ANALYSIS OF HOST COUNTRY APPROVAL PROCESS AND IDENTIFICATION OF BARRIERS IN IMPLEMENTATION OF CDM LAHORE COMPOST PROJECT IN PAKISTAN

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30th January 2010

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Submitted in partial fulfilment of the requirement for the

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IN THE NAME OF ALLAH, THE MOST MERCIFUL AND BENEFICIAL

DEDICATION

This research work is dedicated to my beloved parents (late), wife (Azra Javed), daughters (Warda Younas & Adan Younas), son (Muzammil Younas) and teachers (Professor Dr. M. Irfan Khan & Dr. Rashid Karim), whose love enabled me to reach at this zenith in my life.

Analysis of Host Country Approval Process and Identification of Barriers in Implementation of CDM Lahore Compost Project in Pakistan

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ABSTRACT

The Clean Development Mechanism (CDM) was initiated under the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC) in order to explore cost- effective options to mitigate the impacts of climate change. CDM assists the developing countries to implement project activities that reduce Greenhouse Gas (GHG) emissions in return for generating Carbon Credits/ Certified Emission Reduction (CERs). Pakistan was unable to start any institutional activity until the ratification of the Kyoto Protocol in January 2005. The CDM Cell which was formed in 2005 consists of three technical persons. By not signing the Kyoto Protocol earlier Pakistan did not get the experience of early learning into these types of mechanisms. There is a tremendous opportunity for CDM projects in Pakistan in order to improve the industrial efficiency, and develop clean and renewable energy. However, there is very little information and knowledge shared about potential CDM opportunities. In line with its mandatory functions, the DNA has prepared a CDM operational strategy, which has been approved by government of Pakistan in January 2006. This research study entitled *"Analysis of host country approval process and identification of barriers in implementation of CDM Lahore Compost Project in Pakistan"* was conducted to review the existing system of host country approval process, identify the implementation barriers, and development of quantitative indicators for assessing environmental; social and economic impacts of CDM projects in consultation with stakeholders. The overall aim of this study was to provide an input for improvement of existing CDM mechanism

in Pakistan. The PDD approval time has been set at 30 days after receipt of the document. To attract investors, an incentive of 'no income tax or duty' on transfer or sale of CER is part of the operational strategy in Pakistan. At present, the system of approval in Pakistan is not fully mature and time consuming due to unnecessary delays and confusion in the procedures at DNA level. The DNA in Pakistan is still lacking the appropriate number of technical and other support in order to meet the futuristic need in the field of CDM in Pakistan. The DNA should take responsibility to provide all related updated version material / guidance to the proponent on priority that would help in proper documentation and avoid any congestion for any change of PDD or methodology requirement. The proposed quantitative indicators for Pakistan are grouped according to the four pillars of sustainable development: environmental, social, economic, and technological sustainability. Although UNIDO has started institutional capacity building programme in collaboration with Ministry of environment but DNA has yet to develop a systematic awareness raising and capacity building programme.

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- UNIDO-CDM, Islamabad
- Lahore Compost Limited
- CDM Cell, Islamabad – Pakistan
- WWF-Pakistan, Lahore Office

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Kanwar Muhammad Javed Iqbal

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Acronyms

BOT	Build Operate Transfer
CDGL	City District Government Lahore
CDM	Clean Development Mechanism
CDM Cell	Clean Development Mechanism Cell, DNA in Pakistan
CEO	Chief Executive Officer
CER	Certified Emission Reduction
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
DES	Department of Environmental Science, IIUI
DNA	Designated National Authority
DOE	Designated Operational Entity
EIA	Environmental Impact Assessment
ESIA	Environmental & Social Impact Assessment
GHG	Green-house Gas
GM	General Manager
GT Road	Grand Trank Road
HC	Hydro Carbons
HRD	Human Resources Development
ICE	Institutional Capacity Enhancement
IEE	Initial Environmental Examination
IIUI	International Islamic University Islamabad
IPCC	The Intergovernmental Panel on Climate Change
GWP	Global Warming Potential
LCL	Lahore Compost Limited
LCP	Lahore Compost Project
LoA	Letter of Approval
MSW	Municipal Solid Waste
N_2O	Nitrogen dioxide
PDD	Project design document
PDD-LCL	Project design document of Lahore Compost Limited

PP	Project Proponent
SD	Sustainable Development
SDC	Sustainable Development Criteria
SDF	Sustainable Development Foundation
SDPI	Sustainable Development Policy Institute
SWMD	Solid Waste Management Department
TPD	Tons per day
UNIDO	United Nations Industrial Development Organization
VOC	Volatile Organic Compounds

CHAPTER 1

INTRODUCTION

1.1. Background

The Clean Development Mechanism (CDM) was initiated under the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC) in order to explore cost- effective options to mitigate the impacts of climate change. It is one of the instruments that help the developing countries in achieving sustainable development, while at the same time contributes to the ultimate objective of the UNFCCC. CDM assists the developing countries to implement project activities that reduce Greenhouse Gas (GHG) emissions in return for generating Carbon Credits/ Certified Emission Reduction (CERs).[1]

Since Marrakech in 2001 and especially since Russia's ratification allowing the entering into force of the Kyoto Protocol on 16 February 2005, the main global uncertainties have been clarified, and several countries in Asia, Africa, the Middle East and Europe have embarked on institution building to manage and approve CDM projects. However, development of host country institutions is not a new process as it has been going on since the early phase of activities implemented jointly from 1999 and onwards

[1] CDM in Pakistan available at; http://cdmpakistan.gov.pk/default.html retrieved on 20th May 2009

(Michaelowa, 2002) supported by capacity development initiatives (Michaelowa, 2004). By 11 August 2006 there were 107 DNAs globally; 88 DNAs in developing countries and 19 DNAs in developed countries (UNFCCC, 2006).

In a global overview of DNA's from different regions Latin America has the advantage of an early start but according to Figueres (2004) this has not resulted in strong institutional frameworks. Asia's DNAs are generally younger but development differs highly from one country to another. Some are leading globally (India and China) and others have just started or are in the process of institution building (Thailand, the Philippines and Indonesia). Africa expects and receives little CDM investment but partly due to capacity development support, a substantial number of countries (18) have established DNAs (Wittneben, 2005).

In the Middle East and North Africa, a few countries have established DNAs (Morocco, Egypt and Tunisia) but since the entering into force of the Protocol more countries have decided to reap the benefits of the emerging carbon market and are now beginning to establish CDM offices. Southern-Eastern Europe and Countries in Transition is the region furthest behind in CDM institutional development. Only a few countries in this region have designated DNA contact points and only one of them is operational with fully-fledged Sustainable Development (SD) criteria and approval procedures (Findsen and Olshanskaya, 2006). Annex-I countries that have ratified the Kyoto Protocol are also required to establish DNAs in order to participate in the CDM. Before registering a CDM project, a letter of approval (LoA) is needed from the host country. Until a LoA from the buyer country is issued, the project is unilateral. When a LoA from the buyer country is signed, the project is considered bilateral (Karen, O., Jørgen, F., 2008).

Pakistan deposited its instrument of accession to the Kyoto Protocol on 11th January 2005, and thus became eligible to benefit from CDM. For this purpose the Ministry of Environment has been declared as the Designated National Authority (DNA). A CDM Cell was established in August 2005 for providing technical and policy support to, including implementation of CDM Strategy, conduct awareness raising, enhancement of capacity for CDM project development, review of CDM projects for grant of approval by the DNA and to advise the Government in technical matters related to CDM in Pakistan.[2]

This research study entitled *"Analysis of host country approval process and identification of barriers in implementation of CDM Lahore Compost Project in Pakistan"* was conducted to review the existing system of host country approval process, identify the implementation barriers, and development of indicators for assessing environmental; social and economic impacts of CDM projects in consultation with stakeholders. These activities will lead to the development of a methodology/system in order to improve the host country approval process of CDM projects in Pakistan.

The case study of existing CDM project, in-process of host country approval, served as an important tool of information gathering and evaluation for the objectives. The selected project for the case study was Lahore Compost Project (Saif Group of Industries), the project under validation for CDM.

The Lahore Compost (Private) Limited (LCL), part of the Saif Group of Companies, is operating a composting plant utilizing organic component of the municipal solid waste collected and transported to the Mehmood Booti landfill site, Bund Road,

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[2] CDM in Pakistan available at; http://cdmpakistan.gov.pk/default.html retrieved on 20th May 2009

Lahore. The LCL project is first of its kind under Public Private Partnership. Currently LCL is operating at 300 tons per day (TPD) of municipal solid waste (MSW) and intends to expand the processing up to 1,000 TPD.[3]

The case study of LCL has been carried out in order to strengthen the existing CDM system in Pakistan through sharing of experience and technical inputs.

1.2. Aim of the study

The overall aim of this study was to provide an input for improvement of existing CDM mechanism in Pakistan.

1.3. Objectives of the study

The major objectives of the study were:

- To provide input for the improvement of DNA approval process in Pakistan through its analysis;
- To provide an input for the improvements in the development and implementation process through the identification of barriers in the implementation of CDM projects in Pakistan;
- To provide an input for quantitative assessment of social, economic and environmental impacts of CDM projects through developing and suggesting the quantitative performance indicators.

