainable Use of the Lower Mekong Basin	Biodiversity conservation	2004 - 2008	Stung Treng Ramsar Site	Funding secured until 2008	Wetlands management (flooded forests)
Tonle Sap Environmental Management Project	Biodiversity conservation	2003 - 2008	Tonle Sap Basin	One of 3 Tonle Sap projects, funding secured to 2008	Project responsibilities will fall under relevant jurisdictions (flooded forests)
Worldwide Fund for Nature	Biodiversity conservation		Dry Forest Eco-Region		Research opportunities
Wildlife Conservation Society	Biodiversity conservation		Southern Mondulkiri Biodiversity Conservation Area		Identification and mapping of good tree stands Seed collection activities

Flora and Fauna International	Biodiversity conservation		Phnom Samkos Phnom Aural		Seed collection
Cambodia Tree Seed Project	Capacity building Seed source establishment Forest genetic conservation	1999 - 2004			Tree planting Genetic conservation
JICA Advice to the Forestry Sector	Seedling production Tree planting Monitoring	1999 - 2003	DFW/PFO nurseries	Unclear – depends on the priorities defined by DFW and the incoming advisor	Dependent on the priorities defined by DFW and the incoming advisor
Participatory Reforestation Demonstration	Reforestation		Stung Treng	Proposal submitted for funding from ITTO	Success dependent on access to good quality seeds
Agriculture, Irrigation and Forestry Programme	Watershed management Reforestation		Lower Mekong Basin	Technical assistance and funding for reforestation from KFW	This will become clearer when more is known about the activities planned by KFW
Kbal Chhay Watershed Project	Capacity building Sustainable management	2002 - 2005	Kbal Chhay Watershed		<i>Ex-situ</i> conservation
Capacity Development for the Clean Development Mechanism	Capacity building	2003 - 2005		Investment for reforestation activities	Forestry sector included in capacity building

4. Overview of the Reforestation Sector

This section examines past, present and planned activities within the reforestation sector, implemented by the Department of Forestry and Wildlife (DFW), the armed forces, and communities. Information was gained mainly from secondary sources, with validation and clarification sought through interviews with selected representatives of DFW and the armed forces.

4.1 Brief History

4.1.1 Department of Forestry and Wildlife

The Department of Forestry and Wildlife resumed its activities in 1979, and records of tree planting are available from 1985 (DFW, 2003). Since that time, nurseries have provided approximately 15 million seedlings to local communities, and more than 10,000 hectares have been planted at tree planting stations, and during Arbour Day ceremonies. The majority of the seedlings produced have been exotic, mainly eucalyptus and acacia. Government plantations have not been successful due to the fact that the late allocation of limited budgets has restricted tree-planting activities, and the plantations have not been protected from illegal cutting and land encroachment, leading to poor relationships between forestry officials and local communities.

4.1.2 Armed Forces

In 2002, the armed forces became active in reforestation activities in co-operation with MAFF/DFW, through a pilot project in Phnom Kulen National Park (Siem Reap), covering an area of 200 hectares.

4.1.3 Communities

Community forestry has been promoted in a number of provinces, as a method to encourage participatory approaches to forest management. The first recognised community forest was established in Takeo, in 1992, but since that time there has been a great proliferation across the country, even though the legal framework remains weak. Communities participating in forestry activities rely heavily on the support of NGOs, but there is no central location holding information related to past tree planting activities.

4.1.4 Other

Hun Sen Stations, and *British American Tobacco (BAT)* provide seedlings for tree planting activities within local communities. BAT is the largest single distributor, contributing 46% of the total supply of 2,355,219 seedlings in 2002 (DFW, 2003).

4.2 Present Situation

4.2.1 Department of Forestry and Wildlife

Government reforestation plans and budget allocations increased dramatically in 2003, to cover tree planting activities by the forestry administration, the armed forces and local communities. During this same year, the 14 tree planting stations managed by DFW are expected to reforest 1,625 hectares, and the 18 nurseries will produce 1.3 million seedlings for distribution to local communities, pagodas and government institutions. Concerns surround the future survival and management of plantations, because budgetary support is limited to a 3-year period (the planting year, and 2 years of plantation maintenance).

4.2.2 Armed Forces

Tree-planting activities in 2003 were planned to cover an area of 2,200 hectares, across the 6 military regions. However, this plan was rejected and a revised, but much reduced plan is now awaiting approval. In the meantime, planting sites have been prepared and a million seedlings

produced. The military will maintain the plantations for 3 years, after which time, management responsibility will return to DFW.

4.2.3 *Communities*

DFW has records of current community forests but this does not include information of tree planting activities. DFW data shows an area of 64,901 hectares of state forest to be under community management, across 16 provinces (DFW, 2003). When land under the jurisdiction of fisheries and protected areas is added, the area increases to almost 83,000 hectares across 18 provinces (CGFP, 2002).

