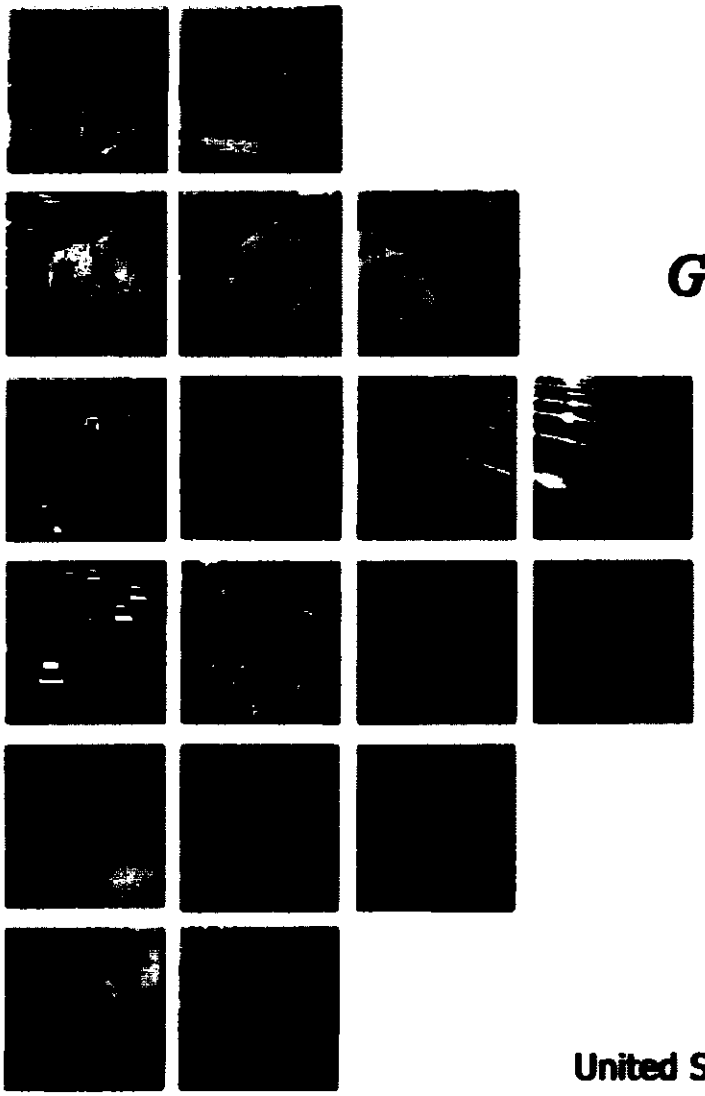
PN-ACY-742

CLIN 3: Project Development and Financing

Subtask 3.B TA for Demonstration for GHG Reduction in One State: Pilot Project Work Completed



Greenhouse Gas Pollution Prevention Project - Climate Change Supplement

A Program of the:
United States Agency for International Development / India Mission

Implemented by:
The Louis Berger Group, Inc.
Global Environment Team

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I. BACKGROUND

One of the primary focuses of the Greenhouse Gas Pollution Prevention Project-Climate Change Supplement (GEP-CCS) is to catalyze the clean energy project development process in India. GEP-CCS aims to achieve this objective through activities that build the capacity of the key stakeholders: industry, financial institutions, government agencies and the local communities, to develop, fund, approve and support such projects. For industrial enterprises with their profit orientation, the potential for increased energy efficiency provides a clear economic incentive to embark upon the project development process. Energy efficient projects will also complement India's overall economic development, which in turn, will provide many co-benefits including economic, social, and environmental benefits. The state, local and central governments as well as India's vibrant NGO sector should therefore have a vested interest in supporting these types of projects.

Under the various emerging international climate change market mechanisms, it is anticipated that clean energy projects can reap the benefits from their inherent GHG abatement potential. These projects are broadly termed climate change mitigation projects (CCMP), and will need to be structured to include certain additional facets and analyses, as compared to conventional commercial projects, to ensure that they will be able to qualify for and benefit from the carbon offsets generated. As such, the project development process has to proceed in a systematic manner so as to include the necessary parameters of a CCMP. Since the organized dialogue on global climate change began under the UN Framework Convention on Climate Change (UNFCCC), the international investment community has demonstrated its intent to fund energy efficient and renewable energy 'sustainable' development projects worldwide. To date, however, there has been more demand than qualified projects presented for investor tenders. The main reasons cited for the low acceptance rate of projects is the insufficient data, substandard formulation and mediocre structure of the majority of the projects presented.

In order to address these deficiencies, GEP-CCS decided to work with a select group of project developers and international funding agencies to develop and provide guidelines to potential project developers from Indian industry to assist them in the process of developing and structuring of CCMPs. Towards this objective, GEP-CCS has conducted numerous awareness building and outreach activities that have included training programs for Indian financial institutions, strengthening the capacity of the Climate Change Center at Development Alternatives, sponsoring workshops for project developers, policy roundtables and the development of and provision of computational and assessment tools, among other activities. In order to provide "step-by-step" guidance to CCM project developers and decision makers at local and state levels, GEP-CCS decided to develop a Roadmap which clearly documents the CCMP development process. This document, prepared in collaboration with, and as part of the capacity building assistance to, the Climate Change Center at Development Alternatives, provides a "what-to-expect" guide with practical "know-how" and to-do checklists and matrices for project developers who are in the process of formulating and structuring clean energy projects like renewable energy or energy efficiency projects.

II. DEMO PROJECT STRATEGY

The Society of Development Alternatives (DA) is a non-governmental organization with the mission of promoting sustainable development in India. DA has created a Climate Change Outreach and Awareness Center under its Environment Systems Division (ESD). GEP-CCS has been closely working with the Center to build its in-house capacity to sustain itself as a fully functional, efficient facilitation Climate Change Center (CCC). The GEP-CCS technical assistance to DA focused on helping DA to assist potential project developers. Under direction from the CTO USAID, and after lengthy discussion about the most effective means to replicate a demonstration project for project developers, a decision was taken that the demonstration project under this GEP-CCS activity would be the production of a Roadmap that would document the process of CCMP development and illustrate the process with a real-life case study. It was felt that working with a single project developer to develop one discrete pilot would limit the learning potential due to the many different potential project development/developer scenarios for CCMPs, and severely limit the transparency of the effort.

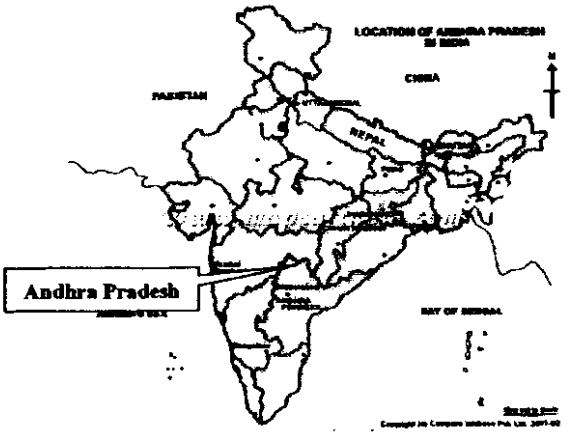
As the Center will continue to work with Indian project developers, it was decided that the Roadmap document be prepared by the CCC team of DA under the overall technical support of LBG/GEP-CCS.

[redacted]

In a CCMP, the role of state specific institutions are critical, as the raw material and fuels for the project would most likely be locally supplied, the service off take from the project would be to a state level agency (e.g. the power utility), and the approvals for the project would come from the state government. It was, therefore, decided to identify a specific state and to follow the CCMP development process through all the necessary steps, including the project review and approval processes. During this process, the team would meet with important state stakeholders like the private sector entrepreneurs, state government authorities, and potential financing institutions. The dialog and interactions from these meetings would contribute to the general awareness building around CCMP and what policies might need to be addressed and/or barriers removed, to create an enabling environment for such projects. The GEP-CCS Team (LBG and DA) identified selection criteria for selecting the state.

Starting with the five states of Andhra Pradesh, Karnataka, Maharashtra, Rajasthan, and Tamil Nadu, which are among the biggest states in India which have both comparatively large economies and progressive energy sector postures, the exercise ranked the states according to the criteria in the box below and selected the state of Andhra Pradesh. *(Note: In the case study in the annexure, the project name, developer and state have been disguised. Andhra Pradesh has become Karnataka)*

III. INTERACTIONS WITH STATE STAKEHOLDERS



Subsequent to the selection, the GEP-CCS team and DA visited Hyderabad and held meetings with several Government of Andhra Pradesh (GOAP) departments involved in approvals of renewable energy and industrial projects, power purchasers etc. These included the Non Conventional Energy Development Corporation of AP Ltd. (NEDCAP), AP Power Transmission Corporation (AP TRANSCO), AP Ministry of Energy and several project developers. In addition, DA held detailed meetings with some of the project developers and key GOAP officials involved in the project approval process. These meetings helped in understanding and defining the steps which clean energy projects must undertake before getting clearance. The timeframe in the approval process is crucial for the CCMP development process as the associated costs with delays are then reflected in the transaction costs.

These interactions also helped in mapping the overall approval process and therefore in deciding the steps that the project developer needs to concentrate on or 'flag'. It also helped in making the roadmap more useful to the state government officials from AP and other states and potentially will facilitate faster approvals, which in turn results in lower transaction costs and leads to carbon finance for the projects.

IV. APPROACH / METHODOLOGY

Since inception of the activity in April 2001, there have been a number of changes in the international climate change dialogue and negotiations. The 6th (phase II) and 7th meetings of Conference of Parties have taken place in the interim. In these meetings, significant progress was made on the formulation of the criteria for CCMPs. Several international organizations have developed their own guidance documents to develop CCMPs and leverage market–based mechanisms. These documents, however, by and large, are purely CDM oriented and do not adequately cover the background in which Indian projects are developed. The GEP-CCS roadmap, therefore, would fill an informational gap and would serve as a clear and transparent resource document for Indian project developers. As larger project developers generally have better access to information, particularly on international practices and procedures, and have more resources to hire "turn-key" project consultants, this road map was envisioned as being of particular assistance to small size renewable energy projects.

A roadmap document is expected to serve various purposes. It should assist a lay enterprise in understanding the needs of capturing the GHG abatement aspects of a clean energy project: it must provide step-by-step guidance in structuring the CCMP. At the same time the roadmap should also clearly explain the meanings of the underlying concepts of CCMP and call attention to their importance so that policy makers, financial institutions and communities have a better understanding of the benefits and co-benefits of such projects.

The roadmap would provide a hands-on step-by-step guide to implementing and fulfilling the requirements for structuring a clean energy project or a conventional commercial project as a CCMP. It was decided in consultation among DA, GEP-CCS and USAID/India, that the document should be structured so that the primary section of the document will provide the step-by-step guide and the Annexure will provide the necessary background, underlying principles and analysis.

Finally, the Roadmap illustrates and documents the processes followed during the development of an actual CCMP to which DA and GEP-CCS provided technical assistance. This document also provides a template to capture information contained in a project Detailed Project Report to interest a carbon investor. Similar to an Information Memorandum, this template, which was developed under the GEP-CCS project, makes it possible for the CCC to present the summary of CCMPs for the consideration of investors.

The involvement of DA in this activity has provided them with more than a perspective in developing CCMPs for financial closure. The CCC has a more complete understanding of all the steps involved: the approval processes, the checks and balances; the financial analyses; the importance of documentation and the need for a very systematic approach. This Roadmap, along with the other "tools" provided by GEP-CCS for their tool-kit, will enable the CCC to provide more value added services to a project developer in formulation of their CCMP. This resource guide, used with skill, can serve to enhance the sustainability of the Climate Change Center at DA.

V. NEXT STEPS

The DA Climate Change Center and GEP-CCS will continue to work with additional project developers across India. The intention is for the roadmap document, once finalized, to be utilized by the CCC staff not only for their work with project developers, but also as a general resource document for DA's community work and policy advocacy. DA will also share to a larger audience their experiences in working with project developers and state governments while preparing the Roadmap document. This can either be done through a formal workshop or through interactions with stakeholders in other states, beginning with the five states identified at the selection stage. The Roadmap document would also be shared with the ministries of GOI who are part of the core group on climate change decision-making.

A Roadmap for Climate Change Mitigation Project Development

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DISCLAIMER

This document is not intended to substitute for the engagement of qualified professional(s) who are experienced in the development and structuring of a climate change mitigation project. Establishment of a credible baseline and monitoring and verification system are extremely critical for all CCMPs. These elements of development are complicated for all CCMPs. The quality of emissions reductions as perceived by the marketplace, and therefore the market value of the reductions, may be severely downgraded in the absence of the involvement of a skilled carbon baseline professional who has a proven track record of providing these specialized services. Similarly establishment of a sound financial analysis describing a project is a very important part of the project development process and should be done by competent professionals.

This document was developed to help project developers monetize a project's GHG emissions reductions and is not linked to any particular emission trading protocol. This roadmap document is based on regional, national laws and regulations in India and international regulatory structures. This document should not be construed as representing the official position of USAID, the Louis Berger Group and/or Development Alternatives.

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I. EXECUTIVE SUMMARY

Society for Development Alternatives (DA) is a non-governmental organization which is primarily engaged in research and advocacy for sustainable development. Under its Environmental Systems Division, and through its involvement with the Greenhouse Gas Pollution Prevention - Climate Change Supplement (GEP–CCS) project of the United States Agency for International Development/India (USAID) being implemented by the Louis Berger Group, Inc., DA operates a Climate Change Center. The activities of the Climate Change Centre are in three main areas: outreach and awareness building on climate change related issues, provision of technical assistance to develop climate change mitigation projects and research related to modalities and procedures for climate change projects and other issues related to climate change and its impacts. The objective of the Climate Change Center is to provide information to the SME business sector and policy makers to facilitate the development of both policies and on the ground projects that will reduce greenhouse gas emissions. As a part of its facilitation function, the Climate Change Centre has provided assistance to the Indian business sector in developing a portfolio of climate change mitigation projects (CCMP), particularly from the renewable energy (RE) sector such as biomass cogeneration, biomass gasification, small and mini hydro electric, wind energy, solar photovoltaic lighting and waste to energy projects. The Centre's project portfolio consists of projects from different areas of India. Working with the related policy environment and scenarios for a climate change mitigation project development process that exist in different parts of the country, the Centre has been able to identify gain valuable insights into the project development process from an on-the ground practitioner perspective.

During its work on these projects, the Climate Change Centre and the GEP-CCS team realized that there is a general lack of information about climate change mitigation mechanisms and processes among the different stakeholders (e.g. the business sector, policy makers, the financial institutions and the public). With the assistance of GEP-CCS, the Climate Change Centre, therefore, has prepared this guide, or "Roadmap" to both assist the business sector to better understand the process involved in bringing a climate change project from concept to market, and also to help financiers, policy makers and local communities gain a more complete understanding of how these market based mechanisms work to contribute to India's sustainable economic growth and social development.

This document, referred to the *Road Map* hereinafter, presents the salient features of climate change mitigation projects and the potential benefits and co-benefits of a climate change mitigation project to the various stakeholders. The document has been structured to layout the practical aspects of climate change mitigation project development in a straight forward manner. In addition, this Road Map can serve as a useful tool for project developers to develop their traditional commercial projects as climate change mitigation projects and thus realize a financial, or business benefit from the value of their greenhouse gas emission reductions. It may also provide guidance to appropriate government authorities at the local, state and central government levels who are responsible for approvals of such projects.

The Road Map presents a step-by-step approach to customize a commercial project as a climate change mitigation project. The Road Map also brings out the technological, environmental and social benefits and co-benefits of a climate change mitigation project. In addition to describing the benefits from a climate change mitigation project, the Road Map walks the reader through the project development process. By providing greater transparency, this Road Map can be useful for bringing down project transaction costs and thus enhance the financial viability of the project. In the development of this Road Map guide for climate change mitigation project development and for the validation of the Road Map, the DA-GEPCCS project team selected the state of Andhra Pradesh, based on selection criteria developed by the team. The team then interacted with the key Government officials involved in the development of clean energy/renewable energy projects and the renewable energy project developers, to understand the views of both the parties and identify the gaps in the existing policies and/or the institutional arrangements. This Road Map suggests measures required to fill these gaps in the policies and institutional frameworks to acheive a more enabling environment for implementation of climate change mitigation mechanisms.

II. ORGANIZATION OF DOCUMENT

Climate change and the mechanisms to address climate change are relatively complex issues and there seems to be a lack of awareness on these issues among the various stakeholders in national development. While climate change negotiations and debates at national and international fora have raised the awareness and understanding about climate change issues generally, in many countries there is still a lack of information on the ground level.

The Climate Change Centre of Development Alternatives and the GEP-CCS team, through their activities in the field of climate change, have developed certain expertise in the climate change mitigation project development process and the process of project approval at the national and international level. The team feels that documentation of these experiences in the form of a guidebook or a roadmap may be useful for the stakeholders to understand the process and to motivate the business sector to take a more proactive role in climate change mitigation process.

This "Road Map" presents the aspects of climate change mitigation projects and the potential benefits of a climate change mitigation project for specific stakeholders. The "Road Map" systematically describes the process for Climate Change Mitigation Project (CCMP) development and the approval procedures. This guide is designed to provide information on the practical steps of climate change mitigation project development, and the multiple tangible (financial, technological, etc.) benefits and the co-benefits (improved health, lower insurance rates, increased productivity) to improve the understanding of the various stakeholders about such projects. The purpose of the "Road Map" can be summarized as follows:

- to increase the understanding and interest of project developers and financial institutions about climate change issues
- to motivate the private sector to take a proactive role in climate change mitigation project development and to facilitate the process by providing a step-by-step guide.
- to provide more transparency on the process of taking a project from concept to approval, and by making the process more accessible, reduce the transaction cost and the time from concept to closure.
- to provide a reference for policy makers and the public sector on CCMP to better understand the benefits and co-benefits of such projects on a local, national and international scale.

The "Road Map" contains four main sections and an annexure describing the provisions of climate change mechanisms. The first section, an **"Executive Summary"**, addresses the purpose of the document, the audience for whom it is intended and the ways this Road Map can be utilized.

The second section, the **"Organisation of Document"** describes the structure and presentation of information in different sections and sub-sections to assist the user in accessing specific information.

The third section, **"Climate Change Mitigation Projects"**, has three main sub-sections :

- ***Introduction*** – which describes the concept of climate change mitigation projects
- ***Benefits of Climate Change Mitigation Projects*** - this sub-section presents the financial, environmental, technological and social benefits and co-benefits from a climate change mitigation project.
- ***Climate Change Mitigation Project Cycle*** - this area outlines the requirements and procedures necessary for a project to be qualified as a climate change mitigation project. In this sub-section, methodologies and options are also presented to assist the developers of traditional commercial projects explore how to capture and quantify potential greenhouse gas (GHG) emissions reductions in a manner that will enable them to benefit from these reductions through market mechanisms.

The fourth section, "**Climate Change Project Development Process**", has the following sub-sections:

- ***Project Conceptualisation*** – this sub-section discusses, in brief, the process of preparing a detailed techno-economic feasibility report.
- ***Technical Approval*** - this sub-section describes the various technical approvals required for a project and the relevant department/regulatory authorities dealing with those approvals.
- ***Other Necessary Approvals for the Project*** - other approvals required for the project such as environmental, land usage, and ground water usage approvals, among others, are discussed in this sub-section.
- ***Approval as a Climate Change Mitigation Project*** - The steps to be followed after the techno-financial feasibility portion of the project development process has been carried out are laid out in this sub-section. This sub-section also describes the process of endorsement from the national government, the submission to various carbon procurement tenders to obtain carbon benefits.
- ***Financial Closure*** - this sub-section describes the process of bringing the CCMP to financial closure with financial institution(s)

To develop these sections, the team of Development Alternatives and the Louis Berger Group, Inc who is implementing the Greenhouse Gas Pollution Development Project – Climate Change Supplement for the United Sates Agency for International Development/ India, has used real-life renewable energy projects and plotted out the process of developing a commercially viable renewable energy project as a climate change mitigation project. The lessons learned during the experience have also been documented for the benefit of future project developers. The "Road Map" also presents recommendations for creating an enabling environment for climate change mitigation project development.

Annexures

The CCMP development process is based on the current understanding of international market based mechanisms. The significance of various underlying concepts like sustainable development, risk analysis, technology transfer issues, experiences of various GHG Offset procurement tenders and a case study are enclosed in the Annexure as an aid to the project developer.

III. CLIMATE CHANGE MITIGATION PROJECTS

A. Introduction

Climate models predict that the global temperature will rise by about 1-3.5°C by the year 2100. Climate change is likely to have a significant impact on the global environment. In general, the faster the climate changes, the greater will be the risk of damage. The mean sea level is expected to rise 15-95 cm by the year 2100, causing flooding of low-lying areas and other damage. Stabilizing atmospheric concentrations of greenhouse gases will demand a major effort. Based on current trends, the total climatic impact of rising greenhouse gas levels will be equal to that caused by a doubling of pre-industrial CO2 concentrations by 2030, and a trebling or more by 2100. The United Nations Environmental Program financial institutions initiative has recently warned (October 2002) that losses as a result of natural disasters appear to be doubling every decade and have reached one trillion US dollars in the past 15 years. Annual losses, in the next ten years, will reach close to $150 billion if current trends continue. One way that the international community is tackling this challenge is through the United Nations Framework Convention on Climate Change (UNFCCC). Adopted in 1992 and now boasting over 175 members, the Convention seeks to stabilize atmospheric concentrations of greenhouse gases at safe levels. Through common but differentiated responsibilities, it commits developed countries to take measures aimed at reducing emissions. It further requires all countries to limit their emissions, gather relevant information, develop strategies for adapting to climate change, and cooperate on research and technology.

