CARBON FINANCE in MONGOLIA

GOVERNMENT OF MONGOLIA
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CDM DNA MONGOLIA

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Capacity Building for Development and Implementation of Carbon Finance Projects (CBDICFP)

CARBON FINANCE IN MONGOLIA

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This report " Carbon Finance in Mongolia " has been prepared and published within the project on capacity building for development and implementation of carbon finance projects in Mongolia financed by Policy and Human Resource Development Fund of Japan and implemented between April 2008- December 2010 jointly by Ministry of Nature, Environment and Tourism, Mongolia and the World Bank.

Disclaimers

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ABBREVIATIONS

AC	Appraisal Committee
ADB	Asian Development Bank
BAT/BEP	Best Available Technology and Best Environmental Practice
CCC	Climate Change Committee
CER	Certified Emission Reductions
CIT	Corporate Income Tax Law
CME	Coordinating and Managing Entity
CFL	Compact Fluorescent Lamps
CDM	Clean Development Mechanism
CDM EB	Clean Development Mechanism Executive Board
COP/MOP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CBDICFP	Capacity Building for Development and Implementation of Carbon Finance Projects
CPA	CDM Programme Activity
DCA	Development Credit Authority
DNA	Designated National Authority
DOE	Designated Operational Entity
ERPA	Emission Reduction Purchase Agreement
ERA	Energy Regulatory Authority
GS	Gold Standard
GHG	Green House Gases
HOB	Heat Only Boilers
HWH	Hot Water Heaters
ICSID	International Centre For the Settlement of Investment Disputes
IPP	Independent Power Producers
IPCC	Intergovernmental Panel on Climate Change
KFW	Kreditanstalt for Wiederaufban, Germany
LULUCF	Land Use, Land-Use Change and Forestry
LoE	Letter of Endorsement
LoA	Letter of Approval
MNET	Ministry of Nature, Environment and Tourism
NAPCC	National Action Programme on Climate Change
NCC	National Climate Committee
NAMA	Nationally Appropriate Mitigation Actions
NGO	Non Government Organization
PP	Project Participant
PHRD	Policy and Human Resources Development Fund
REDD	Reducing Emissions from Deforestation and Forest Degradation
RE	Renewable Energy
SD	Sustainable Development
SGH	State Great Hural
UNFCCC	United Nations Framework Convention on Climate Change
USAID	US Agency for International Development
VCS	Verified Carbon Standard
WB	World Bank

PREFACE

Carbon Finance in Mongolia is a three-volume publication prepared under the World Bank project " Capacity Building for Development and Implementation of Carbon Finance Projects" (CBDICF) implemented at the Ministry of Nature, Environment and Tourism of Mongolia between April 2008-December 2010. It is the first comprehensive report on potential for and current development of Clean Development Mechanism (CDM) projects in Mongolia. The first and third volumes are primarily intended for international investors and the donor community while volume 2 is targeted at Mongolian project developers.

1. Volume 1 describes the current situation for CDM in Mongolia including information on the institutional and regulatory environment both directly and indirectly affecting CDM projects in Mongolia.
2. Volume 2 deals with CDM development in Mongolia and focuses on several practical issues in the development of CDM projects and explains the CDM project cycle.
3. Volume 3 focuses on barriers towards the development of GHG emission reduction projects in Mongolia, the actions that the donor community has already taken to address the barriers, possible actions to remove remaining barriers, and an assessment as to the efficacy of these actions.

The "Carbon finance in Mongolia" publication was developed by three leading international CDM experts who worked on the CBDICF project and is largely based on the reports and papers submitted by the contributors from different fields and sectors during project activities.

A special note of appreciation goes to the Lead Authors: Dr. Peter Noel Pembleton and Dr.Casper Van Der Tak, international CDM experts for the CBDICF project who prepared this report and to the contributors: Dr. Dorjpurev Jargal, the local CDM expert, Dr.Oyunchimeg Bordukh, the local legal consultant (for the analysis on the legal environment for CDM), Mr.Ken Beck Lee, international CDM expert, Ms.Tsendsuren Batsuuri, Head of CDM National Bureau (for the revision on institutional arrangement for CDM) all of whom made valuable contribution to the chapters on specific issue areas. Without the generous time and efforts of all authors and contributors, the report could not have been produced.

We extend our appreciation to the CBDICF project team for their constant support and valuable comments throughout the development of this publication. Thanks go to: Mr.Enkhbat Altangerel, National Director of the project, Director of Ecological Clean Technology and Science Division of the Ministry of Nature, Environment and Tourism of Mongolia; Mr. Tumentsogt Tsevegmid, Task Team Leader, Infrastructure and Operations Officer at the World Bank Mongolia; Mr. Munkhjargal Begzsuren, National Project Coordinator ; Ms.Bayarmaa Amarjargal, Training and Procurement Officer ; Mr. Galkhuu Davaasambuu, Financial Management Officer.

We would also like to thank Mr.Bat-Ulzii Batmunkh, officer of CDM National Bureau, who worked hard to help prepare this publication for printing.

Our sincere gratitude is extended to the Policy and Human Resource Development Fund of Japan and the World Bank for their financial support to this technical assistance project without which the development of this publication would not have been possible.

Volume 1: The CDM in Mongolia: A guide for investors and donors

Edited by Peter Noel Pembleton

With contributions from Oyunchimeg Bordukh and Tsendsuren Batsuuri

INTRODUCTION

This publication describes the current situation regarding the Clean Development Mechanism (CDM) in Mongolia and is intended for members of the international investor and donor communities that are interested in developing CDM projects and/or supporting developments that will further improve the 'enabling environment' in the country.

This is the first of a set of three volumes and presents: a brief overview of the political, social and economic situation in Mongolia; basic facts on the energy situation; past donor agency assistance with a focus on capacity building for a broad range of CDM stakeholders as well as on project identification and development; the current institutional setting and CDM structure; a description of the in-country CDM procedures and requirements; and issues related to financing and incentives.

The publication has extensive annexes that list: activities (mostly) undertaken in 2009-2010; CDM projects in various stages of development including future opportunities; laws, rules and regulations relevant to doing business in Mongolia in general and CDM projects in particular; stakeholders and project developers; and trainees.

Volume two is targeted at Mongolian project developers and explains the CDM project cycle while volume three is also targeted at the international community examining the barriers and actions to reduce them.

BACKGROUND

Mongolia ratified the United Nations Framework Convention on Climate Change (UNFCCC) on September 30, 1993 and the Kyoto Protocol on December 15, 1999. Government resolution #120 issued in 2000 initiated the Climate Change National Programme under which the National Action Programme on Climate Change (NAPCC) was prepared and largely used as input to the first national communication of Mongolia to the UNFCCC. An inter-disciplinary and inter-sectoral National Climate Committee (NCC) was established under the NAPCC to implement the measures foreseen but it had no operational linkage with the Designated National Authority (DNA) for the CDM.

The first Mongolian DNA was established in 2004 in the Ministry of Nature, Environment and Tourism (MNET) and some changes were made in 2006; but it was not until 2008 that the first full-time staff member was assigned DNA duties. During that period, four projects were issued Letters of Approval (LoAs) and entered the official CDM pipeline, being passed to Designated Operational Entities (DOEs) for validation; three have since been registered.

The CDM was given new impetus in Mongolia in 2009 with the receipt of a grant from the Japan Policy and Human Resources Development Fund (PHRD), channelled through the World Bank as the 'Capacity Building for Development and Implementation of Carbon Finance Projects' (CBDICFP). This technical assistance programme had three independent but related components, activities and elements that were co-ordinated and managed by a 'Program Implementation Unit' (PIU) located within the host organization, the Ministry of Nature, Environment and Tourism (MNET):

- Component A that targeted the development of an institutional framework and enabling environment for CDM projects;
- Component B provided training, workshops, stakeholder dialogue and enhancement of intermediary capacity; and
- Component C assisted in developing and preparing CDM project documents.

Three international experts were recruited early in 2010; one for each of the components, each having one or more national experts to assist them. The experts and staff of the PIU are listed in Annex 1 and their reports are available at the DNA web site (http://www.cdm-mongolia.com/index.php?lang=en).

The bulk of the material in the following sections of this first volume of the publication series was generated as part of the CBDICFP programme utilizing results from the work of all experts; information on activities undertaken prior to this team's engagement has been added wherever available.

N.B. Page 16-20 and relevant part of this volume is revised by Ms.Tsendsuren Batsuuri, Head of CDM National Bureau to reflect new institutional structure of CDM National Bureau after the establishment of Climate Change Coordination Office (in charge of supervision of CDM NB) on 1st February 2011 by the order number A-23 of the Minister for Nature, Environment and Tourism of Mongolia as well as to reflect new CDM project approval procedure approved on 28th June 2011 by the order number A-219 of the Minister for Nature, Environment and Tourism of Mongolia.