[3] 2008, ESIA report of LCL

1.4. Methodology

This research study was carried out under the supervision of Professor Dr. Muhammad Irfan Khan. As a matter of fact, the whole research was qualitative that involved the collection of qualitative & quantitative data from various secondary (documents & texts) and primary sources (research papers, interviews and questionnaires). The data collection included participatory approach through meeting / interview sessions with proponent of CDM project and stakeholders.

The data acquisition plan was prepared after orientation on the project's technical matters. The relevant secondary information available with the project proponent, UNIDO-CDM, stakeholders and DNA on the physical, technical and institutional aspects of the project was collected and utilized as baseline information.

All available secondary information was scrutinized and action plan was developed for primary data collection. Primary data was collected through field visit of Lahore Compost Project on Thursday, 7th of May 2009. A semi-structured interview of the core management of LCL was conducted at their facility for which the questionnaire was prepared. The contents of the questionnaire were covered through interview due to keeping in view the respondent's approach to questionnaire and importance of the information to be collected. The questionnaire template is attached as **"Appendix-A"**.

The questionnaire was prepared keeping in view the collection of feedback of the proponent of CDM project in particular and DNA/ other stakeholders in general. The questionnaire was circulated electronically (via e-mail) in order to get feedback of key stakeholders. The feedback of the following key stakeholders was taken through questionnaire:

Table-1: List of Key Stakeholders (Feedback taken through questionnaire)

S #	Name of Organization / Stakeholder	Objective of Feedback
1	CDM Cell, Ministry of Environment, Islamabad	Acting as DNA in Pakistan which is expected to improve the existing DNA approval.
2	UNIDO-CDM	Technical and financial support to strengthen the CDM mechanism in Pakistan.
3	Multilateral Environment Agreement (MEA) Secretariat	Technical and financial support to strengthen the CDM mechanism in Pakistan.
Proponents for CDM		
4	Lahore Compost Limited, Lahore	Role model for futuristic CDM projects.
5	Pak Arab Fertilizer Multan	Analyzing the DNA approval process, and trend settler CDM project in Pakistan.
6	Biogas Project of Landhi Cattle Colony, Karachi	Analyzing the DNA approval process
NGOs		
7	WWF-Pakistan, Lahore	Awareness raising and HRD support.
8	LEAD Pakistan, Islamabad	Awareness raising and HRD support.
9	IUCN Pakistan, Islamabad	Awareness raising and HRD support.
10	Sustainable Development Foundation (SDF)-Pakistan	Awareness raising and HRD support.
11	National Cleaner Production Centre (NCPC)	Awareness raising and HRD support.
12	Sustainable Development Policy Institute (SDPI)	Policy and HRD support.

The collected data was collated and compiled. The progress and measures taken by the DNA, towards the objectives of CDM in Pakistan, was analyzed through questionnaire. The DNA approval was analyzed through the feedback of LCL, trends of different countries and scrutinizing the existing CDM strategy in Pakistan.

The available primary information (research papers) was thoroughly investigated in order to develop and suggest the quantitative indicators to be used for futuristic assessment of the economic, social and environmental performance of the CDM projects in Pakistan.

1.5. Scope of the study

The DNA approval process and implementation mechanism for CDM projects in Pakistan is a very broad term in order to address the issues of different sectors for CDM projects. The research work was confined to the case study of Lahore Compost Project keeping in view the present scenario of this research work in a limited time frame and resources.

The critical analysis was done for the DNA approval process, and barriers were identified for the implementation of CDM projects in Pakistan. The quantitative performance indicators were developed and suggested so as to backstop the CDM strategy in Pakistan for effective and fruitful implementation and approval of CDM projects.

1.6. Limitations of the study

It was equally important to cover and analyze the different sectors and their guidelines / methodologies as devised by UNFCCC but this study was originally focused on the Lahore Compost Project for the analysis of generic features of DNA approval and implementation barriers which are applicable to all sectors.

1.7. Framework of thesis

The contents of this thesis are as per following detail:

Chapter 1 (Introduction): It provides background of the research study with its aim and objectives along with scope and limitations. It also presents and discusses the methodology used for this research study.

Chapter 2 (Literature Review): Presents and discusses the need for studying the DNA approval process and barriers in implementation of CDM projects in Pakistan.

Chapter 3 (Overview of Lahore Compost Project): Provides information on the existing structure with key features and discusses the mechanism of Lahore Compost Project as CDM project.

Chapter 4 (Indicators for Monitoring during Project Cycle): It discusses the present scenario in Pakistan and futuristic need of quantitative indicators for the assessment of performance of CDM projects. The quantitative indicators are also suggested in this chapter.

Chapter 5 (Results and Discussion): The critical findings / results are enlisted in this chapter along with critical discussion and analytical view points.

Chapter 6 (Conclusion and Recommendations): The conclusion of the overall research study is given in this chapter along with recommendation for future referral and improvement purpose.

CHAPTER 2

LITERATURE REVIEW

The Kyoto protocol, agreed in 1997, paved the way for the setting of targets by developed countries (Annex 1 nations) for reducing their emissions of greenhouse gases, and for international trading in emissions reductions, with the ultimate goal of fighting climate change resulting from the greenhouse effect (UN Report 1998).

The Clean Development Mechanism (CDM) was initiated under the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC) in order to explore cost- effective options to mitigate the impacts of climate change. It is one of the instruments that help the developing countries in achieving sustainable development, while at the same time contributes to the ultimate objective of the UNFCCC. CDM assists the developing countries to implement project activities that reduce Greenhouse Gas (GHG) emissions in return for generating Carbon Credits/ Certified Emission Reduction (CERs).

According to UN report 1998, the third conference of the parties of the framework convention for climate change at Kyoto saw the agreement of so called flexible mechanisms, designed to give developing countries the opportunity to gain from reducing emissions. These are the Joint Implementation mechanism, aimed at allowing annex 1

countries to reach their targets partially by realizing projects in other annex 1 countries, and the Clean Development Mechanism, aimed at allowing annex 1 countries to reach part of their targets by realizing projects in non-Annex 1 countries.

Article twelve of the Protocol states that (a) :countries not in Annex 1 will "benefit from projects resulting in certified emission reductions" and (b) countries which are in Annex 1 "may use the certified emission reductions accruing from such project activities to contribute to compliance with part of their quantified emission limitation and reduction commitments under Article 3".

The World Bank has set up a Carbon finance unit to facilitate the purchase of certified emission reductions through both the Joint Implementation and the Clean Development Mechanism (World Bank, 2006). A number of Annex one countries with obligations in CO_2 emission reductions have decided to use this channel for their purchases, including the Netherlands, Italy, Denmark and Spain (World Bank, 2006).

Karen et al. (2008) reported that the clean development mechanism (CDM) is a part of the global carbon market developing rapidly in response to global warming. It has the twin objective to achieve sustainable development (SD) in host countries and assist Annex-1 countries in achieving their emission reduction targets in a cost-efficient manner. However, research has shown that trade-offs between the two objectives exist in favour of cost efficient emission reductions and that left to the market forces, the CDM does not significantly contribute to sustainable development. The main argument of his paper was the need for an international standard for sustainability assessment—additional to national definitions—to counter weaknesses in the existing system of sustainability approval by designated national authorities in host countries. He developed and proposed

a new methodology through his paper, i.e. a taxonomy for sustainability assessment based on text analysis of the 744 project design documents (PDDs) submitted for validation by 3 May 2006. Through analysis of the SD benefits of all CDM projects at aggregated levels, the strengths and limitations of the taxonomy are explored. The main policy implication of the research is to propose the taxonomy as the basis of an international verification protocol for designated operational entities (DOEs) for reporting, monitoring and verifying that potential SD benefits described in the PDDs are actually realized.

Employment generation is the most likely impact of an average CDM project, with more than two-thirds of all projects (68%) contributing to this aspect of SD. Close to half of all CDM projects (46%) contribute to economic growth and slightly less (44%) to improved air quality. The distribution of SD benefits among the three dimensions is fairly even, with most benefits in the social dimension, followed by the economic7 and the environmental. Only a few projects contribute to the dimension 'other benefits' (Karen et al. 2008).

AI Hiramatsu et al. (2003) discussed that the he Clean Development Mechanism (CDM) was adopted in the Kyoto Protocol as a flexibility mechanism to reduce greenhouse gases (GHGs) and has been started with such projects as improving efficiency of individual technology. Although applying various countermeasures to urban areas has significant potentials for reducing GHGs, these countermeasures have not been proposed as CDM projects in the practical stage. A CDM project needs to be validated that it will reduce GHGs additionally compared with a baseline, that is, a predictive value of GHG emissions in the absence of the project.

The Clean Development Mechanism (CDM) is one of the flexibility mechanisms outlined in the Kyoto Protocol (Article 12). Under the CDM, industrialized countries implement GHG mitigation projects in developing countries (Non-Annex I countries) so that they achieve Certified Emission Reduction (CER) according to the emission reduction accomplished in the projects. They can count CERs as complementary GHG emission reduction achievements to fulfill their own target. Since such projects in developing countries cost less than domestic measures, industrialized countries can succeed in reducing GHG emission more cost-effectively (Woerdman, 2000).