4.2.4 *Other*

The *Cambodia Tree Seed Project (CTSP)* supports the national tree seed sector based within DFW. Activities include the identification, establishment and management of indigenous tree seed sources. Pilot village development projects based on tree seed source management and seed supply activities will be developed, and lessons learned and extended. The provision of genetically suitable seeds of good physiological quality from these sources will be one essential factor in the success of reforestation programmes (refer also to Section 3.2.2).

The *Kbal Chhay Watershed Project* focuses on capacity building for sustainable management. Part of the project area is used as an *ex situ* and demonstration site for forest gene conservation in collaboration with CTSP and DFW.

4.3 **Future**

4.3.1 *Department of Forestry and Wildlife, and the Armed Forces*

Although government plans for reforestation have increased significantly, consideration has yet to be given to activities in terms of geographical location and management regimes. Plans for tree planting by DFW and the armed forces are prepared on an annual basis only, resulting in difficulties in assessing the future implications for the tree seed sector. MAFF is in the process of drafting procedures for private plantations.

4.3.2 *Communities*

An increased demand for community forestry is expected, following the adoption of the sub-decree. With *IUCN*, a proposal for participatory forest rehabilitation within the Lower Mekong Basin has been submitted to ITTO.

4.3.3 *Other*

The Watershed Management Component of the *MRC/Agriculture, Irrigation and Forestry Programme* focuses on best practices. Field activities are implemented through partners, and technical assistance for forest rehabilitation will be provided by KFW, further detailed in Appendix 1.

Mechanisms of the United Nations Framework Convention on Climate Change (UNFCCC) may offer investment opportunities for the reforestation sector. The *Capacity Development for the Clean Development Mechanism Project (CD4CDM)* is highly important for raising awareness of a future potential source of funding, and for developing capacity to formulate and implement CDM projects, further detailed in Appendix 1.

5. Overview of Other Relevant Areas

Activities within reforestation and biodiversity conservation programmes may have the more obvious linkages to tree seed supply and forest genetic conservation. However, the roles and responsibilities of a number of other relevant sectors have significant implications for the development of recommendations for policy frameworks. Some of these are outlined below, with summaries of the linkages to, and scope for collaboration with, the tree seed sector, provided in Table 2.

5.1 Sectoral

5.1.1 Ministry of Agriculture, Forests and Fisheries/Department of Fisheries (DoF)

DoF has responsibility for flooded forests and mangroves. Activities within the flooded forest focus on conservation, although a list of priority species has been identified based on discussions with local communities, as listed below:

- phtuol *Diospyro cambodiana* Lecomte
- anhchanh *Gimelia asiatica* L.
- sandann *Garcinia loureiri* Pierre
- kdol *Nauclea orientalis* L.
- rumdenh *Daphniphyllum majus* Muell
- prabuoy *Croton caudatus* Griseb
- tunlea *Crateva religiosa* G.Forst
- thmenh trey *Bridelia cambodiana* Gagnep
- trahs *Combretum trifoliatum* Vent

Fishing lot owners have an obligation to replant trees, and to date more than 1,000 hectares have been replanted, including 78 hectares in 2002. DoF provides some seedlings to settled communities, who are keen to plant trees as their livelihood depends upon it. Mangrove forests are managed through projects based in the Ministry of Environment (see Section 3).

5.1.2 Ministry of Rural Development (MRD)

The mandate of MRD is to improve rural livelihoods through an Integrated Rural Development Programme. Forestry activities are outside of this mandate, but there is provision for participation in NRM and biodiversity conservation, and a link to community forestry activities through the Commune and Village Development Councils. Demand is high for family level fruit orchards, and roadside plantings. Fast growing species such as acacia and others are planted for fuel wood on public land, which is identified through surveys, between or near villages, or as boundaries around houses. Seedlings can be provided in some cases, but support from partners is often required.

5.1.3 Ministry of Health/National Centre of Traditional Medicine (NCTM)

NCTM has identified and documented over 500 species of plants important for use in traditional medicine (MoH, undated). Of these, approximately 70% are tree species. In collaboration with DFW, teams of staff frequently visit the forest to collect seedlings for *ex situ* plots, and samples of plant materials for experimental and research work. It is feared that some important species may be lost in areas experiencing over-exploitation, and therefore, NCTM is in the process of establishing *ex-situ* sites at the Centre, and in Pichnil (Kampong Speu).

5.1.4 Ministry of Industry, Mines and Energy/Department of Energy (DoE)

DoE has responsibility for energy planning. To date, the electricity sector has been central to the efforts of the department, and renewable energy development has focused on hydro and solar energy. However, wood fuels contribute by far the largest share of the country's total energy

supply, and form the most important source of energy for the majority of the population within Cambodia. In addition, wood fuels are used extensively by industry and services, as well as the expanding informal sector. Whilst energy demand scenarios suggest a continuing decline in the share of wood fuels in total energy consumption, in absolute terms an increase is indicated.

