# United Nations Development Programme

# Country: Malaysia

# Inception Report : 21 July 2011

Project Title	Economics of Climate Change for Malaysia (ECCM)
<b>Expected CP Outcome(s):</b> (Those linked to the project and extracted from the CPAP)	Malaysia has improved environmental stewardship through sustainable energy development and environmental management and a good understanding of policy options to address and manage climate change impacts.
<b>Expected Output(s):</b> (Those that will result from the project and extracted from the CPAP)	Improved capacity of stakeholders in environmental management, including water management, planning and implementing integrated approaches address climate change impacts.
	Improving data management system of GHG emissions and ODS consumption.
	Non-CPAP Outputs: Providing policy options on economic costs and benefits of climate change adaptation and mitigation measures.
Executing Agency:	Economic Planning Unit
Implementing Partner:	Economic Planning Unit / Ministry of Natural Resources and Environment

#### **Brief Description**

The aim of the project is to undertake analysis on the economic costs and benefits of climate change adaptation and mitigation measures with the view of enabling policy and decision makers in Malaysia to institute targeted interventions to address climate change It will be divided into three components: i) Development of Database and impacts. Methodologies; ii) Economic Modelling and Impact Studies; and iii) Policy Options. The economic models will assist the government in formulating coherent analysis especially in undertaking suitable mitigation and adaptation measures. The options will be ranked in order of priority in ensuring effective implementation and strengthen existing interdependencies and coordination between various ministries and agencies at the federal, state and local government level to address climate change issues from a multi-sectoral point of view.

USD 43.064.06

USD 112.935.94

194,000

350,000

140,000

210,000

12,600

	Programme Period: Two years	2010 AWP budget:	USD 4
	Key Result Area (Strategic Plan):	2011 AWP budget:	USD
	Towards Improved Quality of Life	2012 AWP budget:	USD 1
through Sustainable Environmental Management		Total resources required :	USD
	Atlas Award ID: TBD	Total allocated res	ources:
	Start date : July 2010	TRAC	USD
	End Date : June 2012	Government CS	USD
	PAC Meeting Date: TBD	GMS fee 6%	USD
	Management Arrangements: NEX		

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### ABBREVIATIONS

ADB	Asian Development Bank
APR	Annual Progress Report
AWP	Annual Work Plan
BHC	British High Commission
CBA	Cost Benefit Analysis
CDR	Combined Delivery Report
CETDEM	Centre for Environment, Technology and Development Malaysia
CGE	Computable General Equilibrium
CP	Country Programme
CPAP	Country Programme Action Plan
DID	Department of Irrigation and Drainage
DOS	Department of Statistics
ECCM	Economics of Climate Change for Malaysia
EE	Energy Efficiency
ENRES	Environment and Natural Resources Economics Section
EPU	Economic Planning Unit, Prime Minister's Department
FRIM	Forest Research Institute of Malaysia
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GMS	General Management Support
HACT	Harmonised Approach to Cash Transfer
IAM	Integrated Assessment Model
IRR	Internal Rate of Return
ISS	Implementation Support Services
LULUCF	Land Use, Land Use Change and Forestry
MAC	Marginal Abatement Cost
MACC	Marginal Abatement Cost Curves
MARDI	Malaysian Agriculture Research Development Institute
MEGTW	Ministry of Energy, Green Technology and Water
MGTC	Malaysia Green Technology Corporation
MHLG	Ministry of Housing and Local Government
MMD	Malaysia Meteorological Department
MOF	Ministry of Finance
MOT	Ministry of Transport
NAHRIM	National Hydraulics Research Institute of Malaysia
NC2	Malaysia's Second National Communication
NEX	National Execution
NPD	National Project Director
NPV	Net Present Value
NRE	Ministry of Natural Resources and Environment
NSC	National Steering Committee
OAI	Office of Audit and Investigation
ODA	Official Development Assistance
ODS	Ozone Depleting Substances

RE	Renewable Energy
REDD	Reducing emissions from Deforestation and Forest Degradation
SBAA	Standard Basic Assistance Agreement
SCR	Security Council Resolutions
SPAD	Land Public Transport Commission
SLR	Sea Level Rise
TOR	Terms of Reference
TWC	Technical Working Committee
UKM	Universiti Kebangsaan Malaysia
UPM	Universiti Putra Malaysia
UM	Universiti Malaya
UN	United Nations
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change

# **1.** INTRODUCTION

The Economics of Climate Change for Malaysia (ECCM) project is study undertaken by the Government of Malaysia (GoM) – United Nations Development Programme (UNDP). The Economic Planning Unit, Prime Minister's Department (EPU) is the executing agency. The ECCM project started in July 2010 and scheduled to complete in two years.

The main objective of the ECCM study is to assess the economic costs and benefits of adaptation and mitigation measures in specific sectors. The three components of the ECCM study are as follows:

- i. Development of Database and Methodologies;
- ii. Economic Modeling and Impact Studies; and
- iii. Policy Options.

The results of the project can be used not only as a basis to prescribe mitigation and adaptation measures but also for Malaysia in positioning herself in any commitment under the United Nations Framework Convention on Climate Change (UNFCCC). The policy options will help in identifying the appropriate response to climate change i.e. adaptation and mitigation and making sure the measures taken are in line with the national priorities.

The inception period helped raise the awareness of key stakeholders and secure a high level of their participation. Through the ECCM study, several activities have been organised, including workshops and seminars to build the capacity of key members as well as stakeholders, examine the feasibility of economic models, database, and also explored the policy questions. This Inception Report will discuss on the work done and provide a revised plan which consists of key tasks, an institutional approach for ECCM, and strategies to ensure that the project will meet its deadlines and the project objectives to move forward.

This report also contains annexes that specify details such as terms of reference (TOR) for the various management committees as well as project staff requirements and reports of activities held thus far.