Developing countries can use the CDM as a chance to obtain financial resources and state-of-the-art technology. However, developing countries are currently not bound by any commitments. When CERs are issued and transferred to the industrialized countries, total emission quotas in the world increase. Therefore, the CDM requires stricter investigation than other flexibility mechanisms, Joint Implementation (JI) or Emission Trading (ET), to validate and verify the projects (Haites, 2000). There are the following key requirements.

1) Sustainability: A project must contribute to sustainable development in a developing country. The decision on sustainability of the project ultimately depends on the developing country.
2) Supplementarity: Industrialized countries must reduce GHGs mainly through domestic measures and the CDM is to be used supplementary to achieve their commitments.
3) Additionality: GHG emission reduction achieved by a project is to be sufficiently additional, monitored and calculated according to an estimation of GHG emission in the absence of the project (baseline).

A baseline represents how GHGs will be emitted if the project does not exist. To be valid as a CDM project, credibility and transparency are essential in the calculation of GHG emission reduction achieved by the project. The approach to baseline definition is one of the most important elements in fixing a baseline, and has many alternatives. This paper focuses on potential CDM projects in an urban area. A large amount of GHGs are emitted directly and indirectly through urban activities. Since there will be significant population growth and increases of energy consumption per capita in urban areas of developing countries, GHG emission will increase. CDM projects are expected to promote the reduction of such GHG emission. In additionto the complexity of urban systems and variety of urban areas, there will be various possible baselines. For projects in urban areas, this study aims to examine how a baseline and GHG emission reduction under different baseline definitions vary according to the characteristics of a city. It also aims to indicate the variety of baselines among the different cities under the same baseline definition. Solid waste incineration with electricity generation was adopted as a case study of CDM projects and applied to different cities of developing countries. Possible baselines and GHG emission reductions for each city were calculated and evaluated. A baseline represents the estimated GHG emission in the absence of the project. If the GHG emission under the project exceeds the GHG emission for the baseline (baseline emission), the project will not be validated as a CDM project. The difference between the baseline emission and the GHG emission under the project is used to calculate the Certified Emission Reduction (CER) that is obtained by investors. Baseline emission tends to be overestimated since investors wish to obtain more credits, and host countries may also permit this overestimation intentionally because they have no commitment to the Kyoto Protocol. In this case, non-environmentally additional, ineffective projects (in which nothing environmentally novel is included) might be

implemented as CDMs. In order to avoid such misuse of the CDM, it is important to set the baseline using 'credible' and 'transparent' approaches. However, if the accuracy requirement is too strict, the transaction cost becomes too high, which prevents prevalence of the CDM. From this point of view, it is also important to set the baseline using a 'practical' approach (Ellis and Bosi 1999; Kawashima and Yamagata 1999; GISPRI and MRI 2000). The three ways of baseline definition are proposed as below:

1) Project-specific baselines: Developed to evaluate emission reductions generated from one particular project, by using project-specific assumptions, measurements, or simulations for all key parameters, such as fuel and technology characteristics and changes over the life of the project. These baselines are more consistent and transparent but require more transaction cost and more time than the following two ways.
2) Multiproject baselines: The emission level associated with certain activities, often at a sectoral or subsectoral level. Potentially simple, transparent, predictable and low cost. Agreement among groups which are not directly involved (governments, international organizations) is needed.
3) Hybrid project baselines: Baseline in between project-specific and multi-project baselines. Some components and assumptions are standardized.

According to G. Tyler Miller Jr., "sustainability or durability is the ability of earth's various systems, including human cultural systems and economies, to survive and adapt to changing environmental conditions indefinitely". Under the CDM, industrialized countries may finance GHG mitigation projects in developing countries. The Kyoto Protocol requires that the CDM shall assist developing countries to achieve sustainable development. However, a clear definition of sustainability for CDM projects is still

debatable. Definitions of sustainability were reviewed as the aspect of sustainability in terms of the assessment of CDM projects is important[4].

MATA-CDM (Multi-Attributive Assessment of CDM Projects) is a quantitative assessment of potential projects regarding their contribution to sustainable development. In South Africa, the application was done mainly for academic and demonstrative purposes, whereas in Uruguay it was implemented together with the responsible Designated National Authority (DNA). The work included the selection of sustainability criteria and measurable indicators. Experts weighted the criteria using personal interviews and a multi-stakeholder workshop. This method was applied to three potential CDM projects in South Africa and one in Uruguay. Results show that under the conditions of this study, the MATA-CDM approach yet fails to yield a perfect quantitative overall sustainability assessment of CDM projects. However, the several findings could be useful to further develop the approach with the aim to translate the vague term *sustainable development* to a mainstream project level. The reason for reviewing the paper is, the MATA CDM Approach is new in terms of the assessment of CDM project impacts and this paper has identified the workable sustainability criteria and indicators which are important for concluding this study also.[5]

It was concluded by Brown et al. (2004) that one of the main challenges of present and future carbon projects is to find the appropriate means and resources to work closely with local organizations and to understand local social, environmental and political histories. He suggested that carbon projects require robust and flexible institutional frameworks, which allow project developers and participants to cooperate and fairly

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[4] Source; The Sustainability Handbook, by, William. R. Blackburn, published in November 2007

[5] Source; Environment, Development and Sustainability (2006), DOI 10.1007/s10668-005-9002-7, Paper Received 22 Dec 2003 :

negotiate new rules governing resource use, in which rights and duties on all parts should be made clear and agreed. If funding to developing countries through the UNFCCC, Kyoto Protocol and other international channels is to bring meaningful benefits, then further research is necessarily on the politics, legitimacy and institutions which enable and disable different actors to reap benefits. The report has been reviewed as it has a close link to the objectives of the current research study and especially to the perspective of sustainable development indicators.[6]

The research findings of Thorne *et al.* (1999) were towards the inherent opportunities and problems involved in the application of global eligibility criteria and sustainable energy development indicators for the appraisals of the CDM projects. The eligibility criteria and indicators can be used both as constraints and as design instruments in devising opportunities to provide a decision-making framework for host countries which may be overwhelmed with CDM project proposals. The criteria is meant to provide a process approach to the appraisal of CDM projects as well as an input for a decision regarding their acceptance or rejection. His research output was the list of certain social, economic and environmental indicators along with the percentage calculation formulas of assessment of the indicators.[7] An overview of his research findings have helped us in formulation and sorting out the indicators for under the scope of this research work.

The review of CDM Policy and Implementation in China by Lei. Zang (2006) was an important study in order to analyze the development and implementation mechanism

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[6] Source: How do CDM projects contribute to Sustainable Development? Technical Report, Tyndall Center for Climate Change Research (2004), Authors Katrina Brown, W. Neil Adger, Emily Boyd, Esteve Corbera-Elizalde and Simon Shackley.

[7] Source: Criteria and Indicators for Appraising CDM Projects By Steve THORNE, Energy Transformations, Cape Town, South Africa and Dr. Emilio Lèbre LA ROVERE, Federal University of Rio de Janeiro, Brazil HELIO INTERNATIONAL, October 1999

in case of Pakistan for the identification of barriers and review the DNA approval process.

The Ministry of Environment, Government of Pakistan (2009) prepared the National Sustainable Development Strategy (NSDS) which provides a framework to institutionalize the processes for consultation, negotiation, mediation, and consensus building on priority social, economic and environmental issues. It can empower a country to address complex socio-economic problems such as poverty, population growth, and globalization through public participation and improved decision-making as it highlights NSDS process, challenges of sustainable development and challenges of policy integration in order to evolve a harmonious society in the country that promotes a vibrant and equitable economic growth without unbridled exploitation of resources and with due cognizance of distribution of development dividends to all; in particular to the poor and vulnerable in the society and future generation. The CDM Criteria by DNA/CDM Cell for host country approval (HCA) in Pakistan includes the NSDS recommendations by one way or the other to meet the Sustainable Development objectives in the country[8]. The review of NSDS has provided a clear insight as how the CDM projects success linked with the Sustainable development aspects (social, environmental and economic).

Harish, K. J. and Karla, S. (2007), compared the design and functions of DNAs as institutional setups to address the climate change in Peru and Pakistan. Their findings shows that three main lessons learnt from the two countries: the delay of the Protocol ratification affecting the delivery of CDM projects; the lack of funding gathering affecting capacity building for training climate specialists and the lack of institutional activities affecting the attraction for investors. The main objective of their research paper

was to highlight the role of institutions in implementing environmental activities in two developing countries: Pakistan and Peru. DNA institutions are taken as a case to explore their roles in implementing climate change mitigation activities through CDM. The two countries were selected due to the fact that Pakistan has been slow in getting involved with the CDM activities as it only ratified the Protocol in early 2005, after it came into force. On the other hand, Peru has shown more involvement in the CDM activities since 1998.

A National CDM Operational Strategy has been approved by the Honorable Prime Minister of Pakistan in February 2006 in consultation with stakeholders for the implementation of CDM process in Pakistan. The strategy describes policy guidelines and sets criteria for review and approval of CDM projects. It also gives qualitative indicators for sustainability issues in economic, social and environmental contexts. The strategy still lacks the quantitative indicators for the performance monitoring to address the sustainability concerns in a well defined manner.