Countries and collaborative groups that include both the public and private sectors have not been waiting for governments to act. Many corporate entities and communities are undertaking voluntary initiatives to cut down GHG emitting activities or fund clean energy development in developing economies. Emissions reductions are already being traded, some emissions registries are place, there has been increased interest in the development of renewable energy and energy efficiency projects, and various market mechanisms are being employed These mechanisms are designed to stabilize the concentration Greenhouse Gases (GHG) in the atmosphere by reducing anthropogenic emission of GHGs, by using the power of the market to provide incentives for change.

Currently the developed countries are the major emitters of the GHGs To encourage and promote "clean" development in developing countries, and to assist developed countries meet their own emissions targets that individual countries commit to under the Kyoto Protocol, negotiations under the UNFCCC have also resulted in the development of several market based mechanisms like the Kyoto Protocol Joint Implementation (JI), Clean Development Mechanism (CDM) and International Emissions Trading (IET).

JI and the IET are between the developed country Parties, whereas the CDM is between a developed and a developing country Party. The purpose of the CDM is to assist Parties not included in the Annex I list of developed countries, in achieving sustainable development and in contributing to the ultimate objective of the reduction of GHG emissions and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments (QELRCs).

Besides the KP mechanisms, a number of bilateral and multilateral agencies like USAID encourage project based activities that help in reducing the emissions of GHGs and curtailing their rate of growth. Programs like PACT, PACER, EMCAT, TEST-CTI, GEP, ECO, SARI/E have been funded by USAID in India over the last two decades. Similarly, other agencies like DFID, ADB and World Bank also promote such activities.

As energy generation and its use are the main source of GHG emissions, the efforts to bring down emissions emphasize the use of cleaner technologies for energy generation such as natural gas, and renewable energy sources like wind, solar and water along with more energy efficient practices.

Countries committed to GHG emissions reductions are, therefore, concentrating on implementing projects in these focus areas.

A project activity to reduce the GHG emission compared to the "business as usual" scenario (BAU) is called a Climate Change Mitigation Project (CCMP). Companies with either an emission cap or voluntary target may invest in the CCMPs of the Project Proponent. The emissions thus reduced through the CCMPs are shared by these project partners. The developed country partners can credit the emission reductions against their QELRCs and the developing country partners can monetize these to supplement their national sustainable development activities. Thus, a CCMP is a mechanism for quantifying an asset that hitherto was not valued. Though the concept of CCMP is straight forward, in practice it involves a number of complex issues such as constructing the baseline; establishing additionality; addressing sustainable development concerns; monitoring the progress of a project, and verification and certification of the actual emissions reduction are involved in the process of monetization of carbon offsets.

B. Benefits Of A Climate Change Mitigation Project

There are multiple stakeholders involved in or affected by a CCMP and these stakeholders derive a range of direct and indirect benefits. Under a Project Finance structure, the project promoter in a developing country can benefit from the additional revenue stream generated through the monetization and sale of GHG offsets from project activities either in the form of certified emission reductions or reductions that help meet the voluntary corporate or State GHG targets. The investor in a developed country can benefit from the GHG offsets that might be procured at a lower cost in comparison with the costs to generate the same quantity of emissions reductions at other sites. The investor might also use the purchased carbon offsets to comply with emission caps at other sites.

Benefits to Project Developers

Through CCMPs the project developers can harness extra benefits in terms of finance available from potential carbon investors. This can increase the financial viability of the project by enhancing the Internal Rate of Return (IRR) of the project. An improved IRR can attract domestic and international financial institutions to fund the CCMPs. The carbon revenues will thus strengthen the overall revenue generation and help in replacing some of the higher cost funds, thereby reducing the Cost of Capital.

The additional revenues from carbon finance can also make the adoption of more advanced and efficient technologies (in comparison to the conventional / business as usual technologies) more attractive. In turn, the use of more efficient technologies can contribute to making a project more sustainable in terms of quality output and efficient operation. Utilization of advanced technology can also lead to more efficient use of scarce and or costly resources, which can also lower production costs.

Besides the tangible financial and technological benefits discussed above, a CCMP also offers numerous social and environmental benefits and co-benefits. Some of the benefits that are associated with CCMPs are:

- Increased capacity being built in the local community for the maintenance and replication of the cleaner production technologies.
- An increase in the income generation in the area and an emergence of collateral enterprises.
- A reduction in local environmental pollution.
- Health benefits, including a reduction in respiratory aliments, and increased longevity.
- Reduced health care costs, possibility of reduced insurance rates.
- Opportunities to leverage the funds generated through the CCMPs into community development activities.

Benefits to Developing Countries

CCMPs can provide benefits to developing countries through technology transfer and additional fund flows. They also supplement and support local and national sustainable development efforts and provide a host of co-benefits that improve the life and livelihood of the local population.

Benefits to Developed Countries

Developed countries and investors have an opportunity to acquire carbon offsets to meet their emissions reduction goals and obligations under variety of programs be it the KP targets or voluntary targets. An associated benefit for the manufacturers in developed countries may be the emergence of a market for energy efficiency and cleaner production technologies and new business opportunities.

Benefits for Project Developers in both Developed and Developing Countries

A positive image by companies who engage in CCMP projects can in turn deliver many co-benefits to those "champion" companies. These benefits range from an enhanced corporate image which can translate into better community relationships, to increased share prices, and increased customer and employee loyalty. Benefits can even extend to regulatory relief, or government policies that provide incentives for good corporate behaviour.

C. Eligibility Criteria for Climate Change Mitigation Projects

The basic premises of a CCMP are:

- the emissions reductions from a CCMP should be real, measurable and long-term
- reductions in emissions should be **'additional'** to any that would occur in the absence of the certified project activity

In order to establish these criteria, a baseline picture that describes the status in the absence of the project needs to be identified. The baseline situation provides an idea of the amount of GHG emissions that would have resulted had the proposed project **not** been implemented. This Business-As-Usual (BAU) scenario will result in certain amount of GHG emissions. The difference between emissions from the project activity and the business as usual scenario determines the emissions reduction. The project also should also justify that GHG reduction was also one of the major purposes of undertaking the CCMP, and that it does not avail itself of grant funds from a bilateral aid agency, meaning thereby, that it is financially **'additional'** to the committed Overseas Development Assistance.

Other important points of CCMPs:

- A CCMP that is targeting sale of the carbon offsets to an investor with a KP Target must obtain a Host Country approval from the Government. In addition, the Government of the country in which the investor is located may stipulate the approval procedure
- The modalities and procedures adapted in the estimation of baseline emissions, measurement and verification protocol should be transparent and should ensure efficiency and accountability through independent auditing and verification of project activities.
- Emission reductions shall be certified by a designated operational entity (DOE) that is internationally accredited. For projects undertaken under the KP market mechanisms, the DOE should be accredited under the UNFCCC and an independent entity.

D. Climate Change Mitigation Project Cycle

The CCMP has a number of requirements to fulfil, including the validation of the project, the registration of the project activity with the country government or a national registry, monitoring of the progress of the project, and the verification and certification of the GHG offsets, among other requirements. The steps in a CCMP cycle may be summarised as shown in Table 1. The Table also lists the principal parties responsible for carrying out each of the specific steps.

Table 1: The CCMP Cycle

Project Idea Note	Identification of a project concept and preparing the Project Idea Note (PIN)	Project developer
Host / investor country approval	Approval at the national level, consistent with domestic laws and priorities; Unless unilateral, investor approval is also required	Project developer, Designated Operational Entity (DOE) for KP related investments; carbon purchaser for voluntary programs
Project Design Document	Developing detailed project design documents including: • a baseline emissions estimation, • additionality assumptions, • sustainable development contributions, • a monitoring and verification plan • stakeholders opinion input • Term sheet in case of voluntary purchase	Project Developer
Validation	Third party validation of baselines and other project data to ensure the necessary transparency and credibility in the process for later verification and certified emissions reductions	DOE
Registration	Registration of the project activity with an international registry programme once it has received approval of the host country	UNFCCC CDM Executive Board (EB) or Registry programme on demand of DOE for the KP related investments; Carbon Purchaser in voluntary programs
Financing	Investor providing capital in the form of debt or equity; the investors may or may not be carbon buyers	Project developer, Domestic/International Funding Agencies

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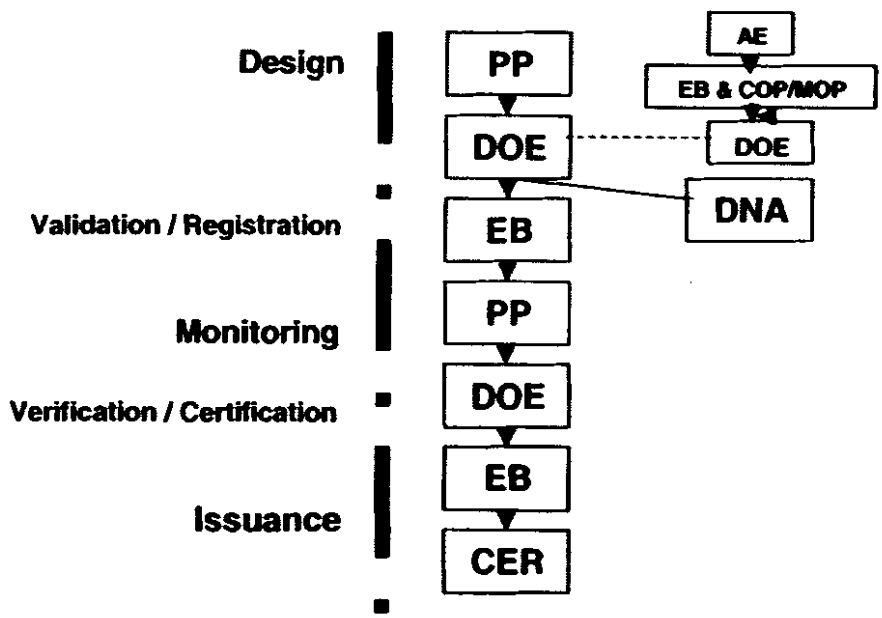
Implementation	Erection, commissioning and commencement of operations	Project developer
Monitoring	During commissioning and further operations, the progress and GHG offsets are to be monitored	Project developer
Verification	An independent assessment of project performance against the validated design, including the baseline is made.	DOE or buyer
Certification and issuance of CERs	Based on the verification report, the international registry programme certifies and issues CERs	CDM EB / Registry programme

The project design document involves a number of activities within itself such as baseline design, establishing additionality, preparing a monitoring plan, arranging environmental impacts statements according to host country regulations, and documentation of approval.

The CCMP cycle as proposed under the CDM can be accessed at UNFCCC website http://unfccc.int/cdm/cdmpdd.htm. The same is indicated below.

Figure 1 : CDM project activity cycle



IV. CLIMATE CHANGE PROJECT DEVELOPMENT PROCESS

A. Project Conceptualization

The CCMP development process can be integrated with, or layered onto, conventional project development. To begin with, a screening criteria should be applied to the project under consideration to determine whether or not the project meets the basic requirements of a climate change mitigation project. Illustrative criteria used by the DA and GEP team in selecting projects is given in Box 1. It may be noted that all the projects that envision harnessing a clean source for generation or the use of energy, which is the main source of GHG emissions, should meet this selection criteria. In addition, the activities that help reduce GHG emissions from urban activities, if designed properly, would also meet the CCMP selection criteria.

BOX1: GEP-CCS CRITERIA FOR DEVELOPMENT OF CLEAN ENERGY PROJECTS (CEP)

GEP-CCS projects should have measurable and clearly identifiable GHG emissions reductions and/or should lead to avoidance of GHG emissions. Projects should employ a technology option that is better than the business as usual options in terms of GHG emissions (i.e. specific energy consumption) employed in India. An illustrative list of the broad criteria that can be used to identify clean energy projects appears below:

A. Categories of CEPs

Renewable energy technologies for grid feeding/replacing:

Biomass-combustion, gasification, bio-methanation power and thermal applications, Cogeneration of power/steam from bagasse or other agri residues;
Solar Thermal- medium temperature applications;
Solar PV-small /medium size systems;
Mini hydropower generation from small dams/run of the river;
Waste to Energy-MSW methane generation from landfill/bio-methanation, sewage based biogas plants for power generation or other applications, industrial waste to power/thermal applications

Energy Efficiency Improvement technologies:

Waste heat recovery-WHR from industrial flue gases or wastewater for power generation or thermal applications,
Renovation and modernization (R&M) of old power plants to improve efficiency, industrial process efficiency improvements mainly in the utility system but also in the production process in key sectors (i.e. cement, steel)

Fuel switching:

Switching from a GHG emission intensive fuel such as coal to a less GHG intensive one like natural gas, replacement of fossil based fuels with renewable fuels like oils from plants.

B. Size of the Project

Small and Medium size i.e. non-utility projects (distributed generation preferred), Individual criteria Mini hydro □ 25 MW, bagasse based cogeneration with steam pressure > 65 Bar. The minimum investment in project is flexible. [However, this will be subject to the needs of funding sources]

An additional set of criteria in this respect is the size defined for fast track projects at the UNFCCC Sixth Conference of Parties at Bonn:
Renewable Energy projects □15 MW
Energy Efficiency projects with equivalent savings □ 15 GWh
Other mitigation projects with carbon potential □15 Kilotonne CO_2/year

C. Technology Source

Innovative technological approaches are preferred. However, unproven technologies should not generally be considered due to the higher technology risk. Clear cut licensing with the technology providers is always required.

D. Promoters

Should be genuinely interested in the project, resourceful and have good track record with existing lenders/bankers. Should possess or be ready to acquire the necessary experience and expertise for undertaking the proposed project.

E. Service Off Take and Provision

Should have sound service off takers (e.g. power purchasers) or should have proper credit enhancement. In case of power generating for grid supply, a Power Purchase Agreement with proper risk mitigation options should be in place. In case of supply of fuels and other services, proper agreements like FSA
should be in place.

F. Funding

Projects may take recourse to the promoters' balance sheet, corporate loans, or could be project financed on a non-recourse basis and with equipment finance in the form of leases or asset lines of credit depending on the needs of the project. The project should exhibit reasonable performance indicators like IRR/payback etc. to merit consideration by lenders/investors.

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Conceptualisation of a project activity and preparing the project documents involves the following steps:

i) Needs Assessment

Project conceptualizations follow a well-defined process, which may vary in extent from company to company. The Figure 1 below illustrates the process followed generally.

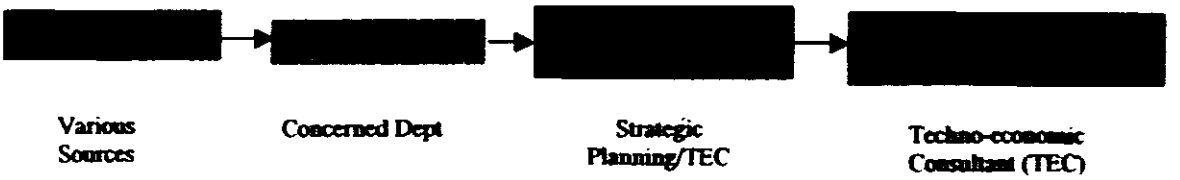

Figure 1: Project Development Process

A rigorous needs assessment is required to ensure that proposed project activity is consistent with company's business strategy, as well as with local environment needs, to ensure its overall sustainability as an initiative and how well it fits with the development requirements of the region. An accurate assessment of demand/supply gaps for the products/services provided by the proposed project must precede the decision to implement the project. The project developers need to understand the economical, environmental, social and technological scenarios of the region. The CCMPs should, therefore, follow the steps mentioned in Figure 2 in further developing the project concept:

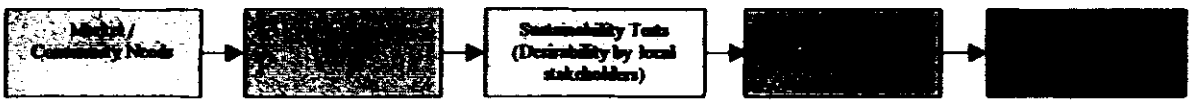

Figure 2: Selection of Project Concept

A proposed project addressing as many of the above parameters as possible will be positioned more favorably to obtain host country approval.

ii) Availability of Raw Material and Technology

After assessing the actual need of the community/region, the project developers should research the availability of raw materials and suitable technology. While making such an assessment, the project developers should ensure that these are available on a sustained basis. Another important area to consider in the selection of technology, is that the technology should be such that its operation and maintenance are not more complex than the ability of the local work force to be trained to operate and maintain such technology. Depending on the investors and countries involved, a technology with high replication potential might be given preference.

To ensure the availability of raw materials on a sustained basis, a project developer should have supply agreements (such as the fuel supply agreement in case of power projects) with relevant parties. These agreements also serve to minimize the risk associated with the availability of raw material. A memorandum of understanding with and/or a contractual performance guarantee by the technology providers will also help to ensure the availability of technology for the proposed activity.

iii) Availability of Financial Resources

The project developers need to carry out a financial viability assessment for the project. This study should cover the detailed financial risk assessment and provide full details on the mitigation measure aspect of the project to make it attractive for the funding agencies. In analyzing the financial viability of the project, it is highly desirable that the project should be self-sustaining without the carbon leverage. The sales potential of the carbon offsets should be calculated and considered as an **additional** revenue stream, that will enhance, not determine, the viability of the project

The financial impacts of the project on the community and the co-benefits (e.g. improved health which translates to reduced health care costs and increased productivity) may give an added advantage to CCMP developers. Project developers should, therefore, highlight the community and social benefits in their documents, with supporting facts and figures from similar projects.

iv) Techno-economic Feasibility Study - Preparation of the Detailed Project Report

After the overall needs assessment, and the assessment of financial viability and resources, raw material and technology options, the project developers should prepare a detailed techno-economic feasibility report or Detailed Project Report (DPR), for the proposed project for the life cycle of the project. The DPR in case of a CCMP should contain the following information, in addition to the information which a conventional DPR normally contains.

a) Determination of the Base Line
b) Calculation of the projected Carbon Emission Reduction
c) Determination of the Sustainable Development Indicators to assess the sustainability factors of the project
d) A monitoring and verification plan developed as per the norms and regulations set by Government of India and international boards and entities like the World Resources Institute, ISO or the UNFCCC - CDM Executive Board

The GEP-CCS project developed a computational toolkit for the development of CCMPs. The project developers are encouraged to utilize these and/or the services of an experienced facilitator like the Climate Change Centre, at Development Alternatives, to incorporate the required supplements in their DPRs.

B. Technical Approval

i) Registration of Application

After the successful completion of the project conceptualization stage, the project developers need to apply to the state nodal agency [like Non-conventional Energy Development Council of Andhra Pradesh (NEDCAP), for renewable energy projects in Andhra Pradesh] with a copy of the DPR for the technical approval of the State Government.

ii) Acceptance of the Application

After evaluating the project details and conducting the requisite field survey, the state nodal agency either accepts or rejects the application. The state nodal agency for accepting a proposal looks at the following parameters:

- Suitability of the project in the region
- Technological soundness and compatibility
- Raw material availability in a sustainable manner

The acceptance of the application indicates the technical suitability of the project.

iii) MOU between State Nodal Agency and Project Developers

Upon the acceptance of the project by the appropriate state nodal agency, the project developer has to sign a Memorandum of Understanding (MOU) with the state nodal agency in order to achieve the financial closure within a certain period. There is a time limit specified for financial closure, however there is generally some flexibility in terms of extensions allowed by the concerned agencies.

In the case of renewable energy projects in the state of Andhra Pradesh the project developers have to pay a service charge of Rs. 1 Lakh / MW to NEDCAP. The project developers have to also pay Rs. 25,000/- per MW towards financial closure within 6 months, which can be extended up to 18 months.

C. Other Necessary Approvals

Besides the technical approval from the state nodal agency, the project developers have to get additional approvals from various State Departments like the pollution control board, land usage agency, ground water usage, etc. If the project is sited within a forestland, clearance from the forest department will be necessary. Similarly, if it borders a highway, clearance from the Highway Authority is required. Some typical necessary clearances that a project should have are listed below:

i) Clearance from the State Pollution Control Board (In case of Andhra Pradesh – Andhra Pradesh Pollution Control Board)

ii) Clearance from the State Ground Water Board

iii) Land Use Clearance from the State Land Department

This Road Map provides a check list for approvals based on a real project case study. However, prior to initiating a project, the project developer should ascertain from the concerned state government agencies if any additional clearances will be required.

Power Purchase Agreement

In some states of India, a private power producer cannot sell power directly to a third party. To transfer the power, therefore, the project developers have to have a Power Purchase Agreement (PPA) with the licensed power utility i.e. State Transmission Company. A proper PPA with appropriate clauses and provisions that satisfy lenders is essential as it is the only mechanism to ensure the revenue streams under a Non-recourse based project structure. With formation of the State Electricity Regulatory Authorities in many states, it is essential to have the PPA approved as per the procedures laid by the SERC.

In the state of Andhra Pradesh, the Commissionerate of Industries acts as a single window clearance centre to deal with the general approval stages of any project. However, the project developers also have the choice of getting the required approvals from various departments separately. In other states, this separate approval process may be the only available option

D. Requirements for Climate Change Mitigation Projects

To be considered a CCMP and to accrue the benefits of the carbon offsets generated, the techno-economic feasibility report of the project should contain information on baseline design, additionality, emissions reduction, sustainable development concerns, etc. How this information should be integrated into a project is discussed below.

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i) Baseline Development

Establishment of a proper baseline is of tantamount importance as the baseline will define the frame of reference for establishing the additionality of the project and the emissions reduction. A **baseline** represents the counterpoint picture of "what would otherwise have been the scenario in the absence of the CCMP". Thus, it depicts either the current business-as-usual scenario for the industry and/or takes into account the probable and most likely scenario considering the proposed development plans in the concerned sector. (Baselines are subject to review and updating over time) Before proceeding to identify the baseline, it is essential to fix the **Project Boundary**, the area or organizational entity considered when generating and measuring emissions. For a renewable energy project, for example, the project boundary can be determined by understanding the nature and extent of the potential coverage of the project's services. In the case of a project which will supply power to the grid, the flows of power and the current source of supply to that particular grid need to be determined. In an energy efficiency project, for example, the project boundary might be the output from one boiler, or one unit, or an entire facility. Once the project boundary is established, it is possible to establish the alternate scenarios.