# **2.** ACTIVITIES UNDERTAKEN DURING THE INCEPTION PERIOD

The key activities that were undertaken during the inception period are as follows:

- i. A Technical Workshop was held on 3-4 August 2010 to review the key findings and results of Malaysia's Second National Communication (NC2), and also to learn the methodologies used in the Asian Development Bank's (ADB) Study on the Economics of Climate Change for Southeast Asia. Suggestions from stakeholders include the need to focus on certain sectors and stock-taking exercises. The report can be found in <u>Annex</u> <u>VIII</u>;
- ii. A more rigorous Stock-Taking Exercise was undertaken between August and September 2010 to review the existing significance models, to look whether it has linkages to any economic analysis (that were used in the NC2 study). Key agencies that were consulted include Macroeconomics Section of EPU, Ministry of Finance (MOF), Forest Research Institute of Malaysia (FRIM), National Hydraulics Research Institute of Malaysia (NAHRIM), Malaysia Meteorological Department (MMD), Malaysian Agriculture Research Development Institute (MARDI), LESTARI of Universiti Kebangsaan Malaysia (UKM) and Malaysia Green Technology Corporation (MGTC). Key findings of the stocktaking exercise include the need to use multiple scientific and economic models to examine various policy dimensions of climate change, and a realisation that the skills required for modeling are limited. The report is attached as <u>Annex IX</u>;
- iii. A Technical Training on the PAGE 2009 Model was held on 28-30 September 2010. The PAGE model is an integrated assessment model (IAM) that was used by the Stern Review on Climate Change and is also used by the ADB Climate Change Study. Its usefulness is in modeling the economic impact of climate change separately for mitigation and adaptation. The 2009 version of the model includes incorporating projection of sea level rise and non-carbon dioxide (CO<sub>2</sub>) gas emissions. Six participants from key institutions (MOF, EPU, MARDI, Universiti Putra Malaysia (UPM) and UKM) participated in the training with the possibility of using the model for the ECCM project. It was found that the PAGE 2009 model generated results that were suitable for long term and extremely macro scenario but without any sectorial details. The summary of the feedback from participants on the training is as in <u>Annex X;</u>
- iv. A Technical Working Committee (TWC) 1/2010 meeting was held on 23 September 2010 to discuss key issues arising from the developments of the project. Minutes of the TWC meeting are contained in the <u>Annex XI</u>. Key decisions were to narrow the focus of the study to a few sectors, namely:
  - i) Mitigation energy, transport and waste;
  - ii) Adaptation water resources, coastal ,and land-use, land-use change and forestry (LULUCF); and
  - iii) Cross-cut energy security, food security and urbanisation.

- v. National Steering Committee (NSC) 1/2010 meeting was held on 16 November 2010. Members from key federal ministries and state governments were invited. The rationale for the ECCM was presented and several issues were discussed. The NSC affirmed the decision taken by the TWC on the key sectors, i.e. energy, LULUCF, water, and crosscut issues. Minutes of the NSC are contained in the <u>Annex XII</u>;
- vi. An Inception Workshop was held on 25-26 January 2011 with wide participation from federal and state governments, NGOs, and the private sectors. The ECCM project and its major components were presented. The first day focused on adaptation issues with initial presentations by NRE, ADB, NAHRIM and EPU. In the breakout groups, the participants discussed possible approaches to adapt to climate change impacts, particularly on costs and potential benefits. The focus of the second day was on mitigation with presentations by MGTC, FRIM, ADB, and the World Bank with a focus on the constraints that Malaysia faces in climate change mitigation, policy response, available data and analytical tools and models to examine potential strategies. Possible options and suggestions were also proposed.

Breakout groups discussed further in detailed on areas that the ECCM project should focus on. In the adaptation sessions, the suggestions were for the following areas:

- 1. Need to increase understanding for advocating more effective policies;
- Greater awareness to get buy-in from key stakeholders in government, the public/NGOs and the private sectors;
- 3. Strengthening the Government's responses;
- 4. Enhancing ecosystem protection, including land use zoning and other measures;
- 5. Developing a vulnerability assessment and a sustainability plan; and
- 6. Identifying agencies to take the lead in articulating the needs and priorities needed herein.

In the mitigation sessions, sectorial issues and existing policy responses were discussed in some level of detail and the key suggestions were in the following areas:

- 1. Energy sector has identified Renewable Energy (RE) and EE (Energy Efficiency) options;
- 2. Coordinate land-use, land-use change via government mechanisms;
- 3. Develop national policies for transport in order to address policy coherence in combating climate change effects;
- 4. Implement local level "green" solutions to support mitigation efforts;
- 5. Identify through R&D the kinds of technologies that are needed;
- 6. Tapping on funding opportunities (e.g. REDD+) from international bodies or potential donor countries; and
- 7. Develop incentives and disincentives to move economic actors to reduce the climate change impacts and move towards a low carbon economy and a more sustainable consumption pattern.

Rapporteur report for the Inception Worksop is attached as <u>Annex XIII</u>.

# **3.** PROJECT COMPONENTS

The ECCM study consists of three components as follows:

- i. Component 1: Development of Database and Methodologies;
- ii. Component 2: Economic Modelling and Impact Studies; and
- iii. Component 3: Policy Options.

The study will be undertaken in a series of tasks that aim to develop the tools required to fulfil the objectives of the project, build the capacity of key stakeholders and recommend policy options for the Government to consider. The following diagram shows all the tasks that are required for this project and the description of the tasks follow there from.



## Figure 1: ECCM Project Tasks

### **Component 1: Development of Database and Methodologies**

To undertake economic analysis for this study, baseline economic data and future projections of climate change impact to the key sectors will be needed. Among activities under this component is to take stock and review the on-going analysis by various agencies especially on climate change impacts as well as different sectors of the economy. Data that would be suitable for examining policy options and its gaps will be identified. Based on the findings, a database encompassing spatial, sectoral and temporal data on climate change will be developed. Two tasks are envisaged under this component, and they are described below.

### Task 1: Climate Change Database Compilation

The NC2 project has made various estimates of greenhouse gases (GHGs) emission for year 2000, and in some cases up to 2005. It is proposed that the end-period forecast for the ECCM study be 2100. Key variables to forecast include temperature, precipitation, sea level rise, etc. Where forecast is available from key agencies, they will be adopted for the ECCM project.

Sectorial information shall also be part of the database, and these include energy, transport, agriculture, water resources and coastal, land-use, land-use change and forestry, wastes, and GHGs emission scenarios. In particular, the emissions inventory shall be updated and estimated by Ministry of Natural Resources and Environment (NRE).

The ECCM project needs to access the on-going work and output of key agencies that are involved in forecasting climate change scenarios and monitoring their potential impacts, such as the MMD, NAHRIM and the Department of Irrigation and Drainage (DID).

### Task 2: Economic Database and Forecasting

The NC2 project had collated some information about the Malaysian economy, viz. population, urbanisation, age distribution, life expectancy, gross domestic product (GDP), and unemployment. This information is documented over several periods between 2000 and 2007. A more complete set of economic information needs to be collected and shall include: government revenues and expenditures, investments, and trade, and sectoral/state data. Estimates till 2010 are already available and the baseline will be updated.

