

APN CAPaBLE

- Making a Difference -

Scientific Capacity Building & Enhancement for Sustainable Development in Developing Countries

Development of a Mobile Environmental Education Programme (MEEP) to raise awareness about climate change in Cambodia

Final Report for APN CAPaBLE Project:
APN2005-CB07NSY-I eng

Implemented by
**Ministry of Environment, Royal Government of
Cambodia**



MOE

#48 Preah Sihanouk Blvd, Tonle Bassac
Chamkarmon
Phnom Penh, Cambodia
Tel: +855 12 879 779
Email: philieng@yahoo.com

in collaboration with

**Association for the Protection and Development of
the Cambodian Environment**



APDCE

House #10Eo, Street 212, Sangkat Psa Doem Kor
Khan Toul Kok
Phnom Penh, Cambodia.
Tel: +855 12 480 050



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Project Reference Number: [APN2005-CB07NSY-I eng](#)

Final Report submitted to APN

Overview of project work and outcomes

Non-technical summary

The MEEP represents an innovative means to increase awareness about the causes and impacts of climate change in Cambodia. The programme will focus on students and opinion-formers involved in formulating responses to climate change and environmental degradation, in particular, around Tonle Sap Lake.

Participants will visit communities located around the Tonle Sap lake by boat. They will observe at first-hand the impacts of climate change and environmental degradation on these communities and learn from examples of best practice in environmentally sustainable resource management. Participants will also have the opportunity to carry out scientific tests, developing basic skills in these areas as well as helping build up a public database over time.

It is planned that MEEP will be undertaken as a public-private partnership. Donor support would be required for capital expenditures but MEEP is expected to cover its operating costs from participant fees.

Funding under the APN's CAPaBLE Programme was used to develop a feasibility study for the MEEP, including an extensive community consultation process. This study will subsequently be used as the basis for implementing an initial partnership. If successful, it is hoped that this will form the basis for similar future initiatives in Cambodia and regionally.

Objectives

The proposed MEEP has two main objectives:

- It should provide a means of introducing students and opinion-formers to the impacts of climate change and environmental degradation in Cambodia, to provide education in how these impacts can be reduced and mitigated and to encourage participants to push for the necessary policies and measures to be implemented.
- It should help students to develop a basic understanding of scientific issues and techniques in measuring and monitoring environmental impacts, to build Cambodia's levels of technical expertise and to encourage students to pursue careers in environmental science.

There are also a number of subsidiary objectives, which impact on the design of the MEEP:

- The MEEP should contribute, directly and indirectly, to income generation and environmental improvements among its host communities around Tonle Sap.
- The MEEP should be able to cover its operational expenses from participant charges.
- This consideration also points towards the MEEP operating under a PPP model.
- As well as being educational, the MEEP should also be pleasurable for participants.

Amount received and number years supported

The Grant awarded to this project was:

- US\$ 40,000 for Year1, 2006-2007, comprising US\$30,000 for project implementation and US\$10,000 for consultancy fees.

Work undertaken

This project was undertaken to assess the feasibility of the proposed MEEP and to develop an implementation plan and detailed project design. The work undertaken reflects this.

Community consultation has been a priority throughout. Support for the MEEP from participating lakeside communities is essential to its success, while it is also important the MEEP's design takes account of inputs from and lessons offered by these communities. At the initial planning stage of the project, it was recognised that effective consultation would take time. Communities would need to become aware of the MEEP and to have sufficient opportunity to internally consider it, prior to being able to effectively contribute to external discussions and decisions on the program. At the same time, the project team would need to learn more about potential participating communities in order to identify which are suitable for inclusion in the program and to know which leaders to interact with in each community.

A three-stage consultation and design process was therefore followed:

- Stage 1 – Assessment of interest: During this first stage, the project team visited lakeside communities to inform them of the MEEP and to identify their interest in and suitability for participation in the program.
- Stage 2 – Initial design: Using the results of the first stage, the project team developed an initial design for the MEEP. A second series of visits was made to those lakeside communities most suitable for inclusion in the program and which had expressed interest in participation, to discuss this design and obtain comments on it. These visits were followed by a workshop bringing together key stakeholders to review the design.
- Stage 3 – Final design: The inputs and comments received during the second set of field visits were used to refine and finalise the MEEP design. A third and final set of field visits was made to describe the design, followed by a second stakeholder workshop to obtain consensus around the design and commitments to its implementation.

Results

A feasibility study has been completed and a detailed design for the MEEP prepared, which has benefited greatly from the involvement of lakeside communities. Those same communities, as well as relevant Government ministries and provincial departments, have shown their commitment to the MEEP and willingness to support it through the consultation process undertaken under the project.

Relevance to the APN CAPaBLE Programme and its Objectives

The MEEP will contribute directly to objectives 1 and 3 of the APN CAPaBLE Programme:

- *Objective 1: Improvement of informed decision-making by dissemination of research activity outcomes to policy-makers and civil society* – the MEEP will provide a mechanism specifically designed to introduce policy-makers and

influential members of civil society to recent research into climate change, with specific reference to Cambodia. These theoretical lessons will be reinforced by participants observing the practical implications for the Tonle Sap lake at first-hand.

- *Objective 3: Capacity building of aspiring scientists through sharing of knowledge, experience, information and data collection* – the MEEP will provide a means to raise awareness of climate change among potential future scientists represented among participating students. The planned educational programme will help to develop basic skills among aspiring scientists through the inclusion of practical exercises in collecting, evaluating and recording data on the impacts of climate change and environmental degradation on the Tonle Sap lake.

Self evaluation

The project has been completed largely successfully with a feasibility study and project design suitable for seeking funding for implementation completed and an extensive programme of community consultation undertaken.

Completion was one month later than originally expected due to initial delays in project start as a result of the unavoidable absence of the Team Leader and the rains associated with an extended wet season making travel around Tonle Sap lake more difficult.

Potential for further work

Further work involves the implementation of the MEEP design. The initial steps are the submission of detailed funding proposals using the design developed under this project to possible donors and further elaboration of the legal framework for the proposed PPP. If funding can be successfully obtained, then, following its establishment, the MEEP can provide lessons for possible future environmental educational programmes along the same lines as the MEEP elsewhere in Cambodia and the region.

Publications

No scientific or technical papers are expected to be produced under the project. Information leaflets introducing the MEEP concept in English and Khmer have been distributed and various materials prepared for stakeholder workshops. A project design has been prepared for discussion with potential funding agencies.

Acknowledgments

We would like to express our profoundest gratitude to His Excellency Dr Mok Mareth, Senior Minister, Minister for the Environment, who has supported this project throughout including making available the time of Ministry staff and facilitating all official meetings and communications necessary for the success of the project.

We would also like to thank the Directors of the Provincial Environment Departments for Siam Reap and Kampong Chhnang provinces, Mr Chev Phal and Ms Dork Sothea, for their assistance to the stakeholder workshops and for generously making the time of their staff available to support this project.

Additionally, we would like to gratefully acknowledge the assistance of the following individuals:

HE Mr Ung Seng Chief of Cabinet, Ministry of Environment

Mr Sem Sundara	Director for Foreign Affairs, Ministry of Environment and National Focal Point for APN
Mr Nop Nimol	Deputy Director of Education Department, Ministry of Environment

Finally, we would like to thank all those community representatives who generously made their time available to meet with the project team and to participate in project workshops including, but not limited to:

Vble Tang Torn	Venerable Chief of Preah Prom Rath Pagoda Siem Reap district, Siem Reap province
Vble Doum Tuon	Venerable Chief of Ksam Pagoda, Kampong Chhnang district, Kampong Chhnang province
Vble Suong Pal	Venerable representative monk of Domnak Pagoda, Siem Reap District, Siem Reap province
Vble Suon Chanserey	Venerable representative monk of Kampong Phlok Pagoda, Prasat Bakon District, Siem Reap province
Vble Outh Chea	Venerable representative monk of Ksam Pagoda, Kampong Chhnang district, Kampong Chhnang province
Mr. Chhoeung Hok	Village Chief in Moat Khla Village, Chikgran district, Siem Reap province
Mr. Pheng Samreth	Commune chief, Chhnok Trou Commune, Boribo district, Kampong Chhnang province
Mr. Srey Ly	Commune chief, Kampong Phlock Commune, Prasat Bakon District, Siem Reap province
Mr. Sok Blong	Fishery community chief, Kampong Phlock Commune, Prasat Bakon District, Siem Reap province
Ms. Oun Boren	Local Community Teacher, Phat Sanday commune, Kampong Svay district, Kampong Thom province
Ms. Chheong Makara	Local Community Teacher, Phat Sanday commune, Kampong Svay district, Kampong Thom province

Technical Report

Preface

Environmental degradation and climate change are of growing concern in Cambodia, particularly around the Tonle Sap lake, of immense economic and cultural significance to the country. The Ministry of Environment (MOE) has for some time envisaged a Mobile Environmental Education Programme (MEEP) to raise environmental awareness among opinion-formers and the young. With funding from APN, MOE has now undertaken a study of the feasibility of such a programme and prepared a detailed design in close consultation with lakeside communities who would participate in MEEP. The design is now at a stage where MOE is able to seek external funding.

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1.0 Introduction

1.1 Project background

Cambodia is one of the poorest countries in East and South-East Asia. Gross Domestic Product (GDP) per capita in 2004 was US\$354 or US\$2,423 on a purchasing power parity (PPP) basis¹. The country was ranked as the 125th-poorest in the world. The economy remains dominated by agriculture, which accounts for 34% of GDP².

Cambodia's topography is dominated by the Mekong River and Tonle Sap lake (see Figure 1), located in the central floodplain and linked to the Mekong at Phnom Penh by the 100 km Tonle Sap river. Tonle Sap, also known as the Great Lake, is the largest freshwater lake in Southeast Asia.



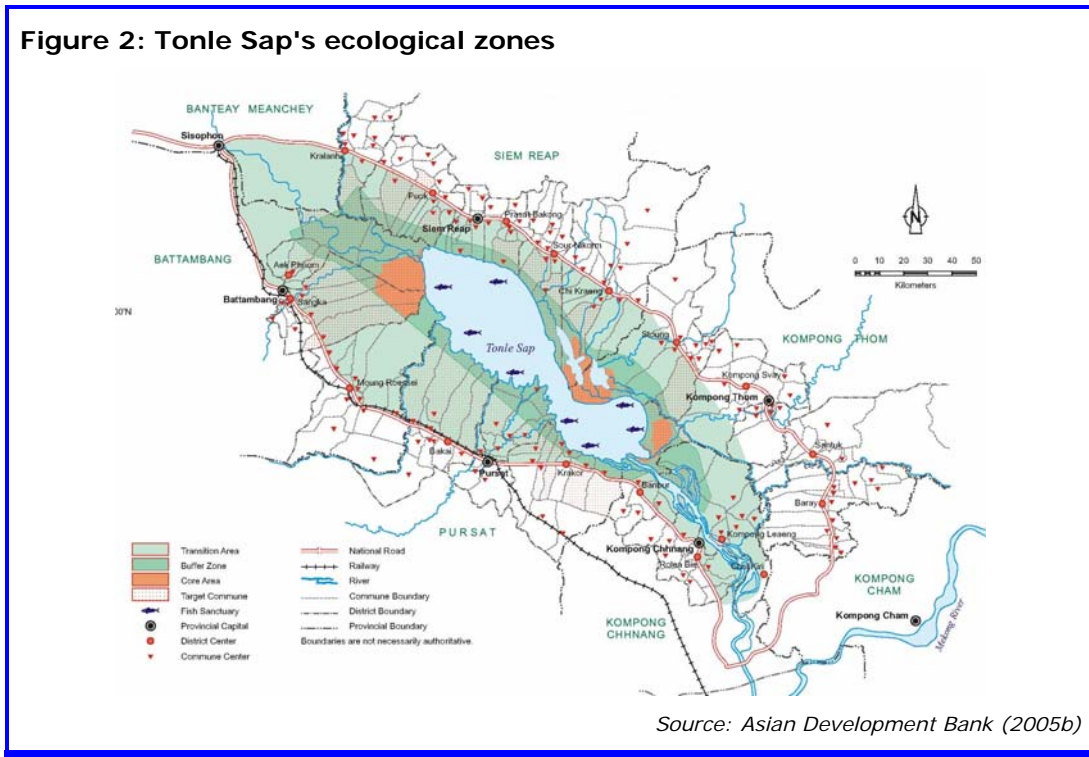
Tonle Sap is known for its exceptional water regime with huge changes in the lake's water level and water volume between different seasons. Its size varies from approximately 160 km long and 35 km wide during the dry season to up to 250 km long and almost 100 km wide at the height of the flooding. The water depth in the lake varies between the dry and wet seasons from 1 metre up to 10 metres. At the same time, the surface area more than quadruples from 2,500 km² to approximately 11,000 km² extending the lake over vast floodplains.

The Tonle Sap's floodplains are divided into three zones. The three core areas are unique ecosystems of high conservation value, characterized by preserved flooded forests, a rich river system and biodiversity. These areas are currently used mainly for fish production, wildlife hunting, and firewood collection. The buffer zone is covered by flooded forest, where fishery activities are dominant. The transition zone

¹ Human Development Report 2006.

² World Development Indicators 2007. Data for 2005.

is farmland, where rain-fed rice and floating rice are cultivated. Figure 2 shows these zones.



The variation in the lake's water volume is caused by a unique hydrological phenomenon determined by the Mekong River. During the southwest monsoon the Mekong's water level rises so high that part of the floodwaters together with fish larvae and fertile sediments run into the Tonle Sap River, causing the river to reverse its flow back to the Tonle Sap Lake and its floodplains. After the flooding season ends in October or November, the Tonle Sap River reverses direction again.

The fishery resources of the Tonle Sap rank first in the world for their productivity and fourth for their total catch despite the small size of the country³. The Tonle Sap ecosystem contributes 60% of this total with the most productive floodplains worldwide. The floodplains' contribution to income, employment, and food security is higher than in any other country. The lake meets directly and indirectly the livelihood needs of at least 15% of Cambodia's total population and the nutrition-related needs of about 80%, especially the poor.

The flooded forests and shrubs of Tonle Sap offer shelter and breeding grounds for fish and other aquatic animals. The lake has one of the richest stocks of water birds in Asia, including many endangered species. It is also home to a variety of mammals, reptiles and insects. Flora in the area includes almost 200 different aquatic plants as well as a range of other plants. Migration of different fish species between the Tonle Sap and the Mekong River is extensive and diverse. In October 1997, Tonle Sap was designated as a Biosphere Reserve under the Man and Biosphere Programme of UNESCO.

Its economic significance, has made Tonle Sap is central to the Khmer cultural identity. The Khmer Angkor civilization with its many famous temples centered around Angkor Wat relied on the rich natural resources of Tonle Sap as a source of wealth. The water festival, one of the largest festivals in Cambodia, is celebrated in

³ Asian Development Bank (2005a).

October or November after the Tonle Sap river reverses course once again and starts to flow back into the Mekong River.

1.2 Tonle Sap and the environment

In recent years, Tonle Sap has come under severe environmental pressure from a growing population and rapid urban expansion.

Flooded forests that form the buffer zone between the lake and its floodplain, and which are a rich source of fish, are being progressively cleared and converted to seasonal agriculture. Deforestation is also taking place for firewood and fuel for fish smoking and sugar manufacture. The area of flooded forest is declining rapidly. In 1997, satellite imagery revealed only about 20,000 hectares (ha) of flooded forest, compared with 362,000 ha in 1991, 614,000 ha in the 1960s, and more than 1 million ha originally⁴.

The cutting of flooded forests is having significant adverse impacts on the lake's fish, bird and animal population. These are further threatened by the increased use of fertilizers and pesticides, run-off from which is leading to deteriorating water quality. Bird and wild animal populations are also affected by aggressive hunting practices including the use of poison, traps, electric shocks and collection of eggs and chicks.

The renowned floating villages on the lake are expanding, and waste and refuse from these is affecting environmental health and particularly water quality. This has deteriorated significantly during the dry season in the most densely populated areas.

These pressures are both contributing to and exacerbating the broader impacts of global warming on the lake's ecosystem and hydrology. The 1994 national inventory of greenhouse gas (GHG) emissions showed that GHG emissions were overwhelmingly (97%) related to land use change and forestry. The inventory also showed that Cambodia is a net carbon sink country. However, this conclusion does not take account of the likely impacts of illegal logging, which would change the results significantly. Even without this, forest coverage across Cambodia as a whole has been declining at rates approaching 1% annually. These rates are much higher for flooded forests, as the figures for reducing coverage around Tonle Sap, provided above, illustrate. The main cause of deforestation is conversion to agricultural land—reflecting the impacts of a rapidly growing rural population⁵.

Cambodia is already experiencing social, economic and environmental impacts caused by irregular, severe and more frequent floods and droughts, which are believed to be related to climate change. Between 1998 and 2002, 70% of all Cambodia's lost rice production was attributed to floods, and a further 20% to droughts⁶. A 2001 survey by the Ministry of Environment suggested that by 2100, rainfall will increase by between 3-35% and temperatures between 1.3-2.5°C, which can be expected to lead to more frequent occurrences of extreme weather events⁷.

1.3 Project concept

The Ministry of Environment (MOE) has been pursuing opportunities to increase environmental awareness among the population and, in particular, among the young and among opinion-formers, for some years. Such educational activities are seen as vital to building understanding of the adverse impacts on the environment of human activities, and how these can be mitigated and managed by individuals and communities. They also offer a means to increase interest among students and opinion-formers in the science of the environment in general and climate change in particular—increasing Cambodia's future pool of scientific talent and its ability to

⁴ Asian Development Bank (2005c).

⁵ Ministry of Environment (2001).

⁶ Cambodian Research Centre for Development (2004).

⁷ *ibid*

interact and collaborate effectively with other countries and international organisations to address these issues.

The centrality of Tonle Sap in the life of the country, and its international significance make it an obvious venue for such educational programmes. The increasing pressures on Tonle Sap's environment and the urgent need to address these further strengthen the arguments for it being the location for MOE's educational initiatives.