[8] Source: "NSDS National Sustainable Development Strategy", 2009, prepared by Ministry of Environment, Government of Pakistan.

CHAPTER 3

OVERVIEW OF LAHORE COMPOST PROJECT

3.1. Basic Information of LCL

Table-2: Basic Information of LCL

Organization:	Lahore Compost Limited (LCL)
Type:	Public Private Partnership
Partners	1. City District Government Lahore 2. Saif Group of Companies (Pvt) Limited
Contact Person:	Mr. Sohail Kareem Rana, CEO
Street / P.O Box:	Mehmood Booti, Ring Road / Bund road
City:	Lahore
Province:	Punjab
Country:	Pakistan
Telephone:	+92-42-6845712-6
Fax:	+92-42-6845717
E-mail:	skrana@saifgroup.com & info@saifgroup.com
URL:	www.lahorecompost.com.pk

3.2. Location of the Project

The LCL composting plant is located within the boundaries of Lahore city. The site is adjacent to Mahmood Booti MSW dumping site, approximate 7 km towards Wahgah (from GT Road) on Ring / Bund road, Lahore.

3.3. Project Rationale

The Solid Waste Management Department (SWMD) of City District Government Lahore (CDGL) is the sole authority, responsible for the management of Solid Waste generated in the city. The responsibility of the SWMD consists of the whole process of collection of waste to its satisfactory disposal. However, due to high population growth and the lack of resources, the waste management has become a challenge for CDGL. Accordingly, SWMD prioritized the need to address this issue including the possibility of private sector participation through which waste can be managed and used in an economically beneficial manner (PDD-LCL, 2008).

Lahore Compost (Private) Limited (LCL), a Saif Group company, has been setup on a Build-Operate-Transfer (BOT) basis under which the project will be transferred to City District Government Lahore (CDGL) after a period of 25 years. It has been financed by the Bank of Punjab, whereas the European plant and machinery has been supplied by Menart Technologies SPRL of Belgium. CDGL has granted an exclusive right to LCL to receive 500 to 1000 tons of MSW per day from Aziz Bhatti Town, Ravi Town and Shalimar Town for a total period of 25 years. The collection and transportation of the solid waste to the plant site is the responsibility of the CDGL (PDD-LCL, 2008).

This arrangement would address the need to dispose off solid waste in economically beneficial ways without putting extra burden on the Lahore SWMD. Currently LCL is operating at 300 TPD since 2006, and intends to expand the processing to 1000 TPD. Carbon credits are being sought to accommodate the required expenditures to increase the processing by 700 TPD of MSW. Available statistics suggest that around 1,900 tons of solid waste per days is generated in Aziz Bhatti Town, Ravi Town and Shalimar Town every working day; out of which around 1,600 TPD is collected and dumped at the Mahmood Booti Landfill Site. All of this solid waste is available for processing and composting. Various studies conducted in the past on the quality and composition of the solid waste suggests that the waste delivered to the project company includes over 55% organic materials. The project processes the organic content of MSW and converts it into compost (Organic soil conditioner) in a 70 to 90 day process through the aerobic decomposition of bio-degradable organic matter in windrows (PDD-LCL, 2008).

3.4. Composting Process

There are various forms of composting, e.g., aerobic windrow type, anaerobic trench type, in-vessel high rate composting, vermi-composting etc. LCL has been operating and plans to extend capacity of aerobic windrow type composting technology. The process flow is given in exhibit 1 while pictorial views are given in Photo 1 to 8.

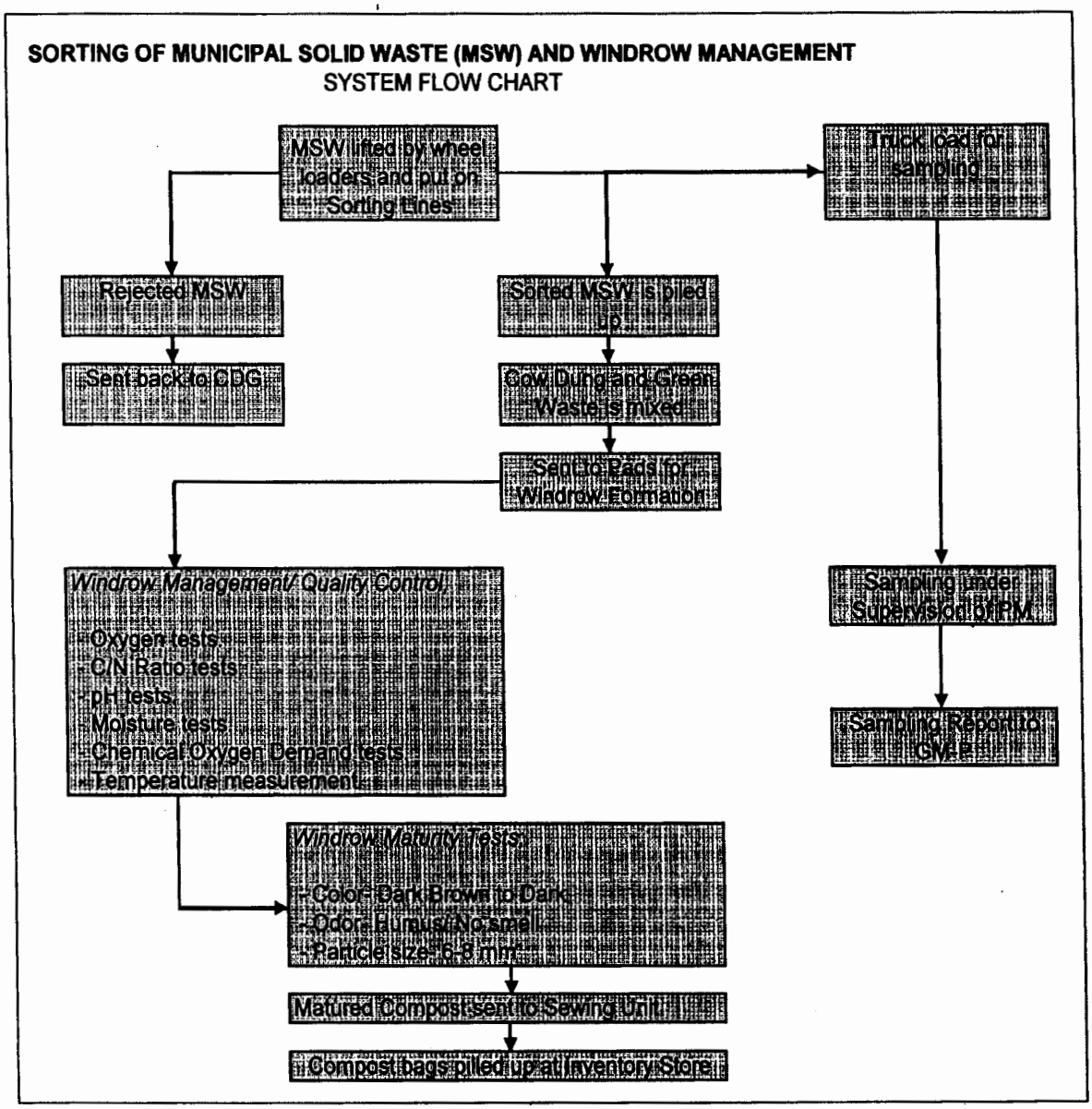

Exhibit 1: Process Flow Chart of Composting at LCL

Source: This LCL Field Study

Photo 1: Weighing of hauled MSW
Source: This case study

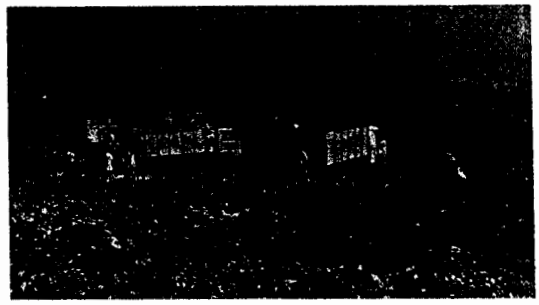

Photo 2: Dumping of hauled MSW at Mehmood booti
Source: This case study

Photo 3: Natural fire in MSW due to internal temperature rise
Source: This case study

Photo 4: Segregation (Mechnical + Manual) at LCL
Source: This case study

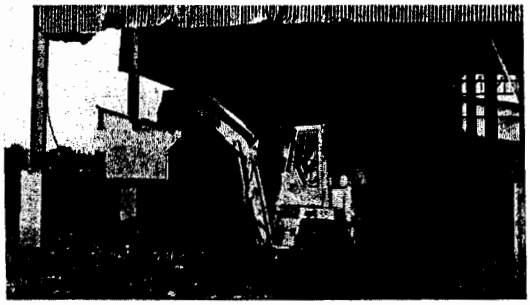

Photo 5: Mechnical Processing of MSWat LCL
Source: This case study

Photo 6: Windrows for composting at LCL
Source: This case study

Photo 7: Mechanical pressing & water sprinkling at LCL
Source: This case study

Photo 8: Packing of compost for market supply
Source: This case study

3.5. CER Potential

The Estimated amount of emission reductions over the chosen crediting period is given in Table-3:

Table-3: Emission reductions by Lahore Compost Project

Years	Annual Estimation of Overall Emission Reductions in tCO2e
2008	12,438
2009	36,475
2010	59,192
2011	81,016
2012	101,316
2013	120,200
2014	137,770
Total	**548,407**
Total Number of Crediting Years (First Crediting Period)	7 years
Annual Average Over the Crediting Period of Estimated Reductions	**78,344**

Source: PDD-LCL, 2008

3.6. Greenhouse Gases Sequestration

Approved baseline and monitoring methodology AM0025 version 9 titled "Avoided emissions from organic waste through alternative waste treatment processes" was applied by Lahore Compost Project. The baseline scenario is claimed to remain unchanged with the waste being disposed off in the solid waste dumping site. As a result landfill gas generated would be released in the atmosphere. The greenhouse gases included and/or excluded from the project boundary are given in the Table 4 (PDD-LCL, 2008).