The baseline should preferably be defined on project-by-project basis for large-size projects. However calculation of baseline emissions on a project-by-project basis can increase the transaction cost of the project. Small-scale projects as defined in Box 1 may not be able to absorb these costs. For such projects, a sectoral or technology matrix/benchmark baseline may be used. As per the accords reached at Bonn for power generation projects smaller than 15 MW, energy efficiency projects saving <15GWh energy and other mitigation projects leading to <15 kiloton of CO_2 p.a., a standardized regional or national level baseline may be considered. Alternatively, for smaller projects, it might be more feasible to bundle similar projects to determine a baseline for the entire group, and to lower transaction costs.

Various approaches to establish baselines as proposed by different practioners and for different types of projects are discussed below. According to the type and size of their own projects, the project developers can choose to employ one of these methodologies.

- **Project Specific Baselines**

  Project-specific baselines evaluate emission reductions from a particular project by using project-specific assumptions, measurements, and simulations. In the energy sector, for example, key parameters would include changes in fuel and technology over the life of the project. The developments that might occur during the period of operation under consideration can be forecast to some extent using Planning Commission or Central Electrical Authority plans and surveys.

  The project-specific baseline may be subject to considerable uncertainty, which can lead to uncertain estimates of the 'environmental additionality' of the CCMP. The largest component of this uncertainty is the choice and timing of the baseline fuel and technology options.

- **Sectoral Baselines**

  Sectoral baselines are aggregated baselines associated with certain activities, often at a sectoral or sub-sectoral level. These baselines are sometimes known as benchmarks, activity indicators or intensity standards. In the energy and industrial sectors, the baseline will be measured by carbon emission intensity per unit service /product (e.g. tones of carbon per Giga-watt Hour or ton).

  Sectoral baselines can encompass baselines at differing levels of geographical or sectoral aggregation. At each level of aggregation, the baseline can be based on historical data or on projected data. At a disaggregated level, for a particular technology, sub-sector and/or country, a sectoral baseline can require almost as much detail as a project specific baseline.

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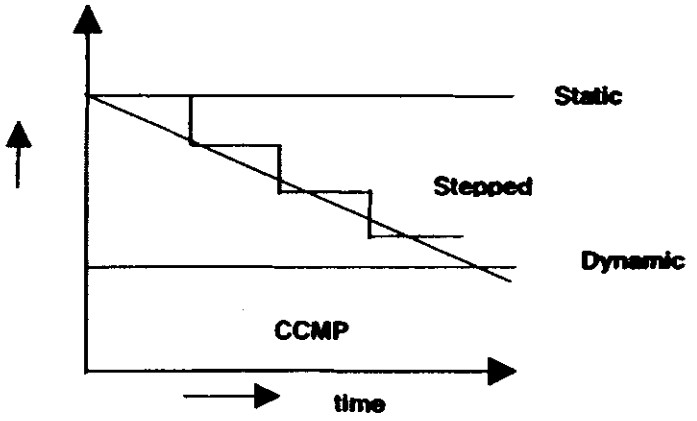
- **Static versus Dynamic Baselines and Crediting Period**

Baselines can either be fixed for the lifetime of the project or revised during the project operation. Static baselines are predictable, and thereby reduce the uncertainty surrounding the carbon credits generated from a CCMP. Static baselines are also less of an administrative, monitoring and reporting burden than dynamic baselines. They require only one baseline estimate and therefore incur lower transaction costs.

Dynamic baselines are baselines that have to be re-estimated at certain intervals during the project's life. Once they have been revised, subsequent emission reduction credits will be claimed against this new baseline. This allows the baseline to reflect more accurately the 'best estimates' for the key parameters. Dynamic baselines can be adjusted downwards if the environmental performance of the sector/process improves. This ensures the continuing environmental additionality of a project more consistently than static baselines.

Figure 2 : Stepped Base Line



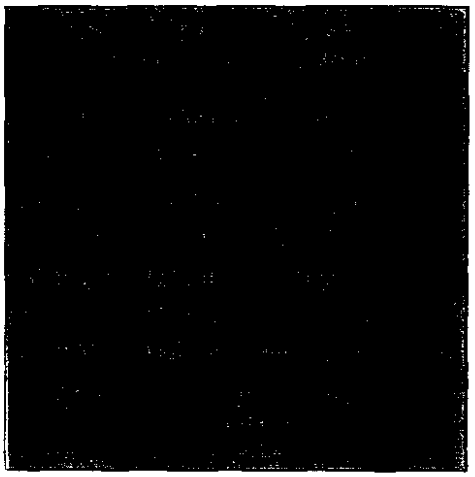
A stepped baseline is a baseline which undergoes periodic regular revision at a pre-determined interval (i.e. 5 or 7 years). Due to regular improvement of the technologies and more efficient utilisation of natural resources, the emissions in the business-as-usual case should follow a decreasing trend.

The choice of the baseline is dependent on the proposed funding options. For investors with caps, modalities as stated under the UNFCCC rules have to be followed. For voluntary investors, the baseline determination depends on norms fixed by them.

Designing the Baseline

The important points to remember while designing the baseline are:

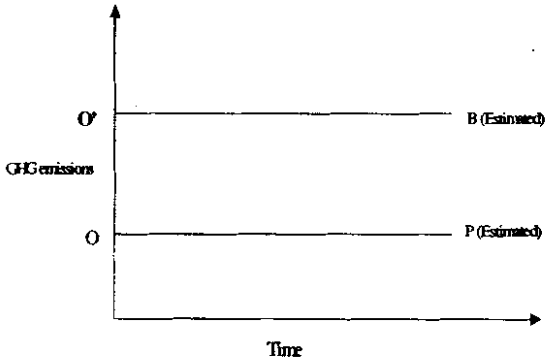
- The methodology for determination of baseline should be homogeneous and reliable;
- The baseline should be precise, transparent, comparable and workable;
- Avoid systematic overestimation – the estimation must be made on an accurate conservative basis
- Potential errors should be indicated;
- Systems boundaries of baselines should be established;
- Interval between updates of baselines, if considered, should be clearly described;
- The role of externalities should be brought out (social, economic and environmental);
- Include historic emission data-sheets wherever available; Lifetime of project cycle should be clearly mentioned;



ii) GHG Reductions Estimation

The methods for projecting CCMP emissions differ, depending on the sector and the type of project. The graph below illustrates the conceptual framework surrounding baselines and environmental additionality. The lines O'B and OP show the greenhouse gas emissions without-project and with-project over time. Both O'B and OP are estimated prior to start of the project. The difference between the two lines, O'B-OP, is the greenhouse gas emissions reductions that the CCMP could claim.

Figure 3 : Emissions Baseline And Projected Emissions



O'B: Estimated GHG emissions without project (baseline)
OP: Estimated GHG emissions with project
O'B-OP: Estimated GHG emissions savings

During the implementation of the CCMP, the emissions from the project would be measured, verified, and reported annually. The line OP shows these emissions. Carbon offsets(CERs or simply tons of CO2e) are credited according to the emissions reduced as compared to the baseline – this difference being represented by any two points on the lines OP and O'B at the same point in time.

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Steps to estimate emission on a BAU basis

In the energy supply and demand sectors, a project developer would take several steps to estimate future emissions for either the baseline or for their project. These steps are briefly described below.

- **Step 1: Establish the Project Boundary**

The project boundary consists of the temporal and spatial domain within which the greenhouse gas emissions are estimated and monitored. This domain may vary for different attributes of the project. Determining the physical and conceptual project boundary is the first step in estimating emissions for both reference scenario (the baseline) and the CCMP scenario. The boundary should be so defined that it minimises the possibility for leakage and identifies all of the relevant sources and sinks (*i.e. areas that absorb CO2 like forests*), for the greenhouse gases that may be impacted by the project.

- **Step 2: Project Future Activity Levels**

The project developers should be able to define the business as usual scenario. Possible future improvements in the business as usual scenario should also be taken into account for a realistic estimate of GHG emissions reduction. Historical trends may be useful, but are not sufficient to forecast what is likely to occur in the future.

The CCMP developers should also be able to forecast GHG projections for their projects based on a similar set of assumptions

- **Step 3: Use Energy Intensity to Project Future Energy Use**

For both the cases i.e. the CCMP and the business as usual, energy intensity should be taken as the indicator for establishing additionality and emissions reductions. Energy intensity is the amount of energy per unit of useful output – for example the amount of energy used per tonne of steel produced, or per passenger kilometre travelled.

For either the project or baseline case, projecting future energy use requires an understanding of how technology is likely to change.

- **Step 4: Use Emissions Factors to Project Future Emissions**

Once the demand for different energy types is known, the quantity of greenhouse gases emitted per unit of energy consumed can be calculated. This is called the emissions factor of a fuel, and is usually expressed as tonnes of carbon (or carbon dioxide) equivalent per unit of energy. The exception to this rule is an energy source such as electricity, where there are primary energy losses (and hence additional emissions) in the production of the energy carrier.

For fuels such as coal, the amount of coal needed multiplied by its emission factor would give the emissions figure. The standard emission factors for various fuels are given in the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual. Emission Factors of Typical fuels as provided in the IPCC Guidelines are given in the Annexure to the Road Map.

For electricity, there is a need to know how much coal or other fuel was used to produce the electricity. This can be estimated by knowing the losses in end use, distribution, transmission and the thermal efficiency of the individual generation plants that supply power to the grid. This estimation can be simplified by referring to the data published by the pertinent agencies like the Ministry of Power, the Planning Commission and other key ministries.

Emissions of other greenhouse gases than carbon dioxide, (e.g. methane in case of municipal solid waste to energy projects) can be converted to a carbon dioxide equivalent by multiplying by the global warming potential (GWP) of the gas. (GWP is the measure of relative potential of the other GHGs with respect to CO2 in causing warming through atmospheric radioactive forcing.) Once the changes in energy use and the type of energy used is known,, it can be converted to total greenhouse gas emissions using the Global Warming Potentials. The global warming potential of the major GHGs are given in Annex V.

iii) Describing the Additionality

A fundamental criterion for CCMP eligibility is that projects reduce emissions in a way that is considered 'additional'. This means that the project has to demonstrate that these reductions would not have happened without CCMP.

According to the guiding principles of the CCMP, developers must demonstrate project additionality. Environmental additionality means that the project has to deliver environmental benefits through greenhouse gas emission reduction. To be eligible for environmental additionality, the project developer has to identify and document the measures that reduce emissions, but exclude measures that would have been introduced anyway (BAU).

The project developer will need to justify that the technology employed is one of the best available options in the techno-economical situation of the region and that it is more efficient in terms of resource utilization, energy usage and should have the least negative impact on the environment. Technological comparison could be made at the local, national, and regional level, against pre-established benchmarks.

The financial additionality aspect addresses whether or not the project financing is in "addition" to funds already allocated by the investor country to ODA (Official Development Assistance).The principle behind financial additionality is that CCMPs should not divert or decrease already scarce development aid. The financial additionality criterion includes bilateral ODA and multilateral grant funding. In general, it is recommended that projects that receive ODA funds as defined under the OECD guidelines not be proposed for funding under the cap based investments.

iv) Development of M and V Plan

The project developers need to develop a Monitoring and Verification Protocol for monitoring their projects. This Protocol should meet the approval of the host country government and should be validated by a DOE. While there is no one international standard guideline yet for a Monitoring and Verification protocol, a number of protocol are being developed and employed. One of the most utilized being the GHG Protocol developed by the World Resources Institute and the World Business Council for Sustainable Development. The Organization for International Standardization is also working on protocols that will follow its ISO series. The executive board under CDM is also expected to take up the question and formalize such a Protocol in the future. As per the Marrakech Accord, the broad outline for the monitoring and verification protocol is as follows:

- ***Categorization of Projects*** - The host country needs to specify some broad categorization of the projects undertaken by the country. Optimally, this categorization should be standard across the globe to facilitate the decision making process for international investors and other stakeholders. In the absence of comparable or uniform categories, there will be difficulty in validating projects.

- ***Baseline Design*** - The project developers should clearly, and in a transparent manner, describe the methodology for baseline development. This is very important for operational entities to validate that baseline is the best estimate of emission in the business as usual scenario.

- ***Monitoring Methodology*** - Monitoring methodologies should provide an accurate measurement of actual emission reductions as a result of the project activity. The rigour involved should, however, take into account the need for consistency and cost-effectiveness. Decision trees and other methodological tools, where appropriate, should be considered to guide choices in order to ensure that the most appropriate methodologies are selected, taking into account relevant circumstances.

Within the project boundary, methodologies for estimating emissions of all the GHGs should be described. The description may also involve the possible leakages and spill over.

The monitoring plan must incorporate all project factors that are of importance for controlling and reporting of project performance. It should clearly identify the frequency of, as well as the responsibility and authority for registration, monitoring and measurement activities.

In the monitoring plan the project proponent should describe the methods it will employ for data registration, monitoring, measurement and calibration.

Wherever possible, internationally recognized methods for monitoring, measurement and calibration should be applied. When other methods are used, the project organization shall clearly establish conformity or correlation between the methods used and internationally recognized methods. Records proving method validity and accuracy shall be kept and be available on request.

Where applicable, the methods used for quality assurance of monitoring and measurement activities should be described. Where deemed necessary, accredited laboratories or inspection bodies should be used for monitoring and/or measurement.

Where statistical techniques are used for recording, monitoring and measurement these shall be documented and used in a conservative manner. The importance of the monitoring activities can not be underestimated, as the quality of information provided through these activities and the due diligence with which it is provided will govern the both the financial benefits that can be realized from the project through the sale of carbon offsets and the attractiveness of the project to investors and other stakeholders. .

E. Financial Analysis of Climate Change Mitigation Projects

Carbon credits can improve the financial viability of conventional projects that have the potential for GHG emissions reductions. Through the sale of carbon offsets, a CCMP can generate additional income over a conventional project. To realize these financial benefits, there will be necessary expenditures for validation, registration, monitoring and verification, among other costs.

i) General Financial Analysis

- **Costs and Benefits**

The basic technique for determining whether or not a CCMP strategy (or any particular strategy) is viable for a specific project is to look at all the costs and potential revenue streams. An incremental analysis of the project prior to and after considering the carbon credits will provide the decision strategy for the financial structure of the project. The first step in this process is to construct a capital cost budget and a cash flow chart, which reflect all of the costs and revenues related to the project. The cash flow consists of the following:

- ***Capital costs*** - These are all the capital expenditures required for implementing the project. For large projects, the capital expenditure may spread over several years. Future replacement and rehabilitation costs should be incorporated into capital costs. Capital costs include both generic investments as well as any specific costs for equipment that reduces GHG emissions.

- ***Operating costs*** - Operating costs are generally divided into fixed costs and variable costs. Fixed costs are those that are incurred regardless of how many units are generated. Variable costs are costs that vary according to the project output (e.g. the cost will be higher for greater units of electricity generated in case of power projects).

- ***Revenues*** - Project Revenues are based on the products and services delivered by the project and the manner in which the tariff and other streams are built. These may include initial returns, monthly fixed charges, and charges proportional to sales. For non-energy projects they could include service revenue or sales of products (e.g. timber) by the project. Income from the sale of carbon offsets is an additional revenue stream for CCMPs.

- ***Interest payments and depreciation*** - If the cash flow analysis includes capital expenditure in the year it is incurred, then it is not necessary to include depreciation. If the discount rate used reflects the cost of capital for the project developer (which could be a mix of debt servicing costs and returns to equity investors), then interest need not be included separately as it is incorporated into the discount rate. If estimating the internal rate of return, however, the interest costs should be included as part of the cash flow.

- **Project Lifetime & Residual Value**

The lifetime of the project has to be defined. Usually the lifetime chosen is the expected lifetime of the assets. If the lifetime is longer than the expected age of the assets, replacement costs must be factored in. In some cases assets can be expected to be useful for many years, given appropriate maintenance and rehabilitation. Many times however, the time span considered in financial analysis is a period in which the debt commitments are met, asset depreciation is over and the equity stakeholders are serviced uniformly.

At the end of the lifetime, the assets will probably have a residual value, meaning they can be sold for a certain amount. If the lifetime is reasonably long, this residual value can be ignored. However, if there have been asset replacements during the course of the project, it is reasonable to include a residual value for these assets, based on their remaining lifetime.

- **Net Present Value and Internal Rate of Return**

Two tools for assessing the attractiveness of the project are net present value (NPV) and internal rate of return (IRR). The net present value is the present value of the cash flows, representing all costs and revenues, over the lifetime of the project.

$$NPV = \Sigma[Present\ Value\ (cash\ flow)]$$

The cash flows and the discount rate are needed to calculate the NPV. The cash flow each year will reflect the net impact of the benefits and costs in that year. Benefits are treated as positive numbers and costs as negative numbers, so positive NPV reflects the value created by the project. A project is considered financially viable if the NPV is positive, and the magnitude of NPV reflects the total financial value created by the project. Figure 4 shows cash flows for a typical investment project.

Normally, the discount rate is taken as the cost of capital, which indicates the rate at which funds are available to the firm, plus a risk premium. If the return on these funds from the CCMP is better than their cost, then the investment will be considered more viable. The NPV analysis enables this analysis while considering the time value of money.

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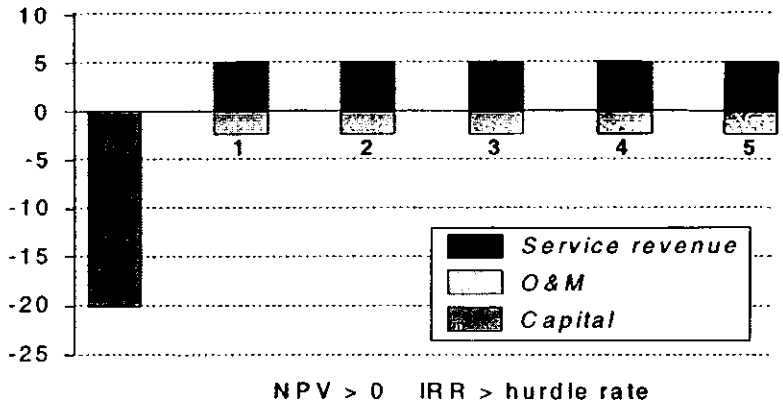
Figure 4 : Typical project financial analysis



Source: Randel S. Fecher

The discount rate which makes the NPV = 0 is known as the IRR. If the NPV formula is used with the IRR, the discounted costs will equal the discounted benefits. The IRR is useful because it can be compared to the cost of capital for the investor, or any other benchmark rate of return that the company targets. If the IRR of a given project is greater than the target (often called the hurdle rate) then the project is attractive for the investor. An investor would not choose to invest in a project if its IRR was below the hurdle rate.

The incremental cash flow resulting from the sale of carbon will increase the IRR of a project and make the project more attractive to a funding agency for investment.

- **Sensitivity Analysis**

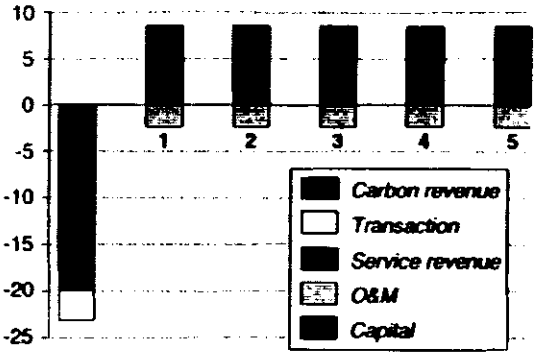
To check the sensitivity of the indicators to key parameters that affect the project performance, it is important to vary some of them between reasonably expected values. The selection of parameters is specific to the concerned project and is based on the experience of project developers/FIs etc. Some of the commonly tested parameters are price of the main product and by-products/services, demand of the product, etc. The analysis is often very sensitive to discount rates, so it is also important to test the results across a range of discount rates.

ii) Additional Costs & Revenue for CCMPs

A CCMP will have both additional direct financial benefits, e.g. the revenue from the sale of carbon credits, and additional costs. The amount of carbon revenue depends on the number of credits the project generates and the price per unit of carbon credit. Because the potential investors will have a wide choice of project opportunities, the Indian project developers must estimate the costs and benefits realistically and minimize the controllable transaction costs. This is discussed in more detail below.

The additional costs of CCMPs relate to three requirements: the cost of developing a CCMP document and getting it approved, the cost of monitoring and verifying the emissions reductions and the adaptation charges to be paid in case of KP related investments. All of these costs must be borne by the project, and therefore will affect the returns to the investor. Including additional costs and benefits in the financial analysis modifies the cash flow as shown in Figure 5

Figure 5 : CCMP cash flows



Source: Randel S. Fecher

While the basic principles of the NPV and IRR analysis remain the same, the additional sources of revenue and project costs must be included. If the additional costs outweigh the carbon revenue for a particular conventional project, then turning the project into a CCMP would not be financially viable.

- **Transaction costs:**

  - ***Project development and approval*** - A CCMP feasibility study must include a baseline analysis and a proposed monitoring and verification plan. These incur additional costs that the project development has to bear. Other costs might include getting the project approved by the host country government and registering the project or offsets with international registry programmes such as the CDM Executive Board.

  - ***Monitoring, verification and certification costs*** - A CCMP has to undergo monitoring, verification and certification of the GHG emissions reductions from the project activity. This may lead to additional capital and O&M costs. The monitoring is to be carried out by the project developers but these results have to be verified by an independent internationally accredited Operational Entity (OE). An OE, like an auditor who verifies a company's finances, needs to have a professional accreditation that is trusted by the GHG market.