The key output of this task will be an input to Task 3, which is the computable general equilibrium (CGE) model that would be used to analyse various mitigation options.

After the initial task is completed, the economic forecasts should be made for the following periods: 2020, 2030, 2050 and 2100. The key variables shall include GDP, investment and consumption, trade, population and employment. These forecasts shall be made according to the best information available to the government. It is envisaged that Department of Statistics (DOS), EPU and MOF will have key roles in this task.

### **Component 2: Economic Modelling and Impact Studies**

The ECCM study will use economic approaches, including appropriate economic models in the analysis of climate change to determine the economic costs and benefits of climate change adaptation and mitigation measures for vulnerable and significant sectors in Malaysia. It will involve projection analysis, scenario setting and targets. Impact study of climate change to various economic sectors/sub-sectors will be conducted and analysed. The study will focus on the following sectors (*Table 1*):

- i. Energy (includes transport, power sector, manufacturing and industrial processes);
- ii. Agriculture;
- iii. Land-use, Land-use Change and Forestry (LULUCF);
- iv. Water Resources (includes flood and drought) and Coastal (includes sea level rise);
- v. Wastes; and
- vi. Cross-cut sectors (includes population dynamics, food security, energy security, climate crises and urbanisation).

The findings of the analysis will then be translated into key macroeconomic indicators and will be inputs into Component 3 to support the analysis of potential interventions. In order to achieve the desired results of the project, this component will develop or use economic model(s) or economic analysis that can aid in assessing climate change impacts as well as identify measures that are cost effective or where benefits are greater than costs. In this regard, there are several methods to achieve this task.

### Task 3: Economic Models for ECCM

A CGE model that would provide the basis for examining both impacts as well as simulate the effects of various measures to mitigate GHG emissions will be developed for Malaysia. CGE models are suitable for examining options and scenarios. In the ECCM, they can be used to examine inter-industry effects and examine policy options in mitigation and adaptation (Tasks 10, 11 and 12). Other models, such as GTAP-E and the PAGE model will also be used to examine short, medium and long term costs and benefits of climate change impacts on the economy, for both mitigation and adaptation components.

### Adaptation

It is proposed that the adaptation sub-component shall consist of the following four tasks:

### Task 4: Impact Assessment (Adaptation)

Using the outputs from Task 1, this task will assess and estimate the physical impacts, such as sea level rise (SLR), precipitation, surface and sea temperature changes as well as drought situations. To obtain the results, a panel of experts (taskforce) will be formed to discuss the issue, provide best estimates of vulnerability and impacts based on what is already known. The key members of the taskforce will be from the key NC2 institutions

viz. NAHRIM, DID, FRIM, MGTC, Ministry of Housing and Local Government (MHLG), and Ministry of Transport (MOT). The outputs will form the basis for the next task.

### Task 5: Estimating the Cost of Future Impacts

This task will estimate the economic cost of future impacts that have been derived in Task 4. Cost data will be collated from sectoral studies that have made economic estimates, e.g. for flood mitigation, cost of supplying water to overcome drought and water shortage, cost of damages as a result of sea water intrusion, and loss of land as a result of SLR, etc. Data will be compiled from various sources, such as past studies, interviews with subject matter experts (e.g. on land value losses), and also from other estimations such as benefit transfers. Econometric analyses are envisaged; the ECCM will examine the impact of climate variables (precipitation, SLR) on various sectors. Macro-analysis may also be undertaken, where inter-sectoral impacts are more pronounced.

### Task 6: Identifying Adaptation Options and Measures

This task will review the adaptation options and measures that have been identified in NC2. The method will be to use the taskforce that has been responsible for Task 4 (Impact Assessment) to review the adaptation options and measures that have been identified. A whole range of measures will be identified, including those that can only be undertaken by the Government as well as through self-regulation or by market forces. These measures range from "no-regret" options (e.g. zoning regulations or information dissemination) to actions that require investments (e.g. to build infrastructures), in order to minimise the climate change impacts.

### Task 7: Estimating the Cost of Adaptation

This task will employ valuation techniques to monetise the adaptation options and measures that were identified in Task 6. It is anticipated that most of the effort will be done through secondary research, i.e. to pull together data and analysis from primary research work. The ECCM team will search for studies that use methodologies that are commonly associated with such tasks, and they include productivity change, replacement cost, revealed preference and stated preference methodologies, as well as benefits transfer approaches.

### <u>Mitigation</u>

The mitigation aspect of the study shall be undertaken by the following two tasks:

### Task 8: Assessing Mitigation Strategies and Options through MACC

Marginal abatement cost curves (MACC) has become the standard way of analysing mitigation options. Marginal abatement cost (MAC) refers to the cost of eliminating an additional unit of emissions (usually  $CO_2$ ). A MAC curve can be constructed by summing up the cost of  $CO_2$  prices against a specified quantity of  $CO_2$  reduction. MACC can

therefore be obtained by running the multiple pairs of price-quantity pairs<sup>1</sup>. Hence, the use of MACC is very useful to examine policy options, which have been identified in Task 10. The ECCM will use MACC to identify the costs and benefits of various options to be utilise in pointing out policy directions for sectors identified.

### Task 9: Quantifying Mitigation Options and Measures: Policies and Programs

Malaysia has several sectoral policies and programmes that aim at developing a climate resilient economy such as the National Policy on Climate Change, National Green Technology Policy, National Energy Policy, National Forestry Policy, Clean Air Action Plan, etc. This task will attempt to quantify the intended effects of each policy measures (in terms of emissions reduction) and to estimate the likely cost for achieving them. Another area of work is also to estimate the cost of various policy scenarios, e.g. the voluntary emissions reduction targets that had been announced at the 15<sup>th</sup> Conference of Parties to the UNFCCC in 2009. These policy scenarios need to be analysed carefully to enable the country to take appropriate measures in addressing the impacts of climate change which should not hinder our vision towards achieving sustainable development and a developed country status by the year 2020.

## **Component 3: Policy Options**

The objective of Component 3 is to provide and recommend policy options and economic measures such as fiscal incentives, regulations and other means to promote the implementation of the strategies. To come up with the policy options, the appropriate economic models (Task 3) will be used to analyse the costs and benefits of undertaking adaptation and mitigation measures as well as the cost of not taking any actions in Malaysian context based on best case and worst case projection path. Once the policy options are identified and developed, it will then be ranked based on the most effective strategies, least cost options or those whose net benefits are greatest. The "best" strategies will be recommended for implementation by various ministries and agencies at the federal and state level from a multi-sectoral point of view as well as to strengthen existing interdependencies and coordination between them. *Table 2* shows a list of proposed analyses that would be undertaken for this study.