Working together with a local NGO, the Association of Protection and Development for Cambodia Environment (APDCE), MOE has developed the concept of a pilot mobile environmental educational programme (MEEP) based around the lake. If successful, the resulting programme could, as well as directly educating participants on environmental issues, serve as a model for the establishment of similar programmes elsewhere.

For MEEP to succeed, MOE considered that it must be integrated into the life of communities around Tonle Sap. The involvement and co-operation of these communities would be required for programme participants to be able to fully appreciate environmental impacts and how communities contribute to these and can work to mitigate them. At the same time, the programme also offers an opportunity to these communities themselves—directly through the income-generating activities associated with the programme and indirectly through the opportunities it offers for communities to learn how they can better manage their environmental impacts.

The MEEP concept envisages that program participants would visit lakeside communities to see, at first-hand, the impacts of environmental degradation and climate change on these communities and to identify how these could be addressed—either through reducing the impacts of the community or through appropriate 'coping' responses. In return for hosting these visits, communities can expect to benefit from

However, obtaining the support of the lake's communities would not be a rapid exercise. It would be necessary to spend time consulting with the communities, explaining the aims of the programme and learning how the communities can contribute to the programme and what it can offer to them. The results of this consultation could then be used to refine the programme's design and to build consensus among communities over the future programme and their role in it and the necessary commitment among all parties to make the programme work.

1.4 Requirements for APN support

As with other ministries and departments in the Royal Government of Cambodia, MOE faces severe financial constraints. Insufficient funds were available to cover the direct financial costs of designing the planned MEEP and developing the necessary support and commitment for it among local communities. MOE, therefore, approached the Asia Pacific Network for Global Change Research (APN) for financial assistance for a 12-month feasibility study of the programme, including a process of community consultation and consensus building.

The application was made under APN's CAPaBLE Programme. The MEEP concept would directly contribute to achieving objectives 1 and 3 of the CAPaBLE Programme:

- Objective 1: Improvement of informed decision-making by dissemination of research activity outcomes to policy-makers and civil society.
- Objective 3: Capacity building of aspiring scientists through sharing of knowledge, experience, information and data collection.

After review, APN generously made available grant funding for 20006-07 of US\$30,000 for project implementation costs and US\$10,000 for consultancy fees.

1.5 Project objectives

The proposed MEEP has two main objectives:

- It should provide a means of introducing students and opinion-formers to the impacts of climate change and environmental degradation in Cambodia, to provide education in how these impacts can be reduced and mitigated and to encourage participants to push for the necessary policies and measures to be implemented.
- It should help students to develop a basic understanding of scientific issues and techniques in measuring and monitoring environmental impacts, to build Cambodia's levels of technical expertise and to encourage students to pursue careers in environmental science.

There are also a number of subsidiary objectives, which impact on the design of the MEEP:

- The MEEP should contribute, directly and indirectly, to income generation and environmental improvements among its host communities around Tonle Sap. This will help build the support for and sense of ownership of MEEP among these communities which will be necessary for it to succeed.
- The MEEP should be able to cover its operational expenses from participant charges. It is clearly not realistic in Cambodia's current stage of economic development to expect a programme of this nature to be subsidised on an ongoing basis by government.
- This consideration also points towards the MEEP operating under a public-private partnership (PPP) model. A PPP can be expected to create stronger incentives for the efficient operation of the MEEP, a greater focus on cost control and more effective marketing in order to increase operating revenues.
- As well as being educational, the MEEP should also be pleasurable for participants. An educational programme of this type can only succeed if participants enjoy the experience, are willing to learn and promote the programme informally among potential future participants through 'word of mouth'.

The MEEP is envisaged as providing a possible model for similar future developments in Cambodia and the wider South-East Asian region.

2.0 Methodology

This project was undertaken to assess the feasibility of the proposed MEEP and to develop an implementation plan. The content of this methodology section reflects these project aims. It focuses on the processes followed to consult with local communities and to obtain their support for and participation in the proposed MEEP.

At the initial planning stage of the project, it was recognised that effective consultation would take time. Communities would need to become aware of the MEEP and to have sufficient opportunity to internally consider it, prior to being able to effectively contribute to external discussions and decisions on the program. At the same time, the project team would need to learn more about potential participating communities in order to identify which are suitable for inclusion in the program and to know which leaders to interact with in each community.

A three-stage consultation and design process was therefore developed:

- **Stage 1 – Assessment of interest:** During this first stage, the project team would visit lakeside communities to inform them of the MEEP and to identify their interest in and suitability for participation in the program.
- **Stage 2 – Initial design:** Using the results of the first stage, the project team would develop an initial design for the MEEP. A second series of visits would be made to those lakeside communities most suitable for inclusion in the program and which had expressed interest in participation, to discuss this design and obtain comments on it. These visits would be followed by a workshop bringing together key stakeholders to review the design.
- **Stage 3 – Final design:** The inputs and comments received during the second set of field visits would be used to refine and finalise the MEEP design. A third and final set of field visits would be made to describe the design, followed by a second stakeholder workshop to obtain consensus around the design and commitments to its implementation.

2.1 Stage 1 – Assessment of interest

Work on the project commenced with the preparation by the project team of an outline proposal for the MEEP. This outline was used as a basis for initial screening of candidate communities for inclusion in the MEEP, and for discussions with these communities. The outline followed the concept already developed by MOE with additional detail added on transport modes (boat) and duration of individual tours (from three to five days). Using this, it was also possible to identify the appropriate distances between communities to be included in MEEP, to ensure that these were neither excessively close nor far apart.

At an early stage, the decision was taken to restrict the MEEP to five out of the six provinces which are located around Tonle Sap (Kampong Chhnang, Pursat, Battambang, Siem Reap and Kampong Thom). The province of Banteay Meanchey was excluded, as only being connected to the lake during the monsoon season.

Prior to the first set of field visits, the project team developed a set of criteria to assess the suitability for inclusion of lakeside communities in the MEEP. These included the:

- Accessibility of the community by boat in both high and low water seasons.
- Ability of the community to offer subsistence and/or accommodation to MEEP participants.
- Significance of environmental issues in the community and, in particular, any mitigation measures adopted.
- Location in a protected area of ecological importance.
- Vulnerability of the community to the effects of climate change such as, for example, through the loss of fishing grounds.

As well as these more quantitative measures, the first field visits were also to be used to qualitatively assess the interest and willingness of communities to participate in the MEEP through discussion with key local stakeholders. Although the exact stakeholders to be consulted would vary from community to community, they would typically be expected to include the:

- Village chief.

- Members of the commune council⁸.
- Chief Monk of the community's pagoda.
- Head of the community's school.

A tentative list of communities to be visited was then drawn up together with the environmental departments of the five provinces visited, with support from the central level provided by the sponsoring ministry (MOE).

The first field visit was undertaken in October 2006. This is the rainy season in Cambodia – which makes such visits more difficult due to higher and more rapid water flows and winds. Further difficulties were caused by the need to obtain clearances to enter controlled fishing lots en route to communities. These lots are guarded and entrance prohibited to vessels without the necessary permits.

Despite these problems, the first field visit managed to reach 15 communities around Tonle Sap. In each, the team initially approached the village chief with a request to gather as many members of the community as possible for a participatory meeting. It was possible to hold such meetings in the majority of the communities visited. At the meeting, the project team introduced the MEEP concept and explained that they were conducting a feasibility study, with the benefit of APN funding. The purposes of the meeting were described, including the need to ascertain the suitability and willingness of the community to participate in the MEEP, and an explanatory leaflet on the MEEP distributed (see Figure 3).



Source: MEEP feasibility study team

Following this introduction, a standard questionnaire developed by the project team was used to elicit responses and generate discussion among meeting participants. The questionnaire was focused on the criteria for community selection previously prepared by the project team, and included questions on each community's history, main sources of income, natural resource endowments, population size, mix and educational level, awareness of climate change and environmental issues of most

⁸ In Cambodia, villages form part of a commune which, in turn, forms part of a province. Communes are the lowest unit at which central government is represented and have important powers as regards daily life.

concern. Each question was explained by the project team, following which an open discussion would take place. The discussion was moderated by the project team.

The team also held individual meetings with commune chiefs, monks, teachers and fishery lot managers. A typical meeting is illustrated in Figure 4.

Figure 4: Typical community meeting



Source: MEEP feasibility study team

In each community, great interest was expressed in the MEEP concept and participating in the programme.

2.2 Stage 2 – Initial Design

Following the first field visits, the project team reviewed the information collected from each community against the various suitability criteria previously established. The decision was taken to eliminate three communities from those visited from further consideration. These were communities where access by boat is difficult and where there are concerns over security, due to the need to pass through various controlled fishing areas. The remaining 12 communities, to be visited during stage 2 of the study, are shown in Figure 5, below. A summary description of the communities is provided in Table 1, overleaf.

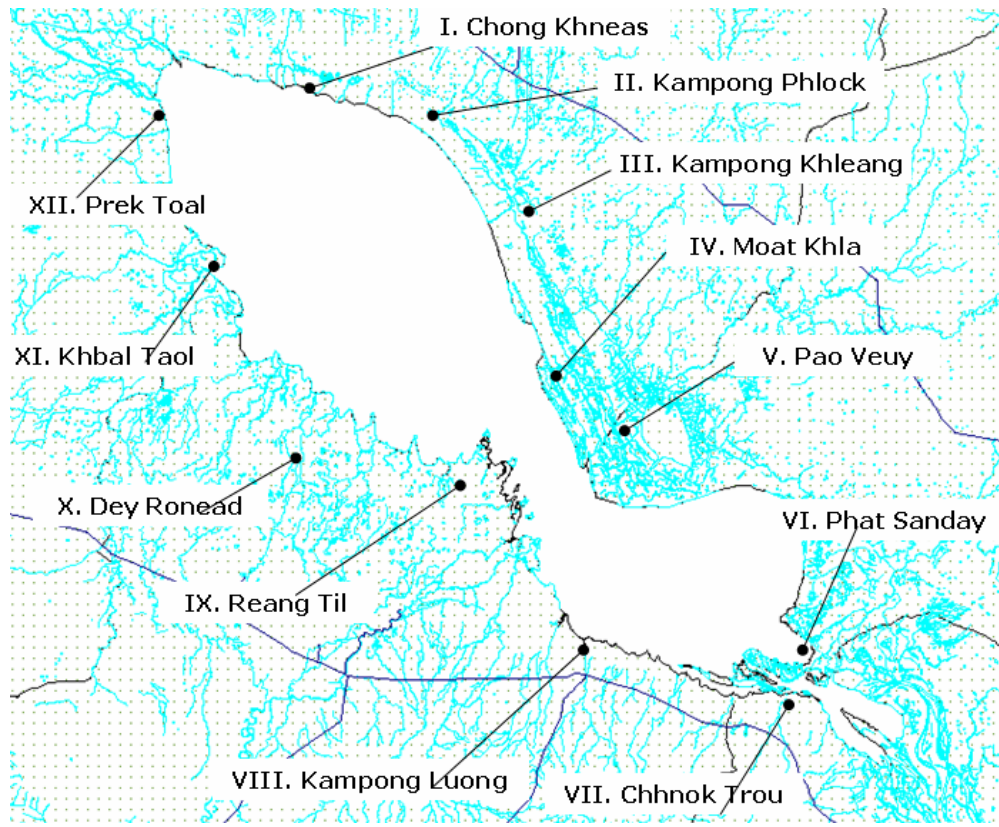
Table 1: Summary characteristics of participating communities

No	Village	Commune	District	Province	Households	Population	Ethnic mix	History	Physical Resources	Natural Resources	Human Capital
1	7 villages	Chong Khneas	Siem Reap	Siem Reap	1,101	5,814	Khmer 68% Vietnamese 30% Cham 2%	After 1979	2,000 boats 800 motorized	Community fishery: 7,847 ha	Literacy 65% Student 750
2	3 villages	Kampong Phlok	Siem Reap	Siem Reap	549	3,062	Khmer 100%	Before 19 th century	1,500 boats 600 motorized	Community fishery: 14,293 ha	Literacy 85% Student 734
3	10 villages	Kampong Klaeng	SoutrNikum	Siem Reap	1,947	10,622	Khmer 85% Vietnamese 15%	Before 19 th century	4,000 boats 1,800 motorized	Community fishery: 21,992ha	Literacy 80% Student 2,327
4	Moat Khla	Anglon Samnor	Chikreng	Siem Reap	194 (dry season) to 300 (wet season)	1,300	Khmer 90% Vietnamese 10%	Before 1970	600 boats 200 motorized	Community fishery: 4,504ha	Literacy 65% Student 250
5	PaoVeauy	Peam Bang	Slaung	Kampong Thom	60	360	Khmer 100%	Before 1930	180 boats 60 motorized	Core area: 14,565 ha	Literacy 60% Student 70
6	5 villages	Phat Sanday	Kampong Svay	Kampong Thom	1,173	5,417	Khmer 80% Vietnamese 20%	Before 1970	3,500 boats 1,500 motorized	Core area: 6,355 ha	Literacy 80% Student 1,670
7	3 villages	Chhnok Trou	Boribo	Kampong Chhnang	1,829	8,419	Khmer 60% Vietnamese 40%	7 th century	5,000 boats 3,000 motorized	Community fishery: 1,350 ha	Literacy 65% Student 1,500
8	5 villages	Kampong Loung	Krakor	Pursat	1,048	6,900	Khmer 60%	Since 16 th century	3,000 boats		Literacy 70%

No	Village	Commune	District	Province	Households	Population	Ethnic mix	History	Physical Resources	Natural Resources	Human Capital
							Vietnamese 40%		1,200 motorized		Student 750
9	5 villages	Raing Til	Kandieng	Pursat	925	4,904	Khmer 40% Vietnamese 60%	Before 1900	1,200 boats 700 motorized	4 fishing lots	Literacy 65% Student 730
10	Dey Ronead	MeTuck	Bakan	Pursat	154	800	Khmer 80% Vietnamese 20%	Before 1970	600 boats 250 motorized		Literacy 70% Student 500
11	Kbal Taol	Koh Chievang	Ek Phnom	Battambang	547	3,056	Khmer 70% Vietnamese 30%	Before 1945	1,500 boats 600 motorized	Fish sanctuary: 7,847 ha	Literacy 75% Student 550
12	5 villages	Koh Chievang	Ek Phnom	Battambang	1,913	10,035	Khmer 70% Vietnamese 30%	Before 1986	5,000 boats 2,000 motorized	Prek taol core area 21,342 ha	Literacy 80% Student 2,102

Source: MEEP feasibility study

Figure 5: Tonle Sap communities participating in MEEP



Source: MEEP feasibility study team

The data gathered from the first field visits was used to refine the MEEP outline proposal into an initial design. More detailed schedules were prepared, with the aim of ensuring that the MEEP visited a range of communities in order to spread the burden and benefits of hosting MEEP participants. Each schedule additionally had to ensure an appropriate mix of communities as regards environmental issues, ongoing mitigation activities and general interest to MEEP participants (history and sights).

The team also prepared a possible public-private partnership structure for the MEEP. This would involve a public sponsoring organisation involving MOE and provincial governments—whose participation is essential for the MEEP to be able to operate effectively in the selected communities. Capital funding would be largely provided by the public sector while a private operator would be contracted to run the MEEP on a day-to-day basis. The operator would be expected to recover their costs from participant charges.

Consultation on the initial design was undertaken through three routes:

- Discussions with central ministries, including MOE, as the key sponsoring agency for the MEEP, and the Ministry of Education, as one of the major potential customers for the MEEP's services.
- A second set of field visits in January 2007 to the 12 communities selected for further investigation was undertaken. These visits were used to confirm and complete the information on each community obtained during the first field visits. Additional discussions were held with key decision-makers within each community in order to further expand on the MEEP concept, using the initial

design, and to obtain commitments of continuing support and willingness to participate of the community.

- A stakeholder workshop, held in March 2007 following the second set of field visits and bringing together representatives from MOE, provincial governments and participating communities. The workshop was used to review the initial MEEP design and to work towards agreeing a consensus on how it should be modified and developed to better achieve the programme's aims. Sessions were held on each aspect of the design, introduced by a short presentation from the project team and followed by an open discussion moderated by the team. All presentations and discussions were in Khmer. The workshop agenda, a list of participants and copies of workshop materials are contained in Appendix A1.1.

The process of organising the stakeholder workshop provides an illustration of the challenges encountered by the project team in ensuring effective consultation with participating communities, and the need for the extended process adopted. Most of the communities visited lack telephone or radio facilities. Invitations to the stakeholder workshop had, therefore, to be hand delivered during the second set of field visits and accompanied by a verbal explanation of the workshop's purposes and the administrative arrangements for attendance. It was also necessary to devote time to agreeing with community decision-makers as to the most appropriate attendees at the workshop. In many cases, the most obvious attendees were illiterate, and it became necessary to identify suitable alternatives and to ensure that each was carefully instructed in the purposes of the workshop, the information they would need to collect from community members prior to the workshop and how to disseminate the workshop results to the community on their return.

2.3 Stage 3 – Final design

The third stage of the study followed the same structure as for the second stage. Using the results from stage 2, the initial design was further refined and developed to provide a draft final design. This included more detail on the planned MEEP itineraries and the PPP arrangements and the addition of a draft financial analysis of the MEEP including assessment of likely pricing levels.

The focus of this stage was a second stakeholder workshop to present the draft final design for discussion. However, prior to this workshop, it proved necessary to undertake a third and final set of field visits to participating communities during early-April 2007. This was in large part due to the need to hand deliver workshop invitations, for the reasons outlined above. These visits also provided an opportunity to survey access to communities during the dry season when much lower water levels exist. In some cases, it was obvious that community visits undertaken as part of the MEEP would need to be by transfer to smaller dinghies—for which provision was made in the costings for the programme.

Following completion of the final field visits, the second stakeholder workshop was held in May 2007. The format and attendance followed that of the first workshop. Participants reviewed the draft final design and made recommendations on further changes that might be required. The workshop was held in a different province to the first, in order to increase opportunities for participants to familiarise themselves with other areas and to ease access for some communities. In total, 43 participants from all 12 communities participated. The project team particularly welcomed the participation of Buddhist monks who play a highly influential role in educating and informing rural communities in Cambodia, and whose involvement is important in being able to transfer lessons on good environmental management practices to these communities using the opportunities provided by the MEEP.