    Monitoring and verification are critical for the issuance of the carbon offsets. If a project is not properly monitored and verified, it will not result in issuance of these instruments, which would make the offsets valueless on the open market.

F. Application to GoI for Endorsement as CCMP

The Detailed Project Report with the climate change supplements incorporated is submitted to the nodal ministry of Government of India depending on the nature of the CCMP (i.e. the *Ministry of Non-conventional Energy Sources would be the nodal ministry for any renewable energy project)* with a parallel submission to the Ministry of Environment & Forest (MoEF) which is the authorizing ministry for any climate change activity in the country. The two authorities review the project and on the basis of their feedback, MoEF issues host country approval for the project (*A National CDM Authority has already been convened by the Govt. of India to facilitate CCMPs. The National CDM Authority consists of representatives of the different concerned ministries)*

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Depending on the type of investors, after receiving the approval from the host country (Indian) government, the project developers may submit it to the international registry program (like the CDM Executive Board of UNFCCC or to private registries in case of voluntary investors) for registration as a CCMP. After the registration of the project as a CCMP, or in parallel while the registration process is proceeding, the project developer can start marketing the offsets to various Carbon Funding Institutions to get project funding.

A number of private organizations (like Oregon Climate Trust, PCF, BC Hydro, Canada; and CERUPT, Netherlands.) have already floated tenders for purchasing carbon offsets for developed as well as developing countries. As the standard guidelines for developing and funding CCMPs are evolving, these organizations have based their guidelines for approval of projects on the current understanding of different mechanisms and negotiations. Some of these guidelines are attached in the annexure as a ready reference for the project developers.

G. Financial Closure

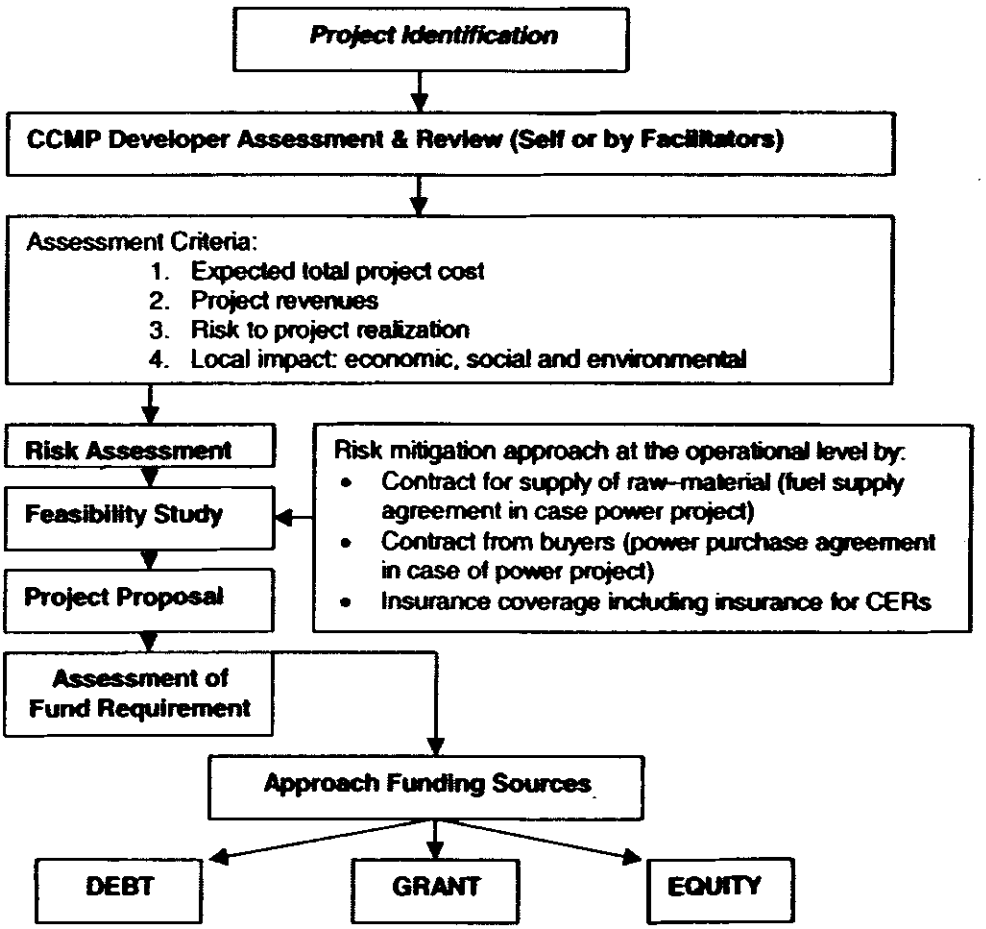
After acquiring the above clearances, the project developers have to submit the project to different financial institutions for funding. This submission is generally done in two stages. At first the Project Concept Note or Initial Screening Report (ISR) is submitted to the financial institution and after their acceptance of the concept note, which is technically the Detailed Project Report, the project is submitted for final consideration.

Renewable energy projects are eligible for special financial benefits in some cases. To qualify for such financial benefits, the project developers have to submit the project to the concerned departments in the respective state governments and to the Government of India. For example, a renewable energy project will have to be submitted to the Ministry of Non-conventional Energy Sources to be considered for financial subsidies*.

The projects involving sale of power to the utility will have to negotiate a power purchase agreement (PPA) with the utility. The PPA has also to be endorsed by the concerned State Electricity Regulatory Commission (APERC, in case of Andhra Pradesh). Beside the other standard clauses, it is important to add clauses clarifying the ownership of Carbon Offsets in this agreement so as to reduce the risk during the sale of these offsets.

* The Project Developers must ensure the source of funds that the ministries would use due to requirements of ensuring financial additionality

Figure 6 : Path Diagram for the Risk Assessment of CCMPs



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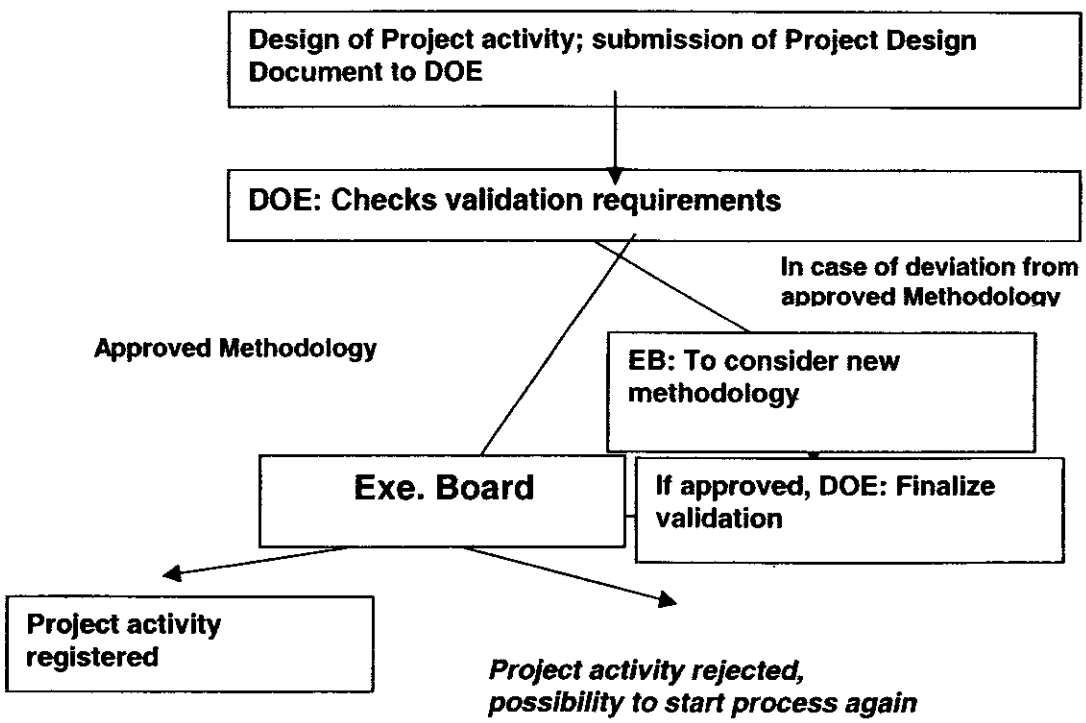
H. Validation & Registration through Independent Operational Entities

Validation is the process of independent evaluation of the project design document by a third party designated as operational entity to impart transparency to the project development process in general, and to avoid generation of invalid GHG reductions. Registration is the formal acceptance as a CCMP by the national/host government and international registry programs. Registration is required for the verification, certification and issuance of carbon offsets. The designated operational entities selected by the project proponent to validate a project activity shall review the project design document/DPR to confirm the following requirements:

- Environmental impacts
- Emission reductions
- Sustainable development criteria addressed by the proposed project activity
- Baseline & monitoring methodologies

Figure 7 : Validation & Registration Procedure



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I. Verification and Certification

Verification is the periodic independent review and determination by the designated operational entities (DOE) of the monitored emission reductions by a registered CCMP. Certification is the assurance by DOE that during the specified time period the project activity achieved the GHG emission reductions.

The DOE may conduct on–site inspections as required, for the review of the performance record generated through the monitoring activity. It is expected that the DOE will review the monitoring methodology in detail.

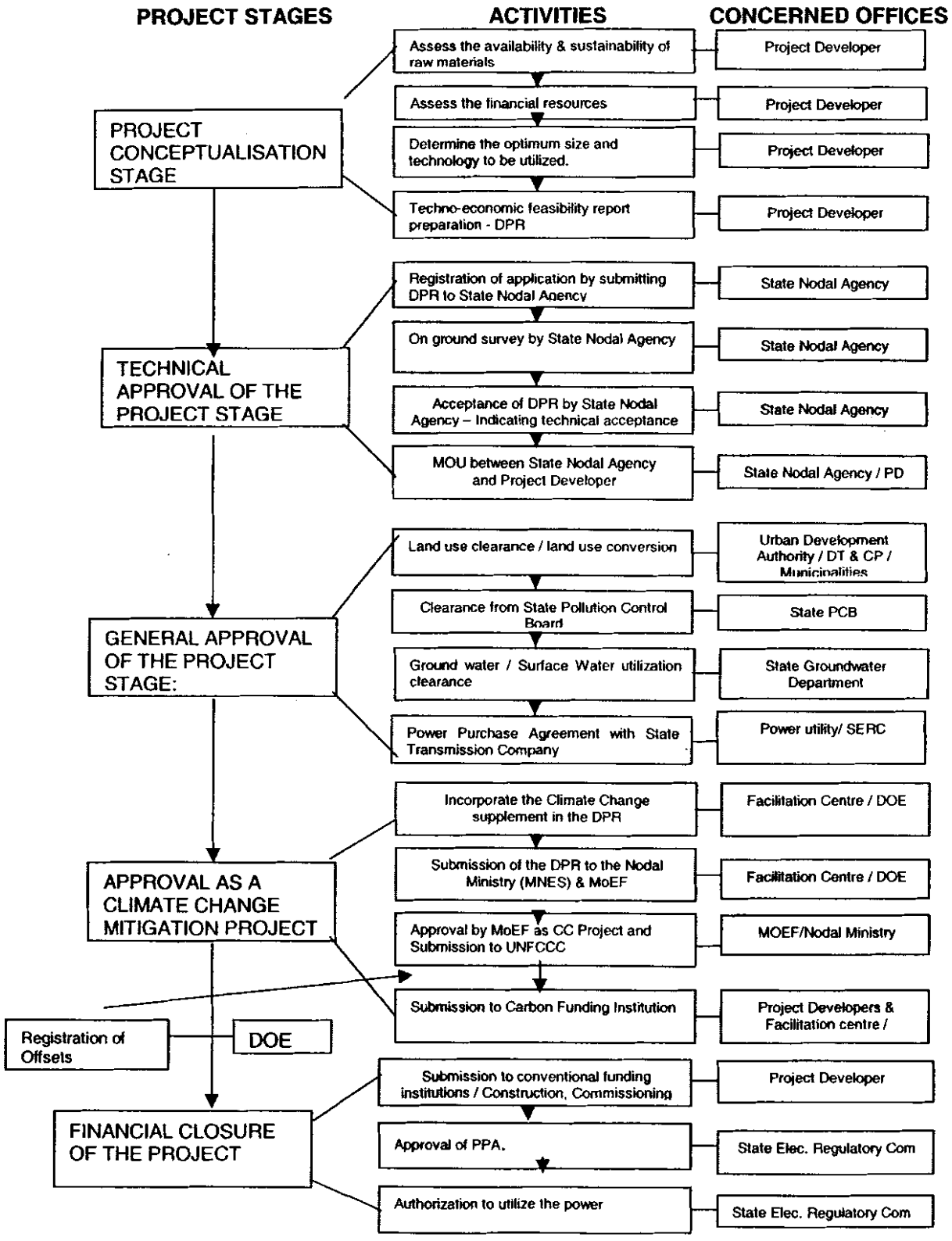
The DOE, based on its verification report, certifies in writing that, during a specific time period, the project activity has achieved the verified amount of reduction in GHG emissions.

J. Issuance of Certified Emission Reduction

The certification report, as provided by the DOE, shall constitute a request for issuance to the international registry program (like the CDM Executive Board) of certified emission reductions (CERs) equal to the verified amount of reductions of emission of GHGs. Such issuance will be effective after thorough evaluation by the international registry and the outcome should be reported to the project proponent within a specific time period.

It may be noted that the process of validation, monitoring, verification, certification is still evolving and the entire process may undergo minor changes based on the experience in the first few years of its operation.

Figure 8 : Climate Change Project Development Process Flow Chart



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CASE STUDY ANALYSIS: *STATE OF ANDHRA PRADESH, INDIA*

The development of renewable energy project as a CCMP in the State of Andhra Pradesh.

Summarized Outcome of the Climate Change Project Development Process in the State of Andhra Pradesh:

I. PROJECT CONCEPTUALISATION STAGE

Main Role - Project Developers

Step 1 - Assessed the availability and sustainability of raw materials

Step 2 - Assessed the financial resources

Step 3 - Determined the optimum size and technology to be utilised

Step 4 - Techno-economic feasibility report prepared - DPR

II. TECHNICAL APPROVAL OF THE PROJECT STAGE

Main Role - Non-conventional Energy Development Corporation of Andhra Pradesh (NEDCAP)

Step 5 - Registration of application by submitting the DPR to NEDCAP

Step 6 - Visit of site by NEDCAP officials

Step 7 - Acceptance of project by NEDCAP – Indicating technical acceptance

Step 8 - MOU between NEDCAP and Project Developer
- Service Charge - Rs. 1 Lakh / MW to NEDCAP
- Bank Guarantee of Rs. 25000 / MW towards financial close within 6 months, with an extension provision for up to 18 months.

III. GENERAL APPROVAL OF THE PROJECT STAGE

Main Role - Different Government Departments like the Pollution Control Board, the Land Revenue Department, Commissionerate of Industries.

Step 9 - Application for common approval through prescribed formats of the Centralised Documentation and Clearance Centre of the Commissionerate of Industries (or alternately) independently to different department for
- Land use clearance / land use conversion
- Clearance from APPCB
- Ground water / surface water utilisation clearance
- Power Purchase Agreement with AP Transco This may have to negotiated and initialled after the approval by the AP Electricity Regulatory Commission
- Financing Arrangement / Incentives
  - 100% Depreciation
  - Exempted from excise
  - Import duty concession

IV. Approval as a Climate Change Mitigation Project

Main Role: - Project developer, Nodal Ministry (MNES for Renewable Energy Project), MoEF and Climate Change Facilitation Centre

Step 10 - Incorporation of the Climate Change Supplement in the Detailed Project Report (with the help of Climate Change Facilitation Centre of Development Alternatives)

Step 11 - Submission of DPR to the Nodal Ministry in GoI (Ministry of Non-conventional Energy Sources)

Step 12 - Submission of DPR/Presentation to the Ministry of Environment & Forest (MoEF), GoI. MoEF will issue a "Letter of Endorsement"

Step 13 - Submission of the project to UNFCCC or other registry for approval as a Climate Change Project

Step 14 - Submission of the approved project to different carbon funding institutions

V. Financial Closure of the Project

Main Role: - Different Financial Institution and Government Development Agencies

Step 15 - Submit the DPR and application form to domestic FIs for financial assistance to the project to ensure financial closure

Step 16 - To avail of the financial benefit as provided by MNES, the project may then need to be forwarded to them for their approval

Step 17 - Construction and Commissioning.

ANNEX A.
TECHNOLOGY TRANSFER

The term "technology transfer" is used in this GHG Road Map for project developers in its broader sense, i.e. to cover a broad set of processes that "transfer" technical information, data, experience and equipment for mitigating and adapting to climate change to and among the multiple stakeholders including government agencies, private sector entities, financial institutions, NGOs, research/education institutions and the local community. In the verbiage used by the UNFCCC and of the particular Articles of the UNFCC Convention, the term "transfer" is used exclusively to define the specific diffusion of technologies and technology co-operation across and within countries. As per the convention, the term "technology transfer" mainly covers technology transfer processes between developed countries, developing countries and countries with economies in transition and is a key aspect to ensuring that the advanced technologies help the developing countries in achieving a less emissions intensive path of development. It comprises the process of learning to understand, utilise and replicate the technology, including the capacity to choose and adapt the technologies to local conditions and integrate them with indigenous technologies.

The role of technology transfer in addressing climate change

Global economic growth is currently leading to increased consumption of raw materials, loss of natural habitats, energy use and production of waste. Achieving the ultimate objective of the UNFCCC will require technological innovation and rapid/widespread transfer of technologies and know-how for mitigation of greenhouse gas emissions. Transfer of technology for adaptation to climate change is also an important element of reducing vulnerability to climate change.

In the past, technology transfer has successfully contributed to the solution of a variety of local and global environmental problems. These are a result of successful dissemination of technology, increased consumer and business awareness, access to information, capacity building, innovative financing, relaxation of trade barriers, and a supportive regulatory framework.

This technological innovation must occur fast enough and continue over a period of time to allow ultimately stabilization of greenhouse gas concentrations and reduce vulnerability to climate change. Technology for mitigating and adapting to climate change should be environmentally sound and should support sustainable development. Sustainable development on a global scale will require radical technological and related changes in both developed and developing countries. Development with modern knowledge offers many opportunities to avoid past unsustainable practices and move more rapidly towards better technologies and techniques. To achieve this, developing countries require assistance with developing human capacity (knowledge, techniques and management skills), developing appropriate institutions and networks and with acquiring/adapting specific hardware. Technology transfer, in particular from developed to developing countries, must, therefore, cover these software and hardware challenges.

Technologies that may be suitable in each of such contexts may differ considerably. This makes it important to ensure that transferred technologies meet local needs and priorities, thus increasing the likelihood that they will be successful, and that there is an appropriate enabling environment for promoting Environmentally Sound Technologies (ESTs).

A Climate Change Mitigation project has to meet certain requirements in the technological aspects to be eligible. The technology proposed in the project and the process of its adaptation in the host country has to be verified rigorously. The technology should be well proven in the country of origin and applicable in the host country with available human resources. It should be ensured that the process and technology being transferred can be easily replicated and that it is not obsolete.

Methodological and technical issues in technology transfer

Key stakeholders in the technology transfer process include developers, owners, suppliers, buyers, recipients and users of technology such as private firms, state enterprises, and individual consumers, financiers and donors, governments, international institutions, NGOs and community groups. In some cases, technology is transferred directly between government agencies, but increasingly technology flows depend on the co-ordination of multiple organisations such as networks of information service providers, business consultants and financial firms. Although stakeholders play different roles there is a need for partnerships to create successful transfers. Governments can facilitate such partnerships. The rate of technology transfer is affected both by motivations that induce more rapid adoption of new techniques and by barriers that impede such transfers. Both types of factors can be influenced by policy (Table 1)

The process of technology transfer involves professionals from a variety of disciplines, including business, engineering, law, finance, economics, trade, political economy, environment, education, communication, and labour studies. However, there are a number of routes through which transfer of technologies take place. They vary depending on sector, country and the type of technology. Common approaches include government assistance programs, direct purchases, trade, licensing, foreign direct investment, joint ventures, co-operative research arrangements, and education and training.

While technology transfer processes can be complex and intertwined, certain stages can be identified. These may include the identification of needs, choice of technology, assessment of conditions of transfer, agreement and implementation. Evaluation and adjustment to local conditions, and replication are other important stages. In order to evaluate whether technology transfer can be considered effective, different criteria can be applied. The criteria can be grouped into four categories, namely, (i) greenhouse gas (GHG) and environmental; (ii) economic and social (iii) administrative, institutional and political and (iv) process.

Table 1: Principal stakeholder and their decisions or policies in technology transfer

Governments National/Central/state/ local/municipal	-Development goals - Environment goals -Energy security	• Tax policies • Import/export policies • Education and capacity building policies • Regulations and institutional development
Private-sector business	- - Profits -Market share -shareholder value -Corporate social responsibility	• Technology R&D/commercialization decisions • Marketing decisions • Capital investment decisions • Skills/capabilities development policies • Structure for acquiring outside information • Decision to transfer technology • Choice of technology transfer pathway • Technology selection (distributors, users)
Donors Multilateral banks Bilateral aid agencies	-Development goals -Environmental goals -Return on investment	• Project selection and design criteria • Investment decisions • Technical assistance design and delivery • Procurement requirements • Conditional reform requirements
International institutions WTO, UNCSD, OECD	-Development goals -Environment goals	• Policy and technology focus • Selection of participants in forums • Choice of modes of information flow
Research centers/ Universities/ Schools	-Basic knowledge -Applied research -Teaching -Knowledge transfer -Perceived credibility	• Research agenda • Technology R&D • Decision to transfer technology • Choice of pathway to transfer technology

ANNEX B.
SUSTAINABLE DEVELOPMENT

A frequently used definition of "sustainable" development is the one given by the World Commission on Environment and Development (popularly known as Brundtland Commission) in 1987. They defined "Sustainable development" as development, which "meets the needs of the present without compromising the ability of the future generations to meet their own needs". The Brundtland Commission considered population control, food security and energy supply as critical components of sustainability. Since the Rio Summit in June 1992 and the adoption of Agenda 21 by the global community, many nations have set sustainability as a key goal of their development. Many multinational corporations have also adopted "sustainability" as a core corporate value.