COUNTRY PROFILE

Political

Figure 1.1

Since 1990, Mongolia has been making the transition from a pastoralist society, modelled on the Soviet communist system, to a parliamentary, multi-party democracy with the powers separated in legislative, executive and (independent) judicial branches of government.

A new constitution was adopted in 1992 that established Mongolia as a sovereign republic providing for the president to be elected by popular vote rather than the previous method of election by the legislature. The State Great Hural (SGH) is the supreme legislative body and its members are also elected by popular vote. The SGH is empowered to enact and amend laws, determine domestic and foreign policy, ratify international agreements, and appoint members of the government, the latter being headed by a prime minister who forms a cabinet subject to SGH approval.

Hurals are also constituted at the 21 provincial administrative levels (aimags) plus in the capital, Ulaanbaatar and its sub-divisions, as well as in aimag sub-districts.

The judiciary branch consists of the Supreme Court (the highest body) and the Constitutional Court that respectively determine the interpretation of laws and their conformity with the constitution. There are also specialized civil and criminal courts as well as administrative courts at the province and city levels; all are subject to Supreme Court supervision. Local authorities (district and city governors) ensure that the courts within their jurisdictions abide by presidential decrees and SGH decisions.

Economic

Mongolia was formerly a pastoralist (herding) and agricultural society and even now, after reforms embracing free-market economics and extensive privatization of the formerly state-run economy, almost 50% of the population remains economically active in the rural areas with agriculture producing 21.2% of GDP. The other sectors that contribute to GDP are industry and services but, in the last few years, the country's extensive mineral deposits have been the focus of national and sectoral development plans and mining can now be considered the 'boom' sector of the economy constituting a large part of industrial production and foreign direct investment. Mining has contributed

significantly to recent economic growth with revenues from this sector underpinning the growth and foreign exchange earnings. The tourism sector has also recently shown signs of rapid growth.

Due to the effects of the global financial crisis on the Mongolian economy and on its currency and financial institutions, the government initiated a broad discussion on fiscal and financial reforms that should further improve framework conditions for economic development.

Social

Mongolia has a young population that has been growing rapidly in recent years; however, the population is widely disbursed and the country has the lowest population density worldwide with almost half still living in rural areas.

Most of the rural population remains nomadic with their main occupation and income coming from livestock. However there is significant migration to the urban centres, especially of young people who are in search of work and better living conditions. This is reducing the population in rural areas and increasing urban populations causing difficulties for both; rural development is hindered and urban infrastructure (housing, water supplies, sanitation, transport and energy) stretched.

Figure 2 below lists some of the basic geographic, climatic, social and macro-economic data.

Table1.1: General Statistics

Topic	Data
Geographic Coordinates	41°35’ and 52°6’ North and longitudes 87°47’ and 119°57’ East.
Land Border	Total: 8,220 km Border Countries: China 4,677 km, Russia 3,543 km
Area	Total: 1,564,116 km^2 (19th largest country in the world) Land: 1,553,556 km^2 Water: 10,560 km^2
Climate	Continental Very cold and dry winter (average temperature in January is –20 to –30 °C falling well below –50 °C in unfavorable areas); short summer Rainfall decreases from North to South
Terrain	North, west and southwest: mountain forests Centre: pasture land/grassy steppe South central: semi-desert and desert plains/Gobi Desert
Elevation Extremes	Lowest Point: Hoh Nuur lake depression 518 m Highest Point: Nayramadlin Orgil (Huiten peak in Tavan Bogd Mountain) 4,374 m Average altitude 1,580 m
Land Use	Arable Land: 0.76% Permanent Crops: 0% Other: 99.24% (2005)
Irrigated Land	840 km^2 (2003)
Natural Resources	Oil, coal, copper, molybdenum, tungsten, phosphate, tin, nickel, zinc, fluorspar, gold, silver, iron
Administrative Divisions	21 provinces and 1 municipality (Ulaanbaatar)
Population	3,086,918 (July 2010 est.)
Population Growth Rate	1.495% (2010 est.)
Population Density	1.9 people per kmI
Rural Population	1995 48.1 % 2002 42.8 %
GDP	US$ 3.89 billion (2007) Growth 8.9% (2008) Per capita $3,200 (2009 est.) 32.2 % below poverty level (2006)

GDP – composition by sector	Agriculture: 21.2% Industry: 29.5% Services: 49.3% (2009 est.)
Inflation Rate	11.7% (2007)
Agriculture - products	Wheat, barley, vegetables, forage crops, sheep, goats, cattle, camels, horses
Industries	Construction and construction materials, mining (coal, copper, molybdenum, fluorspar, tungsten, gold), processing of animal products, cashmere and natural fibre manufacturing
Exports - commodities	Copper, apparel, livestock, animal products, cashmere, wool, hides, fluorspar, other nonferrous metals, coal
Exports - partners	China 78.52%, Canada 9.46%, Russia 3.02% (2009)
Imports - commodities	Machinery and equipment, fuel, cars, food products, industrial consumer goods, chemicals, building materials, sugar, tea
Imports - partners	China 35.99%, Russia 31.56%, South Korea 7.08%, Japan 4.8% (2009)
Exchange Rates	Togrog/Tugriks (MNT) Per US $: 1,442.8 (2009) Per EUR: 1,908 (4.2009)
Source incl.: The World Factbook, CIA	

Energy

Mongolia is not yet able to provide its population with universal access to electricity or heating although the generation capacity of both increased in 2008.

The energy sector is dominated by fossil resources and is the largest contributor to Mongolia's greenhouse gas emissions estimated at 19.1 million tons (1990) with a very high (ca. 7.9 tons) per-capita rating because domestic coal, used for most of the heat and power generation, is of low calorific value. Some projections show that energy demand will increase by a factor of three in the coming ten years so a business-as-usual scenario will see a significant increase in the per capita and overall CO2 emissions as the country has a significant reserve and production of coal and has recently identified large petroleum reserves. Some general energy statistics are presented in figure 5.

According to calculations based upon a recent review of the regional grid of Mongolia, the emission factor is 1.1501 for operating margin and 1.0559 for build margin (see figure 3 and http://www.cdm-mongolia.com) thus offering significant potential volumes of carbon credits that can be derived from mitigation projects.

Despite their potential to mitigate GHG emissions, renewable energy (RE) resources remain largely untapped, providing only around 3% of total energy generated. This is due, in part, to coal being considered a strategic energy resource (providing energy security and independence) and in part because of low energy tariffs and subsidized supply.

Figure 1.2

Grid emission factor for Mongolia

Regional Grid	2009-2010	
	OM*	BM*
Central Energy System	1.1501	1.0559

*(unit: tCO2/MWh)

Data source: Raw data from National Dispatching Center, Energy Statistic Indicators 2009 published by Energy Regulatory Authority, Mongolia

Calculation sheet

Download sample PDD with EF calculation guidance

Nevertheless, the development of RE for heat and power generation is being promoted by the government; the National Programme for Renewable Energy was issued in 2005 and the Renewable Energy Law passed in 2007. The Law includes feed-in-tariffs (figure 4) that vary depending on whether final tariffs will be determined by the Energy Regulatory Authority (ERA) or the local authorities depending upon the location of the RE facility.

The National Programme targeted a 3–5% share of RE in total energy production by 2010 and a 20–25% share by 2020. Since then two hydropower projects have been constructed and the 100,000 Solar GER Programme (solar home systems) was launched. There are also a number of RE projects under consideration and some under development, such as hydropower, biogas, geothermal, wind, solar and waste to energy.

Table1.2: Feed-in Tariffs for RE

	Sector	Low	High
Grid[1]	Regular tariffs	$ 0.027	$ 0.089
	Wind power	$ 0.080	$ 0.095
	Hydropower <=5MW	$ 0.045	$ 0.060
	Solar power	$ 0.150	$ 0.180
Stand-alone[2]	Wind power	$ 0.100	$ 0.150
	Hydropower <=5kW	$ 0.080	$ 0.100
	Hydropower > 5kW: <=2kW	$ 0.050	$ 0.060
	Hydropower > 2MW: <=5MW	$ 0.045	$ 0.050
	Solar power	$ 0.200	$ 0.300
[1]= regulated by ERA			
[2]= regulated by Aimags & UB			

Despite its infancy in Mongolia, the Clean Development Mechanism (CDM) has provided an additional incentive to private sector and government developers to undertake RE projects and a few international donors as well as investors have already provided assistance as can be seen in the next section. Nevertheless, much more help is required as the RE sector is still in its infancy in Mongolia and domestic promoters need grant funding, favourable debt financing conditions as well as equity and technical partners for the underlying projects.