The workshop agenda, a list of participants and copies of presentations are provided in Appendix A1.2. The workshop itself is pictured in **Figure 6, 7a & 7b**, below.

Figure 6: First stakeholder workshop



Source: MEEP feasibility study team

Figure 7a: Second stakeholder workshop



Source: MEEP feasibility study team

Figure 7b: Second stakeholder workshop



Source: MEEP feasibility study team

The results of the workshop were used to prepare the final MEEP design and appraisal, as summarised in Section 3.0, below.

3.0 Results & Discussion

The project was undertaken to develop a feasible model for the MEEP, and one that can be replicated in similar future projects in Cambodia and elsewhere. Central to this was the building of support for and commitment to the MEEP among its host communities and provincial stakeholders—through the participatory process described above. This section describes the resulting MEEP design developed under this process.

The description of the MEEP is organised into four parts:

- Operations: The programme for the MEEP’s day-to-day operations, showing how the objectives for the MEEP are translated into concrete activities.
- Institutional arrangements: The planned structure for the governance and operation of the MEEP as a PPP.
- Financing plan: The planned financing arrangements for the MEEP.

3.1 Operations

The MEEP is targeted at a mix of participants. It is initially expected that these will include:

- Schools (both public and private), for students of ages 14 years and up.
- Universities and colleges (in particular, students on science and environmental courses).

- Non-governmental organisations (NGOs) active in environmental issues.
- Staff of Royal Government of Cambodia (RGC) ministries and departments with responsibility for environmental issues.

The MEEP will also offer trips targeted, in particular, at foreign tourists. Participation by these tourists will help meet three needs:

- Enabling tourists to view Tonle Sap and lakeside communities from an alternative perspective and, thereby, further enriching the variety of tourism opportunities on offer within Cambodia.
- Raising awareness of environmental issues among tourists and, in particular, assisting them in understanding how environmental policies and actions in their home countries can affect the lives of people in countries such as Cambodia.
- Providing opportunities for local communities to increase their incomes, through the sale of services and souvenirs to participating tourists.

The exact details of the trip programmes will be finalised by the MEEP's operator. However, it is expected that a number of pre-designed programmes will be offered to participants, lasting three, four and five days. From 20 to 30 participants per trip are planned.

An example of a possible three-day programme is attached as Appendix 0. Each programme offers a mix of environmental educational activities, visits to communities and recreational activities. The actual form of education will be tailored to the nature of the participants. For example, for school-age students, it might involve structured lessons with students asked to undertake experiments on water quality or similar and to discuss and present their results. For older participants, it might involve more free-form discussions and sharing of views on key environmental issues around Tonle Sap. Participants will also be given suitable opportunities to interact with communities visited during the programme—including visits to schools to meet and talk with students and to discuss with leading community members on what the environment means to them and how they can mitigate their impacts on it.

It is proposed (subject to confirmation by the MEEP's operator) are that each group of participants will be accompanied by two teachers. These teachers will be employed on a full-time basis and their responsibilities will include detailing and updating the educational elements of the programme.

The physical infrastructure of the MEEP will primarily consist of a barge procured for this purpose, with all necessary facilities. There will be a need for some form of contact point to be established in both Phnom Penh and Siem Reap, to market the programme to potential participants (both groups and individuals) and to liaise with participants and other related parties. It is envisaged that participants would be able to originate from either city, with transport to the barge location being arranged as part of MEEP.

All participants will be provided with an introductory lecture covering the purposes of the MEEP, safety information and information on how to limit their own environmental impacts.

3.2 Institutional arrangements

It is envisaged that the MEEP will be governed by a PPP arrangement. Under this, overall responsibility for the MEEP will lie with a public sector entity with its own legal identity established for this purpose. The exact nature of this entity needs to be defined, but it is envisaged that it would bring together MOE and the governments of

the provinces within which MEEP would operate. Majority control would be held by MOE, as the MEEP's 'owner', with provincial governments representing the interests of the communities participating in and affected by MEEP.

The public sector entity would be responsible for the commissioning of MEEP and the procurement of a barge. It would let a contract for the operation of the MEEP to a private sector (including not-for-profit) entity. The operating contract would be for a limited period and would give the private entity the rights to operate MEEP and retain participant fees. The public sector entity would continue to provide governance of MEEP including approving participant fees charged. There would be an annual report from the operator to the public sector entity of its performance.

In return for their operating rights, the private operator would be expected to make some form of limited up-front contribution to the costs of the MEEP—either through a capital contribution or, potentially, by assuming the debt service of any loans taken out to finance MEEP's initial capital expenditures (see below).

As the private operator will pay all operating costs and will retain the revenues from participant fees, they have clear incentives to manage MEEP efficiently, in order to keep costs down, and to maximise utilisation of MEEP, in order to increase revenues. Both incentives align with the requirements for establishing a successful and sustainable MEEP—and demonstrate why a PPP is envisaged. The alternative of growing revenues by increasing participant fees is controlled by the requirement for the public sector entity to approve changes in fees.

The private operator would have flexibility, within the overall objectives of the MEEP programme, to modify and refine trip schedules and other features of MEEP's operations in order to increase participation and improve efficiency.

If sufficient interest is expressed by potential private operators, it might be desirable to select between these on a competitive basis using as an evaluation criteria the lowest required level of participant fee. This would be more appropriate for MEEP than selection on the basis of a payment by the operator for their rights—it would help lower fees and, thereby, increase access to MEEP.

3.3 Financing plan

Cost estimates for the MEEP were developed during Stage 2 of the project. Initial cost data was collected by the project team from existing sources and reports. This was verified during the second set of field visits, following which a draft financing plan was prepared as part of the draft final design. This plan was reviewed during the second stakeholder workshop prior to finalisation.

Total capital costs are projected at US\$323,000, of which the major component is the costs associated with the barge (costed at US\$300,000). Ongoing operating costs are projected at between US\$45,000 and US\$70,000 annually, depending on the number of trips, of which the largest cost components are food for participants (at US\$23,000 to US\$47,000 annually depending on participant numbers) and staff costs (at US\$15,300 annually).

In line with the principles established for MEEP, it has been assumed that the majority of the start-up costs would be covered by a grant or low-interest loan from donors, but that operating costs would be covered from revenues from participants. For the analysis developed under this project, a donor grant of US\$300,000 has been assumed with the remaining costs, including provision for working capital, covered through a loan⁹.

⁹ This loan is assumed to have a term of six years, including a two year grace period, at a real interest rate of 5% (equivalent to a nominal interest rate of 9% at current Cambodian inflation rates).

Setting an appropriate level of participant fees is a difficult challenge. They clearly must not be set at a level that deters participants and that is affordable for Cambodia. At the same time, they need to be at a sufficient level to cover the operating costs of MEEP, repayment and interest costs of any initial loan and to provide a small margin for the MEEP's operator (in order to create appropriate incentives under the PPP arrangement).

Provisionally, participants' fees of US\$70 for Cambodian nationals and US\$95 for foreign nationals have been assumed. Introducing a small element of cross-subsidisation from foreign to Cambodian nationals helps keep fees for Cambodians down, but the cross-subsidy also needs to be maintained at low levels to avoid deterring foreign nationals (both by setting fees excessively high and from the inevitable opposition to two-tier pricing).

There are still legitimate concerns over whether the rate for Cambodians is excessively high, in particular for students in public schools. However, it would be difficult to reduce this further at this time. As the programme develops, it may prove possible to reduce fees by adjusting fees for other participants upwards or by increasing the frequency of trips (at present, a gradual increase over three years to a maximum utilisation of around 40% has been assumed). The current level is expected to be affordable for most other institutions and organisations who represent potential MEEP participants.

A summary of the results of the financial analysis, showing projected cashflows, is provided in Figure 7, overleaf. These assume an operating period of six years (matching the assumed term of an initial loan). The operator could expect to see a return of around 11% in real terms (15% in nominal terms) with a net present value¹⁰ at the assumed real interest rate of 5% of around US\$6,800. This would make this a moderately profitable undertaking for a private operator—consistent with its being a partially donor-sponsored public educational tool rather than an opportunity for large profits to be earned by a private entity.

¹⁰ The net present value is calculated as the sum of net cashflows to the operator discounted at a 5% real rate. It is calculated irrespective of how the operator funds their contribution to capital expenditures (ie, ignoring the commercial loan).

Figure 7: MEEP cashflow projections

<i>Year</i>		<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
Expenditures								
<i>Capital expenditures</i>								
Barge	US\$	-300,000						
Dinghies	US\$	-20,000						
Water quality testing equipment	US\$	-3,000						
		-323,000						
<i>Operating expenditures</i>								
Staff costs	US\$	-15,000	-15,300	-15,600	-15,600	-15,600	-15,600	-15,600
Educational materials	US\$	-1,680	-2,520	-3,360	-3,360	-3,360	-3,360	-3,360
Participant subsistence	US\$	-23,400	-35,100	-46,800	-46,800	-46,800	-46,800	-46,800
Fuel	US\$	-432	-648	-864	-864	-864	-864	-864
Other operating expenditures	US\$	-6,300	-9,450	-12,600	-12,600	-12,600	-12,600	-12,600
		-46,812	-63,018	-79,224	-79,224	-79,224	-79,224	-79,224
Total expenditures	US\$	-323,000	-46,812	-63,018	-79,224	-79,224	-79,224	-79,224
Financing costs								
Donor grant	US\$	300,000						
Start-up loan								
- opening balance	US\$	0	25,500	25,500	25,500	19,125	12,750	6,375
- drawdown	US\$	25,500	0	0	0	0	0	0
- principal repayment	US\$	0	0	0	-6,375	-6,375	-6,375	-6,375
- closing balance	US\$	25,500	25,500	25,500	19,125	12,750	6,375	0
- interest payment	US\$	0	-1,275	-1,275	-1,116	-797	-478	-159
Total financing costs	US\$	325,500	-1,275	-1,275	-7,491	-7,172	-6,853	-6,534

Cambodian equity financing is assumed to take the form of in-kind contributions from MOE (facilities for centre etc.)

A working capital requirement of US\$2,500 is assumed

		<i>Year</i>	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
Revenues									
Cambodian participants	<i>fee</i>		<i>70 US\$/participant/trip</i>						
	US\$		35,000	52,500	70,000	70,000	70,000	70,000	70,000
Foreign participants	<i>fee</i>		<i>95 US\$/participant/trip</i>						
	US\$		9,500	14,250	19,000	19,000	19,000	19,000	19,000
Total revenues	US\$		44,500	66,750	89,000	89,000	89,000	89,000	89,000
Net cash flows									
Net cash flows - project	US\$		2,500	-3,587	2,457	2,285	2,604	2,923	3,242
Net cash flows - operator	US\$		-25,500	-2,312	3,732	9,776	9,776	9,776	9,776
IRR (operator)			11.1%						
NPV (operator) @ 5%	US\$		6,786						
Cash reserves									
Opening balance	US\$		0	2,500	-1,087	1,370	3,655	6,260	9,182
Change in year (net cash flows)	US\$		2,500	-3,587	2,457	2,285	2,604	2,923	3,242
Closing balance	US\$		2,500	-1,087	1,370	3,655	6,260	9,182	12,424

4.0 Conclusions

MEEP has two main objectives:

- Educating students and opinion-formers on the impacts of climate change and environmental degradation in Cambodia.
- Helping students develop a basic understanding of scientific issues and techniques in measuring and monitoring environmental impacts.

The MEEP design delivers these through creating an environment in which participants experience guided observations of environmental impacts around Tonle Sap, undertake basic scientific tests and experiments and participate in moderated discussions on climate change and the environment. The use of a floating educational centre along Tonle Sap makes such education more relevant to participants, allowing them to witness impacts at first-hand in an area of great economic and cultural significance to Cambodia, while also allowing them to focus on the training more effectively than can be possible in a land-based environment.

To achieve these objectives, a number of subsidiary objectives have been set and addressed under this project:

- *The MEEP should contribute, directly and indirectly, to income generation and environmental improvements among its host communities around Tonle Sap.* This has been a central element of the feasibility study process. The MEEP has been developed in close consultation with participating communities, in order to ensure their interest and commitment to it, and to allow them to understand how they can best benefit from it.
- *The MEEP should be able to cover its operational expenses from participant charges.* This has been a basic premise of the financial analysis of the MEEP and its costing arrangements have been designed accordingly.
- *This consideration also points towards the MEEP operating under a PPP model.* An operating contract is expected to be awarded to a private or not-for-profit entity. Where interest permits, a competitive tender would be held on the basis of the lowest participant fee required to operate MEEP.
- *As well as being educational, the MEEP should also be pleasurable for participants.* The MEEP schedule combines opportunities for with potential for a range of other activities, mixing relaxation with training.

Overall, the MEEP is considered to provide an interesting model for furthering the goals of enhanced environmental awareness and education in Cambodia, and in developing countries more generally. The design process has emphasised, throughout, the importance of any such programme being sustainable and, in particular, has placed great importance on consultation with local communities to ensure their commitment to support the project.

5.0 Future Directions

The immediate next step in the implementation of the MEEP is the preparation and submission of detailed funding proposals to possible donors. In parallel with this, further elaboration of the legal framework for the proposed PPP is required and, in particular, the nature of the public sector entity that would govern the MEEP and award a contract for its operation.

If funding can be successfully obtained, then, following the establishment of the MEEP, it will be important to set up some form of monitoring and evaluation process

in order to assess how the MEEP concept can be further developed. The outputs from this process will be used to improve the MEEP itself, but also to provide lessons for possible future environmental educational programmes along the same lines as the MEEP elsewhere in Cambodia and the region.

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Appendices

A1 Conferences/Symposia/Workshops

A1.1 First stakeholder workshop

Agenda

Held on 12 March 2007 at Department of Environment offices in Siem Reap province

- | | |
|-----------|--|
| 0730-0800 | Registration |
| 0800-0815 | Playing of the National Anthem |
| 0815-0830 | Welcoming remarks
<i>Mr Chev Phal (Director, Department of Environment, Siem Reap Province)</i> |
| 0830-0915 | Overview presentation <ol style="list-style-type: none">1. What is Mobile Environmental Education Program (MEEP)?2. Why do we want to promote MEEP?3. Purposes of this workshop are:<ol style="list-style-type: none">a. To discuss the findings collected by our consultantb. To get some feedback from participantsc. Some recommendations and kind cooperation if MEEP is funded to carry out its activities around the lake
<i>Mr Ieng Sovannora (Team Leader, MOE)</i> |
| 0915-1015 | Presentation on the findings around Tonle Sap lake <ol style="list-style-type: none">1. Go through in details of each selected province2. Open discussion
<i>Mr Yean Ly (Team Member, APDCE)</i> |
| 1015-1030 | Tea / coffee break |
| 1030-1200 | Continuation of open discussion on province details |
| 1200-1330 | Lunch |
| 1330-1530 | General plenary session
(Seeking recommendations and inputs from community representatives to the MEEP design)
Moderated by <i>Mr Ieng Sovannora (Team Leader, MOE)</i> |
| 1530-1545 | Tea / coffee break |
| 1545-1600 | Wrap-up and closing remarks
<i>Mr Ieng Sovannora (Team Leader, MOE)</i> |

List of participants

No	Name	Ministry, Organization	Position	Telephone No
Speakers and Secretariats				
1	Mr. Ieng Sovannora	MoE	Project Leader	012 879 779
2	Mr. Yean Ly	APDCE	Local Consultant	012 480 050
3	Mr. Chev Phal	DoE, Siem Reap	Director	012 625 562
Phnom Penh				
4	Mr. Sem Sundara	MoE	APN Focal Point	012 801 177
5	Ms. Nun Bunsan	MoE	Official	012 457 700
6	Mr. Ngan Chhayheang	MoE	Official	012 645 647
Siem Reap Province				
7	Mr. Chhoeung Hok	Local Community	Director in Moat Khla Village	012 194 0124
8	Mr. Om Narain	Local Community	Villager in Chong Khneas Commune	Don't have
9	Mr. Tang Torn	Buddhism	Monk	Don't have
10	Mr. Suong Pal	Buddhism	Monk	Don't have
11	Mr. Suon Chanserey	Buddhism	Monk	Don't have
12	Mr. Srey Ly	Local Community	Director in Kampong Phlock Commune	012 983 256
13	Mr. Sok Blong	Local Community	Villager in Kampong Phlock Commune	092 897 686
14	Mr. Dek Vimeanreaksmey	DoE	Official	012 719 097
15	Mr. Phourng Lina	DoE	Official	012 775 365
16	Mr. Tuoch Bunthoeun	Local Community	Villager in Kampong Khleang Commune	012 194 1585
17	Mr. Riel Run	Local Community	Villager in Kampong Khleang Commune	Don't have
18	Mr. Bo Chan	DoE	Official	092 783 493
19	Mr. Sor Samol	Local Community	Villager in Kampong Phlock Commune	Don't have
Kampong Thom Province				
20	Ms. Oun Boren	Local Community	Teacher	011 220 687
21	Ms. Chheong Makara	Local Community	Teacher	Don't have
22	Mr. Li Kana	DoE	Official	012 888 003

No	Name	Ministry, Organization	Position	Telephone No
23	Mr. Huot Seenoeun	DoE	Official	012 311 863
24	Mr. Pon Sokunthea	DoE	Official	092 741 599
Battambang Province				
25	Mr. Ly Leangheng	Local Community	Villager in Kbal Taol Village	092 284 481
26	Mr. Some Saman	Local Community	Villager in Kampong Preang Commune	012 576 188
27	Mr. Ouk Neikim	Local Community	Villager in Peam Ek Commune	Don't have
28	Mr. Ngoek Bunthoeun	Local Community	Villager in Koh Cheveang Commune	011 313 623
Kampong Chhang Province				
29	Mr. Chhoy Part	DoE	Official	011 697 761
30	Mr. Choeun Vuth	DoE	Official	092 229 348
31	Ms. Phat Phalla	Local Community	Villager in Chhnok Trou Commune	Don't have
32	Mr. Sam Mean	DoE	Official	012 768 417
33	Mr. Chearn Tuo	DoE	Official	012 799 967
34	Mr. Pheng Samreth	Local Community	Director in Chhnok Trou Commune	092 908 190
Pursat Province				
35	Mr. Ek Daravuthy	DoE	Official	012 660 766
36	Mr. Keok Chiv	DoE	Official	Don't have
37	Mr. Kheng Sokhar	DoE	Official	092 618 431
38	Mr. Chor Thai	Local Community	Villager in Dey Ronead Village	Don't have

Presentations and other workshop materials

Welcoming remarks

Mr Chev Phal (Director, Department of Environment, Siem Reap Province)

First of all, welcome venerable, ladies and gentlemen, on behalf of the Department of Environment Siem Reap province and myself and the honorary of the workshop, I am please to participate to the most important workshop on feasibility study to formulate Mobile Environmental Education Program (MEEP) around Tonle Sap Lake. In this time, I am deeply grateful to all participants from the 12 areas of the 5 province around Tonle Sap Lake. I am expected that we will have some discussion to share idea for promoting the important MEEP around Tonle Sap Lake, that manage the natural resource of the lake to be wisely protected so that it will last longer for our next generation.