The concept of sustainable development is quite distinct from economic growth and recognizes the limitation of economic indicators like GNP in measuring the true well being of nations. Instead, sustainable development includes the wider perspectives of poverty alleviation, health-care and education, and more, broadly, the social, economic, environmental and technological well being of the society. According to the World Resources Institute, the four dimensions of sustainable development are social, economic, environmental well being, and technological. These dimensions provide a framework in which to specify details for countries at a given stage of development.[1]

In India, development cannot be considered sustainable unless it reduces poverty and address the livelihood generation. Out of India's almost one billion population, more than 360 million people are below the poverty line. To tackle the challenges of eradicating poverty, India needs rapid economic growth. But the economic growth must not focus on short-term gains alone. Destroying the natural resource base will jeopardise potential for the alleviation of poverty. For example, preserving land resources is critical for future generations to grow food.

For measuring the sustainability of a development process, a useful way is to select and organize indicators in a pressure (cause), state (linking effects), responses (policy action) framework. The UN Commission on Sustainable Development identified indicators of sustainable development using a pressure-state-response framework. The resulting indicators are intended for use at the national level. The Commission brought out a list of about 130 indicators from which countries could choose a smaller set to reflect national priorities, goals and strategies. (See Table 1 for an example of the pressure-state-response framework.) Indian climate change mitigation projects including CDM may adopt the similar p-s-r framework for selecting / identifying SDIs.

TABLE 1: EXAMPLE OF PRESSURE-STATE-RESPONSE FRAMEWORK

Economic	Poverty alleviation	Inadequate means of livelihood	Poverty index	Employment generation
Social	Access to basic services	Inadequate public infrastructure	Electricity consumption per capita	Off-grid electricity services
Environmental	Reduction in health effects from indoor air pollution	Inadequate access to clean cooking fuel	Morbidity from particulate concentration	Provision of fuel with lower emissions and efficient chullas
Technological	Capacity to improve technological base	Inefficient production technologies	Energy use per unit of output	Training and investment to adopt improved technologies

[1] World Resources Institute. 1992. World Resources Report, 1992-93. Washington, DC.

Private and Public Corporations

A number of private and public corporations such as Shell, Bristol-Myers and Ontario Hydro have established SDIs to assess the performance of their business units and enterprises. In some cases, the assessment is conducted for internal managers, in other cases for external audiences such shareholders, consumers, or government. Companies have used individual approaches, employing and combining internationally approved standards and indicators (e.g. ISO, Global Reporting Initiative, and other Social Accountability standards and measures).

National governments

Several developing country governments, such as the Philippines, India (as mentioned in planning commission document) etc. have adopted SDIs, often as part of national planning exercises. A unit of the UN through workshops and technical assistance has supported these activities. The United Nations Division for Sustainable Development has conducted regional and national meetings on SDIs in Bangkok and Manila, respectively. Out of these activities has emerged a sourcebook on SDIs and a working list of indicators.[2] Some industrialised country governments have also implemented SDI initiatives. In the US, an interagency group has developed a list of SDIs.[3]

Although the Government of India has not adopted SDIs, several organisations in India have implemented initiatives to measure progress toward sustainability. India's Ninth Five-Year Plan emphasized measures to ensure sustainability along economic, social, and environmental dimensions. Many required actions from Agenda 21 of the United Nations Conference on Environment and Development have been incorporated in the plan document. Objectives of the Ninth Plan include reducing the population growth rate, ensuring environmental sustainability through social mobilization and participation, and providing basic minimum services.

Using SDIs for decision-making

SDIs are merely a tool that can be used to improve decision-making. In the context of climate mitigation projects, information about the sustainability performance of the projects would be used to make decisions regarding their design, replication, modification, or discontinuation. Such information can also be used by the Government of India to rank CCMPs and select among competing projects. The Government should decide on how to use SDIs in the CCMP process, and then select the set of SDIs and establish a procedure for their application.

Selecting a set of SDIs

Lists of possible SDIs that have been created by practitioners can easily run over 100. With respect to selecting SDIs, practitioners have found the following to be desirable attributes:

- User-friendly
- Simple
- Robust
- Few in number

[2] See <<http://www.un.org/esa/sustdev/program.htm>>

3 "Sustainable Development in the United States". A Progress Report Prepared by the U.S. Interagency Working Group on Sustainable Development Indicators, Washington, DC, 1998

Key risks facing CCMPs

Although the benefits of a CCMP are numerous, such projects also have inherent risks including: still undefined global climate change policies, lack of coherent national policies, and uncertain carbon offset prices as well as the usual project risks: political risks, environmental risks, inability to predict operating and transaction costs, and cash flow difficulties. These risks are in addition to the traditional risks associated with project finance and joint ventures between parties in different countries. Project risk profiles will change over time, falling as the construction phase nears, only to rise again when new risks in the implementation and monitoring/verification stages appear. Perhaps the most complex risks will be legal risks, as the framework for CCMP property rights is still evolving.

- ***Technical risks***: lower than expected technical performance, which result in less emission credits. Technical risks include the type of technology used, the construction and development risk, scheduling and time delays, availability and quality of contractors and labourers, access to materials and spare parts, cost overruns, and problems related to the use of new technology.

- ***Policy risks***: risks arising from policy shifts at both national and international levels. At national level, environmental regulations or energy policies could change dramatically – examples would be levels of subsidies on fossil fuels, regulation of new emission standards, and taxes. Such changes could render a project 'non-additional,' and hence ineligible, in the short period between commencement and approval. Even after a project has been approved, policy shifts could affect the validity of a particular baseline and reduce future credits. Internationally, supplementarity restrictions could affect the number of credits that could be sold in a particular country.

- ***Market risks***: These risks are tied to fluctuations in the carbon market, such as average prices for Carbon Offsets and related emission credits. If there are large time gaps between an initial investment and the final sale of Carbon Offsets, price fluctuations and the possible effects of market collusion could dramatically affect carbon revenue.

- ***Liability risk***: One of the parties – investor, seller, or independent certifier – will be legally liable for errors in the calculation of emission reductions (and for fraudulence in reporting). Much of this liability risk would shift from developer to certifier after the verification/certification process. The shift in the risk can be reflected in the transaction cost.

- ***Qualification risk***: A CCMP project might become ineligible for crediting after it has commenced but before it is formally approved. An example would be a project failing to qualify under CCMP guidelines after it has been partially implemented, because of the particular technology or mitigation strategy employed. Qualification risk would include reducing the crediting lifetime of the project due to policy changes or methodological uncertainties in measuring greenhouse gas reductions.

The following are potential risks that are inherent in any international transaction, and are not exclusive to a CCMP.

- ***Credit risk***: The creditworthiness of the parties in meeting their liabilities like loans, bonds, guarantees, leases, and insurance policies are a potential risk. The carbon investor would conduct their due diligence and the credit risk may hamper their decision.

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- ***Country/political risk***: These risks are associated with major political changes. They cannot be anticipated or controlled, and they can result in significant economic loss. Examples of such risks are: the expropriation of property; the imposition of crippling new taxes, tariffs, or export restrictions; currency devaluation and foreign exchange restrictions; and taxes on repatriation of profit or debt servicing. Country risk can also include differences in the legal and business systems in the two countries. Mitigation of this risk depends largely on the investor's knowledge and experience of the working environment of the host country.

- ***Environmental, health and safety risk***: This risk comes from adverse impacts on the environment, whether intended or not. It includes the occupational health and safety of the employees involved in the CCMP. Environmental costs may include: fines and penalties for pollution; the cost of preparing an Environmental Impact Assessment (EIA) and obtaining any necessary permits; cleanup costs for contaminated sites; and the costs of an environmental audit. EIAs usually include provisions for adverse environmental impacts and estimate the likely costs of those actions.

- ***Force majeure***: This risk applies to any unforeseen natural disasters – lightning, earthquakes, floods, fires – that could seriously jeopardize the success of the project, or lead to major liability for the developer. The surest way to mitigate force majeure risk is through insurance coverage. This is relatively inexpensive and may even be a requirement for borrowers to obtain third party finance.

Risk mitigation matrix

The confidence of investors will increase if the developer demonstrates a proactive attitude toward mitigating risks. A risk matrix is a useful tool for this. It should include the following elements:

- The categories of risk in question;
- The exact nature of the risks;
- Which parties are most affected by the risks;
- Mitigation strategies adopted to counter those risks; and
- The financial or other consequences of any mitigation instruments and strategies.

The table below lists common risks facing CCMPs through various examples. The last column suggests instruments or strategies for mitigation.

Table: 3

Technical risks	• Construction and/or operating costs are higher than expected due to inexperience or complications with use of new technology. • Delay in implementation due to lack of availability of raw materials or spare parts and/or unreliable contractors.	• Performance Bonds and completion guarantees by suppliers, contractors, and sub-contractors. • Commercial & export credit guarantees. • Incentives incorporated into contracts for timely completion. • Specialized emissions reduction insurance.
Market Risk	• Estimated carbon values used in financial models are over estimated, resulting in insufficient cash flow for ongoing project implementation. • If global economic and	• Development of more reliable market forecasts and carbon revenue models. • Hedging or 'locking in' of future Carbon Offset prices through derivatives, although a fixed contracted

	technological growth is slower than expected, it will be less costly to reduce emissions domestically, thereby reducing the market price of Carbon Offsets.	price could also be lower than under future market values.
Liability risks	• An error in emission reduction calculation is discovered and challenged after a project has been certified and Carbon Offsets have been transferred.	• Explicitly distribute liability risks in contractual arrangements. • Adding suitable clauses in the contracts for assessment of carbon offsets. • Specialized insurance that covers carbon offsets.
Political/country risk	• Major changes in the policies of the host country • Economy of the host country is destabilized • Laws of bankruptcy, repatriation etc are rescinded	• Memoranda of Understanding with host country government. • International political risk insurance . • Commercial insurance and export credit guarantees. • Local licensing/registration of the project and buy-in of local stakeholders through public participation and local content and labour. • Portfolio approach on the part of carbon investors
Environmental, health & safety risk	• Contamination discovered on project site prior to implementation. • Ongoing project approval by host country or CCMP Executive Board withdrawn after evidence of negative environmental impact or threat to cultural heritage, negating future crediting potential. • Sub-contractor violates existing permitting requirements or causes a toxic spill.	• Understanding of the legal framework and any legislation governing environmental liability that relates to project. • Covenants and indemnity clauses inserted into contracts. • Require that an environmental procedure or audit is a condition for making available co-financing or other services. • Environmental risk insurance. • Force Majeure insurance and covenants in contractual arrangements. • Specialised emissions reduction insurance.
Qualification risk	• Less than expected emission reductions are verified and certified as Carbon Offsets than are technically achievable. • Delay in certification of project's emission reductions, resulting in fewer than expected Carbon Offsets. • Project fails to qualify under final CCMP guidelines (i.e. carbon sequestration, nuclear energy).	• Third-party verification of emission reductions and validation of baseline and key methodological assumptions prior to certification by the Executive Board. • Specialised emissions reduction insurance.
Force majeure	• Project assets destroyed in natural disaster e.g. severe flooding.	• Specialised insurance • Clear treatment of period of FM

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country and the investing country. Finally, the contract should specify the insurance coverage on the project, and include information on the risks and terms of this coverage. A developer may be able to secure 'title insurance' to protect against conflicting claims of ownership.

As in any international business transaction, an increase in the number of investors, transferors, and transferees, will greatly increase the legal complexity. Contracts for emission credit transactions should therefore clearly stipulate the location, legal system, and governing rules for the adjudication and resolution of disputes between the parties. The legal frameworks of the host country should be examined to ensure that these agreements would not be dishonoured.

Legal and contracting issues for CCMPs are complex and will likely increase in importance over time as the market matures and the potential for disputes between parties grows. The above suggestions should not take the place of professional legal advice.

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ANNEX D.
GLOBAL WARMING POTENTIALS

Often there is a need to estimate the emissions of more than one greenhouse gas; so one needs to know what the relative impact of different gases is. Global Warming Potentials (GWPs) are one type of simplified index based upon radiative properties that can be used to estimate the potential future impacts of emissions of different gases upon the climate system in a relative sense. The impact of greenhouse gas emissions upon the atmosphere is related not only to radiative properties, but also to the time-scale characterising the removal of the substance from the atmosphere. Radiative properties control the absorption of radiation per kilogram of gas present at any instant, but the lifetime (or adjustment time) controls how long an emitted kilogram is retained in the atmosphere and hence is able to influence the thermal budget.

The weight and effect of different GHGs varies enormously. GWPs take the different strengths into account thereby enabling the analyst to show the relative importance of different GHG emissions. The direct GWP of methane, for example, is defined as the cumulative direct effect on the atmosphere's energy budget resulting from a one-kilogram release of methane, relative to the direct effect of a one-kilogram release of CO2. The GWP for the gases covered under the Kyoto Protocol are given in the table below.

TABLE 3: GLOBAL WARMING POTENTIALS, *SOURCE: IPCC (1996); UNCCEE (1999)*

Carbon dioxide (CO2)	1
Methane (CH4)	21
Nitrous oxide (N2O)	310
Hydro fluorocarbons (HFCs)	120-12000
Per fluorocarbons (PFCs)	6500 – 9200
Sulphur hexaflouride	23900

Source: Climate Change 2001: The Scientific Basis,

http://www.grida.no/climate/ipcc_tar/wg1/247.htm#6121

ANNEX E.
GUIDELINE FOR CCMP DEVELOPMENT – CLIMATE TRUST AND BC HYDRO GHG OFFSET TENDERS

Although the Kyoto Protocol has not come into force yet, there is a grown enthusiasm among the countries, which have ratified it already. In addition, several multinational companies, especially those in the oil and gas, electric utility, metals (steel, aluminum etc.) sectors and several U. S. state governments have announced voluntary GHG emission reduction schemes. These schemes permit the entities, which have high GHG emissions in deciding their own strategy to voluntarily curtail their GHG emissions. As a result several of these bodies have shown interest in purchasing emission reductions from projects in developed as well as developing countries. As expected, these have developed their own terms for qualifying projects. It has been observed that majority of these are based on the same understanding as that under the UNFCCC.

Project developers from India have also applied for many of these schemes in the past that were applicable to India. The terms of two of such Request for Proposals are attached for reference of the users of this Roadmap. These are:

- BC Hydro Request for Greenhouse Gas Offset Proposals and
- The Climate Trust and Seattle City Light 2001 Request for Carbon Offset Project Proposals

The Climate Trust and Seattle City Light
2001 Request for Carbon Offset Project Proposals
Phase 1: Project Summary Information

Summary: The Climate Trust (The Trust) and Seattle City Light (Seattle) are soliciting carbon offset projects that 1) directly avoid, displace, or sequester carbon dioxide emissions [or those of other greenhouse gases for Seattle], 2) will be implemented in the future, 3) would not be likely to occur in the absence of offset project funding, and 4) can quantify the Carbon Dioxide Emissions Benefit.

Responses to this request for Carbon Offset Project Proposals will be considered to meet the offset needs of The Trust and Seattle (jointly referred to as the Requesters).

The Climate Trust is seeking from 3 to 10 projects to meet a need of contracting for a minimum of $5,500,000 from projects involving *carbon dioxide offsets only*.

Seattle City Light is seeking from 1 to 4 projects to meet a need of contracting for 247,000 metric tons of carbon dioxide equivalent from offset projects involving *carbon dioxide or other greenhouse gases*.

The Trust is administering the process of solicitation and evaluation of offset proposals on behalf of both organizations. Proposals will be considered jointly by the Requesters. Proposers need not indicate to which organization they are proposing. The Trust and Seattle will make independent decisions regarding the selection of offsets for contracting. Offset contracts might involve either or both of the Requesters, depending on the selections made by each organization. All communications regarding this solicitation are to be with The Trust.

The Requesters have set a goal of signing contracts for offsets by January 31, 2002. **Phase 1 of the process involves a request for project summary information. Responses are limited to ten pages of text, plus a cover sheet and appendices. Responses are due by Tuesday, April 10, 2001.** The Trust will screen the project summaries, select a short list of projects for which to request more detailed Phase 2 project proposals, and work with Seattle to select its short list. Phase 2 will involve evaluation of detailed project proposals, preliminary selection of projects, contract negotiations, and contract awards. For information regarding our previous solicitation, please visit The Trust's web site at www.climatetrust.org.

Disclaimer

This RFP is not an offer by The Climate Trust or Seattle City Light to purchase any rights, goods or services, and submission of project proposals does not create any rights whatsoever. The Trust and Seattle are free to accept or reject any project proposal, and are not bound to accept the economically most favorable proposal, or any proposal at all, and may accept any proposal regardless of whether it conforms to the terms of this RFP. The Trust and Seattle, and their directors, officers, agents, employees or assigns are not liable at law or at equity to any project proposer or participant or any other party for any decision by any of them regarding submission, acceptance, rejection or modification of a proposal, or in any other connection with this RFP. All costs directly or indirectly related to preparation of a proposal or submission shall be the sole responsibility of, and shall be borne by, the developer of the project proposal.

Introduction

The Climate Trust (The Trust) and Seattle City Light (Seattle) are soliciting carbon offset projects that 1) directly avoid, displace, or sequester carbon dioxide emissions [or those of other greenhouse gases for Seattle], 2) will be implemented in the future, 3) would not be likely to occur in the absence of offset project funding, and 4) can quantify the Carbon Dioxide Emissions Benefit [see page 6].

Responses to this request for Carbon Offset Project Proposals will be considered to meet the offset needs of two organizations The Trust and Seattle (jointly referred to as the Requesters).

> The Climate Trust is seeking from 3 to 10 projects to meet a need of contracting for a minimum of $5,500,000 from projects involving *carbon dioxide offsets only.*
>
> Seattle City Light is seeking from 1 to 4 projects to meet a need of contracting for 247,000 metric tons of carbon dioxide equivalent from offset projects involving *carbon dioxide or other greenhouse gases.*

The Trust is administering the process of solicitation and evaluation of offset proposals on behalf of both organizations. Proposals will be considered jointly by the Requesters. Proposers need not indicate to which organization they are proposing. The Trust and Seattle will make independent decisions regarding the selection of offsets for contracting. Offset contracts might involve either or both of the Requesters, depending on the selections made by each organization. All communications regarding this solicitation are to be with The Trust.

Background on The Climate Trust's Request

The State of Oregon requires new power plants to meet a carbon dioxide (CO_2) emission standard in order to receive a site certificate from the Energy Facility Siting Council. The Hermiston Power Project and Coyote Springs Unit 2 Project, in order to meet the CO_2 standard, chose to provide funding under the standard's monetary path to The Trust, a qualified nonprofit organization. The Trust will use the money to contract for carbon dioxide offsets from projects that directly avoid, displace, or sequester carbon dioxide, and to manage such contracts once put into place. The Oregon standard requires that The Trust acquire offsets involving CO_2 only, not other greenhouse gases.

Background on Seattle City's Light's Request

The Mayor of Seattle proposed and the City Council approved a resolution requiring that its municipal electric utility, Seattle City Light, fully mitigate the greenhouse gases from its purchase of power from the Klamath Falls, Oregon, natural gas combustion turbine. Seattle City Light estimates that it will be mitigating 247,000 tons of carbon equivalent per year. Seattle City Light is partnering with The Climate Trust to solicit carbon offset proposals that directly avoid, displace or sequester greenhouse gases. Seattle is not limited to acquiring offsets involving CO_2 only, and will consider offsets involving any greenhouse gas.

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Description of The Requesters' Needs

The Requesters are seeking offsets that meet the description of needs provided below. Most of these needs descriptions are common to both The Trust and Seattle. Common needs are either identified as pertaining to "The Requesters," or refer to no specified organization. Needs specific to The Trust are identified by naming "The Trust," and *needs specific to Seattle are identified by naming "Seattle" and are shown in italics.*

Total amount of project funding: The Trust has a need for contracting for a minimum of $5,500,000 in offsets. *Seattle has set a target of acquiring 247,000 metric tons of CO_2 equivalent.*

Number of projects: The Trust anticipates acquiring from 3 to 10 projects. *Seattle anticipates acquiring from 1 to 4 projects.*

Size of projects: The Requesters are seeking projects for which their funding level would be $250,000 or greater. Proposals for less than this amount may or may not be considered, at the discretion of The Requesters. The largest project The Trust will consider would involve $2 million of funding from The Trust. *The largest project Seattle will consider would involve all 272,000 metric tons.*

Type of greenhouse gas: As required by Oregon statute, The Trust will consider only offsets that directly avoid, displace, or sequester emissions of carbon dioxide (CO_2). The Trust will not consider emissions reductions of other greenhouse gases for purposes of quantifying emissions reductions, but rather may consider these when evaluating co-benefits. *Seattle will consider offsets that directly avoid, displace, or permanently sequester emissions of any greenhouse gas addressed by the Kyoto Protocol, and is not restricted to acquiring carbon dioxide offsets as is The Trust.*

Quantifiability of offsets: The Requesters will consider only projects that directly avoid, displace, or sequester the appropriate greenhouse gas (See "Type of greenhouse gas"), and where the amount of Carbon Dioxide Emissions Benefit can be quantified, taking into consideration any proposed measurement, monitoring, and evaluation of mitigation measure performance. A Carbon Dioxide Emissions Benefit is quantifiable if the total amount of the reduction can be determined, and the reduction is calculated in a reliable and replicable manner (see Baselines, page 6).