Donor agency support is required and foreign partners with the requisite experience and skill sets are also encouraged to take a closer look at the Mongolian potential and assist to move this market segment forward.

Table1.3: Energy Sector Statistics

Topic	Data
Energy (general)	2.5% of GDP 12.5% population no electricity 40% of population not connected to district heating grid Dominated by fossil energy (mostly coal, petroleum reserves found) High percentage imported from Russia Low calorific value coal High per capita CO_2 emissions (7.9 tons): exceeds the world average Possible three-fold increase in energy demand by 2020
Electricity	Production: 4.03 billion kWh (2009) Capacity in operation: 828 MW Consumption: 3.439 billion kWh (2009) Exports: 21.2 million kWh (2009) Imports: 186.1 million kWh (2009) Electrification: 87.5% Tariffs: 34–114 MNT /kWh
Primary Energy Consumption (2008)	Coal: 4,090 ktoe Natural gas: 11 ktoe Oil/petroleum: 944 ktoe Hydro: 0.4 ktoe
Coal	Reserves: 20 billion tons Hard & coking coal: 1 billion tons B1 & B2 brown coal: 10.1 billion tons
Oil	Production: 5,100 bbl/day (2009) Consumption: 16,000 bbl/day (2009 est.) Exports: 0 bbl/day (2009) Imports: 10,900 bbl/day (2009 est.)

Natural Gas	Production: 0 m^3 (2008 est.) Consumption: 0 m^3 (2008 est.) Exports: 0 m^3 (2008 est.) Imports: 0 m^3 (2008 est.)
Renewable energy (general)	Renewable largely untapped Ca. 3% of total electricity generating capacity Significant potential: solar, hydro, wind, & geothermal
Hydro potential	Ca. 3,800 small rivers with a total length of 65,000 km Hydroenergy potential 6,200 MW Many freeze during winter so year-round operation not possible
Source incl.: The World Factbook, CIA & GTZ	

THE CDM IN MONGOLIA

Past assistance

As previously mentioned, the Mongolian DNA has only been in existence since 2008 in its current configuration and most of the CDM capacity, recent developments and operational facilities in the country have been made possible primarily because of Japanese and South Korean assistance that respectively provided funds through the World Bank and Asian Development Bank and the results of this assistance is outlined below.

Other donors and technical assistance agencies have so far been noticeably absent on the Mongolian CDM scene although the European Union did collaborate with the DNA in holding a CDM training workshop.

Asian Development Bank Project

The Asian Development Bank (ADB) supported the 'Capacity Building Program on Clean Development Mechanism' (October 2009 - April 2010) that was financed by the e-Asia and Knowledge Partnership Fund of the Republic of Korea.

This project included: training; workshops; development of 3 PDDs; preparation of a CDM manual (including lessons learnt from preparing the PDDs) and translation into Mongolian; and support for improving the DNA's web site.

World Bank Project

Material in this publication stems from the work of national and international consultants, as well as staff of the DNA located in the Mongolian Ministry of Nature, Environment and Tourism (MNET), undertaken with assistance from the World Bank (WB) project 'Capacity Building for Development and Implementation of Carbon Finance Projects (CBDICFP)' financed by Japan's Policy and Human Resource Development (PHRD) Fund. This project commenced operations on the 1st April 2008 and was completed at the end of December 2010.

The project was initiated to enhance domestic capacity to identify, develop and implement carbon financed projects in Mongolia and included awareness raising through seminars and workshops, training of DNA staff, Appraisal Committee members and project developers, hands-on PDD development, and review of the DNA institutional set up with recommendations for improvements to the operational framework.

The project facilitated the development of four PDDs and enabled numerous presentations to and dialogue with a wide range of stakeholders as can be seen in Annex 2 that lists sessions since the start of the project.

This section of the publication will now present an overview of the Mongolian CDM projects in various stages of development as well as other areas that present opportunities while the following two sections present the current regulatory and institutional setting, CDM-relevant structure and processes.

CDM projects

As of August 2010, there were 3 registered CDM project activities hosted by Mongolia and another project was at the validation stage (Annex 3); all projects were developed largely by foreign partners prior to the establishment of the current DNA in 2009.

Eleven project design documents (PDDs) are currently under development with the ADB capacity building project assisting the preparation of 3 (Maikhan hydro power plant, insulation of pre-cast panel buildings and A/R projects) and the World Bank/Japan project with 4 more (waste gas to green energy; biofuel pellet plant; and two PoAs, one for CFL distribution the other rehabilitation of heat only boilers [HOBs]). These projects were the most promising for development under technical assistance conditions, i.e. they were in a sufficiently advanced state and most likely to move forward in a short space of time and some were part of a batch of 18 PINs previously prepared under the World Bank/Japan project. The remaining 4 PDDs (1 large- and 1 small-scale wind power and 2 energy efficiency projects) are being developed by government agencies and private sector developers (Annex 3).

At the end of Annex 3 project briefs for the PDDs under development with assistance from the international experts are presented.

More details on the project-specific work are available in the respective expert's reports, available from the DNA , .

Project opportunities

Annex 4 lists all remaining CDM project opportunities that have been submitted to and considered by the DNA; six of these have Project Idea Notes (PINs) that were part of an initial batch of 18 prepared under the World Bank/Japan project.

In addition to reviewing and preparing stand-alone CDM projects, the project experts undertook a review of the potential for Programmes of Activity (PoAs) under the CDM and recommended the following four (Annex 4) as being promising areas for consideration: adoption of LED lighting; energy efficient heat-only boilers (HOB) and hot water heaters (HWH); biogas generation from livestock manure and organic domestic waste; and reforestation of grassland. PDDs for two of these areas (efficient lighting/CFL and HOBs) are currently under development under the World Bank/Japan project. For each of these activities a coordination/managing entity will be organized, possibly with municipal administration unit representing a CDM programme activity (CPA) within the PoA.

There are a number of project types and opportunities that are available to be pursued either through donor-assisted capacity building programmes or through private sector initiatives and joint ventures on the underlying projects such as:

- A/R forestry (the largest potential volume of emission reductions) and REDD;
- Energy efficiency, e.g. heating and electricity as well as a variety of opportunities in industry (offers many low-cost possibilities);
- Renewable energy (wind, solar) for the domestic and export markets;
- Advanced technologies in the fossil fuel-based power sectors offer significant mitigation options for large international energy businesses through joint ventures;
- If the cost of carbon increases significantly in the future, CCS could be eligible if accepted under the CDM; and
- Transport sector e.g. rapid transit, fuel switching (biofuels).

INSTITUTIONAL STRUCTURE

Regulatory Setting

This section presents some of the national legislation and policies that are relevant to the Clean Development Mechanism.

The Mongolian Parliament recently revised the Law on Air (16th June 2010) that is set in the context of other relevant laws and regulations, specifically the Law on Environment. Under the revised Law on Air the government is specified as being directly responsible for: setting policies, regulations and procedures; developing and implementing a national programme covering all aspects of air quality (such as pollution control, testing, monitoring, permitting and setting standards as well as aspects related to greenhouse gases); consolidating information; and establishing a National Committee on Climate (Article 4.1.2) to "organize and manage" (i.e. coordinate) all activities related to UNFCCC, both mitigation and adaptation. Article 5.1.4 specifies that the "State Administrative Central Organization in charge of nature and environment" (i.e. the Ministry of Nature, Environment and Tourism [MNET][1]) shall undertake the functions covering these areas as well as be responsible for *"approving the Charter of a Climate Change Unit"* and setting up its management. The Unit will also be responsible for activities under the CDM:

"The State Central Administrative organization shall establish a Climate Change unit which is responsible for implementing the Convention (on Climate Change), relevant national policies and action plans, organizing project activities of climate change adaptation fund and the clean development mechanism and evaluating projects and issuing reports on the projects." (Article 19.1) [N.B. unofficial translation]

In addition to these high level national bodies, local government and administrative bodies are also empowered with similar functions within their respective jurisdictions.

Following the approval of revised law on air on 16th June 2010, Minister for Nature, Environment and Tourism issued order for establishment of Climate Change Coordination Office under the Ministry on 1st February 2011 since when CDM National Bureau went under the supervision of the office.

Mongolian Designated National Authority (DNA) and the associated operations and procedures governing the CDM are regulated under Ministerial (MNET) Order, No. A-219 originally issued in August 2009 and revised in June 2011. This Order led to the establishment of: an Appraisal Committee; an organizational structure (since changed by the revised Law on Air); procedures for the approval of CDM Projects; and criteria to measure the impact of CDM projects on sustainable development.