Table 4: Greenhouse Gases Sequestration in Lahore Compost Project

Context	Source	Gas	Included/ Excluded	Justification / Explanation
Baseline	Emissions from decomposition of waste at the landfill site	CO_2	Excluded	CO_2 emissions from the decomposition of organic waste are not accounted.
		CH_4	Included	The major source of emissions in the baseline.
		N_2O	Excluded	N_2O emissions are small compared to CH_4 emissions. Exclusion of this gas is conservative.
	Emissions from electricity consumption	CO_2	Excluded	No electricity consumption in baseline.
		CH_4	Excluded	Excluded for simplification. This is conservative.
		N_2O	Excluded	Excluded for simplification. This is conservative.
	Emissions from thermal energy generation	CO_2	Excluded	No thermal energy generation in the baseline.
		CH_4	Excluded	Excluded for simplification. This is conservative.
		N_2O	Excluded	Excluded for simplification. This is conservative.
Project Activity	Onsite fossil fuel consumption on due to the project activity	CO_2	Included	Fuel used by on-site vehicles
		CH_4	Excluded	Excluded for simplification. This emission source is assumed to be very small.
		N_2O	Excluded	Excluded for simplification. This emission source is assumed to be very small.
	Emissions from onsite electricity use	CO_2	Included	An emission source.
		CH_4	Excluded	Excluded for simplification. This emission source is assumed to be very small.
		N_2O	Excluded	Excluded for simplification. This emission source is assumed to be very small.
	Direct emissions from waste treatment processes	CO_2	Excluded	Not included by methodology – CO_2 emissions from the decomposition of organic waste are not accounted.
		CH_4	Included	The composting process may not be complete and result in anaerobic conditions.

Context	Source	Gas	Included/ Excluded	Justification / Explanation
		N_2O	Included	An emission source of composting activity/
	Direct emissions from waste treatment processes	CO_2	Excluded	Not included by methodology – CO_2 emissions from the decomposition of organic waste are not accounted.
		CH_4	Included	Waste water is treated anaerobically and/or released untreated.
		N_2O	Excluded	Excluded for simplification. This emission source is assumed to be very small.

Source: PDD-LCL, 2008

CHAPTER 4

INDICATORS FOR MONITROING DURING PROJECT CYCLE

4.1. General

The sustainable development criteria under National Operational Strategy of Pakistan for assessing a proposed CDM project are categorised into five groups in general (including general criteria) and four in particular i.e. environmental, economic, social and technological sustainability. The first three types of criteria concern local impacts of the proposed CDM project; therefore the evaluation boundary is local. Specifically, the scope of evaluation for environmental sustainability is the area having direct ecological impacts from the project. The scope of evaluation for economic and social sustainability is administrative border of regency. If the impacts cross boundaries, the scope of evaluation includes all impacted regencies. However, the scope of evaluation for technological sustainability is national.[9]

The eligibility and approval criteria for potential CDM projects in Pakistan can be defined in a reasonably objective way, as described by Pakistan National Operational Strategy for CDM which describes the functions and powers of the DNA and the national

[9] Sustainable Development Criteria and Indicators of Indonesia available at http://dna-cdm.menlh.go.id/en/susdev/?#environmental retrieved on 20th May 2009

approval process. The National Operational Strategy for CDM projects gives only different areas (environment, social, economic and technological) with their criteria for assessment but the criteria under each category has no indicators against which the performance could be gazed. In order to gaze the performance of CDM project quantitative indicators are required.

The identification, development and implementation of quantitative indicators of sustainability estimation is critically important to allow for ranking the available project options that meet the eligibility criteria in Pakistan. These can also play a useful role after the feasibility study during post project evaluation. A standardised process is required to be implemented in Pakistan that includes host country parties in project appraisal with particular reference to sustainable development.

Besides the mitigation of GHG emissions, CDM projects may typically involves other environmental impacts, positive or negative, or affect sustainable development at the local, regional, and national levels, including effects on:

- emission of other atmospheric pollutants (SOx, NOx, CO, HC, etc.);
- production of solid wastes;
- discharge of liquid effluents;
- use of natural resources; and
- biodiversity.

Similarly, economic and social impacts at the local, regional, and national levels will play a decisive role in project adoption. Some so-called externalities may have

negative consequences for individuals and institutions which are not directly involved with the project may be negative, such as:

- transaction costs (e.g. the need for additional information and training);
- a possible further concentration of income distribution.

Others which may be regarded as positive include;

- employment generation;
- foreign currency savings; and
- technological development and/or transfer.

The indicators proposed below should always reflect positive net values in the case of social and environmental sustainability. In the case of economic and technological sustainability, negative impacts may be compensated by the foreign investors through the transfer of financial resources and technological skills[10].

4.2. Indicators of Net Change from Baseline

The contribution of CDM projects to increasing the sustainability of any development must be measured against the expected results at the project level, which constitutes the reference case or the baseline.

All these indicators are calculated in comparison with the baseline(s) for the entire project cycle of the CDM project. This means that the time horizon is determined by the

[10] HELIO International, 1999

technical lifetime of the projects. The net changes (positive and negative impacts) between the CDM project and the baseline(s) are estimated in each case.

The results can thus be expressed as percentile changes compared to the baseline(s). The value of the indicators will be positive in the case of increased development sustainability as a result of the CDM project. Negative values of the indicators will represent losses of sustainability in the national development of the recipient country i.e. Pakistan.

Dynamic Baselines

It would be meaningless to define business-as-usual baselines in low-income countries (like Pakistan) in the process of economic development as static when development is, by definition, a dynamic process. The time frame for the crediting of CDM project proposals can span several decades and allowing an incentive for unsustainable development defies the potential benefits offered by the CDM for technological "leapfrogging". A linear growth at the same pace as in the past? Or exponential growth adjusted according to the extrapolation of past trends? A mimetic path of development trajectories followed by industrialised countries in the past, using their different stages as milestones? Or employing official governmental projections (usually optimistic, by definition)? While there is no single satisfactory answer to these questions, it is nevertheless clear that baselines will have to be updated periodically.[11]

[11] Michaelowa 1999.

In Pakistan, there is no dynamic baseline concept at Project Design Documentation level as seen in Lahore Compost Project during this case study. Although, the management of LCL is aware of baseline issues but periodic update of baseline condition is still not clear to them.

4.3. Sustainable Development Indicators

A desirable approach to cope with this unavoidable uncertainty consists in the definition of multiple baselines (at least two well-contrasted reference cases). Under this approach, a range of values will result for each indicator instead of a single value. This will allow for a sensitivity analysis of their results with respect to different baseline assumptions. In many cases, the impact of different baseline assumptions is much larger than the effects of the mitigation projects themselves.[12] This sensitivity analysis is very often crucial given the high uncertainty level associated to the wide spectrum of possible futures open to developing countries like Pakistan.

The proposed quantitative indicators for Pakistan (where some of which are replicated from literature cited) are grouped according to the four pillars of sustainable development: environmental, social, economic, and technological sustainability to gauge the performance of CDM projects in Pakistan and validate them in its true spirit so that non-conformances at UNFCCC level could be avoided. The proposed quantitative indicators in this report may be adopted.

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[12] La Rovere et al, 1994; Hourcade et al, 1996.

Environmental Sustainability

Indicator 1 - Contribution to the Mitigation of Global Climate Change:

Global environmental benefits could be measured by the net reduction of GHG emissions measured in CO_2 equivalent according to the IPCC GWP for a one hundred-year horizon.

Vector: 0% = No change in GHG emission level compared with the baseline.

100 % = Total avoidance of the GHG emissions predicted.

The main difficulty with quantifying this indicator is in estimating the 'leakage'.[13] Complete leakage accounting is required within the host country i.e. Pakistan and sometimes abroad, for example, in those projects that aim to conserve indigenous forests.[14]

Indicator 2 - Contribution to Local Environmental Sustainability:

Local environmental impacts could be assessed by the percentage change in the emissions of the most significant local pollutant (Oxides of Sulphur, Nitrogen, Carbon and other atmospheric wastes; radioactive waste, VOC, or any solid or liquid waste. A weighted average percentage change may be used when more than one pollutant is considered to be relevant.

Vector: 0 % = No change in emission level of the selected pollutant.

+100 % = Total avoidance of emissions of the local pollutant.

-100 % = Emissions of the local pollutant are doubled.

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[13] La Rovere, 1996.

Subjectivity is an unavoidable weakness of this indicator given the necessary selection of sample pollutants for monitoring.