Timing of project implementation: The Requesters will consider only projects where mitigation measures will be implemented in the future, subsequent to contract execution. The Requesters will not consider projects where mitigation measures have been implemented prior to contract execution. The Requesters will require that the implementation of mitigation measures proposed by a project be planned for completion within five years from the date of contract execution.

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Additionality requirement: The Requesters will only fund projects where mitigation measures would not occur in absence of offset project funding. Projects for which the applicant or other party derives benefits, including financial benefits, other than those relating to carbon dioxide benefits, are eligible.

Regulatory surplus: The Requesters will consider only projects where the Carbon Dioxide Emissions Benefit is over and above what is required by law. An emission reduction is surplus if it is not otherwise required of a source by current regulations or other obligations.

Types of projects: The Requesters will consider offsets based on renewable energy, energy efficiency, supply side energy (such as fuel switching), and CO_2 sequestration. Sequestration projects include forest preservation, reforestation, afforestation, and forest management. Agricultural projects which increase soil carbon are eligible, but The Requesters will especially scrutinize how these projects address quantifiability and permanence.

Portfolio diversity: The Requesters consider it important to acquire a portfolio of diverse project types. Projects which help meet this portfolio diversity objective may receive special consideration.

Eligible proposers: The Requesters will accept proposals from non-profit and for-profit corporations, government agencies, national laboratories, individuals, and combinations of the these parties.

Permanence: The Trust prefers projects that permanently avoid or displace emissions of carbon dioxide, such as energy-related projects, over projects that temporarily sequester carbon. *Seattle requires projects that permanently avoid, displace, or sequester emissions of carbon dioxide and other greenhouse gases.*

Guarantees: The Requesters prefer projects that provide guarantees, especially carbon benefit guarantees. Guarantees are especially important for sequestration projects, and would provide important support for any project proposal. Carbon Dioxide Emissions Benefit guarantees must meet an additionality test, and are preferred over money back guarantees. The Requesters would consider the use of a pay-for-performance approach, where The Requesters pay a fixed amount per ton of CO_2 delivered over a specified period of time, as a form of guarantee.

Portfolio price range: The Requesters plan to use cost effectiveness as the primary selection factor for offsets, while achieving a balance between the desire to acquire the least expensive reasonably assured offsets available with the desire to acquire a diverse portfolio of projects. The Trust is currently in negotiations for an offset portfolio with an average price of approximately \$1.50/metric ton of CO_2 with funding provided by a prior Oregon power plant. The Trust received funding for this current solicitation on the basis of a \$0.68/metric ton of CO_2 cost figure (2000 dollars). The Trust is unlikely to acquire individual offset projects that have a price exceeding \$10/metric ton of CO_2. *Seattle would fund its offsets from utility revenues, and does not receive funding at \$0.68/metric ton as does The Trust.*

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Replicability and expandability: The Requesters may consider the ability to replicate a project in other locations with economies of scale or to expand a project at the original site to be beneficial in project evaluation.

Geographic limitations and preferences: The Trust is open to considering offsets in Oregon, the United States, or internationally. It is important that The Trust acquire some offsets in Oregon. The Trust will give some preference to projects located in Oregon, and is more likely to consider projects with funding levels of less than $250,000 if they are located in Oregon. *Seattle is open to considering offsets located either in the United States or internationally. Seattle anticipates establishing the following geographic order of preference: Seattle, the greater Puget Sound region, and Washington state. Seattle will give some preference to projects located in these geographic areas. International projects have the same requirements as for The Trust.* Both Requesters require an international project to have both a strong U. S. partner and a strong international partner in the host country. The U. S. partner must co-sign the proposal and any offset contract. Host country approval for international projects is strongly encouraged.

Leverage of The Requesters' funding: The Requesters will evaluate the cost effectiveness of proposed projects on the basis of the cost to The Requesters per metric ton of Carbon Dioxide Emissions Benefit. Projects for which The Requesters provide partial funding, and/or that employ financial leverage, such as revolving loan pools and loan guarantees, are encouraged to apply.

Co-benefits: The Requesters prefer projects with environmental, health, and socioeconomic co-benefits, and will request information on co-benefits from proposers. Special consideration may be given to projects with excellent co-benefits.

Retirement of credits: The Requesters plan to "retire" the offsets they acquires, holding them in perpetuity for the benefit of the citizens of Oregon and Seattle, respectively. The Requesters may use these credits in any manner allowed under any future greenhouse gas regulatory system that may be put into place. The proposer will not be eligible to receive allocation or credit in the future in another regulatory setting for the offsets acquired by The Requesters. The Requesters will not consider offsets that have already been allocated or awarded credit for carbon dioxide or greenhouse gas emissions benefits in another regulatory setting.

Assignment and sale: While the primary goal is to "retire" credits, The Requesters reserve the right to assign or sell Carbon Dioxide Emissions Benefits acquired as a result of this request for proposals. The Trust has received a number of requests from business, government, and non-profit organizations to provide offsets under our Greenhouse Gas Partnership Program. These request are incremental to the needs described in this solicitation. The Trust may seek to satisfy these requests by acquiring incremental offsets from the proposals submitted in response to this solicitation.

Quantification of the Carbon Dioxide Emissions Benefit

Proposals must address the following considerations when quantifying the Carbon Dioxide Emissions Benefit and when planning for monitoring and verification. *For Seattle, emissions benefits resulting from mitigation of other greenhouse gases are to be converted into the Carbon Dioxide Emissions Benefit as described under "Units of measurement" below.*

Additionality: Proposals must demonstrate that the mitigation measures installed by the project would not occur in absence of offset project funding. Projects which do not meet this requirement will be deemed to have no Carbon Dioxide Emissions Benefit and will not be evaluated.

Baselines: Proposals must describe a Without Project Baseline and a Project Case and describe the assumptions and methodologies used to quantify each. The difference between the two is the project's Carbon Dioxide Emissions Benefit. Proposals must use dynamic baselines when establishing the Without Project Baseline, to the extent that changes from business as usual are anticipated to occur during the project life. The Requesters will review the proposed Without Project Baseline and the Project Case, and may use its judgment to modify them for the purposes of evaluating projects.

Leakage: Leakage is the extent to which events occurring outside of the project boundary tend to reduce (typically) a project's Carbon Dioxide Emissions Benefit. Proposals must describe how carbon dioxide benefit leakage is addressed by the project, both in terms of project activities to minimize leakage and in terms of adjustments to the project's carbon dioxide benefit calculations to reflect leakage. Proposals can propose to include emissions reduction from positive leakage, but The Requesters will require a strong justification for such reduction. The Requesters will review and may use their own leakage factors when evaluating projects.

Range of uncertainty: Proposals must describe important risks and risk mitigation strategies, and provide an estimate of the range of uncertainty around the expected carbon dioxide benefit. The Requesters may use adjustment factors other than those proposed by the developer's emissions reduction estimates.

Term of Carbon Dioxide Emissions Benefits: Carbon Dioxide Emissions Benefits will be evaluated over the period of time for which The Requesters receives rights to this benefit. This period of time must be equal to or less than the anticipated life of a project.

Units of measurement: All CO_2 emissions reduction figures are to be presented in metric tons of CO_2. See Appendix A for conversion factors to be used. Proposals must justify any variation from these figures. The Requesters reserves the right to apply its own conversion factors for the purpose of proposal evaluation. *For Seattle, for projects involving other greenhouse gases, use the 100-year Global Warming Potentials provided by the International Panel on Climate Change.*

Monitoring and verification: Proposals must include a monitoring and verification plan. The purpose of this plan is to define how the carbon dioxide benefit will be quantified. The quality of the proposed monitoring and verification plans is a component of project evaluation. The cost of monitoring and verification should be included in the project cost bid to The Requesters and specified in the project budget. Monitoring and verification are the responsibility of the proposer, not The Requesters. The use of third party verification is preferred. Please describe 1) procedures to be employed, 2) how the ongoing monitoring and verification will be funded, 3) the time frame and frequency over which the monitoring and verification will occur, and 4) whether a third party has been identified to audit and confirm the source data used to quantify the benefit, and if so, whether the party is under contract.

Evaluation of Proposals

The Requesters will employ a two-step evaluation process for evaluating proposals. **The Requesters reserve the sole right to use its judgment when applying or modifying this evaluation approach.** See the disclaimer on page 1.

Step 1: Essential screening criteria: Projects must meet these tests to be eligible for further evaluation:

Size of Project (See "Size of Projects," page 3.; smaller projects may be considered)
Timing of Project Implementation (See "Timing of project implementation," page 3.)
Additionality (See "Additionality requirement," page 4 and "Additionality," page 6.)
Regulatory Surplus (See "Regulatory surplus," page 4)
Quantifiability (See "Quantifiability of offsets," page 3.)
U. S. Partner for International Projects (See "Geographic limitations and preferences," page 5.)

Step 2: Evaluation criteria:

Primary selection factor: The Requesters plan to use one primary selection factor.

Cost effectiveness: Cost will be the primary selection factor, after factoring in uncertainty. The measure of cost effectiveness will be defined as U. S. dollars per metric ton of reasonably assured, additional Carbon Dioxide Emissions Benefit. The Requesters reserve the right to suspend project evaluation and/or negotiations if the price of CO_2 offsets varies materially from that initially proposed.

Additional selection factors: The Requesters plan to use the following additional selection factors in selecting projects.

Reliability of project concept: In evaluating the reliability of the emissions benefit, The Requesters will consider the quality of the project concept and design, and the performance of similar projects. The Requesters reserve the right to suspend project evaluation based upon this evaluation criterion.

Reliability of project partner: The Requesters will consider the qualifications of the proposer, the proposer's past experience with similar projects, and the qualifications of any organizations cooperating with the project. Note that proposers will be required to demonstrate their financial and institutional capability to deliver the project that they propose. The Requesters reserve the right to suspend project evaluation based upon this evaluation criterion.

Portfolio diversity: See "Portfolio diversity," page 4.

Monitoring and verification: See "Monitoring and verification," page 6. The Requesters reserve the right to suspend project evaluation based upon this evaluation criterion.

Permanence: See "Permanence," page 4.

Guarantees: See "Guarantees," page 4.

Location: See "Geographic limitations and preferences," page 5.

Replicability and expandability: See "Replicability and expandability," page 5.

Co-benefits: See "Co-benefits," page 5.

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Overview of The Project Selection and Contracting Process

The Requesters plan to use the following process and schedule in the project selection and contracting process. **The Requesters reserve the right to modify the process and schedule.**

February 22 Bidders Conference: Meeting with conference call capabilities. This is an opportunity to ask questions about the RFP and the selection and contracting process.

Meeting time: 10:30 a.m., Pacific Standard Time
Thursday, February 22, 2001
Meeting location: City of Portland Building, 1120 SW 5th Ave., 2nd Fl. Rm. C.

Conference call: Proposers may choose to participate in the Bidders Conference by conference phone. The Trust will provide information about the call to those who register for the call. This information will come by e-mail.

Please register for the Bidders Conference by following the instructions at www.climatetrust.org/reg2001.html. In your response, indicate whether you plan to attend in person or if you plan to participate by conference call. To participate in the conference call, it is essential that you register.

April 10 **Phase 1 proposals are due on Tuesday, April 10, 2001.**

April 12 The Trust will acknowledge receipt of Phase 1 proposals by e-mail.

June 21 The Trust and Seattle will identify a group of preferred projects from which to request more detailed project proposals. The Trust anticipates that this will be approximately 25 projects. *Seattle anticipates that this will be approximately 10 projects.* The Trust will provide Phase 2 proposal instructions, project-specific questions, and proposed contract terms to these proposers.

August 17 More detailed Phase 2 project proposals are due from selected proposers, including descriptions of any exceptions to the proposed standard contract terms and other contractual issues.

November 9 The Requesters will select a negotiating group and an alternate group. The Requesters will conduct negotiations with the negotiating group. Negotiations with a specific project may be terminated and a replacement named from the alternate group. As contract negotiations for a project are complete, offset contracts will be taken to the Board of The Trust and the Seattle City Council for approval. **Execution of contracts is solely dependent on approval by the Board of The Trust and/or the Seattle City Council.**

Jan 31, 2002 The Requesters have a goal of signing contracts for offsets by January 31, 2002.

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Format for Responses

Responses are due on Tuesday, April 10.

Responses are to be transmitted to The Trust in two formats:

> **By e-mail to The Climate Trust at the e-mailbox: info@climatetrust.org.**
> **Please send five hard copies to The Climate Trust, 516 SE Morrison Street, Suite 1200B, Portland, OR 97214-2390.**

Responses are to be limited to a one-page cover sheet plus ten additional pages of text with one inch margins and a twelve-point font. In addition, two appendices are required, one to display the project budget and one to display the project carbon dioxide emissions benefit calculations. **The cover sheet and text are to be transmitted in Microsoft Word 97 or compatible format, while the appendices are to be transmitted in Microsoft Excel 97 or compatible format. Responses must be in English**: We will not accept proposals that are not in English.

Proposals must provide the following information:

One-page cover sheet: Present the following information in this order:

Date
Name of Project
Location of Project
Type of Project
Type of Greenhouse Gas (Choose one: CO_2 only, non-CO_2, both CO_2 and other greenhouse gas)
Measure Implementation Starting Date
Measure Implementation Completion Date

Proposing Organization(s) Name
Proposing Organization(s) Address
Proposing Organization(s) Web Site
Contact Person Name
Contact Person Phone Number
Contact Person Fax Number
Contact Person E-Mail Address

Total Project Cost (U. S. $)
Amount of Money Requested (U. S. $)
Amount of Carbon Dioxide Emission Benefit Proposed (metric tons of CO_2 equivalent)
Price of Carbon Dioxide Emissions Benefit Proposed (U. S. $/metric ton of CO_2 equivalent)

Statement of an authorized person at the proposing organization certifying that the offsets that The Trust or Seattle acquires have not been and will not be allocated or awarded credit for carbon dioxide emissions reduction in another regulatory setting. For international projects, two authorized statements are required, one for the host country partner and one for the U. S. partner.

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Up to ten pages of text: Address the following:

Project Description
- Mitigation Measure(s)
- Implementation Approach
- Measure Implementation Schedule
- Implementing Organization(s) and Roles
- Qualifications of Proposing Organization(s)

Carbon Dioxide Benefits
- Description of Project Baseline and Project Case
- Calculation of Carbon Dioxide Benefit
- Additionality
- Leakage
- Uncertainty Range
- Carbon Benefit Permanence
- Monitoring and Verification Plan
- Replicability and Expandability

Co-Benefits

Proposed Financial Arrangements
- Sources of Project Funding
- Leverage
- Ownership of Credits

Appendix A: Present the project budget, specifying specific sources and uses of funding, identifying the capital and operating costs. Include costs for monitoring and verification throughout the project life.

Appendix B: Present the project carbon dioxide emissions benefit calculations, including addressing leakage and the range of uncertainty in the calculation of the project's carbon dioxide benefit.

Issues Raised During Solicitation Period

Clarifications and responses to substantive issues raised by proposers in writing and transmitted by e-mail to the e-mailbox info@climatetrust.org will be posted on The Trust Web site at www.climatetrust.org/2001qa.html. It is the responsibility of the proposer to keep informed regarding clarifications by visiting this Web site. Questions and answers about this offset solicitation are posted there. Please review these Q & A prior to contacting The Trust.

The Climate Trust Contact Information

The Climate Trust 516 SE Morrison Street, Suite 1200B Portland, Oregon 97214-2390		Phone: 503-238-1915 Fax: 503-238-1953 E-mail: info@climatetrust.org
Primary contact:	Mike Burnett	Executive Director mburnett@climatetrust.org
Alternate contact:	Kris Nelson	Program and Operations Manager knelson@climatetrust.org

Seattle City Light Contact Information

Doug Howell
Strategic Advisor
Seattle City Light
700 Fifth Avenue, Suite 3300
Seattle, Washington 98104

E-mail: doug.howell@ci.seattle.wa.us

Appendix A

Conversion Factors for Use in Phase 2 Proposals

Fossil Fuel Conversion Factors

Fuel Type	CO_2 Content*	CO_2 Coefficient (Lb CO_2/Million Btu)	Energy (Mill.Btu/Unit)
Natural Gas	120 lb/10^3cf	117	1.030/10^3cf
Gasoline (conventional)	19.4 lb/gal.	157	5.253/barrel
Distillate Oil/Diesel	22.2 lb/gal.	161	5.825/barrel
Residual Oil	25.8 lb/gal.	174	6.287/barrel
LPG/Propane**	11.8 lb/gal.	139	3.610/barrel
Kerosene/Jet fuel	21.4 lb/gal.	160	5.670/barrel
Anthracite Coal	4,891 lb/short ton	228	21.67/short ton
Bituminous Coal	4,861 lb/short ton	205	23.89/short ton
Sub-bituminous Coal	3,606 lb/short ton	212	17.14/short ton
Lignite Coal	2,742 lb/short ton	215	12.87/short ton

* Carbon dioxide coefficients are calculated by multiplying the carbon content of a particular fuel (for example, 42.8 lb. carbon per million Btu of gasoline) by 3.6667 pounds CO_2 per pound of carbon and multiplying that product (157.0 lb CO_2/million Btu) by the energy content of that fuel (for example, 0.125 million Btu per gallon, given 5.253 million Btu per barrel). Then multiply by the oxidation rate of .99 (accounting for one percent uncombusted carbon) to produce a carbon dioxide coefficient (in this example, 19.4 pounds CO_2 per gallon).

1 pound of carbon in carbon dioxide = 3.6667 pounds carbon dioxide, measured at full molecular weight (CO_2)

** Data are taken from recent Energy Information Agency tables, not Environmental Protection Agency sources.

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Electricity Carbon Dioxide Conversion Factors

CO_2 Intensity Factors for Marginal Electricity Generation for US Regions

	Pounds of CO_2 per kWh
Region 10: OR, WA, ID	1.202
Region 9: CA, AZ, NV	1.240
Region 8: CO, UT, MT, WY, ND, SD	1.244
Region 7: MO, IA, KS, NE	1.404
Region 6: TX, LA, OK, AR, NM	1.186
Region 5: OH, IL, MI, IN, WI, MN	1.988
Region 4: FL, NC, GA, TN, AL, SC, KY, MS	2.215
Region 3: PA, VA, MD, WV, DC, DE	2.096
Region 2: NY, NJ	1.679
Region 1: MA, CT, ME, NH, RI, VT	1.726

CO_2 Intensity Factor for New Natural Gas Fired Electricity Generation

	Pounds of CO_2 per kWh
Combined cycle combustion turbine	0.81

Other Conversion Factors

Weight

1 kilogram = 2.205 pounds
1 short ton = 0.9072 metric tons
1 metric ton = 1.1023 short tons = 2,205 pounds

Volume

Liquid Fuels

1 barrel	42 US gallons
1 barrel	159 liters
1 cubic meter	6.289 gallons

Gaseous Fuels

1 cubic meter	35.315 cubic feet

Energy

Natural Gas
1 cubic foot (cf) = 1,030 Btu
1 therm = 100 cf = 103,000 Btu
1 Mcf = 1,000 cf = 1.03 million Btu

Density

1 thousand cubic feet of methane/natural gas = 42.28 pounds

1 thousand cubic feet carbon dioxide = 115.97 pounds
1 metric ton natural gas liquids = 11.6 barrels
1 metric ton alcohol = 7.94 barrels
1 metric ton liquefied petroleum gas/propane = 11.6 barrels
1 metric ton aviation gasoline = 8.9 barrels
1 metric ton motor gasoline = 8.53 barrels
1 metric ton kerosene = 7.73 barrels
1 metric ton distillate oil = 7.46 barrels

For other conversion factors, please see the Environmental Protection Agency Web site:

www.epa.gov/ttn/chief/eiip/eiip_ghg.htm Vol. VIII link, Tables 1.4

Sources: www.epa.gov/ttn/chief/eiip/eiip_ghg.htm. For CO_2 Intensity Factors: *Regional Electricity Factors Final Report,* US Environmental Protection Agency, Atmospheric Pollution Prevention Division (APPD), November 16, 1998, contract no. 68-W6-0050. For Other Conversion Factors: http://www.eia.doe.gov/oiaf/1605/ggrpt/appendixf.html.

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BC hydro THE POWER IS YOURS

Request for Greenhouse Gas Offset Proposals

January, 2002

Background

BC Hydro is seeking 5.5 million tonnes of greenhouse gas (GHG) offsets in order to fulfill its commitment to offset 50 percent of the increase in GHG emissions through 2010 at two new natural gas-fired power generation plants.

BC Hydro first issued this request in early 2000. Several projects are progressing through negotiations and, with this request, BC Hydro is looking for more quality GHG offset projects.

The main difference between this request and the one issued in February 2001 is that BC Hydro is now looking for GHG offsets located anywhere in the world, instead of only in Canada.

Deadline

Proposals are to be submitted by **May 1, 2002**. BC Hydro will acknowledge receipt of proposals by e-mail. BC Hydro aims to negotiate and sign GHG offset contracts by late 2002.

Criteria

BC Hydro will apply two sets of criteria to proposed GHG offset projects: minimum and evaluation criteria. Proposed projects must fulfill the minimum criteria in order to be considered for investment. Evaluation criteria will then be used to assess and rank those projects that meet the minimum criteria.

Minimum Criteria

Location	Global
Offset Type	Emission reduction, emission avoidance or geological sequestration only. We will not consider biological sequestration projects, such as afforestation or soil sequestration, under this request.
Offset Timing	Future years only, with a preference for offsets occurring between 2003 and 2015.