The Royal Government of Cambodia has been protect Tonle Sap Lake by a lot of projects in order to preserve natural resource of Tonle Sap lake the participation form

all stakeholders to preserve and protect natural resource of the lake is the important strategies.

The workshop aims to presentation and discussion some finding that our local consultant organizes some field trip around Tonle Sap Lake to gather some data and information related to village's history, culture, and social-economic, natural and human capital. And they will formulate one Mobile Environmental Education Program (MEEP) for strengthening local capacity to educate about environmental impact by climate change in Tonle Sap Lake.

Today, Mr. Sovannora Ieng, advisor to HE. Dr Mok Mareth, senior Minister Ministry of Environment project coordinator and Mr. Yean Ly executive director of APDCE local consultants of the project is responsible to the presentation of the workshop and respond to the question and suggestion of all participants.

I expect that all participants are active in discussion and negotiation to provide some recommendation to both consultants.

At the end, I am deeply gratitude to all participants from the five provinces and all of you for your kind inputs to revise the finding. I hope that the workshop is fruited really, and I declare an opening of the workshop, and then I would like to give the floor to Mr. Sovannora Ieng.

Thank you.

Overview (English summary)

Presentation by Mr Ieng Sovannora (Team Leader, MOE)





A feasibility study for
Mobile Environmental Education Program (MEEP)

បទសង្ខេបពី គំរោង MEEP ដោយ លោក អៀង សុវណ្ណនរោ
នៅសិក្ខាសាលាស្តីពី ការរៀបចំកម្មវិធី អប់រំបរិស្ថានគោចរ
ជុំវិញបឹងទន្លេសាប
ប្រព្រឹត្តទៅនៅថ្ងៃទី ១២ មីនា ឆ្នាំ២០០៧

**Presentation on
Mobile Environmental Education Program (MEEP)
around the Tonle Sap Lake by Mr. Sovannora Ieng at the
first consultative workshop , to be held on 12 March 2007**

*For further information, please contact: Mr. Sovannora Ieng, Project Leader
CO # 45 Freshwater Fish Farm, Tonle Sap, Cambodia or Phnom Penh, Cambodia. Tel: +855 22 579 779, +855 23 222 819
Email: jph10@camarg6.com*

មាតិការឿង មាន:

- ១. ស្ថានភាពទូទៅរបស់គំរោង**
- ២. តើគំរោងអប់រំបរិស្ថានគោចរ ជាអ្វី?**
- ៣. ហេតុអ្វី យើងចង់បង្កើត គំរោងកម្មវិធីនេះ?**
- ៤. សារៈសំខាន់នៃសិក្ខាសាលាថ្ងៃនេះ**
- ៥. និង ព័ត៌មានទូទៅ**

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- 2. What is Mobile Environmental Education Program (MEEP)?**
- 3. Why do we want to promote MEEP?**
- 4. The importance of this workshop**
- 5. And General information**

ស្ថានភាពទូទៅ របស់គម្រោងនេះ

The Overview Of This project

Funded by



The feasibility study for
Mobile Environmental Education (MEEP)

Implemented
by



គម្រោងនៃការរៀបចំកម្មវិធី អប់រំបរិស្ថានគោចរនេះ
ឧបត្ថម្ភដោយ ក្រុមបណ្តាញអាស៊ីប៉ាស៊ីហ្វិក (អេ ភី អេន)
អនុវត្តដោយក្រសួងបរិស្ថាន និងសហការជាមួយ
សមាគមនគរការពារព្រៃភូមិស្ថានកម្ពុជា

The feasibility study for Mobile Environmental Education
Program is funded by Asia-Pacific Network (APN)
Implemented by the Ministry of Environment (MOE) and
Association for Protection and Development for Cambodia Environment
(APDCE)



A feasibility study for
Mobile Environmental Education Program (MEEP)

តើកម្មវិធីអប់រំបរិស្ថានគោចរ ជាអ្វី?

What is Mobile Environmental Education Program (MEEP)?

For further information, please contact: Mr. Souvanna Long, Project Leader
CO # 48 Preah Sihanouk Blvd, Tonle Sapaa, Chonkumon Phnom Penh, Cambodia. Tel: +855 22 579 779, +855 23 222 880
Email: plm1@capable.org.kh



A feasibility study for
Mobile Environmental Education Program (MEEP)

ហេតុអ្វី យើងចង់បង្កើតកំរោងកម្មវិធីនេះ?

Why do we want to promote MEEP?

For further information, please contact: Mr. Souvanna Long, Project Leader
CO # 48 Preah Sihanouk Blvd, Tonle Sapaa, Chonkumon Phnom Penh, Cambodia. Tel: +855 22 579 779, +855 23 222 880
Email: plm1@capable.org.kh



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Mobile Environmental Education Program (MEEP)

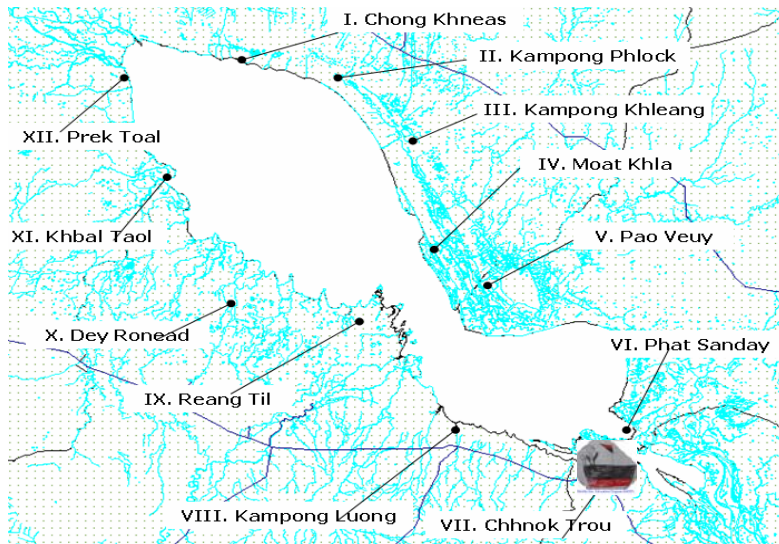
គោលបំណងសំខាន់ នៃសិក្ខាសាលា លើផ្លូវនេះ

Purposes of this workshop

For further information, please contact: Mr. Sasavoneang Project Leader
CO # 45 Preah Sihanouk Blvd, Tonle Sap, Chamkrom, Phnom Penh, Cambodia. Tel: +855 23 579 778, +855 23 222 810
Email: jph10@orange.km.cable



A feasibility study for
Mobile Environmental Education Program (MEEP)



For further information, please contact: Mr. Sasavoneang Project Leader
CO # 45 Preah Sihanouk Blvd, Tonle Sap, Chamkrom, Phnom Penh, Cambodia. Tel: +855 23 579 778, +855 23 222 810
Email: jph10@orange.km.cable



A feasibility study for
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សំរាប់ព័ត៌មានទូទៅ

សូមទាក់ទង: លោក សៀង សុវណ្ណរតន៍ ប្រធានគម្រោង

ផ្ទះលេខ ៤៨ មហាវិថីព្រះសីហនុ សង្កាត់ទន្លេសាត់ ខ័ណ្ឌដំការមន រាជធានីភ្នំពេញ

ឆ្នះស័ព្ទ: ០១២ ៤៧៩ ៧៧៩

អ៊ីមែល: phil@camangkor.com ឬ philieng@yahoo.com

For further information

Please contact: Mr. Sovannora Ieng, Project Leader
C/O # 48 Preah Sihanouk Blvd, Tonle Bassac, Chamkarmon, Phnom Penh.
Cambodia. Tel: +855 12 879 779, +855 23 212 540
Email: phil@camangkor.com or philieng@yahoo.com

For further information, please contact: Mr. Sovannora Ieng, Project Leader
C/O # 48 Preah Sihanouk Blvd, Tonle Bassac, Chamkarmon, Phnom Penh, Cambodia. Tel: +855 12 879 779, +855 23 212 540
Email: phil@camangkor.com



A feasibility study for
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ក្រុមការណ៍សម្របសម្រួល គម្រោង ប្រយោជន៍



គម្រោងប្រយោជន៍
"កម្មវិធីសិក្សាប្រយោជន៍សិស្សសិស្សានុសិស្ស"



ចម្លងសៀវភៅ

កម្មវិធីសិក្សាប្រយោជន៍សិស្សសិស្សានុសិស្ស គឺជាគម្រោងប្រយោជន៍សម្រាប់សិស្សសិស្សានុសិស្សដែលមានស្ថានភាពក្រីក្រ និងមានប្រសិទ្ធភាពខ្ពស់ក្នុងការសិក្សា និងការងារ។ គម្រោងនេះមានប្រយោជន៍ចំពោះសិស្សសិស្សានុសិស្សដែលមានស្ថានភាពក្រីក្រ និងមានប្រសិទ្ធភាពខ្ពស់ក្នុងការសិក្សា និងការងារ។

គម្រោងប្រយោជន៍សិស្សសិស្សានុសិស្ស គឺជាគម្រោងប្រយោជន៍សម្រាប់សិស្សសិស្សានុសិស្សដែលមានស្ថានភាពក្រីក្រ និងមានប្រសិទ្ធភាពខ្ពស់ក្នុងការសិក្សា និងការងារ។ គម្រោងនេះមានប្រយោជន៍ចំពោះសិស្សសិស្សានុសិស្សដែលមានស្ថានភាពក្រីក្រ និងមានប្រសិទ្ធភាពខ្ពស់ក្នុងការសិក្សា និងការងារ។

ចម្លងសៀវភៅ MEEP

MEEP គឺជាគម្រោងប្រយោជន៍សម្រាប់សិស្សសិស្សានុសិស្សដែលមានស្ថានភាពក្រីក្រ និងមានប្រសិទ្ធភាពខ្ពស់ក្នុងការសិក្សា និងការងារ។ គម្រោងនេះមានប្រយោជន៍ចំពោះសិស្សសិស្សានុសិស្សដែលមានស្ថានភាពក្រីក្រ និងមានប្រសិទ្ធភាពខ្ពស់ក្នុងការសិក្សា និងការងារ។



សិក្សាប្រយោជន៍សិស្សសិស្សានុសិស្ស

គម្រោងប្រយោជន៍សិស្សសិស្សានុសិស្ស គឺជាគម្រោងប្រយោជន៍សម្រាប់សិស្សសិស្សានុសិស្សដែលមានស្ថានភាពក្រីក្រ និងមានប្រសិទ្ធភាពខ្ពស់ក្នុងការសិក្សា និងការងារ។ គម្រោងនេះមានប្រយោជន៍ចំពោះសិស្សសិស្សានុសិស្សដែលមានស្ថានភាពក្រីក្រ និងមានប្រសិទ្ធភាពខ្ពស់ក្នុងការសិក្សា និងការងារ។



For further information, please contact: Mr. Sovannora Ieng, Project Leader
C/O # 48 Preah Sihanouk Blvd, Tonle Bassac, Chamkarmon, Phnom Penh, Cambodia. Tel: +855 12 879 779, +855 23 212 540
Email: phil@camangkor.com



*A feasibility study for
Mobile Environmental Education Program (MEEP)*

Kingdom of Cambodia
Nation Religion King



Feasibility Study Project
Mobile Environmental Education Program to raise awareness about climate change in Cambodia



Vision

The Mobile Environmental Education Program (MEEP) is designed to offer lessons in self-sustainable development and the balance between humanity and nature by practically applying real activities and will gain unforgettable experiences through the five senses: touch, smell, see, hear and taste. Thus it will provide a new means to raise awareness of the environmental impacts among students, civil servants, tourists and local communities and stakeholders especially around Tonle Sap Lake.

Partners

The feasibility study is funded by the Asia Pacific Network for Global Change Research (APN). Partners include the Ministry of Environment (MOE), local NGOs and the Association for the Protection and Development of the Cambodian Environment (APDCE).



Overview of MEEP

MEEP will take the form of a mobile education center, possibly a bus or boat, through which participants can visit local communities located around Tonle Sap, to see at first-hand the impacts of climate change and environmental degradation, to share experiences and to learn best practices in environmentally sustainable development and resource management for rural communities. This learning experience will come through an experience that will be enjoyable as well as educational.



MEEP is expected to be a public-private partnership, with services being provided by the private or non-profit sector in return for government support. Over time, it is planned that MEEP will become self-financing from participant fees. Fees charged to foreign participants will be partially used to ensure affordability for Cambodian participants.

Participants

MEEP will be aimed at primary, secondary and tertiary students, Buddhist monks, NGOs, civil servants and tourists. It will raise awareness of environmental management around Tonle Sap in a cross-section of society, particularly among policy-makers, youth and foreign visitors. MEEP will also provide a means for cooperation among government, local communities and others in developing new means to manage environmental resources.

Stakeholder Cooperation

Cooperate among the official entities, local authorities, civil society, academics and especially from the local communities, and how important roles that MEEP will be playing around the Tonle Sap lake areas. In the future we hope to have some cooperation and support from United Nations Environment Programme (UNEP).

MEEP's education program

Sustainable practices that protect biodiversity will form the basis of the training of MEEP using non-formal education with practical activities developed specifically for students of high school and university programs around the Tonle Sap lake as well as other groups, including NGOs. The role of nature and religion in environmental protection and addressing global change issues will be emphasized. During the field study visits, participants in the MEEP would further explore an understanding of the theory of Buddhism related to environmental protection.

The feasibility study

The feasibility study will develop a full comprehensive report of the proposed MEEP, including organizational and institutional arrangements, development of routes, identification of study locations, catering and visit arrangements, specification of equipment and staff requirements and preparation of budget and cost estimates. The study report will provide the basis for moving to the implementation of MEEP.



Timelines

12 months: starting from July 2006

For further information

Please contact:
Mr. Sovannora Leng, Project Leader
C/O # 48 Preah Sihanouk Blvd, Torle Bassac, Chamkarmon, Phnom Penh, Cambodia.
Tel: +855 12 879 779, +855 23 212 540
Email: phil@samangkor.com

For further information, please contact Mr. Sovannora Leng, Project Leader
C/O # 48 Preah Sihanouk Blvd, Torle Bassac, Chamkarmon, Phnom Penh, Cambodia. Tel: +855 12 879 779, +855 23 212 540
Email: phil@samangkor.com



*Presentation on the findings around Tonle Sap lake
Mr Yean Ly (Team Member, APDCE)*

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Implemented By MOE AFCE

A feasibility study for
Mobile Environmental Education Program (MEEP)

CONTENT

1. Introduction
2. Presentation on field trip for feasibility study around Tonle Sap Lake
3. The Important point of formulation MEEP
4. Future action

For further information, please contact Mr. Sovannara Leng, Project Leader
C/O #48 Preah Sihanouk Blvd, Tonle Bassac, Chankamron, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
Email: phil@canangkor.com

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A feasibility study for Mobile Environmental Education Program (MEEP)

INTRODUCTION (APDCE)

I. Chong Khneas
II. Kampong Phlok
III. Kampong Khleang
IV. Moat Khla
V. Pao Veuy
VI. Phat Sanday
VII. Chhnok Trou
VIII. Kampong Luong
IX. Reang Til
X. Dey Ronead
XI. Khbal Taol
XII. Prek Toal

For further information, please contact Mr. Sovanna Leng, Project Leader
CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chankamron, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
Email: phil@canangkor.com

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A feasibility study for Mobile Environmental Education Program (MEEP)

Presentation on field trip for feasibility study around Tonle Sap Lake

I. Chong Khneas
II. Kampong Phlok
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CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chankamron, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
Email: phil@canangkor.com



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A feasibility study for
 Mobile Environmental Education Program (MEEP)

Kampong Phlock Commune Prasat Bakong district

- **History**
- **Physical capital** 549 Houses, 2,000 boats, 800 motorized
- **Natural capital** Community fishery 14,293 ha
- **Human Capital** 3,062 people, 549 household, 752 students, and 8 teachers
 Buddhist 100%

For further information, please contact Mr. Sovanna Leng, Project Leader
 CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chantrea, Phnom Penh, Cambodia Tel: +855 12 879 779, +855 23 212 960
 Email: phil@canangkor.com

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A feasibility study for
 Mobile Environmental Education Program (MEEP)

Kampong Khleang commune Sort Nikum district

- **History**
- **Physical capital** 1,947 houses, 4,000 boats, 40% motorized
- **Natural capital** Community fishery; Prek Sromouch, and Kampong Khleang
- **Human Capital** 10,622 people, 1,947 household, 2,000 students, and 54 teachers

For further information, please contact Mr. Sovanna Leng, Project Leader
 CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chantrea, Phnom Penh, Cambodia Tel: +855 12 879 779, +855 23 212 960
 Email: phil@canangkor.com