### Task 10: Analysis of Adaptation Options

This task will use cost benefit analysis (CBA) to identify the options to adapt to climate change impacts and vulnerability. CBA can be used to rank projects with the biggest net benefit. Hence, it is a useful tool to facilitate decision making. Appropriate discounting of costs and benefits will be made and the usual decision rules shall apply, such as the largest net present value (NPV), positive internal rate of return (IRR) and positive benefit-cost ratios. As above, the adaptation analysis shall be sector-based in order that

<sup>&</sup>lt;sup>1</sup> Jennifer Morris, Sergey Paltsev, John Reilly (2008). Marginal Abatement Costs and Marginal Welfare Costs for Greenhouse Gas Emissions: Results from the EPPA Model. MIT Global Science Policy Change, Report No. 164, November

key adaptation options could be identified, and which impacts they had reduced and which benefits they had enhanced. Macro analysis is also proposed.

### Task 11: Analysis of Mitigation Options

This task will focus on examining the policy scenarios associated with various mitigation measures. The analysis will be undertaken at the sector level, i.e. energy, land-use, land-use change and forestry, waste, and agriculture.

### Task 12: Scenario Analysis and Policy Options

This task will focus on analysis associated with various cross-cutting issues. A proposed list of analysis is shown in Table 2. Analysis will be undertaken on cross-sectoral issues such as energy security, food security, urbanisation, using various appropriate economic analysis and models, such as the CGE or GTAP-E models.

### Task 13: Recommendations

This task will summarise the main findings from the earlier work done on Adaptation and Mitigation and the development of strategies for a low carbon economy. Appropriate recommendations will be based on the decision rules mentioned in Tasks 11 and 12, i.e. best outcome options will be recommended.

Sectors	Areas: Issues	Lead	Immediate Objectives
Energy	Transport Manufacturing Industrial Processes Power	Consultant	<ol> <li>Define parameters for mitigations and adaptations</li> <li>Provide data for economic processing and simulations</li> </ol>
Agriculture	Oil Palm Paddy Rubber Cocoa Livestock	MARDI	<ol> <li>Show case the current mitigations and adaptations</li> <li>Provide the template for economic processing and simulations</li> <li>Define parameters for mitigation and adaptations</li> <li>Provide data for economic processing and simulations</li> </ol>
LULUCF	Forestry Land-use Land-use Change	FRIM	<ol> <li>Define parameters for mitigations and adaptations</li> <li>Provide data for economic processing and simulations</li> </ol>
Waste	Domestic Industrial	Consultant	<ol> <li>Define parameters for mitigations</li> <li>Provide data for economic processing and simulations</li> </ol>
Water Resources & Coastal	Drought Water Supply Flood Sea Level Rise Storm Surges	NAHRIM	<ol> <li>Define parameters for adaptations</li> <li>Provide data for economic processing and simulations</li> </ol>
Cross- cutting	Population Dynamism Food Security Energy Security Climate Crises Urbanisation	Will be looked into through sectoral and economic analysis	<ol> <li>Add on relevant gaps for each sector</li> <li>Cover Issues identified</li> </ol>

# Table 1: Sector Based Forward Plan

Specific Issues	Objectives / Outputs	General Methods
Economic impact of GHGs emission reductions for selected sectors	<ul> <li>Impact on entire economy <ul> <li>welfare, GDP, employment, wages</li> </ul> </li> <li>Identify sectors which will gain and lose <ul> <li>Outputs, exports, imports, trade balance</li> </ul> </li> <li>Identify mitigation measures</li> <li>Identify least cost approaches</li> </ul>	A number of time frames will be simulated: • GTAP – E • CGE • Environmental I-O
Economic impact of climate change on selected sectors caused by: • Sea level rise • Precipitation • Temperature	<ul> <li>Impact on output, GDP, employment</li> <li>Identify economic costs of impact</li> <li>Identify adaptation measures and associated costs and benefits</li> </ul>	<ul> <li>Technical data required from NAHRIM, MMD, DID, etc.</li> <li>Regression Analysis</li> <li>Cost-based approaches</li> <li>PAGE Model</li> </ul>
Impact of economic growth on GHGs emissions	<ul> <li>Projecting the quantum of emissions due to economic growth</li> <li>Quantifying associated economic costs</li> <li>Identifying mitigation measures</li> </ul>	<ul> <li>Environmental I-O</li> <li>Econometric studies</li> </ul>

# Table 2: Economic Analysis Work Plan

The proposed project implementation schedule is shown in *Figure 2*. The inception period was completed in first quarter of 2011 (1Q2011). In the second and third quarter of 2011 (2Q2011 and 3Q2011), the ECCM project will recruit or contract all the personnel required for 2011. For 2Q2011 and 3Q2011, work in parallel for the first two components of the project will be undertaken, i.e. database and model development. It is envisaged that the economic modelling work would require about 6-9 months, and will coincide with the economic model development work that is being undertaken by the ADB. In the fourth quarter (4Q2011), the third component (policy analysis) would begin. For 2012, the main focus of the work would be to examine all the policy options work (Tasks 10-12) and develop the recommendations for consideration (Task 13).

At this stage of the project, the project management is planning to complete the work and fulfil the objectives of the study as originally scheduled. However, the project management will closely monitor the progress of the project and advise the technical and steering committees if a need for extension should arise.