Social Sustainability

Indicator 3 - Contribution to Net Employment Generation:

Net employment generation will be taken as an indicator of social sustainability, measured by the number of additional jobs created by the CDM project in comparison with the baseline.

Vector: 0% = No change in employment level compared with baseline.

+100 % = Doubled number of jobs.

-100 % = Elimination of all jobs predicted in the baseline.

This indicator is problematic in that it doesn't register a qualitative value for employment, such as, whether the resultant jobs are highly or poorly qualified, temporary or permanent, secure or 'flexible'. Figures are also subject to inflation depending on whether direct and indirect jobs are counted.

Economic Sustainability

Indicator 4 - Contribution to the Sustainability of the Balance of Payments

Net foreign currency savings may result through a reduction of fossil fuel imports, for example, as a result of CDM projects. Any impact this has on the balance of payments of the recipient country may be compared with the baseline.

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[14] La Rovere, 1998.

Vector: 0% = No change in foreign currency expenditure compared with the baseline.

+100 % = Total avoidance of foreign currency expenditures.

-100 % = Doubled net foreign currency expenditures.

A major difficulty here is that estimates of future prices of imported goods and services replaced by the project can be quite uncertain (e.g. international oil prices).

Indicator 5 - Contribution to Macroeconomic Sustainability:

The alleviation of the burden on public savings will be measured by the reduction of direct government (national, provincial and local) investments (including budgets of state enterprises) made possible by the foreign private investment in the CDM project in comparison with the baseline.

Vector:0% = No change in public investments compared to the baseline.

+100 % = Total avoidance of public investments.

-100 % = Doubled public investments compared to baseline.

The challenge here is to calculate the saving of public financial resources net of subsidies and to ascertain the additionality of the foreign private investment.

Indicator 6 - Cost Effectiveness:

Cost reductions implied by the CDM project in comparison with the baseline will measure the contribution to increased microeconomic sustainability. The value of this indicator will only be positive in the case of "win-win" ("no-regrets") projects.

Vector:0% = No change in costs compared to the baseline.

+100% = Total avoidance of costs compared to the baseline.

-100% = Doubled costs compared to baseline.

The accounting for full project lifecycle costs, including education, training, information dissemination, monitoring, verification and other transaction costs may be a huge task. This analysis strongly benefits from the contrast and comparison of two separate project performances, two time frameworks and two discount rates in order to check the sensitivity of the results to these key assumptions.

Technological Sustainability

Indicator 7 - Contribution to Technological Self Reliance:

As the share of expenditure with technology changes between the host and foreign investors, a decrease of foreign currency investment may indicate an increase of technological sustainability. When CDM projects lead to a reduction of foreign expenditure via a greater contribution of domestically produced equipment, royalty payments, and license fees and imported technical assistance should shrink compared with the baseline.

Vector: 0% = no change in foreign currency expenditures with technology compared to the baseline.

+100 % = total avoidance of foreign currency expenditures.

-100 % = doubled foreign currency expenditures with technology.

Data collection on full technology costs can be difficult in some cases.

Indicator 8 - Contribution to the Sustainable Use of Natural Resources:

CDM projects should lead to a reduction in the depletion of non-renewable natural resources either through the adoption of technologies with higher energy efficiency or through an increased deployment of renewable resources, such as, the replacement of fossil fuels with solar or wind energy. In both cases, CDM projects contribute to a more sustainable use of natural resources.

Vector: 0% = no change in non-renewable natural resources use.

+100 % = avoidance of all non-renewable natural resources.

-100 % = doubled use of non-renewable natural resources.

The uncertainty on the performance of technological innovations must be accounted for. Again, two well-contrasted project performances can be used to provide a sensitivity analysis.

4.4. Indicators of Net GHG Emissions Reductions

A complementary way of defining indicators for the appraisal of CDM projects is to examine their impacts on the sustainability of national development of the recipient country (i.e Pakistan) and their benefits to the global climate. This allows the indicators of sustainable development to be compared with the project's contribution to the mitigation of global climate change.

In other words, this measure would be equivalent to comparing indicator 1 with indicators 2 through 8. The former will always give a positive value by definition, as CDM projects must reduce overall CDM emissions.

The other indicators may generate positive or negative values, depending on the performance of CDM projects compared with the baseline in each case. Positive values will denote a contribution to increased sustainable national development and negative values a subtraction. So, seven new quantitative performance indicators could thus be defined, in different units according to each case:

Indicator 9: avoided emissions of local pollutant:

(tons/tons of avoided GHG emissions in CO_2 equivalent)

Indicator 10: net employment generation:

(number of jobs/tons of avoided GHG emissions in CO_2 equivalent)

Indicator 11: net foreign currency savings:

(US$/tons of avoided GHG emissions in CO_2 equivalent)

Indicator 12: reduction of direct government investments:

(US$/tons of avoided GHG emissions in CO_2 equivalent)

Indicator 13: project cost reduction:

(US$/tons of avoided GHG emissions in CO_2 equivalent)

Indicator 14: reduction of foreign currency expenditures with technology:

(US$/tons of avoided GHG emissions in CO_2 equivalent)

Indicator 15: reduction in the depletion of non-renewable natural resources

(tons/tons of avoided GHG emissions in CO_2 equivalent)

CHAPTER 5

RESULTS AND DISCUSSION

5.1. Critical Findings / Results

1) The National Operational Strategy for CDM projects gives only different areas (environment, social, economic and technological) with their criteria for assessment but the criteria under each category has no quantitative indicators against which the performance could be gazed quantitatively.

2) Due to the late start of institutional activities, there is non-availability of the appropriate and comprehensive information and knowledge about potential CDM opportunities in Pakistan. The DNA also lacks the availability of in-house technical human resources.

3) There is a lack of awareness on CDM among potential project developers and stakeholders such as industries, NGOs, local authorities, and governmental organizations. Unfortunately, the emphasis on the promotional activities by the national DNA is still lacking. Currently the only little information is available on CDM website.

4) The Lahore Compost project's approval took a big time period as reported by the core management of LCL during interview. Normally, the approval timeline (i.e. 30 days) could not be followed accordingly by DNA in Pakistan as described by the Pakistan National Operational Strategy 2006. This is due to inefficient system and resources.

5) The procedure for Environmental Assessment (IEE or EIA) is not very much clear. The environment assessment approval of CDM projects creates big time lapse for proponents due to involvement and jurisdictions of Provincial Environmental Protection Agencies (EPAs) in almost all cases.

6) The DNA approval process is slow and not up to the mark due to inappropriate system design, newly developed procedures, inadequate capacity of DNA staff to provide proper guidance and non-availability of good number of skilled and technical resource persons who could provide consultancy services for CDM projects in Pakistan.

5.2. Discussion on DNA Approval & Barriers in CDM Implementation

Pakistan National Operational Strategy for CDM was approved by the Prime Minister of Pakistan in February 2006.The Strategy provides policy guidance for implementation of CDM in Pakistan in line with national sustainable development goals. It is an incentive based Strategy which ensures efficiency and transparency. The Strategy

defines institutional arrangement for implementation of CDM in Pakistan, tax and credit sharing policy and the Criteria grant of Host Country Approval to CDM projects. [15]

5.2.1. Project Identification and Formulation

The projects to be implemented under CDM should be identified taking into account the CDM Project Criteria as given under Section 3 of the CDM Strategy 2006. Potential investors and verification bodies may also have their own screening procedures and the same should also be kept in mind while identifying the project.

Under the guidelines of CDM strategy, the project participants can prepare a CDM project in any of the outlined sectors. The Project Design Document (PDD) shall be prepared as per the format and guidelines approved by the CDM Executive Board. An advice is also given to the project participants to check with the CDM web site (http://cdm.unfccc.int) for the most current version of the CDM-PDD for small and normal scale projects.[16]

5.2.2. General Approval Process

The procedures under the current Pakistan National Operational Strategy are applicable to all unilateral, bilateral and multilateral projects in the following areas:

I. Energy (including renewable/ alternate energy, energy efficiency, conservation and fossil-fueled cogeneration);

II. Land use, Land use Change and Forestry (afforestation and re-forestation);

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[15] CDM approval procedure in Pakistan available at http://cdmpakistan.gov.pk/default.html retrieved on 20th May 2009

[16] Pakistan National Operational Strategy for CDM, 2006

III. Agricultural and livestock practices;

IV. Waste Management (e.g. landfills, solid waste management, recycling, Animal /livestock wastes);

V. Transportation (e.g. alternative fuel vehicles, mass transit systems, cleaner engines, Compressed Natural Gas); and

VI. Industrial processes (cogeneration, waste heat recovery, boiler/ kiln/ furnace efficiency, generator change, alternate processes etc).

VII. Any area/sector that reduces any GHG's allows by Kyoto protocol are eligible sector for CDM projects.

The Project Proponent (PP) is required to submit to the National CDM Secretariat 10 copies each of (i) the complete "Project Design Document (PDD)", prepared as per CDM format and guidelines (Annex-C of the CDM strategy in Pakistan) and (ii) Environmental Impact Assessment Report of the Project (if so required).

The Secretariat shall undertake primary screening of the PDD to see whether it supports sustainable development and to ensure that the participation in CDM is voluntary and otherwise meets the Criteria for Host Country Approval (Annex-B of the CDM strategy in Pakistan).