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A feasibility study for
Mobile Environmental Education Program (MEEP)

Moat Khla village
Anglong Samnor commune
Chikreng district

- History
- Physical capital 194 Houses, 600 boats, 200 motorized
- Natural capital Community fishery 4,622 ha
- Human Capital 1,300 people, 194 household, 250 students, and 6 teachers
 Buddhist 100%

For further information, please contact Mr. Sovannara Leng, Project Leader
 CO # 48 Preah Sihanouk Blvd, Tonle Bassac, Chamkamon, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
 Email: phil@canangkor.com

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A feasibility study for
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Battambang Province
Ek Phnom district
Koh Cheveang commune

- History
- Physical capital 1,900 Houses, 5,000 boats, 2,000 motorized
- Natural capital Prek Toal core area 21,342 ha, water bird
- Human Capital 10,035 people, 1,913 household, Primary and high school have 1,984 students, and 54 teachers

For further information, please contact Mr. Sovannara Leng, Project Leader
 CO # 48 Preah Sihanouk Blvd, Tonle Bassac, Chamkamon, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
 Email: phil@canangkor.com



A feasibility study for
Mobile Environmental Education Program (MEEP)

Battambang Province

Ek Phnom district

Koh Cheveang commune

Kbal Toal village

- **History**
- **Physical capital** 547 Houses, 1,500 boats, 600 motorized
- **Natural capital** Fish sanctuary Peak KanTeal 1,200 ha
- **Human Capital** 3,056 people, 547 household, Primary has 550 students, and 8 teachers



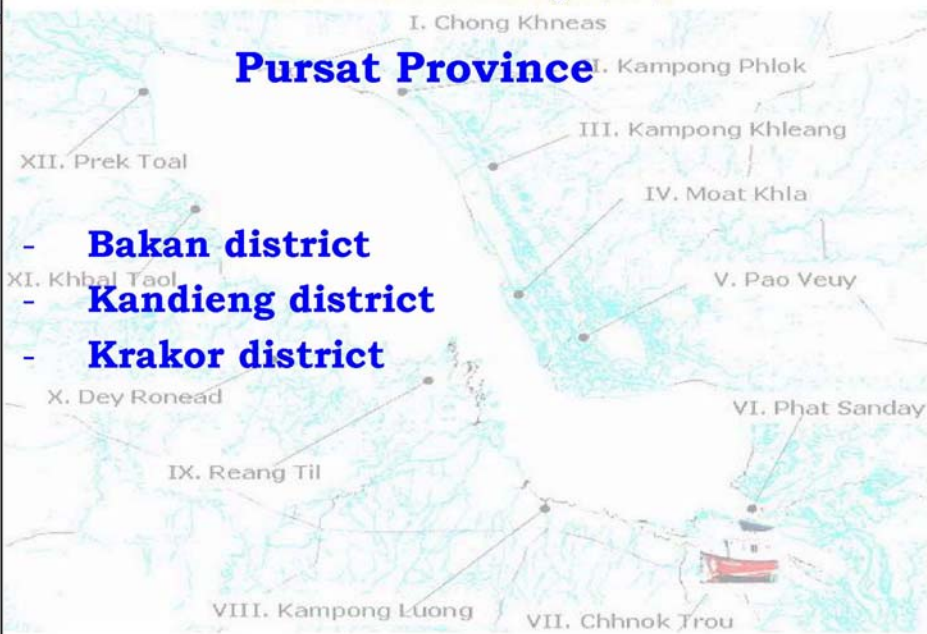
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 CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chankamron, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
 Email: phil@canangkhor.com



A feasibility study for
Mobile Environmental Education Program (MEEP)

Pursat Province

- **Bakan district**
- **Kandieng district**
- **Krakor district**



For further information, please contact Mr. Sovannara Leng, Project Leader
 CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chankamron, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
 Email: phil@canangkhor.com

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A feasibility study for
Mobile Environmental Education Program (MEEP)

Dey Ronead village
Metuek commune
Bakan district

- **History**
- **Physical capital** 154 Houses, 500 boats, 200 motorized
- **Natural capital** Protected area 30,000 ha for Pursat
- **Human Capital** 800 people, 154 household, 250 students, and 6 teachers

For further information, please contact Mr. Sovanna Leng Project Leader
 CO # 48 Preah Sihanouk Blvd, Tonle Bassac, Chamkamon, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
 Email: phil@canangkor.com

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A feasibility study for
Mobile Environmental Education Program (MEEP)

Raing Til commune
Kandieng district

- **History**
- **Physical capital** 924 Houses, 3,000 boats, 1,000 motorized
- **Natural capital** Fishing lot #3, #4 and #5
- **Human Capital** 4,904 people, 924 household, 620 students, and 8 teachers

For further information, please contact Mr. Sovanna Leng Project Leader
 CO # 48 Preah Sihanouk Blvd, Tonle Bassac, Chamkamon, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
 Email: phil@canangkor.com

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A feasibility study for
 Mobile Environmental Education Program (MEEP)

Kampong Luong commune Krakor district

- **History**
- **Physical capital** 1,040 Houses, 4,000 boats, 1,200 motorize
- **Natural capital**
- **Human Capital** 6,900 people, 1,048 household, 650 students, and 12 teachers

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 CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chamkamon, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
 Email: phil@canangkhor.com

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A feasibility study for
 Mobile Environmental Education Program (MEEP)

Kampong Chhnang province Boribo district Chhnok Trou

- **History**
- **Physical capital** 1,829 Houses, 5,000 boats, 2,000 motorized
- **Natural capital** Flooded forest 1,350 ha
- **Human Capital** 8,419 people, 1,829 household, 2,000 students, and 24 teachers

For further information, please contact Mr. Sovannara Leng, Project Leader
 CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chamkamon, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
 Email: phil@canangkhor.com

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A feasibility study for
 Mobile Environmental Education Program (MEEP)

Kampong Thom Province

- Kampong Svay district
- Staung district

For further information, please contact Mr. Sovanna Leng, Project Leader
 CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chankamron, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
 Email: phil@canangkor.com

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A feasibility study for
 Mobile Environmental Education Program (MEEP)

Phat Sanday commune Kampong Svay district

- History
- Physical capital 1,173 Houses, 3,500 boats, 1,200 motorized
- Natural capital Stung Sen protected area
- Human Capital 5,419 people, 1,173 household, 1,500 students, and 17 teachers

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 CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chankamron, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
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A feasibility study for
 Mobile Environmental Education Program (MEEP)

Peam Bang commune Staung district

- **History**
- **Physical capital** 60Houses, 180 boats, 65 motorized
- **Natural capital** Beung Tonle Chhmar protected area
- **Human Capital** 320 people, 60household, 70 students, and 1 teachers

For further information, please contact Mr. Sovanna Leng, Project Leader
 CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chankamron, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
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A feasibility study for
 Mobile Environmental Education Program (MEEP)

Important statement in the formulation MEEP

- **Awareness on climate change**
- **Solid & liquid waste issue and growing issue**
- **Process to promote MEEP program; 3day 4day and 5day**
- **Participate to preserve natural resource**

For further information, please contact Mr. Sovanna Leng, Project Leader
 CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chankamron, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
 Email: phil@canangkor.com

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A feasibility study for
Mobile Environmental Education Program (MEEP)

On going action

- Third field trip
- Barge cost
- Prepare journal Book for MEEP

For further information, please contact Mr. Sovannara Leng, Project Leader
CO # 48 Preah Sihanouk Blvd, Tonle Bassac, Chankamron, Phnom Penh, Cambodia Tel: +855 12 879 779, +855 23 212 860
Email: phil@canangkor.com

Funded By APN CAPABLE
Implemented By MOE AFCE

A feasibility study for
Mobile Environmental Education Program (MEEP)

Thank you

For further information, please contact Mr. Sovannara Leng, Project Leader
CO # 48 Preah Sihanouk Blvd, Tonle Bassac, Chankamron, Phnom Penh, Cambodia Tel: +855 12 879 779, +855 23 212 860
Email: phil@canangkor.com

Workshop summary

The first consultative workshop was held on Monday 12 March 2007, at Department of Environment (DoE) Siem Reap province. The workshop was organized by the Ministry of Environment (MoE) in collaboration with Association of the Protection & Development for Cambodian Environment (APDCE). There were 38 participants from 12 areas around Tonle Sap Lake of 5 provinces namely Kampong Chhnang, Pursat, Battambang, Siem Reap and Kampong Thom and also including our APN national focal point from Phnom Penh.

Opening Session

The workshop was welcomed and officially opened by Mr. Chev Phal, Director of Department of Environment, Siem Reap province. He expressed his sincere thanks to all participants representing all 12 areas around the Lake to participate in the workshop today. He stressed out how important of this workshop for all of us who have connection closely to the Lake, because as it is nowadays the impacts on the lake caused by all mankind, are seriously taken place. He encouraged all participants to contribute as much as possible on what the findings presented by the local consultant at their best to ensure the data and information collected are relatively correct.

The Director then introduced Mr. Sovannora Ieng, the project leader for the feasibility study for Mobile Environmental Education Program (MEEP) and Mr. Yean Ly, national consultant who has been promoting the field survey of the 12 areas around Tonle Sap Lake. He finally reiterated his remark of how importance for this workshop that would give a great opportunity to all participations to share their concept, concern and some recommendations to improve MEEP's preparation for the future's implementation.

Workshop's proceedings

Mr. Sovannora Ieng was called to chair the proceeding of the workshop. He, at the outset has thanked to all participants for their available time and effort to travel far and difficult route all the way to participate in this workshop. He continued by outlining his presentations based on 5 topics namely; 1. Overview of this project; 2. What is Mobile Environmental Education Program (MEEP)? 3. Why do we want to promote MEEP? 4. The important of this workshop; and 5. General information.

Mr. Ieng briefed that this project was funded by the Asia Pacific Network for global change research (APN), Japan, to Ministry of Environment to conduct a feasibility study for strengthening local capacity on the impact of the climate change and promoting environmental education around the Lake. He explained to the participants about the MEEP that will be developed to accommodate 30-35 participants to study about Tonle Sap's environment on the big boat while it will be moving around the Lake. The participants will be also visiting local fishing communities where are feasible to learn and share their knowledge with the community. Mr. Ieng explained further that the community can propose to develop their own community's project where they can seek technical assistance from MEEP in order to mitigate the environmental impact in their community, mainly related to the climate change issue that affects their daily activity. He emphasized how important of the workshop today that all participants must focus on the findings conducted recently around the Tonle Sap Lake by our local consultant, Mr. Yean Ly. Mr. Ieng encouraged all participants especially from the communities around the Lake to make sure that data and information collected were closely accurate and also urged all participants to provide questions, comment and recommendation in order to improve this feasibility study of MEEP. Mr. Ieng finally informed the participants how to contact him if any queries related to the project by providing his contact-details; address, telephone and his email address.

During the workshop session, there were a number of questions raised by participants as followed:

- Mr. Un Boren from Phat Sanday commune Kampong Thom province asked about the impact of plastic bags to the natural resource in his fishing community's area; what shall we do?
- Venerable Soung Pal from Damnak pagoda, Siem Reap province asked what is the usefulness of MEEP to community around Tonle Sap Lake, once it has been established?
- Mr Chhaun Vuth from Kampong Chhnang province asked what can MEEP help the community or educate to community around the Lake?

Mr. Ieng has responded accordingly to those questions by stressing strongly on environmental awareness and self-discipline. That is why the role of MEEP could play an important role for promoting and strengthening the local capacity to understand what should do and what should not as such throwing plastic bags and bottles without properly managed. Mr. Ieng explained the consequences of these impacts not only affect the fishing activity but also lead to cause climate change as some people collected plastic bags and burning them which caused great pollution and produced CO₂ gas and other that will warm up the globe. Such kind plastic management is not the solution to our environmental management and to our community. MEEP planned to play a potential role to raise these concerns and explain to our local communities of how we shall be aware of and what to tell our children these impacts. In fact MEEP would be designed to accommodate participants from the cities or towns who are interested in learning about the Great Lake and its connection including natural resources, wild-life and the local people who live around the Lake. It sounds like tourism but the program of MEEP will promote both participants and communities to be aware of causing the environmental impact to their daily life and understand what their pristine resources that have so far. Both cities and community's people will share their common knowledge once they are organized to get some interaction. Furthermore MEEP would be designed to accommodate people from the foreign cities or countries as well through under foreign exchange program.

The findings around Tonle Sap Lake

Mr. Yean Ly as the local consultant organized two field trips around Tonle Sap Lake prior to this first consultative workshop. He explained that there were 15 areas out of 5 provinces had been visited during the first field survey; visited 3 community- areas in Battambang province, 4 community-areas in Siem Reap province, 4 community-areas in Pursat province, 3 community-areas in Kampong Thom and 1 village in Kampong Chhnang province. After the first field trip only 12 community-areas had been considered for MEEP's action plan. Some information and data were collected from those communities. He presented the findings on the village's history, physical capital, natural capital and human capital as followed;

- The history based on what the name of commune derived from for Chong Khnease commune', Siem Reap district, Siem Reap province and it has 7 villages, 5,814 people in 1,001 households with 12 Km-20 Km from Siem Reap Town.
- The history based on what the name of commune derived from for Kampong Phlok commune, Prasat Bakan district Siem Reap province and it has 3 villages, 3,062people in 549households with 20 Km from Chong Khneas.

- The history based on what the name of commune derived from for Kampong Khleang commune SotNikum district, Siem Reap province and it has 10 villages, 10,622 people in 1,947 households with 22 Km from Kampong Plok.
- The history based on what the name of commune derived from for Moat Khla, Anglong Samnor commune, Chikreng district, Siem Reap province and it has 1,300 people in 194 households with 20 Km from Kampong Khleang.
- The history based on what the name of commune derived from for Pao Veuy, Peam Bang commune Staung district, Kampong Thom province that has 360 people in 60 household with 17 Km from Moat Khla.
- The history based on what the name of commune derived from for Phat Sanday commune, Kampong Svay district, Kampong Thom province and it has 5 villages 5,417 people in 1,173 households with 34 Km from Paoveuy.
- The history based on what the name of commune derived from for Chhnok Trou commune, Baribo district Kampong Chhnang province and it has 3 villages 8,419 people in 1,829 households with 4.5 Km from Phat Sanday.
- The history based on what the name of commune derived from for Kampong Luong commune Krakor district, Pursat province and it has 5 villages, 6,900 people in 1,048 households with 27 Km from Chhnok Trou.
- The history based on what the name of commune derived from for Raing Til commune Kandieng district, Pursat province, and it has 5 villages, 4,904 people in 925 households with 32 Km from Kampong Luong.
- The history based on what the name of commune derived from for Dey Ronead, Metuck commune, Bakan district, Pursat province and it has 800 people in 154 household with 20 Km from Raing Til.
- The history based on what the name of commune derived from for Kbal Toal village, Koh Chiveang commune, Ek Phnom district, Battambang province and it has 3,056 people in 547 households with 24 Km from Dey Ronead.
- The history based on what the name of commune derived from for Koh Cheiveang commune, Ek Phnom district, Battambang province and it has 10,035 people in 1,913 households with 32 Km from Kbal Taol.

There were a number of comments revised Mr. Ly's findings from participants, in particular from Kampong Khlaeng, Kampong Phlok and Phat Sanday that their areas, there was no one raised any cattle; cows and buffalos. Mr. Yean Ly took down the clarification and further explained his findings and hope to get more cooperation from participants in order to make a better project in MEEP.

Finally, Mr. Ieng invited to all participants for an open discussion and there were a number of questions raised by participants:

- Ms. Ly Kanya from Kampong Thom province asked about the relationship between MEEP and local authority?
- Mr. Chhoy Phat from Kampong Chhnang province asked what is the protection and preservation of natural resource from MEEP?
- Mr. Srey Ly from Kampong Phlok asked how will MEEP provide an opportunity to local students to be able to participate in the program?

Mr Ieng responded to each question respectively by explaining that MEEP will closely cooperate with local communities around the Lake and will ensure they will gain benefit when the barge is moving around the Lake. Mr. Ieng reiterated that MEEP is a police agent; MEEP would simply be a boat where it will bring participants to enjoy the nature around the Lake and meeting local community to share and learn from each other. Because of the MEEP's presence daily around the Lake it will minimize the illegal activity around the Lake. Thus it would contribute to protection and preservation of the natural resources. MEEP will continue to support the educational program of each village especially on environmental issues, but MEEP will surely provide an opportunity to local students around the Lake to learn and share their experiences with the city's person when the opportunity arrived.

Least but not last, Mr. Ieng informed the participants that there would be another workshop for all participants to have another chance to improve this feasibility study for MEEP to be more effective. He finally thanked the participants for their coming to the workshop and hope they have learned and enjoyed the workshop.

The workshop was concluded at 16:00pm.

A1.2 Second stakeholder workshop

Agenda

Held on 2 May 2007 at Department of Environment offices in Kampong Chhnang province.