Sustainable wood fuel production and use is not addressed within development plans, perhaps reflecting its cross-sectoral nature, yet it provides great opportunities to work towards the stated national objectives of the Royal Government of Cambodia.

5.1.5 Phnom Penh Agriculture, Forestry and Fishery Department (PPAFFD)

The Forestry Office, of PPAFFD, is responsible for planting trees within the city. Its policy is to use only native species, mainly *Delonix regia* (kngork), *Cassia fistula* (leoung reach), *Lagerstroemia loudonii* (entanel), *Peltophorum dasyrrhachis* (trasek) and *Cassia siamea* (angkhanh), for planting along roadsides and in public places. Fruit seedlings are preferred for schools, pagodas and new communities. Acacia is also used in new communities and along the dam that forms the boundary between Phnom Penh, Kampong Speu and Kandal.

5.2 Non-Governmental Organisations (NGOs)

A large number of diverse NGOs provide support to communities through a range of development activities. In relation to tree seed supply and forest genetic conservation, support is often in the form of community forestry activities, establishment of village nurseries, provision of seedlings, and environmental education and awareness. Whilst individual NGOs and initiatives are too numerous to describe in this paper, a sample has been taken from directories held at the CCC to indicate differing interests, located in Appendix 2.

Table 2
Responsibilities of Government Departments and
Linkages to the Tree Seed Sector

Name of Department	Responsibility	Links to Tree Seed Sector	Scope for Collaboration
MoE/Department of Nature Conservation and Protection	Protected area management	Biodiversity conservation	Forest genetic conservation
MAFF/Department of Forests and Wildlife	Forest management	Reforestation programmes Community forestry Private forestry	Success dependent on good quality seeds
MAFF/ Department of Fisheries	Fishery management	Conservation and management of flooded forests and mangroves	Forest genetic conservation Flooded forest and mangrove rehabilitation Establishment of seed sources for priority species
Ministry of Rural Development	Improvement of rural livelihoods	Fruit orchards Roadside planting Fuel wood plantations	Research into species requirements for tree planting within communities
MoH/Department of Traditional Medicine	Traditional medicine	Tree species are important sources of medicine	Research and experimentation Ex situ conservation
MIME/Department of Energy	Energy supply	Fuel wood contribution to national energy balance	Wood fuel plantations
Phnom Penh Municipality/ Municipal Forestry Office	Tree planting within the city	Roadside planting Parks and gardens Community planting	Success dependent on access to an increased supply of good quality seeds

6. Conclusions

The Royal Government of Cambodia is a signatory to the Convention on Biological Diversity, and assigns the main responsibility for its implementation to the Ministry of Environment, in collaboration with relevant sectors. Forest genetic conservation features highly in the biodiversity strategy and action plan, in particular, through protected area management, *ex situ* conservation, energy development, and climate change mitigation and adaptation.

A number of projects and NGOs support biodiversity conservation within national parks, wildlife sanctuaries, coastal zones and wetlands, and protected forests. A range of activities is underway, and those related to forestry have been well documented, examples include Bokor, Virachey, and the Cardamom Mountains. Whilst biodiversity conservation activities do not generally include tree planting, they have a potential to provide a means of access to good quality seeds of species desired by planting programmes. Areas for collaboration were identified as research, *in situ* conservation, identification and mapping of good tree stands, and seed collection.

Past records and current activities can be reviewed within the reforestation sector, but the lack of planning results in difficulties in assessing future seed requirements. The government reforestation programme has increased significantly, but its success, as well as that of community and private tree planting activities depends on the availability and use of good quality seeds of appropriate species. Tree planting activities, therefore, need to be planned so that the seeds can be sourced and obtained, and budgets secured to allow the timely development of nurseries, seedling production and preparation of planting sites. The use of good quality seeds can only contribute to the improved quality of seedlings, but in order to fulfill their future potential, the planted areas must have appropriate management.

Community forestry is one proven method to encourage participatory forest management. In recent years, its establishment has been prolific, and future demand is expected to increase following the adoption of relevant legislation. A centrally based information system would better enable the tree seed sector to review tree-planting activities and to identify trends in order to assist in planning for the procurement of good quality seeds of species desired by the communities.

Within other relevant sectors, discussions indicated common constraints, such as knowledge of, access to good quality seeds, in sufficient amounts, the establishment of seed sources for priority species, and establishment of *ex-situ* sites. All are directly linked to the ongoing work of the tree seed sector, and indicate a high potential for collaboration. Whilst DFW has developed a priority species list for forest genetic conservation, the wider range of tree seed users has different priorities according to importance of their end use, which should be reflected within the development of recommendations for a policy framework.