		2010 2011		2012					
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Inception Phase :									
Technical Workshop									
Stock Taking & PAGE Training									
TWG Meeting									
NSC Meeting									
Inception Workshop									
Inception Report									
COMPONENT 1 - Development of Database &									
Methodologies									
Task 1 : Climate Change Database									
Task 2 : Economic Database									
COMPONENT 2 - Economic Modelling & Impact									
Studies									
Task 3 : Development of Economic Model									
Task 4 : Impact Assessment									
Task 5 : Cost of Future Impacts									
Task 6 : Identify Adaptation Options									
Task 7 : Cost of Adaptation Options									
Task 8 : MACC									
Task 9 : Mitigation Option									
COMPONENT 3 - Policy Options									
Task 10 : Adaptation Analysis (CBA)									
Task 11 : Mitigation Analysis									
Task 12 : Scenario Analysis									
Task 13 : Recommendations									

# Figure 2: Proposed ECCM Project Schedule



Activities Carried Out

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Proposed Project Activities

# **4.** PROJECT REQUIREMENTS

This section outlines the skills required for the ECCM project, which includes an estimate of the number and type of project staff to perform the tasks and deliver the expected outputs. *Table 3* shows the requirements of resource people needed for ECCM:

Consultants / Resource People	Areas / Issues
Economists	<ul> <li>i. Economic impact of GHGs emission reductions for selected sectors;</li> <li>ii. Economic impact of climate change on the selected sectors; and</li> <li>iii. Impact of economic growth on GHGs emissions.</li> </ul>
Sectors	<ul> <li>i. <u>Energy</u>: Transport, Manufacturing, Industrial Processes and Power Sector;</li> <li>ii. <u>Agriculture</u>: Oil Palm, Paddy, Rubber, Cocoa &amp; Livestock;</li> <li>iii. <u>Water Resource &amp; Coastal</u>: Drought, Flood, Water Supply, Sea Level Rise and Storm Surges;</li> <li>iv. <u>LULUCF</u>: Land-use, Land-use Change and Forestry;</li> <li>v. <u>Waste</u>: Domestic and Industrial; and</li> <li>vi. <u>Cross Cutting</u>: Population Dynamism, Food Security, Energy Security, Climate Crises and Urbanisation</li> </ul>

# Table 3: Proposed ECCM Key Resources

The ECCM project will also collaborate with economic faculty of the local universities. The economic professors with expertise and experience in economic modelling, especially environmental I-O, CGE, GTAP-E, PAGE and also econometric or regression analysis will be invited to participate in this project. The job of the economists is also to ensure that the outputs, once successfully delivered, shall be passed onto the key government agencies, such as EPU, MOF, NRE, and other agencies involved in this aspect of the study.

# 5. ISSUES AND CONSTRAINTS

## 1. Project Manager Position and Delay in Project Activities

Due to the late placement of the Project Manager's job, the expected project timelines were not met, hence resulting in a delay of the project inception. However, EPU will do its utmost to ensure the project will be completed within the stipulated timeframe.

### 2. Limited Capacity in Economic Modelling

The ECCM requires building of capacity in economic modelling. The stock taking exercise came to the conclusion that there was very limited capacity in this area. Apart from several key economic agencies and a few universities, there is very limited capacity and expertise in undertaking economic modelling. Thus, the ECCM project has to build its own capacity while collaborating from within and outside to fill this gap. Hence, attention should be given to capacity building in economic tools that are used and constructed for this study. It is envisaged that these tools would be extremely important as new situation and scenarios will arise and these models can be re-used by recalibrating the assumptions.

## 3. Engagement of Experts for ECCM

A wide range of experts on climate change will be required for the ECCM project. To do this, the ECCM project will engage suitable qualified institutions and economic experts to develop the climate change database, economic models, undertake the required economic analyses and provide insights into the policy options, using the findings from the study.

# **6.** FINANCIAL STATUS

The overall allocation for ECCM study is USD350,000.00 and this amount will be used to cover all expenditure of the project which includes the fees for the project's staffs, consultants and resource people; procurement of models, software and hardware and for implementing the activities identified for all three components.

The ECCM study officially started in July 2010 and is expected to complete by June 2012. Below are the summary of the expenditure for 2010 and also the projected expenditure for 2011 and 2012:

Year	Items	Expected Expenditure (USD)
2010	Inception Period: Technical Workshop Stock Taking Exercise Resource People Project Management Staff Project's Equipment	43, 064.06
2011	Inception Workshop Implementation of Activities for All Components (Workshops, Trainings, etc.) Engagement of Consultants/Resource People Purchasing of Software, Equipment, etc. Project Management Staff	194,000.00
2012	Implementation of Activities For Component 3 (Workshops, Trainings, etc.) Engagement of Consultants/Resource People Peer Review Exercise Publishing Project Management Staff	112,935.94
	TOTAL	350,000

# **7.** RESULTS AND RESOURCES FRAMEWORK

The Results and Resources Framework is summarised in *Table 4*. It shows the intended outcome of the ECCM project and the key indicators for achieving them. The main table quantifies for each component, viz. the intended outputs (output targets), lists the indicative activities to be undertaken to achieve the outputs, identifies the responsible parties involved and the inputs required to achieve the results.

The annual work plan for the ECCM project in 2011 and 2012 is shown in Table 5.

### Table 4: Results and Resources Framework

Intended Outcome as stated in the Country Programme Results and Resource Framework: Outcome 3:

Supporting Environmental Stewardship through Sustainable Energy Development and Environmental Management

Outcome indicators as stated in the Country Programme Results and Resources Framework, including baseline and targets:

- 1.) Improved capacity of stakeholders in environmental management to plan and implement integrated approaches that address climate change impacts.
- 2.) Improved data management system of GHG emissions and climate change analysis.
- 3.) non-CPAP Outputs: Provided economic costs and benefits of climate change adaptation and mitigation measures.

Applicable Key Result Area (from 2008-11 Strategic Plan):

# Partnership Strategy

EPU will be the implementing agency while EPU/NRE is the executing agency. Other key stakeholders from relevant national and international agencies, non-governmental organizations and experts from other institutions will provide technical inputs through various platforms including the Technical Working Committee and National Steering Committee.

Project title and ID (ATLAS Award ID): TBC. Project titled: Economics of Climate Change_for Malaysia					
INTENDED OUTPUTS	OUTPUT TARGETS	INDICATIVE ACTIVITIES	RESPONSIBLE PARTIES	7.1 INPUTS	
C1: Development of Database and Methodologies	<ul> <li>1.1 Database on GHGs emissions for the significant sectors available</li> <li>1.2 Linking the database to existing national data framework such as DOS</li> </ul>	<ul> <li>Take stock and review the on-going analysis by various agencies in different sectors of economies</li> <li>Identify and analyse the gaps</li> <li>Develop a database encompassing spatial, sectoral and temporal data on climate change</li> </ul>	Project Manager Consultants	International Consultants Local Consultants Workshops IT equipment Travel Miscellaneous	
C2: Economic Modeling and Impact Studies	<ul> <li>2.1 A report on comparative analysis studies of various economic models</li> <li>2.2 An economic model to assist in the mainstreaming of activities to address climate change issues in Malaysia</li> <li>2.3 Impact study report on the economic costs and benefits of climate change adaptation and mitigation measures and results/findings for reviews/assessments undertaken</li> </ul>	<ul> <li>Review and conduct a comparative analysis of different models of climate change impact assessment</li> <li>Review existing studies and economic models for climate change analysis to determine their feasibility and appropriateness in Malaysian context</li> <li>Identify a range of suitable climate change models as basis of the study</li> <li>Recommend an appropriate economic model(s) or develop one</li> <li>Compile relevant baseline data and determine the assessment period (2030 or 2050 or beyond)</li> </ul>	Project Manager Consultants	International Consultants Local Consultants Workshops Travel Miscellaneous	