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Project Status	Not yet initiated. We will not consider offsets from projects that are already operating or under construction.
Volume	Minimum of 100,000 tonnes CO_2e in total (e.g. 10,000 tonnes per year for 10 years).
Net Reduction	The project must achieve a net reduction in GHG emissions after accounting for any increase in GHG emissions as a result of the project (also known as leakage).
Voluntary	The change in GHG emissions must be surplus to direct or indirect regulatory requirements.
Ownership	The proponent must either have title to the emission reductions or be capable of acquiring such title.
Verifiable	The change in GHG emissions must be verifiable by a third party.

Evaluation Criteria

Price	Preference for lower cost offsets.
Volume	Preference for projects delivering at least 500,000 tonnes CO_2e in total (e.g. 50,000 tonnes per year for 10 years).
Additionality	Preference for projects that would not otherwise occur without the sale of GHG offsets or BC Hydro's involvement.
Uncertainty	Preference for projects involving less uncertainty with respect to the delivery and volume of GHG emission reductions.
Guarantee	Preference for proponents that guarantee delivery of contracted GHG offsets, subject to liquidated damages in the event of non-delivery.
Risk	Preference for projects involving less risk and with strong risk mitigation plans.
Proponent Capabilities	Preference for proponents with demonstrated capability to carry out the project.
Transaction Costs	Preference for lower transaction costs.
Environmental Benefits	Preference for projects that generate non-GHG environmental benefits.

Social/Economic Benefits	Preference for projects that generate social and/or economic benefits (e.g. job creation, skill development, opportunities for disadvantaged groups, etc).

Proposal Contents

Proposals should contain the following information at a minimum.

- Project name
- Project location
- Total volume of GHG offsets for sale (tonnes CO_2e)
- Term of proposed contract (e.g. 2003-15)
- Asking price for offsets (Cdn or US $ per tonne CO_2e)
- Proponent contact information
- Project description
- Project status
- Potential dates for project construction, commissioning and decommissioning
- Regulatory requirements affecting GHG emissions
- Ownership of the GHG emission reductions
- Verifiability of the GHG emission reductions

In addition, proponents are welcome, but not required, to submit up to 5 additional pages of information on the proposed project and how it meets BC Hydro's criteria.

Confidentiality

BC Hydro is prepared to enter into a confidentiality agreement substantially like the one attached in Appendix A when either BC Hydro or the proponent requests it.

Calculating GHG Emission Reductions

BC Hydro is interested in projects that reduce emissions of carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride (the six classes of GHGs listed in the Kyoto Protocol). All GHG emission reductions are to be quantified in metric tonnes of carbon dioxide equivalent (CO_2e) using recommended values for each gas' Global Warming Potential over a 100 year timeframe issued by the Intergovernmental Panel on Climate Change. They are to be estimated using a base case indicating all GHG emissions without the project and a project case indicating all GHG emissions with the project. The difference between the two cases represents the project's GHG emission reductions.

The following are two of many sources for GHG emission factors and Global Warming Potentials:
http://www.vcr-mvr.ca/downloads/pdf/complete_guide.pdf (starting at page 41 of 63)
http://www.ec.gc.ca/pdb/ghg/ghg_docs/Emission_Factors.pdf

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Proposal Submission

Proposals are to be submitted by **May 1, 2002**, to:

Tim Lesiuk
BC Hydro
333 Dunsmuir Street, 10th floor
Vancouver, BC
Canada V6B 5R3
Tel: 1-604-623-4254
Fax: 1-604-623-4335
E-mail: tim.lesiuk@bchydro.com

Proposals submitted electronically should be in Microsoft Word or PDF format.

Questions regarding this request should be directed to Mr. Lesiuk.

Disclaimer

This Request For Proposal is not an offer by BC Hydro to purchase any rights, goods or services, and submission of project proposals does not create any rights whatsoever. BC Hydro is free to accept or reject any project proposal. It is not bound to accept the economically most favourable proposal, or any proposal at all, and may accept any proposal regardless of whether it conforms to the terms of this Request for Proposals. BC Hydro and its directors, officers, agents, employees or assigns are not liable at law or at equity to any project proponent or participant or any other party for any decision by any of them regarding submission, acceptance, rejection or modification of a proposal, or in any other connection with this Request for Proposals. All costs directly or indirectly related to preparation of a proposal or submission shall be the sole responsibility of, and shall be borne by, the submitter of the project proposal.

The information provided in connection with this Request for Proposals is provided "as is", without warranty or condition of any kind, either expressed or implied, including warranties of completeness, accuracy, usability, fitness for a particular purpose of merchantability. Liability in connection with this or any other information can only arise upon entry into a binding written agreement in connection with a project proposal pursuant to this Request for Proposals and not otherwise. The user's sole remedy for dissatisfaction with the information provided is to stop using the information.

BC Hydro, on behalf of its affiliates, officers, directors, employees, agents, consultants and contractors, completely disclaims all liability for the use of the information posted in this web site by any user or viewer, including liability for any losses, damages, lawsuits, claims or expenses, including, but not limited to, consequential losses anyone may incur as a result of using this information.

Appendix A

CONFIDENTIALITY AND NON-DISCLOSURE AGREEMENT

THIS AGREEMENT dated as of the _____ day of _____ , 200_

BETWEEN:

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY, a British Columbia Crown Corporation

(" BC Hydro")

AND:

XXX, a _____ corporation

("XXX")

WHEREAS:

A. BC Hydro and XXX wish to enter into discussions (the "Discussions") concerning a potential business relationship between the parties in connection with the opportunity described on Schedule A (the "Opportunity");

B. Over the course of the Discussions, the Parties expect to disclose to each other, whether orally or in a visual or written (including graphic, electronic or any other) form, and whether directly or indirectly, certain proprietary confidential business, technical or know-how information or data, which may or may not be expressly identified by the Party disclosing the same (the "Disclosing Party") as confidential (collectively, the "Confidential Information"); and

C. The Parties desire to keep the Discussions, including the nature and scope thereof, confidential, and to protect their respective Confidential Information from unauthorized use and disclosure.

FOR GOOD AND VALUABLE CONSIDERATION, the receipt and sufficiency of which each Party acknowledges, the Parties agree as follows:

1. **(a) Non Disclosure.** Each Party will treat as confidential and will not disclose to any third party in any manner whatsoever any information pertaining to the Discussions, including the fact that the Parties may enter, or have entered, Discussions, or any Confidential Information of the other Party, except as required by law or any regulatory authority having jurisdiction so long as the Confidential Information is marked or summarised as provided in paragraph 1(b) hereof. Each Party will use at least the same precautions to protect the other Party's Confidential Information as it would use to protect its own Confidential Information of like importance and, in any event, no less than a reasonable standard of care.

   (b) Marking. The Party receiving Confidential Information (the "Receiving Party") shall have a duty to protect Confidential Information that is (a) disclosed in writing, electronic or other tangible form and is marked as "Confidential" or is similarly marked at the time of disclosure, or (b) disclosed by the Disclosing Party in a manner other than in tangible

form, provided such Confidential Information is clearly identified as confidential or proprietary at the time of disclosure and promptly summarized in writing clearly identifying the same as confidential.

2. **Permitted Disclosure.** Notwithstanding Section 1, each of the Parties may disclose the other Party's Confidential Information to its employees, officers, agents, consultants and professional advisors (the "Representatives") to the extent such disclosure is reasonably necessary for the purposes of the Discussions or for the evaluation of the Opportunity, and provided that such Representatives have been informed of this Agreement and the need to maintain the confidentiality of information disclosed to them. In addition, BC Hydro may disclose Confidential Information and information pertaining to the Discussions to representatives of the Government of British Columbia who have a need to have knowledge of the Confidential Information and who have been informed by BC Hydro of this Agreement and the need to maintain the confidentiality of information disclosed to them.

3. **Disclosure Required by Law.** If disclosure is required by law or any regulatory authority having jurisdiction, the Receiving Party required to make disclosure of any of the Disclosing Party's Confidential Information will, to the extent not legally prohibited from so doing, notify the Disclosing Party in a timely manner of its obligation to disclose prior to making the disclosure, so as to allow the Disclosing Party to take steps to try to protect its Confidential Information. In no event will a Receiving Party disclose under this provision any portion of a Disclosing Party's Confidential Information except that which it is legally required to disclose.

4. **Freedom of Information Legislation.** XXX acknowledges that BC Hydro is subject to the British Columbia *Freedom of Information and Protection of Privacy Act* and associated regulations, and agrees that BC Hydro's non-disclosure obligations under this Agreement are subject to the provisions of that legislation, as the same may be amended or replaced from time to time. The Parties acknowledge that Confidential Information provided to a Receiving Party constitutes commercial and financial information of the Disclosing Party, which has been, or will be, disclosed in confidence. It is also acknowledged that disclosure of any Confidential Information publicly or to third persons could reasonably be expected to harm significantly the competitive position and/or interfere with the negotiating position of a Party, and further could reasonably be expected to harm the financial or economic interests of BC Hydro. Accordingly, the Parties confirm their intention that all Confidential Information disclosed to each other shall be deemed to be confidential and exempt from disclosure to third persons in accordance with Section 21 of the *Freedom of Information and Protection of Privacy Act* of British Columbia, as amended from time to time.

5. **Use.** Each of the Parties will use the other Party's Confidential Information only for the limited purpose of the Discussions and the evaluation of the Opportunity, and for no other purpose without the other Party's prior written permission. Each Party will further ensure that its Representatives use such Confidential Information only as permitted under this Agreement. The Receiving Party will be responsible and liable to the Disclosing Party for any unauthorized use of the Disclosing Party's Confidential Information by any third party to whom the Receiving Party discloses such Confidential Information, including unauthorized use by any of the Receiving Party's Representatives. The Disclosing Party who created or first disclosed Confidential Information warrants that it is authorized to make disclosure of Confidential Information for the purposes herein provided. A Disclosing Party that created or first disclosed Confidential Information may use that Confidential Information in any manner determined by it.

6. **Exclusions.** For the purposes of this Agreement, Confidential Information does not include, and this Agreement has no application to, any information that:

(a) is used or disclosed in a manner consistent with the prior written authorization of the Disclosing Party who creates or first disclosed the information;

(b) becomes available to the Receiving Party on a non-confidential basis from a source other than the Disclosing Party or any of the Disclosing Party's Representatives, provided that such source is not bound by a confidentiality agreement with the Disclosing Party or its Representatives or is not otherwise prohibited from disclosing Confidential Information to a Receiving Party or its Representatives by any contractual, legal or fiduciary obligation;

(c) was known to or lawfully in the possession of the Receiving Party prior to the time of disclosure by the Disclosing Party, and with respect to which there is no existing obligation of confidentiality;

(d) is developed independently by the Receiving Party or any of its Representatives without the use of or reliance upon any of the Disclosing Party's Confidential Information; or

(e) is or becomes generally available to the public, other than through a violation of this Agreement by the Receiving Party, or any of its Representatives.

Confidential Information which is specific shall not be within the scope of any exclusion merely because it is embraced by general information within an exclusion. Any combination of information or data that comprises part of the Confidential Information shall not be within the scope of any exclusion because the individual parts of that information or data are within an exclusion, unless the combination itself is within an exclusion.

7. **Ownership.** To the extent the Confidential Information was the property of the Disclosing Party before the disclosure of it to the Receiving Party, the Confidential Information remains the property of the Disclosing Party to the same extent, and the Receiving Party acquires no ownership interest therein. A Receiving Party shall not remove any copyright, confidential, proprietary rights or intellectual property notices attached to or included in any Confidential Information received from the Disclosing Party. A Receiving Party shall reproduce all such notices on any copies.

8. **Competition Not Restricted.** The Parties recognize that a Party may be engaged in the development or marketing of projects, products, goods, services and commodities (collectively or individually, "Products") that are competitive with those of the other Party. Nothing in this Agreement prohibits a Party from engaging in the construction, research, development, marketing, sale, distribution or licensing of any Products independently developed and produced by it without the unauthorized use or disclosure of Confidential Information.

9. **Return of Confidential Information.** At any time upon the written request of the Disclosing Party made prior to the termination of the obligations of confidentiality, non-disclosure and restricted use in this Agreement, the Receiving Party will, within 30 days of such request, return, or if requested destroy, or ensure the return or destruction of, all copies or records of the other Party's Confidential Information in the possession or control of the Receiving Party or any of its Representatives, except that 1 copy of such Confidential Information may be retained by the Receiving Party's counsel. The obligation to delete or destroy shall also extend to any document prepared by the Receiving Party which substantially embodies or contains extracts from such Confidential Information. The Receiving Party's obligations under this Agreement shall, however, survive any such return or destruction of the Confidential Information.

10. **Schedules.** The following attached Schedule forms part of this Agreement:

Schedule A – the Opportunity

11. **Equitable Remedies.** Receiving Party acknowledges that irreparable harm may result to Disclosing Party if it breaches its obligations under this Agreement and acknowledges that such a breach would not be adequately compensable by an award of damages. Accordingly, Receiving Party agrees that remedies for any such breach may include, in addition to other remedies and damages available in law or equity or under this Agreement, specific performance, injunctive relief or other equitable relief enjoining such breach and agrees to waive any requirement for the securing or posting of any bond or other security in connection with the obtaining of any injunction or other equitable relief.

12. **Term.** The obligations of confidentiality, non-disclosure and restricted use contained in this Agreement will automatically terminate two (2) years after the date of this Agreement, except as otherwise agreed in writing by the Parties.

13. **Limitation of Liability.** In no event will either Party be liable to the other Party in connection with any breach of this Agreement for any indirect, incidental or consequential damages, including loss of profits. A Disclosing Party is not liable to a Receiving Party for any inaccurate or incomplete information, except in case of willful misrepresentation or to the extent, if any, otherwise expressly agreed in writing, and information which may be disclosed shall not constitute any representation, warranty, assurance, guarantee, or inducement.

14. **Gender and Number.** Words in one gender include all genders, and words in the singular include the plural and vice versa.

15. **Severability.** If any term of this Agreement is partially or wholly invalid or unenforceable for any reason, it shall be deemed to be severed from this Agreement, and its invalidity or unenforceability will not affect the operation or any other provision of this Agreement.

16. **Governing Law and Jurisdiction.** This Agreement will be governed by and construed in accordance with the laws of British Columbia and the laws of Canada applicable in British Columbia. The Parties attorn to the non-exclusive jurisdiction of the courts of British Columbia, and courts to which appeals therefrom may be taken, in connection with any action or proceeding under or in relation to this Agreement.

17. **Notice.** Any notice or communication required to be given or made under this Agreement will be in writing and delivered by hand, courier, pre-paid registered mail or fax to the Party concerned at the following address:

If to BC Hydro:

BC Hydro
__ Floor, 333 Dunsmuir Street
Vancouver, BC
Canada V6B 5R3
Attention: _____
Fax No.: _____

If to XXX:

XXX
_____
_____
_____
Attention: _____
Fax No.:_____

Notices or communications given by hand, courier, or pre-paid registered mail shall be effective upon actual receipt. Notices and communications given by fax shall be effective upon actual receipt if received during the Recipient Party's normal business hours, or at the beginning of the Recipient Party's next business day after receipt if not received during the Recipient Party's normal business hours. Either Party may at any time change its address or representative for the purpose of notices or communications under this Agreement by a notice in writing in accordance with this provision.

18. **Enurement.** This Agreement will bind and benefit each of the Parties and their respective successors and permitted assigns.

19. **Entire Agreement.** This Agreement is the entire agreement between the Parties concerning the subject matter hereof and supersedes all prior agreements, communications, representations and understandings between the Parties, whether oral or written, in connection with such subject matter.

20. **No Relationship or Obligation.** Nothing in this Agreement obligates the Parties to enter into the Discussions or any business relationship and no relationship of partnership, joint venture, principal and agent or otherwise is created between the Parties as a result hereof. In addition, nothing in this Agreement obligates either Party to purchase or provide any services or products of any kind from the other Party, or to enter into any future agreements or business arrangements of any kind with the other Party.

21. **Amendment.** This Agreement may be amended or supplemented only by a written agreement signed by each Party.

22. **Assignment.** Neither Party may assign this Agreement without the prior consent of the other Party.

23. **Execution of Fax Copy.** Execution by either Party of a facsimile copy of this Agreement will be deemed to constitute effective execution of this Agreement by that Party.

24. **Counterparts.** This Agreement may be executed in any number of counterparts, and each executed counterpart will be considered to be an original. All executed counterparts taken together will constitute one agreement.

25. **Effective Date.** This Agreement takes effect as of the last date indicated below, but only after execution and delivery of this Agreement by both Parties.

TO EVIDENCE THEIR AGREEMENT each of the Parties has executed this Agreement as of the date first above written on the respective dates set forth below.

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
By its authorized signatory:

_____

Print Name: _____

Title: _____

Date: _____

XXX
By its authorized signatory:

_____

Print Name: _____

Title:_____

Date:_____

SCHEDULE A

The potential business relationship between the Parties is in connection with >

ANNEX F.
CASE STUDY – A RENEWABLE ENERGY PROJECT

ABC Power Project Limited (APPL) has recently developed a Poultry Waste-based Power generation project with a capacity of 6 MW in the state of Karnataka. A detailed technological feasibility study has been carried out and has identified a direct combustion system (these technologies are based on combustion of the poultry waste to produce steam to generate electricity) as the most suitable option for generation of power from poultry waste.

Environmental Advantages

- The methane emission from the decomposition of the poultry waste is averted
- The power generation from the project replaces the need of power from conventional fossil fuel based plants and thereby mitigates the emission of GHGs.
- The ash produced in the process is a very effective and environmentally friendly fertilizer.

Market Assessment

Raw Material:

This project is using poultry waste for the first time in India for power generation.

- The many poultry farmers in the surrounding vicinity insure a continuous supply of raw material.

Finished Goods (Electricity):

- The state of Karnataka is power deficit state, and currently there is no risk of demand fluctuation as the demand far exceeds the available supply.
- The company has signed "Power Purchase Agreement" with the Karnataka Power Transmission Corporation which minimizes the off-take risk.

The State Government of Karnataka has placed a priority on implementing renewable energy projects to bridge the demand-supply gap in power. In addition, the size of this project is small and it is being developed by an independent power producer. These attributes also qualify the project as a priority project for the Government

Baseline Development:

The project is well within the limit of a 'small' project (< 15MW), and it is going to replace the power requirement from the regional grid. The baseline, therefore, has been taken as the regional grid.

The greenhouse gas emissions baseline design and its implementation for this Poultry Waste to Power project provides a case study for the process of quantifying the GHG emission reduction resulting from climate change mitigation projects in the field of renewable energy power projects (i.e. alternative energy production which is less carbon-intensive).

The following checklist was followed to assess whether the project had the necessary information for baseline development.

- Has a Climate Change Mitigation Project (CCMP) been identified and defined?
- Has the project boundary been accurately defined?
- Do we have enough data required to perform the baseline calculations?

The answers to the questions are as follows:

- The CCMP is identified as a 6 Mw poultry waste to power project promoted by the ABC Power Project Limited (APPL)
- The definition of the project boundary is extremely crucial. It may be noted that the project boundary definition also acts as the definition of the reference zone for the baseline, which is always spatially designed for climate change applications.
- For the poultry waste to power project, the project boundary is the Southern Grid, which comprises of the power grid system in the states of Karnataka, Andhra Pradesh, Kerala, Tamil Nadu and Pondichery. The Southern Regional Load Dispatch Center (SRLDC) manages this grid. The reason behind the baseline being defined in a regional perspective is that there are a *substantial amount of power exchanges between the Southern Indian States but not much between them and other regions*, so that the point of reference is the regional grid itself.
- The project developers have provided all project specific information related to the development of the baseline. For computation of the regional baseline, the team examined the Southern grid for the necessary details.

This section begins with a discussion on the assumptions governing the baseline design and then designs the baseline.

Location of the plant: in 'X' district, Karnataka, supplied by the Southern Grid.

Assumptions

- The power exchanges between the Southern and Western grid are negligible.
- Preliminary discussions with grid managers in states of Southern grid have revealed that they would not despatch thermal power plants owned by the Central utilities (like the National Thermal Power Corporation) should there be less demand at any time. Thus the marginal unit of power is supplied by thermal power plant. Therefore the baseline for the project is a thermal power plant.
- The APPL plant would, therefore, displace power generated by thermal power plants, since the Karnataka Transmission & Distribution Corporation (KTDC)

Baseline Design

- Based on the assumptions mentioned above, the marginal power plant being a thermal plant based on coal usage, the next step is to figure out the nature of coal that is used for the purpose of generation of power. Most of the coal used in the purpose of power generation is in the category of bituminous or other sub-bituminous coal, with an average calorific value of around 3200 kcal/kg to 3500 kcal/kg. From IPCC estimates, the carbon emissions factor for the category of sub-bituminous coal varieties is 26.8.
- The total export of power from the project to the local grid in Karnataka is around 27.8 million units per annum. As per the assumptions made, this implies that the same amount of power is not being drawn from the marginal power plant, or the thermal power plant as discussed above.
- In addition to the power that the project displaces at the central generating station (CGS), (as the power from the ABC Power Station is locally consumed in the X district) there are also Transmission and Distribution (T&D) losses that are incurred in the present distribution system, where the power is transmitted from the CGS and consumed in the local area. For the purposes of the baseline analysis, the figure for the T&D losses has been conservatively assumed at 20%.
- Assumptions have been made on operational factors such as:
  - The fraction of carbon that is oxidized.
  - Assumptions on the efficiency levels of the baseline plant.
- The basis of the assumptions are the default parameter guidelines of the Intergovernmental Panel on Climate Change (IPCC) for the purpose of assessment of climate change mitigation projects.

  Note: For the purposes of initial assessment, a static baseline has been designed. However, to earn carbon offsets, the baseline may have to be revised periodically.