0730-0800	Registration
0800-0815	Playing of the National Anthem
0815-0830	Welcoming remarks <i>Ms Dork Sothea (Director, Khampong Chhnang Province)</i>
0830-0930	Overview presentation: 1. Reintroduce MEEP 2. Review the first consultative workshop 3. Main purposes of this workshop 4. Explanation on how MEEP is to be implemented Followed by general discussion <i>Mr Ieng Sovannora (Team Leader, MOE)</i>
0930-0945	Tea / coffee break
0945-1100	MEEP programme presentation: ▪ Planned activities ▪ Planned schedule Followed by general discussion <i>Mr Yean Ly (Team Member, APDCE)</i>
1100-1230	Lunch
1230-1315	How MEEP will be operated presentation <i>Mr Ieng Sovannora (Team Leader, MOE)</i>
1315-1400	General plenary session Moderated by <i>Ms Dork Sothea (Director, Khampong Chhnang Province)</i> and <i>Mr Ieng Sovannora (Team Leader, MOE)</i>
1400-1415	Tea / coffee break Completion of evaluation sheets

1415-1500 Wrap up and closing remarks
Ms Dork Sothea (Director, Kampong Chhnang Province) and Mr Ieng Sovannora (Team Leader, MOE)

List of participants

No	Name	Ministry, Organization	Position	Telephone
Speakers and Secretariats				
1	Ms. Dork Sothea	DoE, Kampong Chhnang	Director	016 359 145
2	Mr. Ieng Sovannora	APN	Project Leader	012 879 779
3	Mr. Yean Ly	APN	Local Consultant	012 480 050
Phnom Penh				
4	HE. Ung Seng	MoE	Cabinet Director	012 757 550
5	Mr. Nop Nimol	MoE	D. Director, Education Dep. MoE	012 934 558
6	Mr. Meng Savuth	MoE	Inspector Officer	012 741 604
Kampong Chhang Province				
7	Mr. Chhoy Part	DoE	Official	011 697 761
8	Mr. Choeun Vuth	DoE	Official	092 229 348
9	Mr. Chearn Tuo	DoE	Official	012 799 967
10	Mr. Pheng Samreth	Local Community	Director in Chhnok Trou Commune	092 908 190
11	Mr. Doum Tuon	Buddhism	Monk	Don't have
12	Mr. Outh Chea	Buddhism	Monk	Don't have
13	Ms. Phat Phalla	Local Community	Villager in Chhnok Trou Commune	Don't have
14	Mr. Sam Mean	DoE	Official	012 768 417
Pursat Province				
15	Mr. Ek Daravuthy	DoE	Official	012 660 766
16	Mr. Keok Chiv	DoE	Official	Don't have
17	Mr. Kheng Sokhar	DoE	Official	092 618 431
18	Mr. Bal Vath	Local Community	Villager in Dey Ronead Village	Don't have
19	Ms. Chheom Mathita	Local Community	Villager in Kampong Luong Commune	Don't have
20	Mr. Chor Thai	Local Community	Villager in Dey Ronead Village	Don't have
Battambang Province				
21	Mr. Ly Leangheng	Local Community	Villager in Kbal	092 284 481

No	Name	Ministry, Organization	Position	Telephone
			Taol Village	
22	Mr. Soem Saman	Local Community	Villager in Kampong Preang Commune	012 576 188
23	Mr. Thorn Sothean	Local Community	Villager in Kampong Preash Commune	092 284 481
24	Mr. Ouk Neikim	Local Community	Villager in Peam Ek Commune	Don't have
25	Mr. Ngoek Bunthoeun	Local Community	Villager in Koh Cheveang Commune	011 313 623
Kampong Thom Province				
26	Mr. Out Sokhorn	DoE	Official	012 330 961
27	Mr. Leang Suo	DoE	Official	012 284 791
28	Mr. Teav Samporn	DoE	Official	012 182 4191
29	Mr. Seng Sreng	Local Community	Villager in Paoveuy Village	012 882 901
30	Ms. Chhin Sreytuoch	Local Community	Villager in Paoveuy Village	012 195 943
31	Mr. Ēm Samoun	DoE	Official	012 788 278
Siem Reap Province				
32	Mr. Tuon Heng	DoE	Official	012 423 599
33	Mr. Sor Samol	Local Community	Kampong Phlock Commune	Don't have
34	Mr. Mut Seak	Local Community	Kampong Phlock Commune	Don't have
35	Mr. Tuoch Bunthoeun	Local Community	Villager in Kampong Khleang Commune	012 194 1585
36	Mr. Riel Run	Local Community	Villager in Kampong Khleang Commune	Don't have
37	Mr. Chhoeung Hok	Local Community	Director in Moat Khla Village	012 194 0124
38	Mr. Suon Chanserey	Buddhism	Monk	Don't have
39	Mr. So Song	Local Community	Villager in Chong Khneas Commune	092 498 204
40	Mr. Khut Kry	Local Community	Villager in Moat Khla Village	Don't have
41	Mr. Mov Ruon	Local Community	Villager in Chong Khneas Commune	Don't have
42	Mr. Pok Sean	Local Community	Villager in Kampong Khleang Commune	Don't have
43	Mr. Ros Gneb	Local Community	Villager in Kampong Phlock Commune	Don't have

Presentations and other workshop material

Welcoming remarks

Mr Dork Sothea (Director, Department of Environment, Kampong Chhnang Province)

First off all, welcome venerable, ladies and gentleman, I am please to participate to the most important workshop on feasibility study to formulate Mobile Environmental Education Program (MEEP) around Tonle Sap Lake. In this time, I am deeply gratitude to all participants and I am expected that we will have some discussion to achieve this program for promoting MEEP around Tonle Sap Lake, for perverse and protect the lake to sustainable for our next generation.

The Royal Government of Cambodia has been working a lot to preserve and protect natural resource and promote social development. All stakeholders provide some stratagem to preserve and protect of natural resource in the Tonle Sap Lake, in the present and the future.

The workshop aims to present and draft of MEEP for strengthening local community especially community around Tonle Sap Lake (12 communities) I know that our local consultant have been promoting three field trips around Tonle Sap Lake with communicated some 12 communities to organize communities profile (history, culture, and social capital of each community. And then this most important workshop continued from the first workshop in Siem Reap province. The workshop will provide the last opportunity to all participate in this time. it can be provided some impression and recommendation to the program, so that the draft of MEEP to become an innovative program of which it is reflected the role of Environmental Education to preserve and develop the community around Tonle Sap Lake especially it provide us known as the cause and the impact of climate change, the important key to stop the whole national development.

Today, Mr. Sovannora Ieng, advisor to HE. Dr Mok Mareth, senior Minister Ministry of Environment project coordinator and Mr. Yean Ly executive director of APDCE and local consultant to the project. They will be presented some finding and responding some suggestion about MEEP.

I expect that all participants are actively participated to provide some discussion and give some recommendation to ensure that the MEEP improve to be an institution strong and responding to the need of local community to preserve natural resource such as fish, flooded forest, water bird, reptile manual etc. is the important source for future generation.

At the end, I am deeply gratitude to all participants in the workshop and I hope that the workshop will fruit really and I declare the opening of the workshop. And I would like to give a floor to Mr. Sovannora Ieng to present his part.

Thank you.

Overview (English summary)

Presentation by Mr Ieng Sovannora (Team Leader, MOE)



មាតិកា

១. ការធ្វើសេចក្តីណែនាំឡើងវិញ ពីគំរោងអប់រំបរិស្ថានគោលដៅ
២. សង្ខេបឡើងវិញពីសិក្ខាសាលាបាលីកទី១
៣. គោលបំណងនៃសិក្ខាសាលាថ្ងៃនេះ
៤. ការពន្យល់ ថាតើ MEEP មានសារៈសំខាន់យ៉ាងដូចម្តេច

Content:

1. *Reintroduce MEEP*
2. *Review the first consultative workshop*
3. *Main purposes of this workshop*
4. *Explain on how important of MEEP to be implemented*

For further information, please contact: Mr. Sasoravong Leng Project Leader
 CO # 62 Preah Sihanouk Blvd, Tonle Sap, Chhnok Trou, Phnom Penh, Cambodia. Tel: +855 12 879 778; +855 23 212 820
 Email: pl@camang.org

1. Reintroduce MEEP

MEEP is known as Mobile Environmental Education Program funded by Asia Pacific Network (APN) to the Ministry of Environment in collaboration with Association of Development and Protection for Cambodia's Environment (APDCE) to conduct a feasibility study around the Tonle Sap Lake for a period of 12 months, so that a full comprehensive project of MEEP will be designed to offer lessons in self-sustainable development and the balance between humanity and nature by practically applying real activities and will gain unforgettable experiences through the five senses; touch, smell, see, hear and taste, and hopefully will be funded and implemented around the Lake for its well being and for our future generation.

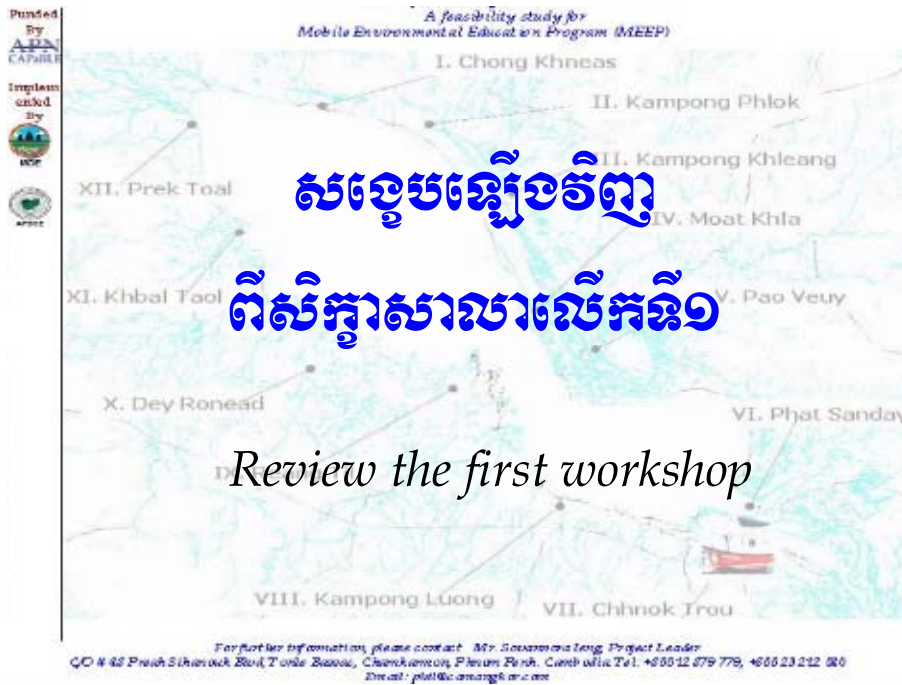
In order to achieve the objective, our local consultant assisted by the Ministry of Environment to carry out 3 field trips around the Lake; meeting with some communities whose living conditions are depending on the Lake, and to collect some information including villages' history, data related to their livelihood including their incomes, occupation etc..., and aquatic resources including water birds, inundated forest and fish.



2. Review the first consultative workshop

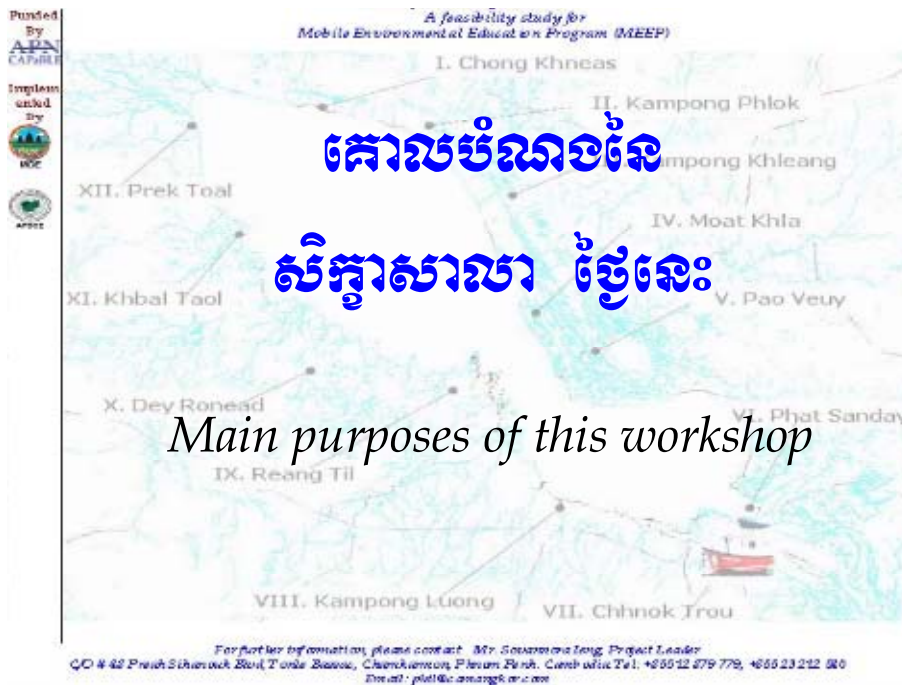
After the local consultant has been twice carried out around the Lake, the first consultative workshop has been recently held in Siem Reap province to discuss and consult with our local communities around the Lake to find out whether the information and data collected would have appropriately corrected. There were 33 participants attended from the 5 of 6 provinces who actually live on the Tonle Sap Lake and from other national agencies.

The workshop at the outset was opened by the director of Siem Reap Environment department and then followed by an introduction of MEEP on how its feasibility study has been approved and funded to take place in Cambodia, in particular around the Tonle Sap Lake. However the workshop was mainly focusing on the findings from our local consultant that has been around the lake to gather some data and information related to village's history, culture, social economic and natural resources to consult and verify with our local communities who actually live around the edge of lake. The presentation of each village around the edge of the lake has been presented one by one and case by case. A number of questions have been raised by participants including their verification to accommodate the findings of our local consultant. Many responses have been satisfactorily accepted.



3. Main purposes of this workshop

This final consultative workshop will foster an opportunity for participants from the 5 provinces and other related agencies to have their final say; comments, suggestions and recommendations toward the MEEP of how it will play an important role for the future's project around the Lake, in which will benefit to everyone, especially the local communities who live on the edge of the Tonle Sap Lake to express their concern and interest including some contribution of how to protect their natural resources and improve the livelihood and to make usefulness of this upcoming MEEP project when it is funded in the near future.



4. Explanation on how MEEP is to be implemented

The details of MEEP's design and how it will be implemented will be explained by the local consultant. However I can assure you that if this MEEP can be funded, there will be a potential benefit for Cambodian people as whole. The design that you are going to hear from the local consultant will highlight all activities and program that will implement on the barge while it is cruising along the edge of the Tonle Sap Lake's boundary. The barge will accommodate 30 to 40 participants included teachers, barge crews and cook, to allow us to learn and enjoy the nature and beauty of the lake. In addition the participants will learn to share their experiences and knowledge among their own group as a team work and to further explore their learning the fact of life on the lake and what will be impact to cause the climate change. For some students, they will experience the reality's practices on top of their classroom's lessons.

On one side the people from cities and towns nationally and internationally will benefit the factual experiences from the MEEP and bring them closer to their own nature. On the other hand local communities living on the edge of the Tonle Sap Lake will gain both benefits from this MEEP by sharing their daily experiences with the cities' people and obtaining the protection of their daily resources with the presence of the barge's daily operation around the lake. Furthermore the local communities will gain their knowledge and information of how to obtain a small fund for their community's project or activity that can be assisted by the MEEP secretariat if they believe the proposed activity will strongly benefit for their community and the lake.

By and a large, both cities and local communities in Cambodia will learn the importance of climate change which cause the devastation to the Tonle Sap Lake and to our country as a whole.

ការពន្យល់ ថាតើ MEEP មានសារៈសំខាន់យ៉ាងណាខ្លះៗ

Explain on how important of MEEP to be implemented

*For further information, please contact: Mr. Souvanna Leng, Project Leader
 QD # 48 Preah Sihanouk Road, Tonle Sap Area, Choeung Choeung, Phnom Penh, Cambodia. Tel: +855 12 679 778, +855 23 212 880
 Email: phil@camangka.com*



MEEP programme presentation
Mr Yean Ly (Team Member, APDCE)



A feasibility study for
Mobile Environmental Education Program (MEEP)

CONTENT

1. Introduction
2. Review on feasibility study around Tonle Sap Lake
3. Presentation on MEEP for 3, 4 and 5 days
4. Other program
5. Benefit from MEEP

For further information, please contact Mr. Sovannara Leng, Project Leader
C/O #48 Preah Sihanouk Blvd, Tonle Bassac, Chankamorn, Phnom Penh, Cambodia. Tel: +855 12 879 779, +855 23 212 960
Email: phil@canangkor.com

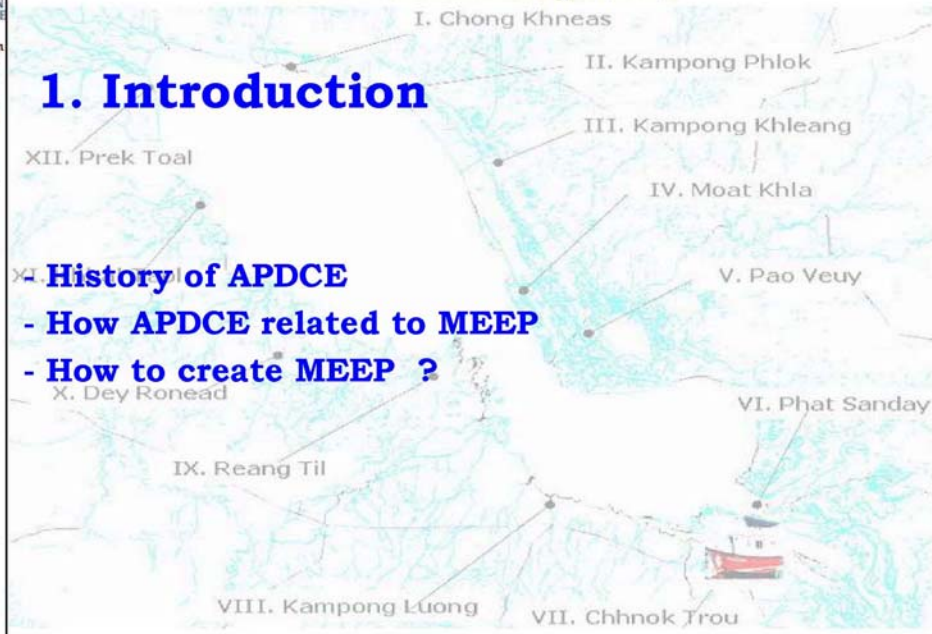


A feasibility study for
Mobile Environmental Education Program (MEEP)

1. Introduction

History of APDCE

- How APDCE related to MEEP
- How to create MEEP ?