Project title and ID (ATLAS Awa	Project title and ID (ATLAS Award ID): TBC. Project titled: Economics of Climate Change for Malaysia										
INTENDED OUTPUTS	OUTPUT TARGETS	INDICATIVE ACTIVITIES	RESPONSIBLE								
Project title and ID (ATLAS Awa INTENDED OUTPUTS	rd ID): TBC. Project titled: FOUTPUT TARGETS	<ul> <li>Conomics of Climate Change_for Malays INDICATIVE ACTIVITIES</li> <li>Determine the vulnerable and significant sectors to be prioritised in the economic analysis. Focused sectors may include: <ol> <li>Energy (includes transport, power sector, manufacturing and industrial processes);</li> <li>Agriculture;</li> <li>Land-use, Land-use Change and Forestry (LULUCF)s;</li> <li>Water Resources (includes flood and drought) and Coastal (includes sea level rise);</li> <li>Wastes; and</li> <li>Cross-cut sectors (includes population dynamics, food security, energy security, climate crises and urbanisation).</li> </ol> </li> </ul>	ia RESPONSIBLE PARTIES	7.1 INPUTS							
		- Apply the model to determine the economic costs and benefits of climate change adaptation and mitigation measures for vulnerable and significant sectors in Malaysia, including the socio economic costs									

Project title and ID (ATLAS Award ID): TBC. Project titled: Economics of Climate Change for Malaysia										
INTENDED OUTPUTS	OUTPUT TARGETS	INDICATIVE ACTIVITIES	RESPONSIBLE PARTIES	7.1 INPUTS						
C3: Policy Options	3.1 A report on Comparative analysis of various policy options including policy strategies and options for Malaysia The findings from the economic analysis will be translated into key macro-economic indicators which will be developed later.	<ul> <li>Consultation meetings</li> <li>Peer-review exercise</li> <li>Develop the comparative analysis of various options proposed</li> <li>Develop the rating mechanism of each options</li> </ul>	Project Manager Consultants	International Consultants Local Consultants Workshops Travel Miscellaneous						

## TABLE 5: Annual Work Plan Budget Sheet

## PROJECT TITLE: ECONOMICS OF CLIMATE CHANGE FOR MALAYSIA RESOURCES FRAMEWORK ALLOCATION (ATLAS PROJECT NUMBER No. : 74235)

### Year: 2011

EXPECTED OUTPUTS	PLANNED ACTIVITIES		TIMEF	RAME			PLANNED BUDGET		
And baseline, associated indicators and annual targets	List activity results and associated actions	Q1	Q2	Q3	Q4	RESPONSIBLE PARTY	Funding Source	Budget Description	Amount (USD)
Output 1 (Activity 2 in Atlas): Description: Development of Database/ Methodology Baseline: 1. Database available in NC2 project 2. Database to be linked to institutional mechanism	<ul> <li>Activity Results Database developed. </li> <li>Associated Actions: <ol> <li>Appoint consultants</li> <li>Review and analyse</li> <li>NC2 and other</li> <li>available data</li> </ol> </li> <li>Organise at least one stakeholder workshop</li> <li>Develop the database with inputs from stakeholders</li> </ul>	Х	Х	X	X	EPU	TRAC & CS TRAC & CS CS TRAC & CS TRAC & CS	Local Consultants Workshops Information Technology Equipment Travel (Airfare & Terminal Expenses)	

EXPECTED OUTPUTS	PLANNED ACTIVITIES		TIMEF	RAME			PL	ANNED BUDGET	
And baseline, associated indicators and annual targets	List activity results and associated actions	Q1	Q2	Q3	Q4	RESPONSIBLE PARTY	Funding Source	Budget Description	Amount (USD)
Indicators: 1. NC2 database will be used and refined in the climate change economic model 2. Linkages with institutions established Targets: 1. Database developed 2. Linkages established Related CP Outcome: Supporting environmental stewardship through sustainable energy development and environmental management							TRAC TRAC & CS CS	Travel (DSA) Travel (Monitoring & Evaluation) Publication Miscellaneous	

EXPECTED OUTPUTS	PLANNED ACTIVITIES		TIMEF	RAME			PLANNED BUDGET		
And baseline, associated	List activity results and					RESPONSIBLE		Dudget	American
indicators and annual	associated actions	Q1	Q2	Q3	Q4	PARTY	Funding Source	Budget	Amount
targets							_	Description	(USD)
Output 2 (Activity 1 in	Activity Results:								
Atlas):	Climate change					EPU	TRAC & CS		
Description:	economic model							Local	
Development of Economic	developed.						CS	Consultants	
Model									
	Associated Actions:	Х					CS	Workshops	
Baseline:	1. Recruit and appoint								
1. Economic model are	project staff	X						Information	
scattered and there is	2. Appoint consultant(s)	N/					<b>TD 4 0 0 00</b>	Technology	
the need to use few	/ consultancy	X					TRAC & CS	Equipment	
models for comparative	company							Travial (Airford O	
analysis	3. Organise inception	V						Travel (Airfare &	
2. Universities and	workshop and	~					TRAC & CS		
	roport	v					<u></u>	Expenses)	
Several models	4 Formulate research	^					03	Traval (DSA)	
Indicators:	4. Torritiale research							Haver (DSA)	
1 Climate change	5 Collect review and							Miscellaneous	
economic model is	analyse baseline data							Misocilaricous	
developed	and determine the		x						
2. The model will be in	assessment period								
line and synchronised	6. Review various		Х	Х					
with international best	economic models for								
practices	climate change								
	7. Conduct at least one			Х	Х				
Targets:	stakeholder workshop								
1. Climate change	8. Develop the right								
economic model	model with inputs				Х				
produced and tested	from stakeholders								
2. Impact study	9. Conduct impact study								
conducted	on the economic								
	costs and benefits of								
Related CP Outcome:	climate change								
supporting environmental	mitigation moscures								
sustainable operav	mugauon measures								
development and									22
environmental management									25