In addition to the CDM-specific governing instruments, there are sector-specific and general laws, rules and regulations that govern various aspects of the development, approval and operation of the underlying projects for which CDM status may be sought (Annex 5) and projects applying for an LoA are required to comply with relevant ones and be consistent with national development policy. Of particular note is the law on Environmental Impact Assessment (Annex 6) that imposes a number of requirements for projects in different sectors. Annex 7 presents indicative sets of applicable laws, rules and regulations for different project types that may apply for CDM status. The chapter on financial issues provides information on other procedures and requirements related to the business and investment environment in general. Considering the multitude of legislative instruments, project developers and investors are strongly advised to obtain local legal advice on which ones are relevant to their envisaged projects.

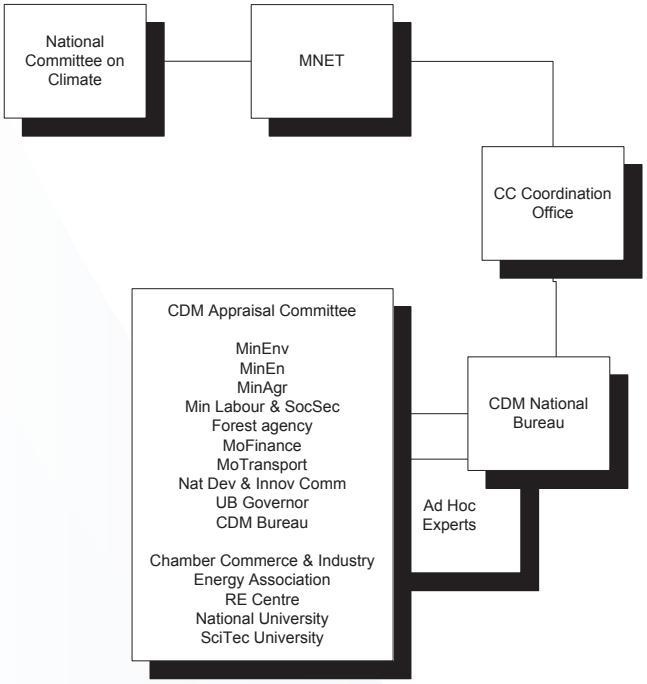
Apart from the sector- and business-specific laws and regulations, the following programmes are, *inter alia*, relevant to the CDM: National Renewable Energy Program (2005); Forestry Program (2001); and the MDG Based Comprehensive National Strategy of 2008.

Institutional Setting

The institutional setting for climate change activities in Mongolia is specified in the revised Law on Air (2010) wherein the previously established Climate Change Committee (CCC) was revived as a non-permanent, ad hoc inter-ministerial agency now known as the National Committee on

Climate. The Committee members have not yet been appointed but the organizational types have been decided and will include members from key line ministries (*inter alia* covering environment, tourism, mineral resources, energy, food, agriculture, infrastructure, utilities, and forestry), academia and NGOs with individual line ministry members being at vice minister/ state secretary leve.

Figure 1.3: Mongolian Structure (rev Feb 2011)



In addition, the revised Law called for a Climate Change Unit (now Climate Change Coordination Office[2]) that has already been established as part of the overall governing structure, responsible for all Mongolian climate change activities, both adaptation and mitigation. The Climate Change Coordination Office is under the management of the Ministry of Nature, Environment and Tourism (MNET), but only the Office is involved in the CDM and then only in the capacity of supervising the CDM National Bureau (DNA) and its operations (figure 6).

However, most government line agencies appointed to these bodies will, in the course of pursuing their mandates, be dealing with climate change issues from different perspectives; for instance the ministries of energy, environment, agriculture, forestry, transport, development and finance are members of the CDM Appraisal committee as are members of civil society and academia.

CDM-relevant Structure

The 'CDM National Bureau' (Bureau), operating under the management of the CCCO, acts in concert with and supports the Appraisal Committee (AC). The Bureau manages the day-to-day operations of CDM processes in the country, *inter alia*: liaising between project developers and Committee members; issuing Letters of No Objection (LoNos)[3], Approval (LoAs) or of Rejection; maintaining a registry of Mongolian projects and overseeing their monitoring and implementation; keeping an account of CERs; and providing information to domestic and international stakeholders. The Head of the Bureau is a member and the Secretary of the Appraisal Committee. Since the appointment of CCCO as supervisor of CDM NB , CDM NB has become responsible for GHG mitigation related activities within the office.

The Appraisal Committee consists of fifteen members (Annex 9) from the ministries shown in Figure 6 and members from the private sector, energy NGOs, and academia; they are appointed by the managements of their respective institutions. The Committee is primarily responsible for reviewing project submissions (project idea notes (PINs) and PDDs) but is also tasked with assisting in the development of CDM-related policies, inter-agency co-ordination and guiding the processes.

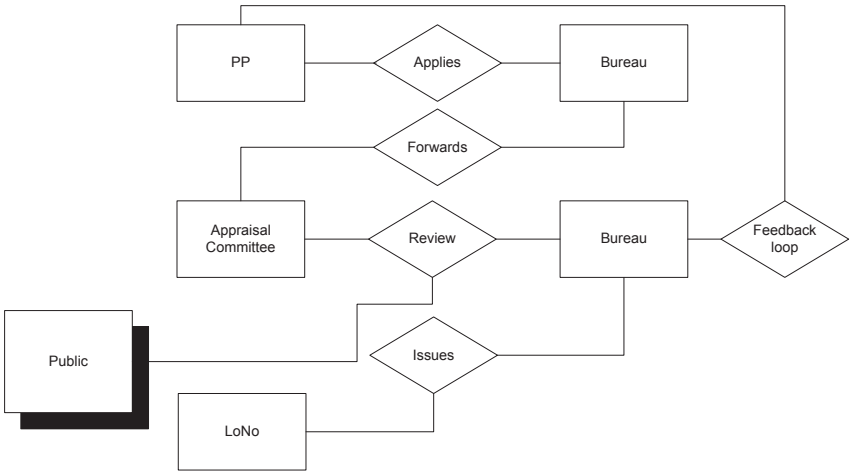
Individual experts are to be called upon to provide technical support for the processes: for PINs, Committee members may call upon experts to support their review; for PDDs, an expert team will undertake the review and pass their findings to the Committee.

THE CDM PROCESS

Project Approval Procedure (PIN)

Preparation and submission of a Project Idea Note (PIN) is a voluntary step in Mongolia leading to issuance of a Letter of No Objection (LoNo)[4] previously known as Letter of Endorsement, if positively reviewed. A LoNo is not a pre-requisite for later submission of a Project Design Document (PDD).

Figure 1.4: Mongolian Procedures (1)



The PIN application is first processed within the Bureau (figure 7) then passed to the Appraisal Committee members in electronic form for their review. The Committee members use an evaluation sheet containing 11 sustainable development criteria (in three groupings: environmental, social, economic and technological impacts,) against each of which they place a numerical vote on a scale of -2 to +2, representing the developmental impact they envisage (Annex 8) the project will have. Committee members may call upon ad-hoc experts to assist them in this process.

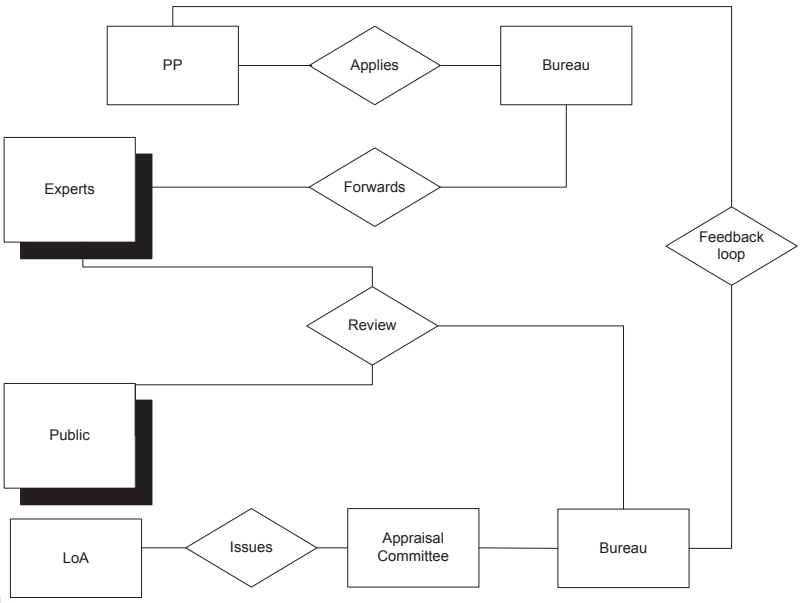
The Bureau also places information on the PIN submissions on its web site and invites on-line comments and voting from the public. The Bureau informs the Committee members of the feedback received from this source.

The processing time envisaged for reviewing a PIN submission and issuing a (positive or negative) decision is 30 working days but it could be longer if clarifications, requested from a project developer, are delayed. After receipt of a LoNo the developer is required to keep the Bureau informed on the progress of their project so that advice may be provided in case of problems.