Sectors included within this study are reliant on supporting partner organisations for the implementation and funding of activities. Budgetary support for tree planting activities, therefore, can only be planned according to project lifespan, whilst support to the maintenance and management of planting sites, and conservation of forest genetics requires a much longer period. Given the uncertainties of government budget allocations for reforestation, it is necessary to identify other potential sources of funding. Private investment will be encouraged through the open market for plantations, an option attractive for short-term rotation species. Conversely, reforestation of degraded areas with long-term species, including priority indigenous species requires a different approach. Mechanisms within UNFCCC, including the Clean Development Mechanism may provide an attractive future option.

Scope for collaboration was evident through the interviews, and a number of stakeholders identified during this preliminary exercise expressed an interest to participate in future endeavours towards recommendations for a policy framework for the tree seed sector.

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- Ministry of Environment, 2002, Cambodia's National Biodiversity Strategy and Action Plan, GEF/UNDP/FAO
- Ministry of Health/Department of Traditional Medicine, undated, Liste des Plantes Medicinales du Cambodge
- Royal Government of Cambodia/Danida, 2002 (Draft), Inception Report, Support to Capacity Building of Sustainable Management of the Kbal Chhay Watershed Project
- Smith, J (ed), 2001, Cambodia's Biodiversity Status Report

Appendix 1

Project Fact Sheets

Biodiversity and Protected Areas Management Project

1. Type of Activity

Biodiversity conservation and national park management

2. Objective

To help the Government of Cambodia achieve sustainable management of its system of national protected areas. The four components are :

- national policy and capacity building
- park protection and management
- community development
- project management

3. Location and area

Virachey National Park

4. Timeframe

March 2000 – December 2003

5. Implementer

Ministry of Environment

6. Tree Planting Activity

N/A

7. Level of Community Participation

Ethnic communities in and around the park boundaries participate in the planning and management of the park

8. Experiences and Problems in Implementation

Implementation of the plan has not begun, and funding has not yet been secured, this will be addressed during the second half of this year.

9. Future Expectations (in terms of assistance)

Currently unknown, but the project is putting together a proposal for an extension.

10. Opportunities for Collaborative Activities

- At the moment, NGOs are identifying their own areas for conservation activities, so it is unlikely that mapping exercises will indicate overlaps of areas of importance. However, if NGOs were willing to co-operate, then multi-use sites could, no doubt, be identified.
- The core zones of the park are for research only, but within buffer zones, special areas can be set-aside for specific purposes, and will include seed sources. *In situ* conservation activities will be included within park management plans.

Coastal Zone Management

- 1. Type of Activity**
Integrated management of the coastal zone
- 2. Objective**
Participatory management of natural resources for sustainable livelihoods
- 3. Location and area**
Kampot, Kep, Sihanoukville and Koh Kong (2 sites)
- 4. Timeframe**
3 phases from 1997 – 2007 (1997 – 2000, 2000 – 2002, 2002 – 2007)
- 5. Implementer**
9 ministries (the main ones being MoE, MAFF, MRD, MWA)
- 6. Tree Planting Activity**
 - a. the area of planting (on an annual basis, but to the end of the planning period)** 24 ha in Kampot (2000 – 2002)
30 ha in Koh Kong (2000 – 2002)
planting is expected to continue and expand through 2002 -2007
 - b. the species planted** mangrove *Rhizophora apiculata*, *Rhizophora mucmata*
 - c. how the species were selected** in conjunction with communities
- 7. Level of Community Participation**
Full participation beginning with training activities during Phase I
- 8. Experiences and Problems in Implementation**
Successes :
 - clear definitions of roles and responsibilities, of which everyone is aware
 - community rights to use and protect resources
 - capacity building through learning by doing and raised levels of confidence
 - integration of 9 ministries within a National Coastal Steering CommitteeProblems :
 - Phase III is too short to ensure ownership and sustainability
 - coordination of all the projects is difficult
 - the newly proposed Danida project will have significant overlap
- 9. Future Expectations (in terms of assistance)**
Discussions are already underway with the government for further funding from MEF after Phase III
- 10. Opportunities for Collaborative Activities**
Integrated efforts are more effective and efficient, but it is very difficult to coordinate activities, when projects have their own goals and targets. The project already collaborates with a number of other projects, the coastal zones are managed for a number of uses.