EXPECTED OUTPUTS	PLANNED ACTIVITIES		TIMEF	RAME			PLANNED BUDGET		
And baseline, associated	List activity results and					RESPONSIBLE		Pudgot	Amount
indicators and annual	associated actions	Q1	Q2	Q3	Q4	PARTY	Funding Source	Description	
targets								Description	(03D)
Output 3 (Activity 3 in	Activity Results								
Atlas):	Comparative policy					EPU	TRAC & CS	Local	
Description:	options developed.							Consultants	
Policy Options							CS		
	Associated Actions:							Workshops	
Baseline:	1. Appoint			Х			TRAC & CS		
1. Policy options on	consultants/consultan							I ravel (Airfare &	
mossures has yet to be	2 Organized at least						TRAC & CS	Fypopsos)	
developed	2. Organised at least				x		TRAC & CS	Expenses)	
developed	workshop including				~		CS	Travel (DSA)	
Indicators:	peer-review exercise								
1. Draft policy option	3. Develop a report on a							Miscellaneous	
completed	series of policy				Х				
	options/comparative								
Targets:	study with techno-								
1. Comparative study	economic analysis of								
completed	each measure and								
Deleted CD Outcomes	cost of inaction								
Related CP Outcome:									
stewardship through									
sustainable energy									
development and									
environmental management									
TOTAL									194,000
GRAND TOTAL									194,000

# **8.** MANAGEMENT ARRANGEMENTS

The National Steering Committee (NSC) and the Technical Working Committee (TWC) will have overall management oversight of the ECCM project. The project organization is shown below and its components are described further down.



### National Steering Committee (NSC)

A National Steering Committee will endorse and provide guidance to the project implementation process according to the established detailed work plan monitoring tool. The Committee will be composed of representatives from:

- i. Economic Planning Unit;
- ii. Ministry of Natural Resources and Environment;
- iii. Ministry of Energy, Green Technology and Water;
- iv. Ministry of International Trade and Industry;
- v. Ministry of Transport;
- vi. Ministry of Housing and Local Government;
- vii. Ministry of Agriculture and Agro-Based Industry;
- viii. Ministry of Science, Technology and Innovation;
- ix. Ministry of Federal Territory; and
- x. United Nations Development Programme Malaysia.

The TOR of the NSC shall be agreed among the stakeholders within the first six months of the project. The Chairperson of the NSC is the Deputy Director-General II of EPU.

## National Project Director (NPD)

The National Project Director will be responsible for coordinating project activities among the main parties to the project. Among these responsibilities are ensuring that the project document and project revisions requiring Government's approval are verified by EPU and processed through the Government co-coordinating authority in accordance with established procedures and providing direction and guidance on project-related issues. The NPD of the project is the Director of Environment and Natural Resource Economics Section (ENRES).

## **Technical Working Committee (TWC)**

A technical working committee will handle all technical matters relating to the project and provide appropriate advice and guidance. The members of the TWC will consist of:

- i. Economic Planning Unit, Prime Minister's Department;
- ii. Ministry of Finance;
- iii. Ministry of Natural Resources and Environment; (Environmental Management and Climate Change Division, and Biodiversity and Forestry Management Division)
- iv. Ministry of Energy, Green Technology and Water; (Energy Sector; and Green Technology Sector)
- v. Department of Statistics;
- vi. Department of Environment;
- vii. Forest Research Institute of Malaysia;
- viii. National Hydraulic Research Institute of Malaysia
- ix. Drainage and Irrigation Department;
- x. Malaysian Meteorological Department;
- xi. National Solid Waste Management Department;
- xii. Town and Country Planning Department;
- xiii. Malaysian Agricultural Research and Development Institute;
- xiv. Land Public Transport Commission (SPAD);
- xv. Kuala Lumpur City Hall (DBKL)
- xvi. Centre for Environment, Technology and Development Malaysia (CETDEM);
- xvii. United Nations Development Programme, Malaysia; and
- xviii. Other relevant stakeholders (as and when necessary).

The TOR of the TWC shall be agreed among the stakeholders within the first six months of the project. The Chairperson of the TWC is the NPD.

### **Consultants and Technical Support**

Technical support will be provided by local and/or international professionals with extensive experience working in relevant areas as required by the project. The UNDP global

knowledge network will provide valuable inputs through best practices and lessons learned from similar experiences in other countries.

### **Project Assurance**

The Project Assurance role supports the Project Board by carrying out objective and independent project oversight and monitoring functions. This role ensures that appropriate project management milestones are managed and completed. A UNDP Programme Officer will hold the Project Assurance together with a representative from the International Cooperation Division, EPU, representing the Malaysian Government.

### **Project Manager**

The Project Manager will manage the project on behalf of the NSC and the TWC in close coordination within the TOR agreed to by the NSC and the TWC. The Project Manager is responsible for day-to-day management and decision-making for the project together with an identified officer of the implementing agency. The Project Manager ensures that the project produces the results specified in the project document to the required standard of quality and within the specified constraints of time and cost.

The Project Manager will be recruited and will report administratively and programmatically to both the NPD and UNDP. The person will prepare progress reports in timely and required manner, and provide the information needed to agree disbursement of funds. The TOR of the Project Manager shall be agreed among the stakeholders as soon as the project commences.

### **Financial Management**

Based on the approved AWP, UNDP will provide required financial resources to the Implementing Partner to carry out project activities during the annual cycle. Under the Harmonised Approach to Cash Transfer (HACT), the following modalities may be used:

- i. Direct cash transfers to the Implementing Partner, for obligations and expenditures to be made by them in support of activities;
- ii. Direct payments to vendors and other third parties, for obligations incurred by the Implementing Partner; and
- iii. Reimbursement to the Implementing Partner for obligations made and expenditure incurred by them in support of activities.

The Implementing Partner and Project Manager will work closely with UNDP to monitor the use of the financial resources and are accountable for:

- i. Managing UNDP's resources to achieve the expected results;
- ii. Maintaining an up to date accounting system that contains records and controls to ensure the accuracy and reliability of financial information and reporting.

Expenditures made should be in accordance with the, Annual Work Plans and budgets.

At the end of a quarter/year UNDP prepares a Combined Delivery Report (CDR) which records all disbursements made under the project for verification. The Implementing Partner and UNDP should sign this CDR.