Project Approval Procedure (PDD)

Figure 8 shows the process flow that is applied to requests for issuance of a Letter of Approval (LoA) in Mongolia. After receipt of a request for issuance of a LoA, the Bureau first undertakes a completeness check and, if the submission is in order, forwards the submitted documents to an expert group for review and sends copies to the Appraisal Committee members .

Figure 1.5: Mongolian Procedures (2)



As with PIN submissions, the public is again given an opportunity to comment on the projects, while the review process is ongoing, as the DNA announces the projects on their website. Project proponents with their representatives and members of the public that have notified the DNA that they wish to share an opinion on the project may be invited to attend subsequent Appraisal Committee meetings that are scheduled as part of the review process. At the end of the process, the Appraisal Committee members will rate the project using the same form and procedure as for a PIN review (Annex 8) and, depending on the score, will either approve or reject a submission.

A Letter of Approval (LoA) or Letter of Rejection will then be issued by the Head of the Bureau. The overall processing time is expected to be 30-60 working days dependent upon timely responses of project developers to any requests for clarification.

Documentary Requirements

To voluntarily request a Letter of No Objection (LoNO), a project participant (PP) should send the Bureau:

1. Letter of Request in Mongolian (original copy signed and stamped by PP)
2. 2 hard copies and an electronic copy of a Project Idea Note (PIN) prepared in English language .
3. Declaration signed by PP that the PP is aware of the meaning of LoNO and responsibilities to bear by receiving LoNO.

   Templates for above mentioned documents are provided by CDM National Bureau and available on their website at www.cdm-mongolia.com.

When requesting a Letter of Approval (LoA), the PP has to submit following documents:

1. Letter of Request by a project participant who is participating in the project on behalf of Mongolia (in both English and Mongolian languages, original copy)
2. 2 hard and an electronic copy of completed PDD in most recent and appropriate format approved by CDM Executive Board (EB)
3. A document describing the project's contribution to the sustainable development of the country based on sustainable development criterions and sustainable development plans and strategies of Mongolia (2 hard and an electronic copy)
4. Declaration signed by PP that the PP is aware of the conditions under which LoA will be revoked by the DNA.
5. Other materials requested by the DNA which were deemed as necessary to evaluate the project contribution to sustainable development.

Based on current practice, Mongolian DNA is requesting additional materials such as Environmental Impact Assessment (EIA) report, and decision by relevant organization in charge of EIA, company certificate, brief introduction of the technology employed within the project in Mongolian language, brief introduction of the proposed project activity in Mongolian language. Templates for documents described in 1,3,4 is provided by CDM National Bureau and is available on their website. As the templates as well as project approval procedures are revised frequently, It is advisable to the project participants to contact the DNA and clarify about the LoA issuance process and documentary requirements before submitting the project.

Sustainable Development Criteria

The criteria used for assessing the developmental impact of CDM project submissions[5] are categorized much the same as for many other countries into impact on environment (three main criteria), society (five main criteria) and economy (three main criteria); all are included in an evaluation sheet where a range of 'scores' can be allocated to each of the eleven criteria.

The evaluation sheet (Annex 8) used for both the PIN and PDD reviews is available on the DNA website; the Appraisal Committee (AC) members assign a numerical weighting, on a scale of -2 to +2 that represents the positive or negative impact they envisage a project will have on each of the 11 criteria. For each cell of the evaluation sheet, an average of each members' score will be taken and considered as the AC valuation for this item.

A negative score under any one of the three categories of sustainable development criterions will automatically lead to rejection of the project in its current formulation and the PP will be requested to take countermeasures or review and revise the information provided. A positive score in all three sustainable development categories will lead to automatic approval. However, if there are negative cumulative results in any of the cells, the AC will discuss the issue and may request clarification from the PP.

INCENTIVES

Investment

The investment climate in Mongolia is being made more attractive through a number of laws; for instance the 1993 **Foreign Investment Law** of Mongolia (last amended in 2008) was developed to encourage foreign investment in the country and to protect the right of investors.

The Law outlines the general framework for investment in the country and specifies the: sectors, areas and activities in which investment can take place; types and forms that may be freely chosen; legal guarantees, treatment rights and obligations of investors; the right of an investor to repatriate financial assets from the business; and associated business regulations. It grants non-discriminatory treatment (i.e. national treatment) with respect to the possession, use and disposal of property within the territory of Mongolia (although land can only be leased, not purchased by a foreign investor) and there are no limitations on the share participation of foreign persons in commercial companies. The Law offers simplified procedures to investors by establishing a one-stop-shop service, thus removing unnecessary administrative barriers and reducing bureaucracy.

In addition, a stability agreement specified in Article 19 of the Law provides extensive fiscal incentives to foreign investors by stabilizing the tax environment i.e. the rate and basis for taxation shall remain stable (unchanged) during the full term of the investment agreement, unless lowered by new or amending laws and regulations.

The Mongolian legal system allows for international investment dispute settlement/commercial arbitration for foreign or domestic investors and the country is signatory to over 40 bilateral investment treaties (BITs) and 24 double taxation treaties. BITs have many common clauses for protecting investors' interests such as an arbitration clause according to the rules of the International Centre for the Settlement of Investment Disputes (ICSID)—Mongolia ratified the Washington Convention in 1991 so it is now possible for foreign investors to also bring the Mongolian Government to the ICSID tribunal—or other private international arbitrators such as UNCITRAL.

Taxation is a key consideration for investors when considering the attractiveness of a country for their activities therefore the **Corporate Income Tax Law** (CIT) (2006) should be a prime candidate for study. The Law divides tax payers into the following categories:

- Permanent resident taxpayers (companies incorporated under the laws of Mongolia or foreign corporations having their head office in Mongolia)
    - o Liable for tax on their worldwide income;
- Non-resident taxpayers (foreign entities running businesses through representation offices in Mongolia, or those earning income in Mongolia through other activities. A permanent establishment is defined as a branch, plant, trade or service unit, or a mine that is extracting oil, natural gas and other natural resources.
    - o Liable for tax on income from within Mongolia.

From a tax perspective, it is advisable for foreign investors to set up an incorporated entity such as a limited liability company for a few reasons:

1. Taxable income of onshore companies is determined after deducting expenses, while offshore companies are charged 20% withholding tax on their gross taxable income;
2. Foreign entities that are not registered or incorporated are not entitled to tax refunds or tax credit when paying value added tax **(Law on Value Added Tax);**
3. According to Article 14.1 of the CIT Law, interest payments for a loan payable by incorporated entities (the proceeds of which have been used for the purposes of including primary and auxiliary production, operation, services and the purchase of property for primary and auxiliary production) is a deductible expense in computing taxable income;

4. Article 14.4 of the CIT Law stipulates that interest payments from a loan taken to finance construction and installation work shall form part of the total cost of construction, and is therefore also deductable;
5. In computing taxable income, a tax loss of an incorporated entity can be carried forward and deducted from its taxable income in the next 2-8 consecutive years after the tax year in which such tax loss was incurred;
6. In August, 2009 the Mongolian Parliament approved amendments to the CIT law that will allow companies in mining and infrastructure sectors to carry forward 100% of their losses for 8 years.

Renewable energy

The Renewable Energy Law (2007) allows private sector independent power producers (IPPs) to build and operate facilities using renewable energy sources and to deliver the electricity produced to distribution networks.

The Law provides a few incentives to encourage private sector investments in renewable energy the main one being the establishment of thresholds for feed-in-tariffs. Under the Law, the Energy Regulatory Authority (ERA) and the regulatory boards of Aimags and the capital city, Ulaanbaatar, are mandated to set feed-in-tariffs and prices within the ranges shown in figure 3.

The ERA will, beyond the sub-sectors shown in the table, set tariffs and prices for other renewable energy generation facilities such as geothermal and biomass. Project developers will be compensated from the Renewable Energy Fund for the price differential between actual cost and the end-user tariffs applied under the jurisdiction of the respective authority. Tariffs set under this Law will be consistently valid for a minimum of 10 years.

In addition, the Law states that: the State Administrative Authority in charge of energy (Ministry of Mineral Resources & Energy) is empowered to use public funds to carry out feasibility studies for the sector; governors of various administrative units are required to make decisions allowing 'possession' of state lands for the purpose of establishing renewable energy facilities; governors are encouraged to also "lease independent renewable energy power sources to an entity or an individual"; transmission companies are required to purchase the electricity from RE facilities at an ERA-approved price; and they are to finance the cost of capacity expansion (and have in fact made significant extensions to the grid already) needed to connect a facility to the grid. Independent power production is explicitly allowed for off-grid projects thereby adding an additional carrot to private sector investors.