Participatory Management of Mangrove Resources

1. Type of Activity

Community development and biodiversity protection through CBCRM

2. Objective

- to design and assess participatory planning and management strategies for Peam Krasaop Wildlife Sanctuary (PKWS) and Koh Kapic Ramsar Site, based on resource use patterns, institutional analysis and participatory resource assessments and mapping
- to evaluate forms of organisation by which local people can participate in the management of PKWS
- to assess sustainable livelihood options for communities highly dependent on the mangrove ecosystem and to continue testing and diversifying options for food production and income generation
- to promote the participation of communities in the protection, conservation and monitoring of mangrove and fishery resources in PKWS through environmental education
- to build the capacity of the project research team, local people and relevant institutions to address issues of CBCRM and to strengthen local, national and international institutional linkages

3. Location and area

Peam Krasaop Wildlife Sanctuary, and Chrouy Proh Bay

4. Timeframe

Phase 1 : December 1997 – February 2000, Phase 2 : June 2000 – June 2003, extension until the end of 2003

5. Implementer - MoE

6. Tree Planting Activity

- a. the area of planting (on an annual basis, but to the end of the planning period)** 30 hectares through the life of the project
- b. the species planted** mainly *Rhizophora apiculata* and *Rhizophora mucmata* (kong kang), with some *Lummitzera* (kranhep)

7. Level of Community Participation

Most local people joined the project, families collected seeds from the area and planted them. The project provided each family with 10kg rice.

8. Experiences and Problems in Implementation

After planting there is no budget to take care of the seedlings, some trees die from disease (yellow leaf), and others are caught in fishing nets and lost. The eco-system has changed, the replanted mangroves were protected by another plant, but this killed the mangroves.

9. Future Expectations (in terms of assistance)

The project was extended for 6 months to allow final reporting. It is thought that the community can protect and sustainably use the resources after the project ends

10. Opportunities for Collaborative Activities

The site is a multi-use conservation area, and activities are integrated into the Coastal Zone Management Project

Biodiversity and Sustainable Use of the Lower Mekong Basin

- 1. Type of Activity**
Biodiversity conservation
- 2. Objective**
Sustainable use of wetland resources and non-timber wetland resources
- 3. Location and area**
Stung Treng Ramsar Site
- 4. Timeframe**
5 years beginning in 2004
- 5. Implementer**
IUCN/MRC
- 6. Tree Planting Activity**
Not known, as work planning at the community level has not yet begun
- 7. Level of Community Participation**
Full, in community development activities
- 8. Experiences and Problems in Implementation**
Not yet implemented
- 9. Future Expectations (in terms of assistance)**
Funding secured until 2009
- 10. Opportunities for Collaborative Activities**
Co-operative activities have been initiated with local and international organisations.

Tonle Sap Environmental Management Project

1. Type of Activity

Biodiversity Conservation

2. Objective

Sustainable management and conservation of natural resources and biodiversity in the Tonle Sap Basin, to enhance the system and develop capacity for CBNRM and Biodiversity Conservation coordination and planning in the Tonle Sap Biosphere Reserve

- improve regulatory and management framework
- establish coordination framework and information dissemination mechanism
- map Tonle Sap Biosphere Reserve
- improve regulation and management planning
- enhance management capacity
- develop a system for monitoring and management
- promote biodiversity awareness and education

3. Location and area

Tonle Sap Basin

4. Timeframe

July 2003 - 2008

5. Implementer

MoE Department of Nature Conservation and Protection, and Department of Environmental Education (MAFF is the executing agency)

6. Tree Planting Activity

None foreseen, but implementation has not yet begun

7. Level of Community Participation

Community fishery to be strengthened by Department of Fisheries

8. Experiences and Problems in Implementation

Not yet implemented, but does not expect activities related to replanting the flooded forest, as if the communities are educated in protection and conservation, the forest will naturally regenerate

9. Future Expectations (in terms of assistance)

Funding secured until 2008. The project is one of a number under the “Tonle Sap” umbrella, each with different sources of funding

10. Opportunities for Collaborative Activities

A multi-institutional Steering committee will be established, and project responsibilities will fall under relevant jurisdictions

WorldWide Fund for Nature

- 1. Type of Activity**
Biodiversity conservation at ecosystem level
- 2. Objective**
Conservation activities within the dry forest eco-region of Cambodia
- 3. Location and area**
Dry forest, corresponding roughly to d and F on the CTSP gene ecological map
- 4. Timeframe**
- 5. Implementer**
WWF
- 6. Tree Planting Activity**
Not likely to be a priority, although keen to investigate possibilities of seedling production for reforestation programmes by local communities as a source of alternate income, and research into growth rates of natives that could provide an alternative to exotics.
- 7. Level of Community Participation**
High, in order to identify income sources alternate to logging and hunting
- 8. Experiences and Problems in Implementation**
- 9. Future Expectations (in terms of assistance)**
- 10. Opportunities for Collaborative Activities**
Research opportunities, as much information already exists for this area. WWF is also keen to conduct research into growth rates of native species that could offer alternatives to exotics, for example, to feed the pulp industry.