Baseline Data Summary at a Glance

Actual Power generation of the Karnataka Power Project Limited (APPL)

- *Plant details:*
  - Installed capacity: 6 mw
  - Operating hours (Annual): 7960 hours
  - Plant load Factor: 65% for year I
  - Auxiliary Consumption: 10%
  - Net Capacity Utilization: 52.9% or 3.17 Mw for year I.

It may be noted that for the first couple of years, the plant load factor remains at a lower level, at 65% and 75% respectively. It is from the third year that the load factor goes up to 85% and stabilizes at that level.

Baseline Determination, Emission Calculation and Carbon Offsets

- Carbon Emissions Factor for the type of coal specified (Sub-bituminous): 26.8
- Baseline Plant Efficiency Factor (assume 33%)
- Transmission and Distribution losses (assumed 20%)
- Baseline Carbon emissions: 1.24 kgCo2/Kwh of energy generated

Sustainable Development Component:

The sustainable development component assessment of a project provides the degree to which the project contributes to the process of achieving sustainable development, as well as how it assists project developers in the process of incorporating sustainable development principles into their projects.

Indicators of sustainability

In the box below the four component 'pillars' of sustainable development are explained. Project specific sustainable development indicators are explained in the paragraphs following the box.

Pillars of Sustainability

- *Social – involving parameters that indicate social progress;*
- *Economic – describes the project's contribution to economic well-being;*
- *Environmental – how the project applies to environmental security; and*
- *Technological – Is the use of technology sustainable in the overall perspective?*

Overall comment: This project is among the first attempts in India to produce power through the use of poultry waste. The project, in addition being a renewable energy initiative, will replace energy from thermal energy sources. The project has certain specific benefits, which are listed as follows:

- Pollution from existing disposal methods is reduced. Waste from poultry has traditionally been disposed off in the open to be used in the ploughing season as manure. This practice causes significant odor problems as well as the sippage of nitrates and other pollutants into the ground water and damage to the atmosphere from methane, a greenhouse gas.

- Improved Bio security. The litter is delivered to the plant in covered trucks as soon as it becomes available at the farms. At the plant, odors and other pollutants are destroyed through a specially designed storage facility and early combustion of the raw materials at high temperature.

- Soil nutrients in the manure are re-used. The ash produced by the process is marketed as an environmentally friendly, nitrogen free fertilizer, rich in phosphates and potash and other key plant nutrients, which are recycled.

- Gaseous emissions are cleaner than those from traditional power plants. The chemical composition of poultry waste is such that it ensures that the level of noxious gases released, SO_X and NO_X, is a small fraction of that emitted by the coal-fired generation process. In addition, these emissions are well within the Indian statutory limits.
- Employment Generation. The project generates primary and secondary employment in and around the project site. As a tertiary impact, the sellers of the poultry waste also derive a value from something that was earlier not valued at all, or at very negligible levels.
- Macroeconomic Impact of technology. The technology is highly replicable in the context of a country such as India, with a large poultry and livestock population. There is a significant potential positive macro-impact for the technology.

Conclusion: These are the broadly the parameters for determining the ABC Power project's contribution to sustainable development in the project area. Precise indicators may be developed jointly with the financing institution and the project developers.

The following are the steps involved in the process of conducting a sustainability assessment:

- Translate project objectives into sustainable development indicators.
- Examine if the project specific goals are in line with the country's overall sustainable development priorities.
- Quantify indicators and develop them into target indicators
- Periodically assess how well the project is meeting the targets against the baseline, through conduct of social assessments and environmental audits
- Report results to the UNFCCC or other certifying authorities through Operational Entities.

The period of assessment should be annual. These are broad guidelines that are to be finalized and adopted. The modalities need to be spelt out by the project host and the investor.

Under the USAID/GEP-CCS project, a template for standard DPR information was prepared. Such templates help the funding institutions and investors to obtain a quick overview of the projects. Interested investors may then work closely with the project developers to complete the transaction of a carbon offset purchase to their mutual satisfaction

The DPR-Assessment sheet of the project as attached here, shows the financial implication of selling carbon offsets and its increased IRR rate. It also quantifies the risk factors involved and how those risk factors will be addressed.

Detailed Project Report (DPR) Worksheet

For GHG mitigating projects under
USAID's Greenhouse Gas Pollution Prevention Project – Climate Change Supplement

Managed by The Louis Berger Group, Inc.

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Instructions:

This form is for the purpose of gathering relevant project and equipment finance information for projects developed under USAID India's Greenhouse Gas Pollution Prevention Project – Climate Change Supplement (GEP-CCS). It is designed for project developers and financial institutions involved with clean energy or other types of GHG mitigating projects that are placed into the GEP-CCS pipeline.

Format: The form is designed to capture two distinct types of projects: Section A) Basic Equipment Finance, and Section B) Project Finance.

Basic Equipment Finance is defined as the purchase of equipment, using external debt financing, in which corporate balance sheet financing is used to pay back the loan. An example of this might be where an Indian firm installs a bank of solar panels on the factory roof for captive energy. Since this would not involve a direct external revenue stream, it would need to be financed through balance sheet payments. Information requirements for simple equipment purchases are focused almost solely on the existing financial credit-worthiness of the buyer.

Project Finance, by contrast, is focused on anticipated revenue streams from the project activity (or off-balance sheet financing). For example, a grid-based biomass co-generation facility would likely depend upon energy payments from a local electricity board. Much more detailed information about the project, project promoter, power purchase agreement, debt and equity sponsors and profitability and cash flow analyses are necessary to determine the relative risk and financial viability of the project.

As both types of projects are eligible for support under the GEP-CCS, this form addresses each type of financing. For simple Equipment Finance, complete Section A only. For Project Finance, complete Section B to describe the entire project, and also complete a Section A form for each major piece of project equipment that is imported from US suppliers. This is a working electronic document/check-list. When each question is answered, place an electronic checkmark (√) in the left-hand box as a reference point for completion of the form.

1. Contact Information for the Prospective Borrower

	Name of Company	ABC Power Project Limited (APPL)
	Address	8-1-332/2 M. G. Road Bangalore-500 008
	City, State, Province	Karnataka,India
	Contact Name	Mr. Vasudevan
	Contact Phone	
	Contact FAX	
	Contact EMAIL	

2. Availability of Financial Information on Borrower

	Audited financial statements available for last 3 fiscal years?		
	Audited financials being provided to LBG Washington?		
	Was firm in same general line of business for last 3 years?		
	Has firm reported operating profits AND net income during each of last 2 years?		

3. Borrower's Financial History (last three Fiscal Years)

	EBIDT			
	EBIDT/Total Income			
	Operating Profit (OP)			
	OP/TI			
	Net worth			
	Equity			
	EPS			
	Dividend			
	Major Capital Investments			
	Debt: Equity ratio			
	Fixed Asset Coverage Ratio			
	Current Ratio			
	Credit Rating by Lead FI/Bank			
	Depreciation/Amortization			

	Expense			
	Interest Expense			
	Current maturity of LTD			

4. Background information on all used and unused short and long-term debt

CONCISE REPORT OF THE PROMOTERS BACKGROUD TO BE PROVIDED

7. About the Business Negotiations

	Is the manufacturer of the technology a domestic company?		
	Is the manufacturer located overseas (exporter)?		
	Is the manufacturer a US company?		
	Have any price negotiations occurred?		
	Has a purchase order been submitted?		

How many units are in the Purchase Order? _____
What is the estimated unit cost of technology (US$)? _____
What is the total cost for the Purchase Order? _____

8. Contact Information on the Manufacturer

√	Name of Manufacturer	
	Address	
	City, State, Province	
	Contact Name	
	Contact Phone	
	Contact FAX	
	Contact EMAIL	

9. About the Trade Financing (For Equipment Imported Into India)

Is trade financing being sought for the import of the equipment to India? _____

What type of trade financing is being sought (insurance, guarantees, and working capital?

_____

_____

10. Has a domestic or overseas lender been identified? _____

	Name of Lender	
	Address	
	City, State, Province	
	Contact Name	
	Contact Phone	
	Contact FAX	
	Contact EMAIL	

Project Name: ABC Power Project Limited (APPL)[1]

Project Promoter: Mr. Vasudevan

Special Purpose Vehicle:

1. Executive Summary: Project at a Glance

ABC Power Project Limited (APPL)[1] is proposing to set up a poultry waste based power project with a 6 MW capacity in X district of Karnataka. APPL is a fully owned company of Karnataka Alloys Pvt. Ltd. The parent company, Karnataka Alloys Pvt. Ltd was set up in 1985 for the manufacture of steel and resistance alloy wires in and superfine sizes used in various electrical and electronic industries. This project is launched as a SPV (Special Purpose Vehicle) as part of the power generation division of the parent company.

The proposed project location offers several advantages in terms of feed stock (poultry waste), availability of civic amenities, availability of ground water and close proximity to the KTDC grid lines. The poultry waste can be collected from a number of poultry farms located within a radius of 50 km from the proposed power plant. As per the findings made by the company and the information provided by the Poultry Federation and the National Egg Coordination Committee, the total waste available in and around the site is 1000 tons per day. The company's requirement is estimated at 250 tons per day, which is 25% of the total availability of waste (within a 50 Km radius).

The technology to be employed in the power generation is standard indigenous solid fuel combustion and steam raising technology. Fuel is delivered to a bunker where it is stored at negative pressure to reduce odor and dust emissions. It is then transferred by crane / conveyor to the combustion unit in-feed system.

The total capital cost of the project excluding interest during construction is Rs 332.00 million, out of which the equity portion is Rs. 83.00 million and the expected loan is Rs 249.00 million. The Debt-Equity ratio is 3:1, which is acceptable for "Power Generation" Projects. The financial analysis indicates that IRR (Internal rate of return) calculates out at 38.75% and average DSCR (Debt service coverage ratio) is 4.04 and break-even point capacity is 43.73%. The financial analysis indicates that the entire loan can be paid back within a period of 10 years from the date of commissioning the project including two years of moratorium for repayment of term loan. The project can be implemented from the year 2003 according to the estimation.

The company has signed a marketing agreement with KTDC. Under this agreement, the transmission company will purchase the power at a pre-determined rate of Rs. 2.25 per kWh in the year 1994-95 escalated at a rate of 5% per annum.

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4. Committed Financing (if any)

a. Committed Debt Providers

b. Committed Equity Providers

Promoters	1.77	100.00

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5. Estimates of Profitability

Revenue from Power Sale	90.41	109.54	130.35	136.86	143.71	150.89	158.44	166.36	174.67	183.41
Other Revenue	42.90	49.50	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
	133.31	**159.04**	**186.45**	**192.96**	**199.81**	**206.99**	**214.54**	**222.46**	**230.77**	**239.51**
Fuel Cost	20.59	23.76	26.93	26.93	26.93	26.93	26.93	26.93	26.93	26.93
O&M Cost	6.50	7.50	8.50	8.50	8.50	8.50	8.50	8.50	8.50	8.50
Adm./Selling Cost	2.74	3.20	3.57	3.82	4.10	4.37	4.75	5.02	5.40	5.80
	29.83	**34.46**	**39.00**	**39.25**	**39.53**	**39.80**	**40.18**	**40.45**	**40.83**	**41.23**
PBIDT	103.48	124.58	147.45	153.71	160.28	167.19	174.36	182.01	189.94	198.28
Depreciation	23.30	23.30	23.30	23.30	23.30	23.30	23.30	23.30	23.30	23.30
Interest Term loan	19.80	19.80	19.80	17.80	15.80	13.90	11.80	9.90	7.90	5.90
Working cap	1.40	1.70	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90
PBT	58.98	79.78	102.45	110.71	119.28	128.09	137.36	146.91	156.84	167.18
Provision for Tax	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PAT	58.98	79.78	102.45	110.71	119.28	128.09	137.36	146.91	156.84	167.18
Dividends	0.00	0.00	8.30	10.38	12.45	14.52	16.60	18.68	20.75	20.75
Net Cash Flow	56.98	79.78	94.15	100.33	106.83	113.57	120.76	128.23	136.09	146.43

6. Projected Cash Flow

Sources of Funds											
PAT	0.00	58.98	79.78	102.45	110.71	119.28	128.09	137.36	146.91	156.84	167.18
Depreciation	0.00	23.30	23.30	23.30	23.30	23.30	23.30	23.30	23.30	23.30	23.30
Inc. in Equity Capital	83.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Inc. in Term Loans	249.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Inc. in Bank Borrowings	0.00	8.00	1.30	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Sources	**332.00**	**90.28**	**104.38**	**126.95**	**134.01**	**142.58**	**151.39**	**160.66**	**170.21**	**180.14**	**190.48**
Application of Funds											
Capital Expenditure	329.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Inc. in Current Assets	0.00	10.60	1.80	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Term Loan Repayment	0.00	0.00	0.00	0.00	35.60	35.60	35.60	35.60	35.60	35.60	35.40
Taxes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dividend	0.00	0.00	0.00	8.30	10.38	12.45	14.52	16.60	18.68	20.75	20.75
Total Application	**329.40**	**10.60**	**1.80**	**9.90**	**45.98**	**48.05**	**50.12**	**52.20**	**54.28**	**56.35**	**56.15**
Net Surplus	2.60	79.68	102.58	117.05	88.03	94.53	101.27	108.46	115.93	123.79	134.33
IRR		**33.28%**									
DSCR		5.16	6.21	7.35	2.84	3.08	3.34	3.64	3.96	4.32	4.73
Av. DSCR		**4.04**									

7. Status of Finance Negotiations

A. Are you in negotiations with any prospective debt providers? If yes, please specify and elaborate on expected time frame.

The project promoters are currently in advanced stages of negotiations with prospective debt providers. However, as part of the non-disclosure norms of the agreement that the promoters have entered into with the respective funding institutions, they are not in a position to disclose information to any other individual / corporate entity, except directly to other funding institutions.

B. Do you plan to submit this project to a private venture capital firm or an international equity organization (e.g. REEF)? If yes identify specific fund and elaborate on negotiations.

REEF was approached but the matter did not proceed, promoters are planning to negotiate with a funding agency in Switzerland but they are not in a position to disclose the date and any other information to any individual/ corporate entity at this point of time.

C. Do you plan to submit this project to an international tender for carbon emissions reductions (e.g. Oregon Climate Trust)? If yes, please specify tender and closing date for submission.

The project would like to submit the project to an international agency/company like Natsource, the Netherlands government fund, or another fund to apply for carbon offset credits under the Kyoto Protocol instruments, or to trade the offsets on the open market.

Indian project developers should also look for private investors who may wish to invest in the carbon offsets generated by the project. The project promoters and facilitators have the utmost confidence, backed by data, that the project will pass the rigorous additionality tests that are set under the Protocol for projects to qualify as CCMPs.

8. Project Promoter Contact Information

	Name of Project Promoter	Mr. Vasudevan
	Address	
	City, State, Province	Karnataka, India
	Contact Name	
	Contact Phone	
	Contact FAX	
	Contact EMAIL	

9. Project Management Team

10. Project Promoter Financial History

	What were profitability figures last 3 years?	Promoter of APPL, Karnataka Alloys have profitable operations for last five years
	Book value of firm?	SPV is recently floated
	EPS reserves and surplus last 3 years?	SPV is recently floated
	What is current business?	Manufacturing Steel and Resistance alloy wires and superfine sizes used in various Electrical and Electronic industries.
	What are synergies between business and this project?	Experience & Expertise in the industrial sector.

11. Project Promoter Relevant Experience:

Briefly describe the relevant experience, if any, possessed by the project promoter. Has the promoter developed similar projects?

The proposed project is the first poultry waste to energy project in the country. However, it employs a standard combustion technology. Promoters have skilled engineers who have requisite experience in designing and operating plants based on this technology. Also, the promoters have conducted a survey of available technologies. Thus, there is a wide range of possible strategies for developing, acquiring technology.

12. Special Purpose Vehicle Contact Information (If applicable):

	Name of SPV	ABC Power Private Limited
	Address	8-1-332/2 M. G. Road Bangalore-500 008
	City, State, Province	Karnataka, India
	Contact Name	Mr. Vasudevan
	Contact Phone	
	Contact FAX	
	Contact EMAIL	
	Names and shares of the promoters	Karnataka Alloys Pvt Ltd
	Is a Shareholding agreement in place	Yes
	Salient terms	

	Length of the PPA. (Years)	20
	What is the initial purchase price?	3.32 Paise Per Unit
	What is the annual % increase in purchase price?	5%
	Can the project sell power directly to major consumers? (Yes or No)	No
	What are the securities provided for the revenues? Have the domestic lenders approved these mechanisms? Are there any special clauses, or provisions of relevance to the investors?	A Letter of Credit (LC) from KTDC.
	What are the terms of Payment to the project developers? Are there any special clauses of relevance to the investors/lenders? Have the domestic lenders approved the payment terms?	30 days from the date of presentation of bill.
	What are the major provisions (event definitions, treatment of the off time, etc.) of the Force Majeure clauses.	Commonly accepted definitions of FM events. Period of the FM not to be considered for LDs
	What is the method of fixation of tariff (two part, availability etc.)? Are there any provisions for deemed generating/penalties? What is the treatment for infirm power?	Tariff is to be calculated at the notified rate of 2.25/Kwh in 1994-95 with an escalation @ 5% p.a.
	Have the provisions for a change in law, termination, liquidated damages, etc. been approved by existing lenders/investors?	Yes.
	Would the SEB/generating utility want a share in the ownership of carbon offsets?	Not specified

16. Other Agreements (where applicable)

	Fuel supply agreement signed	Is in the process of being signed
	Water/utility supply agreement signed	Not relevant.
	Shareholder's agreement entered into between existing equity holders	Yes. The SPV is 100% owned by the promoter.
	Special provisions of above agreements	None

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17. Quantify and Describe Risks

	Market	Low	Market risk is minimal. ABC Power Project Limited (APPL) already has PPA with KTDC and the state is in power deficit.
	Country/Sovereign	N/A	No foreign technology is involved so the country/sovereign risk is nil
	Regulatory	Low	KERC is regulating the power sector in the state.
	Contract/counter party	Low	There are no significant contractual risks associated with this project, since the source of the fuel is poultry farms, which are producing abundant waste. Other major contracts are low risk.
	Construction	Low	No nonstandard construction is necessary in this project, construction risk is negligible.
	Technology	Average	The technology is standard combustion based power generation. The technology has been specifically designed for this power plant with the help of technical experts in India.
	Management	Low	The project management of this SPV company, APPL come from the parent company, and have a proven track record as part of the successful management team of the parent company for the past 16 years.
	Enforceability of Contracts	Low	Indian legal system is well established and contracts are enforceable
	Competition	Low	APPL is using poultry waste as fuel which, to date, has not been used in power generation in the state. Given the wide disparity between the power needs of the state and the ability to source a supply for this demand, no immediate competition is anticipated
	Exit	Low	Indian stock markets have matured. The company law permits investment and sale of shareholding freely. Thus, Exit should not pose any difficulties.

18. For risks identified in section 14, discuss Mitigation/Coverage measures

	Risks	*Describe Mitigation/Coverage*
	Market	Total production has been sold, firm agreement with buyer in place. Risk mitigation measures are not anticipated in the near term, other than contingency strategies for filling a greater production demand.
	Country/Sovereign	This risk is low, mitigation measures are not applicable.
	Regulatory	Currently this risk is low, however mitigation measures that might be taken include positive outreach/advocacy for renewable energy projects through community programs, NGOs, and business associations.
	Contract/counter party	Due to company structure, this risk is low, so mitigation measures have not been prepared.
	Construction	This risk is low, so mitigation measures are not needed.
	Technology	The parts for the plant machinery for APPL are designed by experienced Indian machinery producers. Contract performance guarantees should be in place as a risk preventive measure.
	Management	This risk is low, no mitigation measures are necessary
	Enforceability of Contracts	This risk is also low, so mitigation measures are not needed.
	Competition	This risk is low due to immense demand, so short term mitigation measures are not needed. Mitigation/coverage strategies should be considered in the long-term business plan.
	Exit	This risk is also low so mitigation measures are not needed.

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SECTION C: CARBON COMPONENT.

Checklists were adapted and complied from a variety of sources including Natsource, and LLC:

1. CCMP Applicability Macro Checklist

√		Yes	No
	Does the project generate real, measurable, long-term, additional and verifiable emissions reductions vis-à-vis current baseline alternatives?	Yes	
	Are there sustainable development benefits such as increased employment and protecting biodiversity?	Yes	
	Does the project rely on ODA from Annex B Countries?	No	
	Has the project received host country approval?	Does Not Apply	
	Does project meet size definition for Bonn Fast Track projects? --under 15 MW for renewable projects --under <15 giga watt hours/year savings for energy efficiency projects --under 15 kilotonnes CO2E for emissions reductions from process changes	Yes	

2. CCMP Calculations, Monitoring and Verification Checklist

√		Yes	No
	Does the project involve a discrete reduction of emissions?	Yes	
	Have the emissions reductions been estimated with an accepted methodology?	Yes	
	Has a monitoring methodology been established?	No	
	Has a third party verifier been contracted to verify actual emissions reductions and sustainable development gains?	Does not apply	
	Has clear ownership of emissions reductions been determined and documented?	Does not apply	

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3. Carbon accounting details

1	**Baseline methodology**	Assumption: The project replaces grid power generated from the marginal power plant in the relevant Load Center. Discussions with the power transmission authorities have revealed that marginal plant is a thermal plant operating on coal usage. The next step was to ascertain the quality/variety of the coal that is being used to generate the power. Most of the coal used for the purpose of power generation is anthracite coal. The baseline power plant is assumed to operate at an overall efficiency level of 25%. The Transmission and Distribution losses have been assumed at 20%.
2	**Baseline Emissions TCO2**	34696 tons of CO2 per annum
3	**Project Emissions TCO2**	0
4	**Emission reductions TCO2 (2-3)**	34696 tons of CO2 per annum