However, there are no other incentives provided for in the Law as are normally found in similar laws elsewhere (e.g. renewable portfolio standard; subsidies, grants, or rebates; favourable import conditions on equipment; tax holidays or exemptions; net metering; favourable loans or financing conditions).

Energy

The **Energy Law** (revised 2007) underpins the Renewable Energy Law in most respects so it should be referred to for the general rules and conditions relevant to power generation.

The Energy Regulatory Authority (ERA) was established under the Energy Law and that body is the final instance for setting regular and feed-in tariffs for electric power generation; arguably the most critical incentive for energy-related CDM projects. The ERA is also responsible for setting prices on fuel used for energy generation, for issuing (or revoking) licenses and for setting the guidelines for negotiations of power purchase agreements, all issues that have a major impact on the financial and economic aspects of greenfield power projects.

The generation and distribution of heat and electricity in Mongolia is currently largely carried out by state controlled companies so, although this Law was meant to apply to private enterprises,

private sector companies wishing to produce power need to refer to the RE Law to provide the legislative support for their projects.

There are no incentives in the Energy Law; it just focuses on the overall regulatory and 'enabling' setting for the sector.

Others

The **Law on Technology Transfer** (1998), although among the older pieces of legislation, specifically mentions that the government is mandated to "determine amount and type of incentives and discounts for parties in technology transfer process". In addition, state owned enterprises will be provided with economic guarantees for 'technology advancement'.

The **Law on Land** (revised 2002) is worth noting as it prohibits foreign ownership of land and that is a major factor in making investment decisions for greenfield power projects. Land is allowed to be leased however or can be obtained under a concession arrangement for specified periods of time.

The **Concession Law** (2010) is one of the more recent pieces of legislation intended to accelerate the development of much-needed infrastructure investments through private sector participation in public services. Depending on the size and importance of a project concessionaires can be offered several incentives such as tax exemptions and waivers (Article 19.2) or guarantees and financial support from the state (Article 30).

The **Law on Free Zones** (2002) regulates the form, governing bodies, monitoring mechanisms and realization of special tax and customs conditions for such areas to encourage the location of businesses and investment in those zones. The associated law on the legal status of the Altanbulag Free-Trade Zone (bordering the Russian Federation) contains typical incentives such as income tax exemptions (100% in first 5 years and 50% for three years after that) and exemptions from real estate taxes and land use fees. Zamyn-Uud, is another free trade zone located at a border point with China and also on the Trans Mongolian Railway.

As can be seen from the foregoing, there are options in the Mongolian legislation that provide different types of incentive for investors. It is therefore incumbent upon the investor in CDM-eligible projects to go through the various laws and regulations, not just from the perspective of compliance, but also for the references to benefits they may obtain for their proposed investments.

In addition to various incentives in Mongolian legislation there are some laws that have an impact on financial transactions such as:

1. **Law on Making Payments and Settlements in National Currency** (2009)
    a. Prices for goods sold and works and services performed within the territory must be expressed and paid in Mongolian Tugrug. This will impact pricing and payment conditions on contracts that incorporated companies conclude with suppliers and service providers.

Investors may see this law as a disincentive as it prohibits setting prices in a foreign currency or by 'settlement unit';

2. The **Law on Currency Settlements** ('Settlement Law' of 1994) is the primary legislation on settlement and registration of loans. There are no legal constraints on Mongolian legal entities obtaining loans from domestic or foreign banks, however, Article 14.6 of the Law requires that all foreign loans be reported to the Bank of Mongolia;
3. The Mongolian **Law on Deposits, Loans and Transactions of the Bank and Licensed Legal Person** ('Deposits, Loans and Transactions Law' of 1995) regulates the operations and transactions of banks and financial institutions when issuing loans and their repayment in Mongolia. The law allows the application of a default 'Rate Interest' not exceeding 20% of the main interest (Article 24.3) if the borrower fails to pay back the loan within the period specified in the contract;

4. The **Law on Banking** (revised in 2010) regulates banks and banking activities in Mongolia. The Mongolian Parliament made significant structural reforms in its financial sector passing this revised Law and amending the Law on Central Bank. The changes were made to enhance monitoring and supervision of banks, particularly ensuring transparent, fit, and proper owners/managers of the bank, improving risk management systems and strengthening lending practices;
5. The **Law on Non-Bank Financial Activities** (2002) regulates non-bank financial activities in Mongolia;
6. The **Law on Issuing Guarantee on Deposits in Bank** (2008) covers state guarantees to cover the cash deposits in commercial banks thereby assuring the stability of the financial market;
7. **Law on Central Bank** of Mongolia (amended in 2010) specifies that a unified interest rate policy shall be pursued by setting interest and discount rates on credits and securities. Article 16 specifies that the Bank may impose a ceiling on outstanding credit that may be extended from banks to individuals and legal persons if it considers that the instruments for regulating the money supply are not sufficient.

FINANCIAL SECTOR

Some constraints

Volume 3 of this publication series presents barriers that still need to be addressed to improve the CDM enabling environment in Mongolia but conditions in the banking sector should be highlighted in this volume because access to both debt and equity finance constitutes a major barrier for 'CD-Mable' projects in many (if not most) Non-Annex I countries. For instance, domestic debt financing terms such as high interest rates, short loan periods, and bank demands for non-project collateral frequently hinder the development of underlying projects and/or force developers to take currency exchange rate risks by looking abroad for project finance.

Many Mongolian businesses and project developers face such constraints, for instance:

- There are high interest rates on local debt financing (average 1.2 - 2% a month);
- Tenors (period of loan) are generally 1 - 3 years;
- In addition to project-specific collateral (e.g. assets such as equipment, facilities, land and CER supply contracts) banks may also demand legal rights to non-project assets (e.g. personal real estate and property);
- A default rate is applied;
- Foreign loans must be registered; and, as mentioned above
- The Law on Making Payments and Settlements in National Currency prohibits setting prices in a foreign currency so that will have an impact on those joint venture or foreign-owned businesses that need to repatriate some of their profits and will therefore face exchange rate risks (N.B. the Mongolian currency is not readily convertible and its value fluctuates significantly).

SMEs and start-up companies are particularly affected because of their "limited management capacity, lack of skills to develop business plans, limited collateral and lack of credit history to date" . Some of the developers of CDM project opportunities fall into this category so potential projects may be delayed or shelved because of the relative 'youth' of private sector entrepreneurs, renewable energy and the CDM and the inability of developers to provide the requested collateral and/or guarantees.

Some innovations

Some institutions in the Mongolian finance sector are starting to respond to these constraints in innovative ways and are improving their terms and conditions and some donor countries and agencies are also starting to assist.

One effort to address this barrier was recently announced by the US Agency for International Development (USAID) that is providing XacBank and Khan Bank with Development Credit Authority (DCA) guarantees for SME borrowers that aim "to mobilize local capital and promote local private financial institutions' investment in local development needs. The guarantees cover up to fifty percent of a lender's risk of default, encouraging local private financial institutions to lend their own capital to enterprises and projects in non-traditional or unfamiliar sectors. This makes DCA guarantees an ideal tool to assist lenders in overcoming perceived risks and improving the analysis of actual credit risks of creditworthy borrowers." However, this facility does not cover most 'CD-Mable' sectors, with the exception of construction and housing, so donor agencies have an opportunity to build upon this initiative.

Some other recent encouraging developments:

- Golomt Bank is the first Mongolian bank supporting the CDM having established an agreement with the KfW Carbon Fund (Kreditanstalt fьr Wiederaufbau, Germany) in September 2009 and is actively promoting the CDM to its customers. Golomt Bank's project financing department also supports:
    - Energy efficiency (inter alia through ESCOs) and cleaner production under their 'Green Loan Guarantee Fund' project; and
    - SME and private sector business loans, including for projects that protect the environment

Annex 11 provides loan term details as provided by the Bank;

- XacBank is a community development and microfinance bank created to provide innovative financial services to its clients. The Bank has a strong environmental policy and already has various facilities at its disposal to help finance clean development; the following are currently available through its Eco Products Unit
    - Loans to poor families for clean energy technology, initially focusing on ger insulation blankets, energy efficient cookstoves, solar home systems and fuel briquettes
    - SME lending program through their Eco Unit for projects that support environmentally friendly technology
    - Funding from the Millennium Challenge Account (jointly implemented) for clean air projects that popularise energy efficient products and reduce air pollution in Ulaanbaatar and ger district households
    - A carbon offset scheme that feeds into the voluntary carbon market and
    - Support for the development of new eco-products.