Wildlife Conservation Society

- 1. Type of Activity**
Biodiversity Conservation
- 2. Objective**
Conservation activities
- 3. Location and area**
Southern Mondulkiri Biodiversity Conservation Area
- 4. Timeframe**
- 5. Implementer**
DFW
- 6. Tree Planting Activity**
Possibilities for tree planting include agro-forestry, following road construction, and in empty forest areas. There are standing stocks for conservation and supply of seeds.
- 7. Level of Community Participation**
Ethnic Phnong community
- 8. Experiences and Problems in Implementation**
- 9. Future Expectations (in terms of assistance)**
- 10. Opportunities for Collaborative Activities**
Identification and mapping of good tree stands, and provision of assistance in seed collection activities.

Flora and Fauna International

- 1. Type of Activity**
Biodiversity conservation
- 2. Objective**
Management of Wildlife Sanctuaries
- 3. Location and area**
Phnom Samkos and Phnom Aural
- 4. Timeframe**
2.5 years (2003 – 2005)
- 5. Implementer**
FFI/MoE
- 6. Tree Planting Activity**
Not envisioned
- 7. Level of Community Participation**
Through CBNRM
- 8. Experiences and Problems in Implementation**
- 9. Future Expectations (in terms of assistance)**
- 10. Opportunities for Collaborative Activities**
Seed collection from good sources in Phnom Samkos.

Cambodia Tree Seed Project

- 1. Type of Activity**
Tree seed source management and supply
Conservation of genetic resources of priority indigenous tree species
- 2. Objective**
Development of the institutional capacity of the national tree seed sector in Cambodia with special emphasis on indigenous species and regional co-operation
- 3. Location and area**
- 4. Timeframe**
1999 – 2004 (active since 2001)
- 5. Implementer**
MAFF/DFW
- 6. Tree Planting Activity**
Identification, establishment and management of tree seed sources to encourage the provision and use of genetically suitable seeds of good physiological quality
- 7. Level of Community Participation**
Community participation will be encouraged within a decentralised seed supply approach
- 8. Experiences and Problems in Implementation**
To date, approximately 24 seed sources across 5 provinces, covering 17 species have been established within areas of natural forest.

A forest genetic conservation strategy is in the process of development by a multi-institutional working group.
- 9. Future Expectations (in terms of assistance)**
- 10. Opportunities for Collaborative Activities**
Linkages into reforestation activities to promote the use of good quality seeds, their maintenance and management
Linkages into biodiversity conservation activities to identify and record tree stands for forest genetic resource conservation

JICA Advice to the Forestry Sector

- 1. Type of Activity**
Seedling production, tree planting and monitoring
- 2. Objective**
To assist DFW to improve its system of seedling production and distribution
- 3. Location and area**
Seedlings are produced at DFW/PFO nurseries according to requests
- 4. Timeframe**
1999 - 2003
- 5. Implementer**
DFW
- 6. Tree Planting Activity**
 - a. the area of planting (on an annual basis, but to the end of the planning period)** difficult to assess as seedlings are distributed according to requests
 - b. the species planted** 34 species were used, including acacia and eucalyptus (short-term), jackfruit, kngaok and sour apple (medium-term), koki, chhousteal, beng coconut and kronhoun (long-term)
 - c. how the species were selected** some stations try to assess needs
- 7. Level of Community Participation**
In some cases communities request seedlings in advance of production, they are then responsible for the collection, planting and maintenance of the seedlings, and participate in monitoring activities.
- 8. Experiences and Problems in Implementation**
Inconsistent trends in seedling distribution, and a lack of record keeping at the nursery, which prevents effective monitoring
- 9. Future Expectations (in terms of assistance)**
Unclear at the moment, as the JICA advisor is due to leave, and his replacement will assess the forestry sector to identify appropriate activities
- 10. Opportunities for Collaborative Activities**
Future collaboration will depend on the priority activities identified by the incoming adviser, and needs to be followed up in the near future. The JICA training project includes seedling production, and this should spread to implementation, suggesting a link to the Reforestation Office.

Participatory Reforestation Demonstration

- 1. Type of Activity**
Tree Planting
- 2. Objective**
Forest restoration at landscape level
- 3. Location and area**
Stung Treng
- 4. Timeframe**
Proposal submitted but not yet approved
- 5. Implementer**
IUCN/DFW
- 6. Tree Planting Activity**
To include different wetland and forestry types, and across ecological zones. Mixed species will be used
- 7. Level of Community Participation**
Unclear
- 8. Experiences and Problems in Implementation**
Concerned about the use of the term ‘forest restoration’ as it is very ambitious, and it may not be possible to restore the forest to its original state.
Stung Treng was selected by DFW, partly due to the fact that the Mekong project was already operational there. However, other provinces could have been more appropriate in terms of reforestation activities.
- 9. Future Expectations (in terms of assistance)**
Nothing secured
- 10. Opportunities for Collaborative Activities**
As a reforestation project, success will be dependent on access to good quality seeds.