For further information, please contact Mr. Sovannara Leng, Project Leader
CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chamkamon, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 910
Email: phil@canangkor.com



A feasibility study for
Mobile Environmental Education Program (MEEP)

2. REVIEW ON FEASIBILITY STUDY AROUND TOLE SAP LAKE

- First field trip
- Second field trip
- Third field trip



For further information, please contact Mr. Sovannara Leng, Project Leader
CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chamkamon, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 910
Email: phil@canangkor.com



A feasibility study for
Mobile Environmental Education Program (MEEP)

First field trip (8-17 October 2007)

Feasibility study on 15 areas

- Chong Khneas
- Kampong Luong
- Prak Taol
- Chhnok Trou
- PeakanTeal
- Phat Sanday
- Kbal Taol
- Daung Sdeng
- Prek Krar
- Pao Veuy
- Dey Ronead
- Moat Khla
- Raing Til
- Kampong Khleang
- Kampong Phlok

For further information, please contact Mr. Sovannara Leng, Project Leader
 CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chamkamon, Phnom Penh, Cambodia Tel: +855 12 879 779, +855 23 212 960
 Email: phil@canangkor.com



A feasibility study for
Mobile Environmental Education Program (MEEP)

Second field trip (21-31 January 2007)

Feasibility study on 12 areas

- Chong Khneas
- Chhnok Trou
- Prak Toal
- Phat Sanday
- Kbal Taol
- Pao Veuy
- Dey Ronead
- Moat Khla
- Rainng Til
- Kampong Khleang
- Kampong Luong
- Kampong Phlok

For further information, please contact Mr. Sovannara Leng, Project Leader
 CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chamkamon, Phnom Penh, Cambodia Tel: +855 12 879 779, +855 23 212 960
 Email: phil@canangkor.com



A feasibility study for
Mobile Environmental Education Program (MEEP)

Third field trip (01-10 April 2007)

Feasibility study on 12 areas

- Chong Khneas
- Chhnok Trou
- Prak Toal
- Phat Sanday
- Kbal Taol
- Pao Veuy
- Dey Ronead
- Moat Khla
- Raining Til
- Kampong Khleang
- Kampong Luong
- Kampong Phlok

For further information, please contact Mr. Sovanna Leng, Project Leader
CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chamkamon, Phnom Penh, Cambodia Tel: +855 12 879 779, +855 23 212 960
Email: phil@canangkor.com



A feasibility study for
Mobile Environmental Education Program (MEEP)

3. MEEP for 3, 4 and 5 days

- MEEP on 3 days and its activities
- MEEP on 4 days and its activities
- MEEP on 5 days and its activities

For further information, please contact Mr. Sovanna Leng, Project Leader
CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chamkamon, Phnom Penh, Cambodia Tel: +855 12 879 779, +855 23 212 960
Email: phil@canangkor.com



A feasibility study for
Mobile Environmental Education Program (MEEP)

I. Chong Khneas MEEP on 3days and its activities

Day 1		
Time	Destination	Activity
0630-0930	Phnom Penh to Chhnok Trou	- Pick up - Intro distance travel to Chhnok Trou and history of Chhnok Trou, Cooperation as a family and hand out *journal book for their exercise during this trip
0930-1100	Chhnok Trou to Kampong Loung	- Welcome, - Safety orientation & barge conditions, - Split into group (5 groups), - Intro history of Kampong Loung including canoe safety
1100-1200	Visiting floating Kampong Loung - market	Observe info related to Environmental Impacts & climate change, - Shopping for future meals
1200-1430	Kampong Loung to Raing Til	- Lunch on barge prepared by barge-staff, - Intro history of RI - Courtesy to pagoda, - Visit school & sharing info related to climate change
1430-1600	Visiting Raing Til Pagoda community	- Observe & collect info related to Environmental Impacts - Offering snack
1600-1615	Return to barge	- Plenary session for each group's activity to be undertaken including cooking, plan game, climate observation, water testing, cleaning the deck
1615-1730	Barge remained at Raing Til for a night	
1730-1830	At Raing Til	- Shower in turn (saving water, max. 3 min)
1830-1930	At Raing Til	- Dinner intro by cooking team
1930-2000	At Raing Til	- Play game
2000-2100	At Raing Til	Each group presents their observation about their findings and activity - Wrap up & conclude session with Environmental awareness
2100	At Raing Til	- Lights out in the cabin & off to bed

For further information please contact Mr. Sovannara Leng, Project Leader
 CO # 48 Preah Sihanouk Blvd, Tonle Bassac, Chamkamon, Phnom Penh, Cambodia Tel: +855 12 579 779, +855 23 212 880
 Email: phil@camangkor.com



A feasibility study for
Mobile Environmental Education Program (MEEP)

I. Chong Khneas MEEP on 3days and its activities

Day 2		
Time	Destination	Activity
0600-0630	Barge remained at Raing Til	Wake up and clean up
0630-0720	Remained at Raing Til	Plenary session for each group's activity to learn working as a team or group on their Journal book and plan for their next action when they rotate to undertake other activity
0720-1000	Raing Til to Chong Khneas	Breakfast Intro history of Chong Khneas
1000-1130	At Chong Khneas	Intro to Chong Khneas school & Gecko center
1130-1200	Return to barge	Plenary session for each group's activity to be undertaken including cooking, plan game, climate observation, water testing, cleaning the deck in rotational turn
1200-1330	Chong Khneas to Kampong Phlok	- Lunch - Intro history of Kampong Phlok - Courtesy to pagoda, - Visit school & sharing info related to climate change, - Observe & collect info related to Environmental Impacts
1330-1500	At Kampong Phlok	Visiting Flooded forest - Offering snack
1500-1600	At Kampong Phlok	Plenary session for each group's activity to be undertaken including cooking, plan game, climate observation, water testing, cleaning the deck
1600-1615	Return to barge	
1615-1730	Kampong Phlok to Kampong Khlaeng	- Shower in turn (saving water, max. 3 min)
1730-1800	Barge remained at Kampong Khlaeng for a night	
1800-1900	Barge remained at Kampong Khlaeng for a night	- Dinner intro by cooking team
1900-2000	Barge remained at Kampong Khlaeng for a night	- Play game
2000-2100	Barge remained at Kampong Khlaeng for a night	Each group presents their observation about their findings and activity - Wrap up & conclude session with Environmental awareness
2100	Barge remained at Kampong Khlaeng for a night	- Lights out in the cabin & off to bed

For further information please contact Mr. Sovannara Leng, Project Leader
 CO # 48 Preah Sihanouk Blvd, Tonle Bassac, Chamkamon, Phnom Penh, Cambodia Tel: +855 12 579 779, +855 23 212 880
 Email: phil@camangkor.com



A feasibility study for
Mobile Environmental Education Program (MEEP)

MEEP on 3days and its activities

Day 3

Time	Destination	Activity
0600-0630	Kampong Khlaeng	Wake up
0630-0700	Kampong Khlaeng	Plenary session for each group's activity to be undertaken including cooking, plan game, climate observation, water testing, cleaning the deck
0700-0730	Kampong Khlaeng	Breakfast
0730-0815	Kampong Khlaeng	Shopping and return to barge
0815-1030	Barge underway to Moat Khla	- Intro history of Moat Khla - Group challenge related to climate change - Brief visit MK floating village - Intro history of Paoveuy & Phat Sanday
1030-1200	Barge underway to Paoveuy	- Plenary session for each group's activity to be undertaken including cooking, plan game, climate observation, water testing, cleaning the deck
1200-1330	Barge underway to Tonle Chhma lake	- Lunch
1330-1530	Barge underway to Phat Sanday	- Brief visit Lake reflection, evaluation sheet
1530-1600	Barge underway to Chhnok Trou	- Clean up barge - Packing up and - Farewell
1600-1900	Bus	Go back to Phnom Penh

For further information, please contact Mr. Sovannara Leng, Project Leader
C/O #48 Preah Sihanouk Blvd, Tonle Bassac, Chantrea, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
Email: phil@canargkor.com



A feasibility study for
Mobile Environmental Education Program (MEEP)

MEEP on 4days & its activities

-Day 1

- Phnom Penh to Chhnok Trou,
Kampong Loung, and Raing Til

-Day 2

- Raing Til to Dey Ronead, Kbal Taol,
Koh Chiveang (Prek Toal)

-Day 3

- Koh Chiveang to Chong Khneas
Kampong Phlock, Kampong Kleang

For further information, please contact Mr. Sovannara Leng, Project Leader
C/O #48 Preah Sihanouk Blvd, Tonle Bassac, Chantrea, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
Email: phil@canargkor.com



A feasibility study for
Mobile Environmental Education Program (MEEP)

MEEP on 4days & its activities

Day 4

Time	Destination	Activity
0600-0630	Kampong Khleang	Wake up
0630-0700	Kampong Khleang	Plenary session for each group's activity to be undertaken including cooking, plan game, climate observation, water testing, cleaning the deck
0700-0730	Kampong Khleang	Breakfast
0730-0815	Kampong Khleang Market	Shopping and return to barge
0815-1030	Barge underway to Moat Khla	- Intro history of Moat Khla - Group challenge
1030-1130	Moat Khla	- Brief visit Moat Khla floating village - Intro history of Paoveuy & Phat Sanday - Plenary session for each group's activity to be undertaken including cooking, plan game, climate observation, water testing, cleaning the deck
1130-1230	Barge underway to Poveuy	- Lunch - Brief visit in Tonle Chhnar
1230-1330	Barge underway to Tonle Chhma lake	Lake reflection, evaluation sheet
1330-1530	Barge underway to Phat Sanday	- Clean up barge - parking and closing - Farewell
1530-1600	Barge underway to Chhnok Trou	
1600-1800	Bus	Go back to Phnom Penh

For further information, please contact Mr. Sovannara Leng, Project Leader
CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chamkamon, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
Email: phil@canangkor.com



A feasibility study for
Mobile Environmental Education Program (MEEP)

MEEP on 5day

-Day 1

**Phnom Penh to Chhnok Trou,
Kampong Loung, and Raing Til**

-Day 2

**- Raing Til to Dey Ronead, Kbal Taol,
Koh Chiveang (Prek Toal)**

-Day 3

**- Koh Chiveang to Chong Khneas
Kampong Phlock,**

-Day 4

- Kampong Phok to Moat Khla, Paoveuy,

For further information, please contact Mr. Sovannara Leng, Project Leader
CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chamkamon, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
Email: phil@canangkor.com



A feasibility study for
Mobile Environmental Education Program (MEEP)

MEEP on 5 days and its activities

Day 5			
Time	Location	Activity	
0600-0630	Paoveuy	Wake up	
0630-0730	Barge underway to Tonle Chhma	- Plenary session for each group's activity to be undertaken including cooking, plan game, climate observation, water testing, cleaning the deck	
0730-0800	Tonle Chhma Lake	- Breakfast	
0800-0900	Barge underway to Daun Sdeung & Peam Bang	- Intro history of Daun Sdeung & Peam Bang	
9000-1000	Barge underway to Daun Sdeung & Peam Bang	- Brief visit Peam Bang school	
1000-1200	Barge underway to Phat Sanday	- Intro history of Phat Sanday - Plenary session for each group's activity to be undertaken including cooking, plan game, climate observation, water testing, cleaning the deck	
1200-1300	Phat Sanday	Lunch	
1300-1400	Phat Sanday	Brief visit Stung Sen fish sanctuary	
1400-1500	Phat Sanday	- Visit floating school of Phat Sanday	
1500-1530	Barge underway to Chhnok Trou	Clean up barge - parking and closing - Farewell	
1530-1730	Bus	Return to Phnom Penh	

For further information, please contact Mr. Sovannara Leng, Project Leader
 CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chankamron, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
 Email: phil@canangkor.com



A feasibility study for
Mobile Environmental Education Program (MEEP)

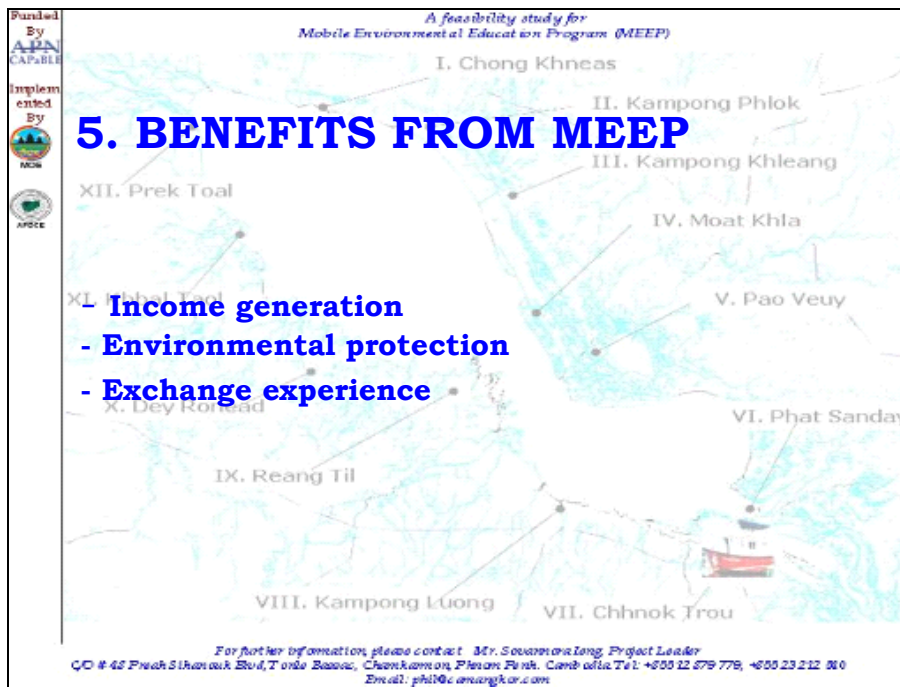
4. OTHER PROGRAMS

Seasonally distribution

- Rainy Season from July to October
- Dry Season from November to March

If there are suggestions, it can be promote for 7 or 9 day program

For further information, please contact Mr. Sovannara Leng, Project Leader
 CO #48 Preah Sihanouk Blvd, Tonle Bassac, Chankamron, Phnom Penh, Cambodia Tel: +655 12 879 779, +655 23 212 960
 Email: phil@canangkor.com



How MEEP will be operated (English summary)

Presentation by Mr Leng Sovannora (Team Leader, MOE)

As you all saw our local consultant's presentation about MEEP program of which will be applied on the barge, now I will give you general overview of how MEEP as a whole will be operated in the future.

In order to implement MEEP functionally well in this particular study, MEEP must be accommodated by a barge where the design will fit all requirements to comfort clients or participants who are interested in this MEEP program. To put in a nutshell, there are 3 main stages that MEEP will be depending on, namely:

1. MEEP programs itself;
2. A barge of course and
3. Mobile Environmental Education Center (MEEC)

So far we have our local consultant working on MEEP program to be applied on the barge. That is the main body for this feasibility study however it will only be useful unless there are a proper designed barge and MEEC.

I am happy to brief you what a proper designed barge would be like and what MEEC needs to be establish and structured.

Punded By: A.D.N. CAPSIT
 Implem-ent-ed by: IAP, MCE, APCC

A feasibility study for
 Mobile Environmental Education Program (MEEP)

កម្មវិធីអប់រំបរិស្ថានគោលដៅ មានសមាសភាព៣:

១. ផ្នែកកម្មវិធីអប់រំបរិស្ថាន
២. ការរៀបចំទូកមួយ ដែលមានលក្ខណៈសមស្រប
៣. មជ្ឈមណ្ឌលអប់រំបរិស្ថានគោលដៅ

There are 3 main components of MEEP

1. MEEP programs;
2. A suitable designed barge; and
3. Mobile Environmental Education Center (MEEC)

For further information, please contact: Mr. Sasorath Leng Project Leader
 CO # 62 Preah Sihanouk Blvd Tonle Sap, Choech Kambon, Phnom Penh, Cambodia. Tel: +855 12 879 779; +855 23 212 820
 Email: phat@camangst.com.kh

PROPOSED ITINERARY FOR 5-DAY BARGE TRIP
 (Times for all participants from 10 years old upward but exceptional case for 13 to 17 years old with some conditions)

Day 1 សមាសភាព ផ្នែកកម្មវិធីអប់រំ

Time	Destination	Activity
0830-0930	Phnom Penh to Chhnok Trou	- Pick up - Intro distance travel to Chhnok Trou and history of Chhnok Trou
0930-1100	Chhnok Trou to Kampong Luong	- Cooperation as a family and hand out *journal - Safety orientation & barge conditions; - Split into group (5 groups);
1100-1200	Kampong Luong - market	- Intro history of Kampong Luong including - canoe safety - observe info related to environmental impacts & climate change;
1300-1430	Kampong Luong to Reang Til	- Shopping for future meals - Lunch on barge prepared by barge staff; - Courtesy to pagoda;
1430-1600	Visiting Reang Til - Pagoda community	- Visit school & sharing info related to climate change; - Observe & collect info related to Environmental impacts
1600-1615	Return to barge	- Offering snack
1615-1730	Barge remained at Reang Til for a night	- Plenary session for each group's activity to be done including cooking, plant games, water testing, cleaning the deck
1730-1830	Barge remained at Reang Til for a night	- Shower in turn (saving water, max. 3 min)
1830-1930	Barge remained at Reang Til for a night	- Dinner intro by cooking team
1930-2000	Barge remained at Reang Til for a night	- Each group presents their observation about findings and activity
2000-2100	Barge remained at Reang Til for a night	- Wrap up & conclude session with Environmental awareness
2100	Barge remained at Reang Til for a night	- Lights out in the cabin & off to bed

> ការធ្វើដំណើរតាមទូកជុំវិញបឹងទន្លេសាប រយៈពេល៣, ៤ រឺ ៥ថ្ងៃ
 > តាមសំណើ និង តាមរដ្ឋាករ
 > មានសៀវភៅប្រវត្តិសាស្ត្រ និង ឯកសារនានា
 > Proposed itinerary for 3, 4 or 5-days barge trip around the Tonle Sap lake
 > Proposed itinerary for special season and request
 > Journal book and other materials
 Component - MEEP programs

General Feature of MEEP barge's design

Currently we plan to host only 30-35 people on the barge at each trip. We expect the barge to have the following features:

1. Can be made from wood or plastic
2. Could run either on diesel jet engine along with a propeller or stern paddle wheel or sail
3. Equip with a solar energy panel for an emergency such as light, recharge battery, heat up water
4. Proper toilets for women and men
5. Shower rooms with a sufficient clean water tank for 3-5 days

6. Sleeping areas for women and men
7. Some lockers
8. A reasonable size for a kitchen
9. A small library equipped with some computers and book-references
10. A small laboratory for water testing and sampling
11. A large deck for working area, meeting or for meal time
12. An area on top where participants can do some outlook
13. A store room
14. At least 2-3 Dinghies, and
15. Lifesaver jackets



Estimated cost

For the cost of the barge, there are 2 type of expenditures; Capital Expenditure and Operational Expenditure.