In addition, XacBank provides access to grant and loan financing from the Dutch Development Bank (FMO) at a concessional interest rate and provides working capital loans up to 3 billion MNT (ca. $ 2.5 million) with interest of 1.3% - 1.9% (if the loan is in MNT) or 1.0% - 1.6% (if in US$) . As mentioned above, XacBank is one of the Mongolian banks chosen by USAID to provide Development Credit Authority (DCA) guarantees for SME borrowers;

- Interest paid on loans that finance construction and installation work is tax deductable.

Annex 1: PROJECT TEAM

Organization	Name	Position
Ministry of Nature, Environment and Tourism	Enkhbat Altangerel	Director of Ecological Clean Technology and Science Division National Project Director
World Bank Mongolia Office	Tumentsogt Tsevegmid	Infrastructure Operations Officer Task Team Leader
Ministry of Nature, Environment and Tourism	Munkhjargal Begzsuren	National Project Coordinator
Ministry of Nature, Environment and Tourism	Bayarmaa Amarjargal	Project Procurement/ Training Officer
Ministry of Nature, Environment and Tourism	Galkhuu Davaasambuu	Project Financial Management Officer
Carbonergy BCS	Peter Noel Pembleton	International DNA consultant
Oyu Tolgoi	Oyunchimeg Bordukh	National legal consultant
	Ken Beck Lee	International training consultant
	Bulganmurun Tsevegjav	National training consultant
Caspervandertak Consulting BV	Casper van der Tak	International PDD consultant
EEC Co.,Ltd	Dorjpurev Jargal	Director/Senior consultant National PDD Consultant
Mon Energy Consult Co., Ltd.	Erdenedalai Lodon	General Director National PDD consultant
ABS Consult Co. Ltd.	Tsolmon Bat-Ochir	Deputy Director Interpreter

Annex 2: TRAINING PROGRAMMES & MEETINGS

Year	Dates	Topics	Objectives
2008	23-24 Jun	Workshop on Carbon Finance Project Development	--to build the capacity of key stakeholders such as public agencies and private corporate sector, financial intermediaries, project developers and non-governmental organizations (NGOs) to identify potential project types and key sectors for CDM and carbon finance projects --to visit sites where potential CDM projects to be initiated and implemented
	14-Nov	Workshop on Strengthening the DNA capacity	--to provide training and advisory support for the DNA staff, board members and key stakeholders to review the DNA set-up and development of systems to evaluate and streamline DNA procedures --to study experiences from "KEMCO"- Korean Energy Management Corporation to deliver various presentations and share their opinion on DNA set-up and future cooperation
2009	9-10 Feb	Workshop on CDM Project Preparation	--to provide training and advisory support for the key stakeholders of CDM, project developers, public and private sectors, NGOs on how to prepare a CDM Project; to discuss current situation and future development of CDM projects in Mongolia; to identify CDM project sectors and collect Project Idea Notes (PIN) ideas from participants of the workshop
	3-Apr	Workshop on CDM Project Preparation	--to deliver presentations that can give participants mostly from energy efficiency sector to understand what CDM is, how to develop PIN and show some example related to the renewable HPP in Mongolia
	15-May	Workshop on CDM PIN development	to provide advice & training to finalize PINs developed from previous workshops/seminars on "CDM project preparation"
	19-Jun	Workshop on CDM in Mongolia	-to provide information and knowledge for officials on what CDM is, and its current situation and future development to the officials of the Municipality Office
	23-Jun	Workshop on CDM PIN financial analysis preparation	--to improve the knowledge and skills of CDM PIN financial analysis, and introduce developed CDM projects as a sample. Guidelines on developing PIN financial analysis were shown to potential project developers who had previously developed PINs with a discussion on their comments about the CDM DNA set-up, project approval procedure
	2-Jul	Workshop on CDM in Mongolia	--to build a local understanding of the requirements and issues for carbon finance project development and to provide better knowledge about CDM to the officials of the Government implementing agency "Ulaanbaatar Business Development Center".
	9-Jul	Workshop on DNA Structure of Mongolia	--to introduce a proposed DNA structure and get participant's inputs and comments

	2-Oct	Discussion meeting on CDM in Mongolia	--to introduce CDM DNA, its regulation and CDM investment potential to branch directors of Golomt Bank as a financial intermediary
	1-Dec	Workshop on CDM Project Preparation	--to give understanding on CDM project cycle, approval procedure by DNA, additionality and PoA to the clients of Golomt Bank as a follow-up to the 2nd October 2010 training
2010	22-Jan	Regional Training in Darkhan city on Preparation of CDM Project	--to introduce climate change and Kyoto Protocol, CDM project cycle, PIN development, CDM regulation and structure of Mongolia, sustainable development and ecological clean technology to various public and private stakeholders of Darkhan city
	2-Mar	Information dissemination on CDM	--to raise public awareness of CDM among university students of "Eco-Asia University" majoring in environmental field
	5-Mar	Information dissemination on CDM	--to introduce the CDM objectives, projects and potentials in Mongolia to officials of the Ministry of Nature, Environment and Tourism
	12-Mar	CDM Appraisal Committee Meeting on PIN evaluation procedure	--to discuss (i) measures to fasten the PIN evaluation procedure; (ii) to evaluate PINs that are left unassessed; (ii) to exchange ideas on possible improvement of PIN evaluation procedure against sustainable development criteria; and (iii) to discuss about the set-up and membership of PAC
	19-Mar	Regional training in Erdenet city on CDM Project Preparation	--to introduce carbon market and carbon financing opportunities in Mongolia to various stakeholders in the public and private sector of Erdenet city, including Program of Activities; provide information on clean production; build the capacity of stakeholders in developing PINs and its financial analysis
	26-Mar	Information dissemination on CDM	--to introduce the CDM project objectives, projects and potential in Mongolia to the officials of the Ministry of Finance
	30-Mar	Information Dissemination on CDM Project Opportunities	--to introduce the CDM objectives, projects and potential for Mongolia to the officials of the Ministry of Food and Agriculture
	2-Apr	Information dissemination on CDM	--to introduce the CDM objectives, projects and potential for Mongolia to the officials of the Ministry of Mineral Resources and Energy
	2-Apr	Training Workshop on CDM in Mongolia	--to build the capacity of environmental NGOs (ENGOs) in identifying CDM project potentials in Mongolia, understanding its origins, objectives, regulation, structure, cycle; carbon market and possibilities of Program of Activities, CDM project potentials in forestry sector; environmental policy and clean production; as well as providing training and advisory support for the ENGOs on how to develop PINs and its financial analysis

9-Apr	Information dissemination on CDM	--to introduce the CDM objectives, projects and potential for Mongolia to the officials of the Ministry of Road, Transportation, Construction and Urban Development
15-Apr	CDM Introduction	--to introduce the CBDICFP project opportunities and CDM project potentials in Mongolia to regional executive directors of Mongolian Cooperative Training and Information Center (MCTIC) with an aim of co-organizing regional trainings on carbon finance
20-Apr	CDM Introduction	--to introduce carbon financing and the CDM project opportunities to economists of Khaan Bank's branch officers, inform bank's participation in the carbon market as a financial intermediary, and to attract Khaan bank's authority in co-organizing trainings to their clients
7-May	Training Workshop on CDM project development from centralized and decentralized heating sector	--to inform CDM project opportunities; provide practical training and advisory support on PDD development based on PDD examples written on heating sector in Mongolia; discuss possible cooperation in the field of CDM; and to provide information on carbon funds, investment opportunities and offers from the CBDICFP project
10-May	Training Workshop on Consultancy opportunities for CDM project developers	--to inform companies conducting environmental impact assessment (EIA) on the possibility of providing consultancy services to CDM project developers by calculating GHG emissions of projects they are conducting impact assessment. --to provide training and advisory support for EIA companies in calculating GHG emissions
14-15 May	Training on CDM and GHG emission reduction	-- to raise public awareness among university students studying in major state universities of Mongolia in the field of environmental studies about climate change and the CDM as part of an Ecology Olympiad on "Reducing GHG emissions"
24-May	Seminar on CDM Project Development	--to provide advisory support to public and private entities in energy sector on developing and implementing CDM projects; ---to identify CDM project development potentials from participants for development of a new portfolio of eligible CDM projects; --to determine the interest and needs of participants for the need assessment of capacity building training programs
4-Jun	Workshop on CDM in Mongolia	--to give introductory understanding of CDM to young academic researchers, inform the need for local experts in the field of CDM in Mongolia, and to attract young academic researchers' interest in conducting further research on CDM related topics
17-Jun	The First Consultation Meeting on CDM Enabling Environment for DNA institutional setup	--to discuss DNA and Appraisal Committee structure; key issues in developing and implementing CDM projects in relation to legal and policy framework, obtain comments and ideas from project developers, CDM project appraisal committee members, NGOs and decision-makers on required changes to CDM governance (laws, rules and regulations), structures, staffing, procedures, requirements, outreach and systems