The Secretariat informs the project proponent in case the project meets the CDM criteria or otherwise within 15 days of receipt of PDD. The projects not complying with the CDM criteria are returned for reformulation along with a brief screening report. In

case the PDD conforms to the CDM Criteria, the Secretariat issues a Letter of Approval within 30 days of receipt of the PDD. [17]

5.2.3. Analysis of Designs, Capacities and Activities of DNA in Pakistan

Analysis of Institutional Design in Pakistan

An effective national institutional arrangement is vital to harness the CDM potential and attract investors (Michaelowa, 2003). The international legal rules applicable to the CDM projects also require the designation of national authority for the CDM projects. Since these rules do not specify or give further guidance as to the requirements for establishing a DNA, different countries have taken distinctive approaches to design their CDM institutions (The World Bank, 2003). Some of the common approaches include the establishment of DNA within an existing ministry, multi-departmental (ministerial) DNA and an independent government office as the DNA. The way that DNAs are designed and structured will affect the process of promoting and approving CDM proposals in host countries. As a consequence it has significant influence on the investment through CDM in those countries. Indeed, national approaches that have lower transaction costs, less bureaucratic hurdles and faster approval processes will be more attractive to CDM investors given similar levels of country attractiveness for investment in general.

Michaelowa (2003) recommended independent governmental office with full decision autonomy and professional, permanent staff as a DNA for host countries. The independent DNA would have the advantage of a relatively straightforward decision making process and could avoid the unnecessary delays caused by conflicting interests of

[17] Pakistan National Operational Strategy for CDM, 2006

different ministries, however, they would have to bear higher administrative costs. On the other hand a DNA operating under a ministry has the advantage of having least administrative costs but it is highly unlikely to have all the expertise required to assess a wide range of projects. A multi-departmental (or ministerial) advisory setup would draw upon the expertise from different departments, but due to the need for consensual decisions, delays in the approval process are likely.

Status of CDM Institutional Design in Pakistan: *Pakistan was unable to start any institutional activity until the ratification of the Kyoto Protocol in January 2005. Soon thereafter, the DNA was established in the Ministry of Environment with the mandate to manage the CDM process efficiently and transparently and in line with national sustainable development goals. The DNA consists of a national CDM steering committee, a technical committee and a secretariat and works under the guidance of the Prime Minister's committee on climate change (Exhibit 2). The steering committee consists of representatives from various ministries and government agencies and has provisions for corporate sector representation. The role of both the steering and technical committees is mainly to provide advice on policy and technical issues to the secretariat that was recently established within the Ministry of Environment and is responsible for most of the DNA tasks (focal point for CDM projects, evaluation and approval of project proposals).*

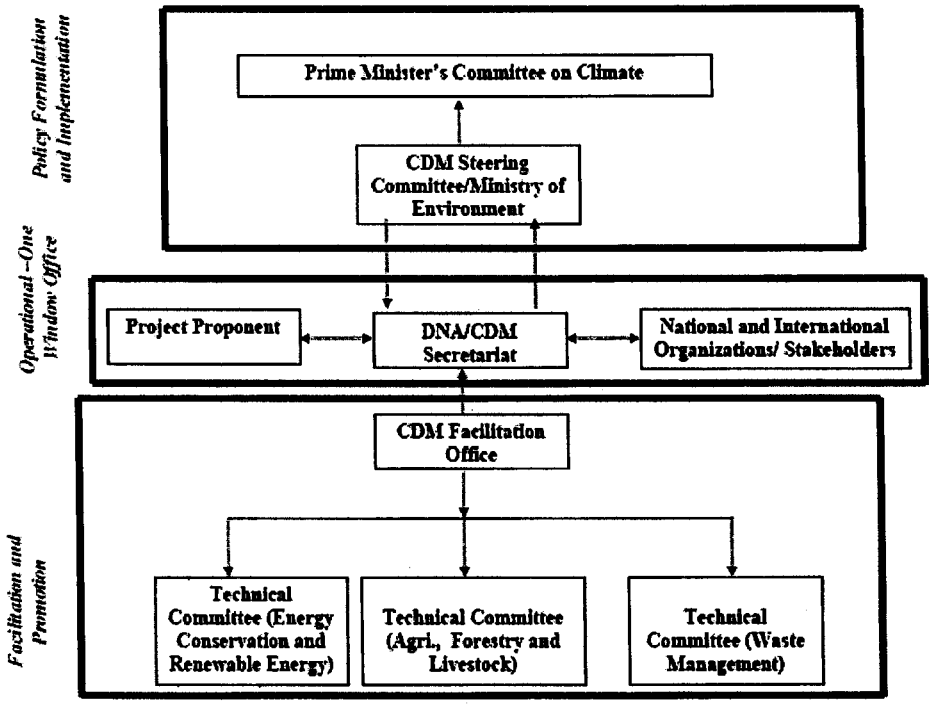

Exhibit 2: DNA Setup in Pakistan

Source: Pakistan National Operational Strategy, 2006

Analysis of DNA Capacities in Pakistan

The capacity of the host country's DNA is perhaps one of the biggest factors in its effective CDM market participations (Silayan, 2005). A well established, trained and experienced DNA will have the ability to minimize transaction time, thus cutting down on transaction costs. These conditions will effectively attract the project developers and project investors as the perceived risks are lower in comparison to the countries where these conditions do not exist. In addition, a capable DNA will effectively evaluate project proposal based on the established national priorities and sustainable development criteria.

Status of DNA Capacities in Pakistan: *The CDM Cell which was formed in 2005 consists of three technical persons. By not signing the Kyoto Protocol earlier Pakistan did not get the experience of early learning into these types of mechanisms. Due to the late start of institutional activities, there is non-availability of the appropriate and*

comprehensive information and knowledge about potential CDM opportunities in Pakistan. The DNA also lacks the availability of in-house technical human resources.

Analysis of DNA Activities in Pakistan

The DNA can perform regulatory and promotional (Figueres, 2002) activities. The regulatory functions are mandatory for all DNAs and include the evolution and approval process of CDM projects. The DNA can play several roles that will enhance a country's participation in this market the CDM market i.e a highly competitive environment. These activities could include; raising awareness through workshops, seminars and training, disseminating information, building capacity of project proponents, and marketing CDM projects. Moreover, DNA can facilitate investment by developing a portfolio of diverse high quality CDM projects that meets to the needs and interests of wide range of potential investors.

Status of DNA Activities in Pakistan: *There is a tremendous opportunity for CDM projects in Pakistan in order to improve the industrial efficiency, and develop clean and renewable energy. However, there is very little information and knowledge shared about potential CDM opportunities. So far, only fourteen CDM projects have been approved by DNA and only two could be registered. In interviews with various organizations (like WWF, LEAD-Pakistan, IUCN Pakistan, Government departments, academic institutions etc), it became clear that there is a lack of awareness on CDM among potential project developers and stakeholders such as industries, NGOs, local authorities, and governmental organizations. Unfortunately, the emphasis on the promotional activities by the national DNA is still lacking. It has yet to develop a systematic awareness raising and capacity building programmes. The only comprehensive Institutional Capacity building programme is initiated by UNIDO in*

collaboration with the DNA. The use of internet which presents an opportunity for information dissemination has yet to be given backup support through regular update and hiring of appropriate number of skilled and required staff. Currently the only little information is available on CDM website. Japan is the host investor country for the first registered project in Pakistan. Table 5 shows the DNA activities in Pakistan.

Table 5: DNA setup in Pakistan and activities

DNAs' activities	Status
Date of establishment	Year 2005
Type	Inter-departmental with CDM secretariat (under Ministry of the Environment)
Staff	Total 4 persons excluding focal person, as on 16-May-09 (two Technical, one IT and one Communication)
Website	http://cdmpakistan.gov.pk/
Website material / news update	Average ranking (not upto mark), based on last two-month (Mid March to 16-May 2009) monitoring of website and personal observations on it.
Regulatory activities	
Procedures developed	Yes (January 2006)
CDM projects approved	14 as on 16-May-2009, in validation process
Promotion activities	
Awareness raising	Limited to only occasional workshop / seminar
Capacity building	A project of Institutional capacity building initiated by UNIDO in collaboration with CDM.
Preparing portfolio of potential projects	Proper portfolio not started yet
Marketing	Appropriate marketing not started yet

Analysis of Systems Procedures in Pakistan

As part of the regulatory functions, DNA is responsible for creating a regulatory framework for CDM projects. To comply with these prerequisites, DNA has to develop a process of evaluation and approval. This involves setting clear criteria for host country approval. The evaluation and approval process should include sustainable development

criteria. Establishing transparent procedures for the screening, evaluation and approval are key for attracting CDM investments. In addition, the additional information for project developers such as guidelines on development and the presentation of projects should be provided.