We have estimated for the capital expenditure is around US\$ 323,000, i.e. including a barge with all features described above and Dinghies.

For Operational Expenditures, we will categorize into 4 components i.e.

1. Staff costs including captain, crew, cook, teachers and translator,
2. Educational material including notebook / pen / journal, teaching aids,
3. Other participant including costs - food in communities, food on barge and
4. Fuel costs including cost

Thus we have estimated around US\$ 54,176 per year



Mobile Environmental Education Center (MEEC)

There must be a Mobile Environmental Education Center (MEEC) to be established so that it will be functioned as a secretariat and MEEP's promotion to attract clients or participants. There will be a bus to bring participants to the barge and a consultative day in which the participants will be given some relevant information about MEEP; what to bring what not and some conditions that participants need to be obliged prior to departure for the barge's trip.



Next steps

Once this final workshop is completed, we will write up the final report in which will be included the product of the full comprehensive proposal of MEEP for future

funding from many other donors; could be World Bank, Asian Development Bank (ADB), a private foundation, some developed countries or APN itself. Therefore we urge everyone to fully participate and give your input to shape up this feasibility study so that it will become an important and productive proposal for all of us in particular for our Tonle Sap Lake to be wisely protected so that it will last longer for our next generation.



Workshop summary

The final consultative workshop was conducted on Wednesday May 02, 2007, at Kampong Chhnang Provincial Department of Environment organized by the Ministry of Environment in collaboration with Association for the Protection & Development of Cambodia Environment (APDCE). There were 43 participants from 12 areas around

Tonle Sap Lake of 5 provinces namely Kampong Chhnang, Pursat, Battambang, Siem Reap and Kampong Thom and also including our APN national focal point from Phnom Penh.

Welcome remarks

The workshop was welcomed and officially opened by Ms. Dork Sothea, Director of Provincial Department of Environment in Kampong Chhnang. She expressed her sincere appreciation to all participants representing all 12 areas around the Lake spending their valuable time and effort to come and participate in the workshop today. The director mentioned at the outset of how important for this final workshop today that would only give us the last chance to express our concern, suggestion and recommendation to the early stage in preparation of MEEP as most of you have heard from the first consultative workshop held in Siem Reap recently.

However, the director strongly pointed out of how important role for environmental education today for the people of Cambodia, especially for people who are depending their livelihood closely to the Lake. Due to the constant impacts on the lake by various activities of mankind, the lake will seriously be devastated. Thus, she encouraged all participants to actively participate in the discussion or provide their inputs as much as they could on what the findings presented by the local consultant at their best to ensure that the upcoming project preparation of MEEP would be inevitably presented when come to implementation.

The Director was happy to introduce Mr. Sovannora Ieng, the project leader of the feasibility study for Mobile Environmental Education Program (MEEP) project and Mr. Yean Ly, the national consultant who has been promoting the field survey of the 12 areas around Tonle Sap Lake. She finally reiterated her remark of how importance for this workshop that would give a great opportunity to all participations for the last time to express and contribute their concept, concern and some recommendations to improve MEEP's preparation for the future's implementation. It was noted that the workshop had been continued from the first workshop in Siem Reap province except now the local consultant has been completed all his three field surveys around the lake. The consultant would explain his final findings among 12 areas but rather on the route of how MEEP's boat or barge that would be cruising around the Lake. Also during the MEEP's barge cruising around the Lake, the consultant would also explain that there would be some programs on the barge itself to educate and raise awareness of climate change and build local capacity on environmental. She said that the purpose of this workshop is to provide the opportunity for all of us to discuss and share information, comments and recommendations in order to improve MEEP.

Introduction and a group photo

Mr. Sovannora Ieng was given the floor to conduct his self introduction and he invited all participants to introduce themselves with the name and the name of village or commune where they came from. As completed all participants' introduction, a group photo was taken.

Figure: A group photo



Source: MEEP feasibility study team

Presentation of the project leader

There were 4 topics that would be presented, namely:

1. Briefing to reintroduce MEEP
2. Review to the first consultative workshop
3. Main purposes of the workshop and
4. How important of MEEP in the future.

Mr. Ieng briefly reintroduced MEEP to participants who have not been in the first workshop. He expressed our gratitude to the Japanese government through the Asia Pacific Network for global change research (APN) for financially support this feasibility study in order to promote the local capacity on climate change in Cambodia, in particular around the Tonle Sap Lake where we believe the heart of our national economy.

Mr. Ieng revised the first workshop where we have been discussing and if anyone required the paper of the first workshop was available at the desk, in which would show you about the findings of the 12 communities that the local consultant has been around to collect the data and information related to the village's history, physical capital, natural capital and human capital.

He emphasized and reiterated the suggestion from the director of how important of this workshop that would only give us the last chance to express and raise any comments, concern or suggestion to make the upcoming proposal for MEEP project in the future would reflect the interest and involvement for the community's development around the lake. Regarding the actual details of how MEEP will be implemented, would be explained by Mr. Ly the local consultant. However Mr. Ieng has further briefed that in reality, when MEEP came to implement its program on the boat, there will be a center; can be named as Mobile Environmental Education Center (MEEC) in which will have a permanent secretariat to manage the barge and promote the MEEP itself to the public throughout Cambodia and to oversea. He added that

MEEP will also develop a program to attract foreigner tourist and some foreign students from various countries under Cambodian National Exchange Program.

The program will be designed to provide participants such an experience for their life-time unforgettable such as cooking, shopping, checking the weather, experiment on water testing, cleaning the barge's deck etc., most of all they can learn to share their experience and knowledge among their own group and learn of how to present their findings at the plenary session. On one side students from city will get benefits the factual experience from MEEP and bring them closer to their own nature and on the other hand, the local community will gain knowledge and information of how to improve their livelihood and learn to develop a small project for their community such as both city and local community will learn the importance and what cause on climate change. Mr. Ieng believed positively that MEEP would be the only key for our local community's sustainable development when any activity taken place because MEEP will build both capacity for local and city's people and build the linkage closer to one and another in order to protect and preserve our Lake's resources for the next generation. Then the floor was opened for questions:

Questions and answers

Q: Mr. Chheun Vuth from Kampong Chhnang asked "what is the benefit for community from MEEP?"

A: The environmental education can provide benefit to local community by sharing their experiences of how to protect natural resource and local community can make souvenirs for sale.

Q: Venerable, Sorn Chansery from Kampong Phlout pagoda asked "what will the MEEP contribute to participants of how the natural resource will be protected and how to improve the local community livelihood?"

A: The MEEP will design lessons on the barge to teach to participants of how the natural resource will be protected and how to mitigate the impact to the climate change. Once the resource can be protected, the local community livelihood around Tonle Sap Lake would gradually be improved.

Q: Mrs. Phat Phath from Chhnok Trou commune questioned "How would this research benefit while they traveled on the barge?"

A: Participants will have 2 roles such as researcher and visitor. So they would know how to adapt themselves on barge, to work as a group, learn of how to cook and clean...etc.

Q: Mr. Ok Naykim from Battambang province asked "Do the MEEP under management by MoE or other institution?"

A: For this question, we would have to wait for the next presentation after Mr. Ly's presentation.

Presentation of Mr. Yean Ly

There were 3 topics that would be presented, namely:

1. The three field trips around Tonle Sap Lake;
2. The formulation of MEEP 3 days, 4 days and 5 days, and
3. Other program of MEEP dry season and wet season

Mr. Ly has presented the pre-feasibility study and the field trip 1st, 2nd and 3rd field trip and closely contacts with local authority and community in the 12 areas.

- The first field trip: is to collect data in early October 2006, we prepared questions for collecting information related stakeholder such as community,

authority, monk, teacher, NGO and other. We went to study in 15 areas about water deep, length from village to village and safety...etc.

- The second field trip: is in end January 2007, to collect more information by main areas and water deep in dry season.

- The third field trip: after consultative workshop in Siem Reap province, we went to get more data in early April, 2007 because it is dry season and we promoted the MEEP to community and invited them to joint the final workshop.

Mr. Ly explained that MEEP will provide to participants a comprehensive program on the barge to learn and experience from five senses; smell, touch, see, smell and taste. In the formulation of MEEP for 3 days program, Mr. Ly explained that this trip can be involved 9 or 10 areas and but for 4 days and 5 days, there will be involved all 12 areas. However if there was any special request up to for 7 days or for 9 days then we design in more details among the 12 areas involvement. This depended on the season as well. There are two seasons which are classified 1). Wet season started from July to October and for dry season started from November to March.

After the lunch break, Mr. Ieng took over the session by introducing 3 main components that MEEP will be depending on, namely:

1. A component of MEEP programs itself;
2. A component of a suitable Designed Barge; and
3. A component of Mobile Environmental Education Center (MEEC)

Mr. Ieng explained that so far we had heard what the details of the actual program would be conducted in the barge when the project taken place. That is the main body for the component 1. However it has to depend on the component 2. Therefore for this component Mr. Ieng explained of how the barge would be designed in order to accommodate 30-35 people per each trip. Hence, the barge was expected to have the following required features – 1) Can be made from wood or plastic, 2) Could run either on diesel jet engine along with a propeller or stern paddle wheel or sail, 3) Equip with a solar energy panel for an emergency such as light, recharge battery, heat up water, 4) Proper toilets for women and men, 5) Shower rooms with a sufficient clean water tank for 3-5 days, 6) Sleeping areas for women and men, 7) Some lockers, 8) A reasonable size for a kitchen, 9) A small library equipped with some computers and book-references 10) A small laboratory for water testing and sampling, 11) A large deck for working area, meeting or for meal time, 12) An area on top where participants can do some outlook, 13) A store room, 14) At least 2-3 Dinghies, and 15) Lifesaver jackets.

He further explained the cost of constructing such barge. There are 2 type of expenditures; Capital Expenditure and Operational Expenditure. For the capital expenditure, it was estimated around US\$ 323,000, i.e. including a barge with all features described above and plus 2 dinghies. For Operational Expenditures, we will categorize into 4 components i.e. i). *Staff costs including* captain, crew, cook, teachers and translator, ii). Educational materials including notebook/pen/journal teaching aids, iii). Other participant including costs - food in communities, food on barge and iv). Fuel costs including cost. The estimation was around US\$ 50,000 per year.

For Mobile Environmental Education Center (MEEC) component, there must be an establishment of that center, so that it will be functioned as a secretariat and MEEP's promotion to attract clients or participants. There will be a bus to bring participants to the barge and a consultative day in which the participants will be given some relevant information about MEEP; what to bring what not and some conditions that participants need to be obliged prior to departure for the barge's trip.

Mr. Ieng thoroughly explained for the Next step, after this final workshop. We would write up the final report in which would be included the product of the full comprehensive proposal of MEEP for future funding from many other donors; could be World Bank, Asian Development Bank (ADB), a private foundation, some developed countries or APN itself. Therefore we urge everyone to fully participate and give your input to shape up this feasibility study so that it will become an important and productive proposal for all of us in particular for our Tonle Sap Lake to be wisely protected so that it will last longer for our next generation.

Questions and answers

- Q: After the presentation, Mr. Nop Nimol from Ministry of Environment (MoE) department of Education asked how much would it cost to finance this MEEP project when comes to implementation in the future?
- A: It was predicted by our international expert that the estimated cost for the barge is around The new project proposal about the cost of MEEP he has presented that Barge can be cost around 340,000 US\$ and expenditure 50,000 US\$/years and promote MEEC and a permanent secretariat, bus and information service. The local community could be selling souvenir also they could be received new technical for composting, waste water treatment (reed bed) and crop, vegetable grow on the floating areas or on the land in dry season.
- Q: Sanreth Pheng Chhnok Troul commune chief: is participant tired in MEEP?
- Q: Mr. Ek Dara Vuthy from Kampong Luong commune asks if the students are rich and foreigner, do they work on the barge.
- A: In program will play step by step from pick up bus to barge as game and presentation about each village when barge will be arrive. So that this workshop is to promote all participants know MEEP how to play in lake because we live around lake.

Before closing the workshop all participants were given an evaluation sheet to write up their comments and recommendation of the workshop on what they thought.

The end of the workshop Ms. Dork Sothea, director of Kampong Chhnang department of Environment has congratulated Mr. Ieng, project coordinator of the APN project and to Mr. Nop Nimol deputy director of education and communication department of MoE for organizing such active and fruitful workshop that she has learned and enjoyed so much. She then made conclusion by summarizing the workshop and thanked all the participants for their presence, time and active participations in the workshop.

The workshop was ended at 16:15pm.

Summary of evaluation sheets

No	Question	Response		
		Good	Not good	Other
1	Do you understand clearly about this presentation?	35 out 43= 95%	2 out 43= 5%	
2	Do you think this workshop provide you enough time and opportunity to express you idea?	35 out 43 = 86%	5 out 43 = 14%	
3	How many times have you been participated in the workshop? What do you think about this workshop?	First time 24 out 43= 60% Second time		

No	Question	Response		
		Good	Not good	Other
		16 out 43= 40%		
4	Are you interested in this project, if so will you support this project to implement in the future?	100%	No	

A1.3 Example three-day programme

This appendix provides an example of the type of trip schedule envisaged for the MEEP. The particular example shown is oriented towards students. Customised schedules will also be available.

Day 1

Time	Destination	Activity
0630-0930	Phnom Penh to Chhnok Trou	- Pick up and travel to Chhnok Trou by bus - Distribution of educational materials - Organisation into groups
0930-1100	Chhnok Trou to Kampong Loung	- Welcome, - Safety orientation & barge conditions, - Introductory history of Kampong Loung
1100-1200	Kampong Loung (floating market)	- Shopping and guided tour of market, highlighting changes from environmental impacts
1200-1430	Kampong Loung to Raing Til	- Lunch on barge - Introductory history of Raing Til - Presentation on climate change and its impacts on Tonle Sap and Cambodia
1430-1600	Raing Til	- Courtesy visit to pagoda, - Visit school - Guided tour of community, observing environmental impacts
1600-1730	Raing Til	- On-board group activity session including climate observation and water testing
1730-2000	Raing Til	- Shower and dinner
2000-2100	Raing Til	- Open discussion of day's activities
2100	Raing Til	- Lights out



Prasat Bros and Prasat Sre in Chhnok Trou (7th century)



The floating village in Chhnok Trou

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Day 2

Time	Destination	Activity
0600-1000	Raing Til to Chong Khneas	- Wake up and breakfast - Introductory history of Chong Khneas
1000-1130	Chong Khneas	- Visit to school - Visit to Gecko centre
1130-1200	Chong Khneas	- On board group activity session
1200-1330	Chong Khneas to Kampong Phlok	- Lunch
1330-1500	Kampong Phlok	- Introductory history of Kampong Phlok - Courtesy visit to pagoda, - Visit school - Guided tour of community, observing environmental impacts
1500-1600	Kampong Phlok	- Visiting Flooded forest and observation of environmental impacts
1600-1730	Kampong Phlok to Kampong Khleang	- On board group activity session
1730-2000	Kampong Khleang	- Shower and dinner
2000-2100	Kampong Khleang	- Open discussion of day's activities
2100	Kampong Khleang	- Lights out



Looking at the sunset where the Raing Til fishing community has moved from shallow water to a deeper water in the Tonle Sap Lake

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Day 3

Time	Destination	Activity
0600-0730	Kampong Khlaeng	- Wake up and breakfast
0730-0815	Kampong Khlaeng	- Shopping and guided tour of market, highlighting changes from environmental impacts
0815-1000	Kampong Khlaeng to Moat Khla	- Group discussion on climate change and appropriate responses
1000-1030	Moat Khla	- Visit to Moat Khla floating village
1030-1200	Moat Khla to Tonle Chhma lake	- On-board group activity session including climate observation and water testing
1200-1330	Tonle Chhma lake	- Lunch - Visit to lake
1330-1600	Tonle Chhma lake to Chhnok Trou	- Wrap-up discussions - packing up
1600-1900	Chhnok Trou to Phnom Penh	- Disembarkation - Return to Phnom Penh by bus



Tourists and people of Kampong Phlok in front of the monk's room



Floating villages along a channel at the edge of the Tonle Sap lake
MEEP feasibility study team

A2 Funding sources outside the APN

MOE agreed to make Mr Ieng Sovannora (the Team Leader) available on an unpaid basis for the duration of his inputs to the project. MOE also provided facilitation support, including organising the necessary official letters of introduction and authorisation for project team members, and meeting facilities in its Phnom Penh headquarters for the project team.

Through its provincial departments, in Siem Reap and Kampong Chhnang provinces, MOE also provided facilities including rooms and audio-visual equipment for the two stakeholder workshops. The staff of these provinces, in addition to assistance in organising these workshops, supported the project team in identifying participant communities and in arranging the various field visits.

APDCE made available the time of Mr Yean Ly, its Managing Director, on an unpaid basis for the duration of his inputs as a team member to the project, including undertaking all field visits.

Mr William Derbyshire, an economics consultant, made available his time unpaid to this project and contributed to the financial analysis of the project and the preparation of the interim and final reports.

A3 Glossary of Terms

APDCE	Association for the Protection and Development of the Cambodian Environment
APN	Asia-Pacific Network for Global Change Research
GDP	Gross Domestic Product
GHG	Greenhouse Gas Emissions
MEEC	Mobile Environmental Education Centre
MEEP	Mobile Environmental Education Programme
MOE	Ministry of Environment
NGO	Non-Governmental Organisation
PPP	Public-Private Partnership
RGC	Royal Government of Cambodia
US\$	United States Dollar