MRC Agriculture Irrigation and Forestry Programme

- 1. Type of Activity**
Reforestation
- 2. Objective**
Watershed management
 - to identify and analyse best practices of watershed management in the 4 countries
 - review policy frameworks relevant to the above practices
 - encourage cross-border dialogue on issues of trans-boundary relevance
 - further development of an information management system and database
- 3. Location and area**
Lower Mekong Basin
- 4. Timeframe**
- 5. Implementer**
KFW for forest rehabilitation, but this has not started in any form
- 6. Tree Planting Activity**
Unclear at the moment, although it is likely that activities will be directed towards the uplands – ie Laos PDR
- 7. Level of Community Participation**
Community forestry will have an important role in watershed management and forest rehabilitation, areas of critical importance to GTZ will be those of high population pressure
- 8. Experiences and Problems in Implementation**
No implementation yet
- 9. Future Expectations (in terms of assistance)**
KFW will provide technical assistance and US\$5 million
- 10. Opportunities for Collaborative Activities**
This will become clearer when more is known about the activities planned by KFW

Kbal Chhay Watershed Project

- 1. Type of Activity**
Capacity Building for Sustainable Management
- 2. Objective**
Sustainable management, with special emphasis on water resources
- 3. Location and area**
Kbal Chhay Watershed
- 4. Timeframe**
August 2002 – July 2005
- 5. Implementer**
DFW
- 6. Tree Planting Activity**
 - a. the area of planting (on an annual basis, but to the end of the planning period)** 70,000 seedlings per year. 553 hectares from 1999 - 2002
 - b. the species planted** mainly *Acacia*, with a smaller number of *Hopea* and *Dipterocarpus*
- 7. Level of Community Participation**
Limited, due to the protection status of the area
- 8. Experiences and Problems in Implementation**
Conflicting interests of different stakeholders concerning the use of the watershed area
- 9. Future Expectations (in terms of assistance)**
- 10. Opportunities on Collaborative Activities**
Identification of good trees in the natural forest, seed collection, seedling production, establishment and maintenance of a seed orchard and demonstration plot

Capacity Building for Clean Development Mechanism

1. Type of Activity

Capacity building

2. Objective

To generate, in selected developing countries, a broad understanding and develop institutional capacity and human capacity to fully participate as equal partners with developed countries in the formulation and implementation of the Clean Development Mechanism (CDM).

- establish procedural and infrastructural elements for the successful implementation of project activities
- conduct information campaigns and awareness raising about the benefits of CDM for relevant target groups and generate support for the government for participating in CDM
- develop CDM-related capacity for national policy makers
- assist the government in establishing and building capacity of the CDM National Authority
- facilitate capacity development for public and private sector players to identify, formulate and secure for CDM projects
- create a pipeline of CDM-eligible projects

3. Location and area

4. Timeframe

2003 - 2005

5. Implementer

MoE

6. Tree Planting Activity

Reforestation/plantations will be eligible for CDM financing

7. Level of Community Participation

For proposed projects to examine

8. Experiences and Problems in Implementation

9. Future Expectations (in terms of assistance)

CDM can provide opportunities for investment into reforestation activities

10. Opportunities for Collaborative Activities

Formal, established links to DFW for the development of sustainability criteria for forestry CDM projects, and capacity building within the forestry sector. The project will prepare government staff to formulate and implement CDM projects

Appendix 2
Members of NGO (Environmental) Forum
with Links to the Tree Seed Sector

Organisation	Address	Telephone	Email	Interest
AFSC American Friends Service Committee	#30, Street 352	023 216400/213447	AFSC@bigpond.com.kh	CBNRM
Concern Worldwide	#36, Street 352	023 214879/214891	concerncam@bigpond.com.kh	CF
Oxfam GB	#54, Street 352	023 720036/720928	oxcam@bigpond.com.kh	CBNRM
SADP Southeast Asia Development Program	#3Z, Street 191Z	023 217218	sadp@bigpond.com.kh	CF and CFish
CEDAC	#1, Street 233/162	023 880916	cedac@camnet.com.kh	NRM with Oxfam GB
Mlup Baitong	#24, Street 29	023 214409		CF with Oxfam GB
Culture and Environment Preservation Association (CEPA)	#40, Street 352	023 720062	cepa@bigpond.com.kh	NRM Education
KVOD Khmer Volunteer Organisation Development	Sandaan District, Kampong Thom	012 967158 Mr. Puth Bun Kang		CF with ACR

Sources : CCC, 2002; CCC, 2003

Organisations with an interest in, or linkages to activities in the Mekong Basin are further detailed in The Cambodian Mekong Directory (CCC, 2000). Those with linkages to the tree seed sector are listed below.