A project revision shall be made when appropriate, to respond to changes in the development context or to adjust the design and resources allocation to ensure the effectiveness of the project provided that the project remains relevant to the Country Programme. A project revision shall be supported by the record of an approval decision made by the project NSC, and an updated and signed AWP.

### **UNDP Support Services**

In addition, UNDP may/shall provide the following services:

- i. Identification and recruitment of project personnel;
- ii. Procurement of goods and services including project vehicle; and
- iii. Identification of training activities and assistance in carrying them out.

The above will be carried out based on UNDP policies and procedures following the principles of best value for money, fairness, integrity, transparency, and effective competition. The support services provided will be charged as follows:

- 6% cost recovery for the provision of general management support (GMS) by UNDP headquarters and country offices for activities funder under Government Cost sharing; and
- ii. Direct cost for implementation support services (ISS) provided by UNDP and/or an executing entity/implementing partner for activities under TRAC funding.

### **In-Kind Contribution**

In addition to the financial resources through UNDP, the implementing partner will provide the following in-kind contribution:

- i. Assist in gaining access to all relevant data and information required to for the project that is accessible for public viewing;
- ii. Office space (i.e. room/workspace) for the Project Manager, consultants and experts at EPU;
- iii. Use of office support facilities by the Project Manager, consultants and experts (e.g. fax machine, stationary, Xerox machine, telephone), and secretarial support where applicable;
- iv. Facilities for convening meetings, workshops and seminars.

Any reimbursable expenses can be borne by the project fund as agreed in the Annual Work Plan (AWP).

# **9.** MONITORING FRAMEWORK AND EVALUATION

The project activities will be closely monitored by UNDP. In compliance with UNDP regulations, the following will be conducted:

### a) Project Monitoring and Review Meetings

### National Steering Committee (NSC) Meetings

The NSC will meet after the receipt of each project report or at least twice a year, whichever is greater and address project issues raised by the Project Manager, review project progress reports and provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to the project document. A final NSC meeting should also be held at the end of project completion to agree to and endorse the final findings and outcomes of the project and to make recommendations towards project closure.

### Technical Working Committee (TWC) Meetings

The TWC will meet as regularly as required to assist the NSC in monitoring and advising the technical implementation of the project and its activities. The TWC acts as the technical advisors to the NSC, and regularly reviews the progress of all project components.

### Annual Project Review Meeting

This internal review meeting will be chaired by EPU during the fourth quarter of the year to assess the performance of the project based on the Annual Work Plan (AWP) submitted at the beginning of the calendar year as well as the Annual Progress Report submitted during the fourth quarter of each calendar year. The review will involve all key project stakeholders and the Implementing Partner, and will focus on the extent to which progress have been made towards achievement of the outputs and that they remain aligned to appropriate outcomes as outlined in the project document. This review should update output targets and results achieved. In the last year of the project, the review will be a final assessment.

### Final Project Review Meeting

A Final Project Review meeting will be conducted towards the end of the project completion. Its purpose is to assess the performance and success of the project. It should look at sustainability of the results, including the contribution to related outcomes (and the status of these outcomes) and capacity development. It will also review lessons learned and recommendations that might improve design and implementation of other UNDP-funded projects. The meeting will discuss the Final Project Review Report that should be submitted two weeks prior to the Final Project Review Meeting.

### b) Progress Reporting Documents

### Mid-Year Progress Report

A Mid-Year Progress Report shall be prepared by the Project Manager and shared with the NSC by 30 June of each project year. As a minimum requirement, the Mid Year Progress Report shall utilize the standard template for the Annual Project Report (APR) covering a six month period.

### Annual Progress Report (APR)

An Annual Progress Report shall also be prepared by the Project Manager and shared with the NSC by the end of the last quarter of each year. The Annual Progress Report shall highlight risks and challenges, the summary of results achieved, and lessons learnt of the project for that reporting year.

### Final Project Review Report

This document which is prepared by the implementing partner is a structured assessment of progress based on the chain of results initially defined in the Project Document and AWP and will include information on financial allocations of expenditure. It may be supplemented by additional narrative to meet specific reporting needs of stakeholders, especially the donor(s). The following should be submitted together with the report:

Lessons learnt log - summarizing the information captured throughout the implementation of the project:

- Minutes of NSC meetings
- Minutes of TWC meetings
- Annual signed CDRs
- Statements of cash position (if applicable)
- Statements of assets and equipment

This report will be discussed at the Final Project Review meeting mentioned above.

### Final Project Evaluation

Project evaluation assesses the performance of a project in achieving its intended results. It yields useful information on project implementation arrangements and the achievement of outputs. It is at this level that direct cause and attribution can be addressed given the close causal linkage between the intervention and its effect or output. Project evaluation provides valuable information to support informed decision-making and serves to reinforce the accountability of project managers. Depending on the purpose, project evaluations can be commissioned by the management at any time during the project cycle: at mid-point, just before or after completion. They should ideally take place around the time of completing a project to determine the future of the project (e.g. continuation or termination of the project), to decide whether the concept should be scaled up or replicated elsewhere, and/or to

generate lessons that are of strategic significance for the organization. The evaluation should be conducted by an independent consultant.

### c) Financial Monitoring and Quality Assurance

### **Combined Delivery Reports**

The Combined Delivery Report (CDR) is the report that reflects the total expenditures and actual obligations (recorded in Atlas) of a Project during a period. This report is prepared by UNDP using Atlas and shared with the implementing partner on a quarterly basis and at the end of each year. The Implementing Partner is required to verify each transaction made and sign the quarterly issued CDR report. Statements of cash position as well as assets and equipments should also be submitted together with the CDR on a yearly basis.

### Audit

Audit is an integral part of sound financial and administrative management, and of the UNDP accountability framework. The project will be audited at least once in its lifetime and in accordance with the threshold established for the annual expenditures by the Office of Audit and Investigations (OAI). The audit provides UNDP with assurance that resources are used to achieve the results described and that UNDP resources are adequately safeguarded.

The selection of an Audit Firm shall be through a competitive Request for Proposals, in consultation with the Implementing Partner and EPU or if possible shall be performed by the National Audit Authority. UNDP procedures must be followed as per the specific Terms of Reference for Audits of NEX/NIM Projects.

The audit is expected to provide assurance related to the following broad areas:

- Project progress and rate of delivery
- Financial management
- Procurement of goods and/or services
- Human resource selection and administration
- Management and use of equipment and inventory
- Record-keeping systems and controls
- Management structure
- Auditors' comments on the implementation status of prior year audit