Status of System Procedures in Pakistan: *In line with its mandatory functions, the DNA has prepared a CDM operational strategy, which has been approved by government of Pakistan in January 2006. It lists the roles and responsibilities of the DNA and the procedure for processing PDD applications. It allows unilateral, bilateral and multilateral projects in the following sectors: renewable energy, energy conservation and fossil-fuelled cogeneration; land use, land use change and forestry, soil conservation, sustainable forest/rangeland management, including afforestation; agriculture and livestock practices; waste management such as landfills, solid waste management, recycling, livestock wastes; mass transit systems, cleaner engines, CNG conversions; and industrial processes. Other sectors may be considered by the Authority at the request of the local or foreign investors provided they are in line with the objectives of the CDM.*

According to the operational procedures, the projects are initially assessed against national sustainable development criteria. These criteria fall under five headings: general; environmental; social; economic; and technological. The given criteria further required to have quantitative indicators. The proposed project must meet those criteria in order to get approval from the DNA. The PDD approval time has been set at 30 days after receipt of the document. To attract investors, an incentive of 'no income tax or duty' on transfer or sale of CER is part of the operational strategy in Pakistan.

5.2.4. Case Study of Lahore Compost Project

The field visit of Lahore Compost Limited (LCL) was done on Thursday 7th of May 2009. During the field of visit, a semi-structured interview of the core management staff of LCL and plant site visit was done. The interview of LCL management was done on the basis of questionnaire (attached as "Appendix-A") prepared.

Mr. Sohail Kareem Rana (Chief Executive Officer, LCL) and Mr. Azmat Qayyum Khan (General Manager, LCL) reported that they faced many difficulties in order to get approved their project with the DNA in Pakistan. The project's approval took a very long time and the process was not so smooth to be appreciated. Mr. Sohail, further, added that the DNA in Pakistan was newly born baby at the time of their project get started and the DNA's technical and human resources capacity is still behind the bottom line in order to achieve the national agenda in the field of CDM implementation in Pakistan.

The approval for environmental assessment study of Lahore Compost was carried out twice (first at the time of its start in year 2006 and second in year 2008 for its operational phase.) as the system procedure was not clear at proponent and DNA level (reported by CEO LCL). The CDM case was at federal level while the environmental assessment was provincial subject.

Similarly, LCL had to prepare the PDD twice due to implementation of updated version 3 of PDD by UNFCCC for which they could got updated / communicated by the DNA well in time.

They reported that all was happened due to inappropriate system design, newly developed procedures, inadequate capacity of DNA staff to provide proper guidance and

non-availability of good number of skilled and technical resource persons who could provide consultancy services for CDM projects in Pakistan.

CHAPTER 6

CONCLUSION & RECOMMENDATIONS

6.1. Conclusion

There is a tremendous opportunity for CDM projects in Pakistan in order to improve the industrial efficiency, and develop clean and renewable energy. However, there is very little information and knowledge shared about potential CDM opportunities.

At present, the system of approval is not fully mature and time consuming due to unnecessary delays and confusion in the procedures at DNA level. The quantitative indicators are not in place so as to assess the performance of CDM projects. The recommended quantitative indicators would be beneficial for environmental vision and futuristic CDM project's implementation in Pakistan.

The requirement of IEE/EIA is not categorized according to the situation of the projects. The DNA in Pakistan is still lacking the appropriate number of technical and other support in order to meet the futuristic need in the field of CDM in Pakistan. The procedure for project appraisal needs to be improved and proponent is required to be well informed. The DNA should take responsibility to provide all related updated version

material / guidance to the proponent on priority that would help in proper documentation and avoid any congestion for any change of PDD or methodology requirement.

Although UNIDO has started institutional capacity building programme in collaboration with Ministry of environment but it has yet to develop a systematic awareness raising and capacity building programme.

The LCL management faced difficulties in terms of relevant information and project appraisal due to poor capacities of DNA and limited availability of technical services in Pakistan.

6.2. Recommendations

1) We can take the example of DNAs of China and India which have facilitating role and facilitated many projects. The DNA in Pakistan should play a facilitating role and not to act as a scrutinizing body. The CDM projects should be put in process with UNFCCC which has already a very big procedure for its registration. So, a lot of time could be saved by adopting this practice.

2) The given criteria further required to develop and implement the quantitative indicators instead of qualitative ones to gauge the performance of CDM projects in a better way so that non-conformances at UNFCCC level could be avoided. The proposed quantitative indicators in this report may be adopted.

3) The timeline for approval is quite good and designed on rationale basis but it should be followed accordingly and given priority by the DNA officials in Pakistan.

4) The procedure for project appraisal can be improved and proponent could be kept well informed for any updated versions (if required / implemented by UNFCCC) through developing and implementing Initial Enrolment Mechanism for Proponent at DNA level. The proponent should be required to get enrolled with the DNA prior to go for project appraisal. The DNA should be responsible to provide all related updated version material / guidance to the proponent and connect the proponent to automatic communication system for immediate update on any change. This will help in proper documentation and avoid any congestion for any change of PDD or methodology requirement.

5) The recommended quantitative indicators may be adopted in order to gauge the economic, social and environmental performance of CDM projects in Pakistan. It would be beneficial for environmental vision and futuristic CDM project's effective implementation in Pakistan.

6) The issue of environmental assessment study and its approval should also be addressed properly in the context of time-frame, apart from the existing rules and regulations and Provincial EPAs. For this purpose, the federal EPA could be given responsibility to deal with the approval of environmental assessments of CDM project within revised stipulated time-frame and in collaboration with the DNA.

7) Although UNIDO has started institutional capacity building programme in collaboration with Ministry of environment but it has yet to develop a systematic awareness raising and capacity building programme.

8) The academic institutions and consulting firms should be taken on board for their technical skills enhancement in order to provide technical resources in Pakistan for CDM project development and to address the projects' sustainability issues in a best way. The DNA should play its important role in regard.

9) Regular news, periodic updates and bulletins should be sent communicated to all potential partners in Pakistan. For this purpose, a comprehensive communication database should be prepared and connected through internet for regular events.

10) The use of internet has yet to be given backup support through regular update and hiring of appropriate number of skilled and required staff.

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Appendix-A: Questionnaire for Review of Host Country Approval Process for CDM Projects

The Department of Environmental Science, IIU has prepared as research study in order to review the existing system of host country approval process and identify the barriers in the implementation of CDM projects in Pakistan. It will further focus on the development of indicators for assessing social and economic impacts of CDM projects in consultation with stakeholders. Case studies of existing CDM projects, registered, under validation and in-process of host country approval, will serve as an important tool of information gathering and evaluation for the objectives. The selected project for the case study, under the scope of this research includes Lahore Compost Project (Saif Group of Industries).

In connection to above mentioned case study, this questionnaire is designed to take information for the review of existing DNA system in Pakistan and identification barriers. We need your invaluable time and knowledge/experience in completing this process, which will be duly acknowledged. Kindly e-mail / post the filled-in questionnaire on following address.

We look to hearing from you soon. Thank you for your kind cooperation. Warm regards.

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SECTION-1 (GENERAL INFORMATION)

a. Name and address of the Institution/organization: .....

.....

.....

.....

b. Date of establishment:

.....

c. Type of institution ——————————————————————

d. Funding sources

1)

2)

3)

4)

SECTION-2 (ORGANIZATIONAL CAPACITY)

Capacity strengths

e. What are your institution's core competencies?

1) .....

2) . ...

3) .....

4) .....

5) .....

Capacity constraints

f. What are the most important gaps /requirements for strengthening your institution to meet the requirements of CDM implementation?

1) .....

.....

2) .....

.....

3) .....

.....

4) .....

.....

SECTION-3 (PDD & DNA APPROVAL)

CDM Project Development

g. How the concept was realized and materialized----------

---

h. Initial start (month & year / date)----------

i. CDM PDD start at organization level (month & year / date)----------

j. CDM PDD completion (month & year / date)----------

k. Case submitted to DNA (month & year / date)----------

l. Enlist the technical difficulties faced by you in development of PDD:

1) .....

2) . ...

3) .....

4) .....

5) .....

6) .....

CDM Project Approval

m. Case approved by DNA (month & year / date)----------

n. Whether you got proper guidance and required information from CDM Cell. Yes / No

o. Whether the CDM Cell provides you updates / news on regular basis. Yes / No

p. Whether the DNA approval process was smooth as per described procedures or difficult? If you faced difficulties then enlist them below:

7) .....

8) . ...

9) .....

10) .....

11) .....

12) . .....

13) .....

14) .....

q. Whether the process of DNA approval is up to the mark with global perspectives? Please comment based on your experience.

.....

.....

.....

.....

.....

.....

r. How the process of DNA approval could be improved in Pakistan? Please comment based on your experience.

1) .....

2) .....

3) .....

4) .....

5) .....

6) .....

1) .....

.....

2) .....

.....

3) .....

.....

4) .....

.....

SECTION-3 (PDD & DNA APPROVAL)

CDM Project Development

g. How the concept was realized and materialized----------

---

h. Initial start (month & year / date)----------

i. CDM PDD start at organization level (month & year / date)----------

j. CDM PDD completion (month & year / date)----------

k. Case submitted to DNA (month & year / date)----------

l. Enlist the technical difficulties faced by you in development of PDD:

1) .....

2) . ...

3) .....

4) .....

5) .....

6) .....

CDM Project Approval

m. Case approved by DNA (month & year / date)----------

7) .....

s. **What are the potential constraints in implementation of your project after its registration with UNFCCC?**

1) .....

2) .....

3) .....

4) .....

5) .....

6) .....