Mekong Directory

Organisation	Address	Telephone	Email	Interest
Buddhist Development Association and Supporting Environment (BDASE)	Wat Peal Ngek, Sam Peuo Meas, Pursat Partners – Concern, Carere			Community forestry and environmental education
Buddhism for Development (BFD)	Wat Anlongvil, Srok Sanke, Battambang	016 881521	bfd@forum.org.kh	Tree nurseries in pagodas, tree planting, community forestry, environmental awareness
Mennonite Central Committee (MCC)		023 215994	mcc@bigpond.com.kh	Community forestry
Non-Timber Forest Products (NTFP)		075 974039	ntfp_rk@camintel.com	Community forestry and NRM
Oxfam America	#54, Street 352	023 210357	OxfamAmerica@bigpond.com.kh	CBNRM
Partners for Development (PFD)	#24, Street 294	023 213335	PFD.Cambodia@bigpond.com.kh	NRM and education
The World Conservation Union (IUCN)	#21, Street 306	023 211944	iucn@forum.org.kh	Biodiversity conservation
Wildlife Conservation Society		023 217205	wcs@bigpond.com.kh	Biodiversity survey and training
Wetlands International	#21, Street 306	023 214224	Wetlands@bigpond.com.kh	Biodiversity conservation, community based protected area management
World Wildlife Fund				CBNRM
FAO	#5, Street 370	023 216654	FAO-KHM@field.fao.org	Community forestry
MRC	#364, Monivong	023 720972	mrcs@bigpond.com.kh	Natural resources planning and development
NRE- Danida	CDC			NRM

Source : CCC, 2000

Appendix 3 Initial Stakeholder List

Name	Department/Project	Type of Activity	Telephone Number	Email Address
Dr. Andy Maxwell	Worldwide Fund for Nature	Biodiversity conservation	023 218034	amaxwell@online.com.kh
Mr. Ben Hammond	Flora and Fauna International	Biodiversity conservation	023 211142	
Dr. Cheng Sun Kaing	MoH/University of Health and Science	Traditional medicine	012 803375	
Mr. Colin Poole	Wildlife Conservation Society	Biodiversity conservation	023 219443 012 807455	poole@bigpond.com.kh
Dr. Cornelis van Tuyll	MRC/GTZ Agriculture, Irrigation and Forestry Programme	Watershed management Reforestation	023 720979 012 906088	tuyll@mrcmekong.org
Dr. Hieng Punley	MoH/National Centre of Traditional Medicine	Traditional medicine	012 857174	
Mr. Joe Walston	Wildlife Conservation Society	Biodiversity conservation	023 219443	
Mr. Kengo Yoshida	JICA	Forest rehabilitation	N/A	N/A
Mr. Kim Nong	Participatory Management of Mangrove Resources	CBNRM		
Dr. Klaus Schmitt	Biodiversity and Protected Areas Management Project	Protected area management	023 213900 012 719024	BPAMP/bigpond.com/kh
Mr. Lao Sethaphal	DFW/Community Forestry Unit	Tree Planting	012 827915	
Mr. Ly Khim	UNDP/GEF	Funding organisation	012 808199	
Mr. Ma Soktha	DFW/Reforestation Office	Reforestation Watershed management (Kbal Chhay)	016 957020	
Mr. Mao Kosal	IUCN	Biodiversity and Sustainable Use of	023 222311	iucn_cambodia@online..

		the Mekong Basin	012 563725	com.kh
Mr. Meng Monirak	MoE/Protected Areas Office	Biodiversity conservation and protected area management	011 953992	
Mr. Neou Bonheur	Tonle Sap Environmental Management Project	Sustainable management of resources	012 976383	
Mr. Pheng Sokham	Phnom Penh Municipality	Tree planting		
Mr. Phoeun Phean	MAFF/Department of Fisheries	Fisheries management		
Mr. Pich Sam Ang	Ministry of Rural Development	Tree planting	012 955835	
Mr. Pich Sokhom	Military Agriculture Office	Tree planting	016 867302	
Dr. Sat Samy	MIME/Department of Energy	Renewable energy	016 813575	mimedet@forum.org.kh
Mr. Sieng Kim Hout	DFW/Wildlife Conservation Society	Biodiversity conservation	012 867072	sengkimhout@hotmail.com
Mr. Tin Ponlok	MoE/Capacity Building for the Clean Development Mechanism	Capacity building		
Mr. Ung Sam Oeun	MoE/Department of Nature Conservation and Protection	National Biosafety Framework	023 217560 011 858183	samoeunu@yahoo.com
Mr. Uy Chieng	MAFF/Department of Fisheries	Fisheries management	012 916544	ching5@jhotmail.com
Mr. Vann Monyneath	MoE/Coastal Zone Management	CBNRM	023 216510 012 706470	MONYNEATH@czm.bigpond.com.kh