17-Jun	Training Workshop on CDM Project Development	--to give detailed and advanced training on commonly used CDM terminologies, CDM project cycle, CDM project potentials in Mongolia, CDM enabling environment and legal issues that may arise in relation to CDM project development
18-Jun	Training Workshop on CDM Project Development (cont'd)	--to build the capacity of key CDM stakeholders in understanding the requirements for CDM prior consideration and additionality; applicability of methodology; describe the possibilities of bundling small scale CDM project activities in comparison to Program of Activties; and to inform CDM project financing alternatives
19-Jul	Training workshop on "CDM PDD Preparation" Sector: renewable energy; Case: hydro power	--to build the capacity of local experts and potential CDM project developers in preparing PDDs in renewable energy sector using the case of hydro power projects, describe methodologies used for each PDD, their history, request for clarification and revision to each methodology, its additionality and emission factor calculation tools, validation reports of PDDs with the practical guideline on using UNFCCC website
20-Jul	Training workshop on "CDM PDD Preparation" Sector: renewable energy; Case: wind power	--to build the capacity of local experts and potential CDM project developers in preparing PDDs in renewable energy sector using the case of wind power projects, describe methodologies used for each PDD, their history, request for clarification and revision to each methodology, its additionality and emission factor calculation tools, validation reports of PDDs with the practical guideline on using UNFCCC website
21-Jul	Training workshop on "CDM PDD Preparation" Sector: energy efficiency; Case: decentralized heating	-to build the capacity of local experts and potential CDM project developers in preparing PDDs in energy efficiency sector using the case of "A Retrofit Programme for Decentralized Heating Stations in Mongolia", describe its used methodology, its history, request for clarification and revision to the methodology, its additionality and emission factor calculation tools, validation reports of the PDD with the practical guideline on using UNFCCC website
22-Jul	Training workshop on "CDM PDD Preparation" Sector: energy efficiency; Case: energy efficient light	-to build the capacity of local experts and potential CDM project developers in preparing PDDs in energy efficiency sector using the case of energy efficient light projects, describe methodologies used for each PDD, their history, request for clarification and revision to each methodology, its additionality and emission factor calculation tools, validation reports of PDDs with the practical guideline on using UNFCCC website
23-Jul	Training workshop on "CDM PDD Preparation" Sector: afforestation / reforestation	--to build the capacity of local experts and potential CDM project developers in preparing PDDs in afforestation and reforestation sector using the case of a "Reforestation of Grassland in Khyalganat of Selenge Soum of Bulgan Province, Mongolia" project, describe its used methodology, its history, request for clarification and revision to the methodology, its additionality and emission factor calculation tools, validation reports of the PDD with the practical guideline on using UNFCCC website

26-Aug	Training Workshop on "CDM Project Development: Emission Factor/Reduction Calculation and Applicability of Approved Methodologies"	--to enhance the capacity and local expertise in conducting technical analysis on CDM project identification and further development. Focus: emission factor calculation from a range of sources in Mongolia including power grids and various fuels
27-Aug	Training Workshop on "CDM Project Development: Emission Factor/Reduction Calculation and Applicability of Approved Methodologies" (cont'd)	--to enhance the capacity and local expertise in conducting technical and financial analysis on CDM project identification and further development. Presentations: applicability of approved CDM methodologies to Mongolian situation; Golomt Bank project loan; Results of PIN review registered at the DNA of Mongolia; key aspects of emission reduction purchase agreement (ERPA).
30-Aug	Final Consultation Meeting on "Potential CDM Opportunities"	--to present an overview of the entire training programs conducted for the CBDICFP project under the guidance of Mr. Lee, to share the findings of Mr. Lee on the assessment of CDM project opportunities in Mongolia through the review of applicability of approved methodologies
15-Sep	Consultation meeting of CDM Appraisal Committee members	--to introduce past DNA activities and the new CDM Project Approval Procedure, approved on 11th June 2010, to the newly joined AC members; and to review the results and recommendations of the analysis prepared by international and national DNA consultants, and to discuss about implementing changes in line with those recommendations
16-Sep	Training Workshop on National Sustainable Development: Criteria for CDM Project Approval	---to (i) review the principles of sustainable development (SD), (ii) discuss SD and suitable criteria in the CDM project approval procedure of Mongolia, and (iii) to review the application of SD criteria to projects using Maikhan hydro power project and a Chinese hydropower example
19-Nov	Consultation Meeting of CDM Appraisal Committee Members	--to evaluate the PDD of Maikhan hydropower station --to discuss the new framework procedure developed by international and national DNA consultants, and agree on follow-up changes including the list and TOR of experts
29-Nov	Training Workshop on Carbon finance and its benefit to financial intermediaries	--to introduce a new market on carbon finance and CDM to financial intermediaries of Mongolia, and on how they could involve and benefit from it based on examples and international practices of raising carbon finance
30-Nov	Final Consultation Meeting on CDM PDD Development in Mongolia	--to introduce four CDM PDDs developed by the CBDICFP project within the period of May to November 2010 and to inform the project progress including ERPA agreement and validation arrangement of four PDDs
2-Dec	Follow-up Regional Training in Darkhan city on CDM Project Development	--to provide advanced training in Darkhan city as a follow-up to the introductory training conducted in Jan 2010 focusing on development approaches of CDM projects, its practical development examples in Mongolia, demonstration of calculation of emission reduction, and pitfalls in CDM project development in Mongolia from international perspective; --to give understanding on 3C: clean production/technology/product, and on best available technology and best environmental practice (BAT/BEP)

	3-Dec	Site visit study tour in Darkhan city	--to visit cement and metallurgical industry in and around Darkhan city to explore their potential for CDM project development that will be included in the final publication report on "Carbon Finance in Mongolia"; --to give understanding to officials of the above industries of the potential on developing a CDM project based on their facilities, and to provide various financial opportunities on CDM project development in Mongolia; --to use the above sites as a case study for follow-up example of CDM project potential in Darkhan city to interested participants of the 2nd Dec training.
	4-Dec	Follow-up Regional Training in Erdenet city on CDM Project Development	--to provide advanced training in Erdenet city as a follow-up to the introductory training conducted in March 2010 focusing on development approaches of CDM projects, its practical development examples in Mongolia, demonstration of calculation of emission reduction, and pitfalls in CDM project development in Mongolia from international perspective; --to give understanding on 3C: clean production/technology/product, and on best available technology and best environmental practice (BAT/BEP)
	5-Dec	Site visit study tour in Erdenet city	--to visit potential sites of Erdenet city for CDM project development that will be used as a CDM project potential for the final publication report on "Carbon Finance in Mongolia"; --to give understanding to officials of the above industries of the potential on developing a CDM project based on their facilities, and to provide various financial opportunities on CDM project development in Mongolia; --to use the above sites as a case study for follow-up example of CDM project potential in Erdenet city to interested participants of the 4th Dec training.
	6-Dec	Regional Training in Sukhbaatar city on CDM Project Development	--to provide advanced training in Sukhbaatar city as a follow-up to the introductory training conducted in March 2010 focusing on development approaches of CDM projects, its practical development examples in Mongolia, demonstration of calculation of emission reduction, and pitfalls in CDM project development in Mongolia from international perspective; --to give understanding on 3C: clean production/technology/product, and on best available technology and best environmental practice (BAT/BEP)
	7-Dec	Site visit study tour in Selenge province	--to visit potential sites of Selenge province for CDM project development that will be used as a CDM project potential for the final publication report on "Carbon Finance in Mongolia"; --to give understanding to officials of the above industries of the potential on developing a CDM project based on their facilities, and to provide various financial opportunities on CDM project development in Mongolia; --to use the above sites as a case study for follow-up example of CDM project potential in Selenge province to interested participants of the 6th Dec training
	10-Dec	Final Consultation Meeting on CDM PDD Development in Mongolia	-to introduce four CDM PDDs developed by the CBDICFP project within the period of May – December 2010 and to inform the project progress including an ERPA agreement and validation arrangement of four PDDs

Annex 3: CDM PROJECTS

Official pipeline

Project Title	Est. GHG Reductions (tCO2e /year)	Participants
A Retrofit Program for Decentralized Heating Stations in Mongolia	11,904	Prokon Nord Energiesysteme GmbH, Germany Mongol Zuukh XXI Ltd.
Durgun Hydropower Project in Mongolia	30,400	Energy Authority (gov't) Mitsubishi UFJ Securities Co., Ltd., Japan
Taishir Hydropower Project in Mongolia	29,600	Energy Authority (gov't) Mitsubishi UFJ Securities Co., Ltd., Japan
Salkhit wind park	180,960	Newcom LLC, Mongolia
Maikhan small hydropower project	36,377	Usny Erchim Co. Ltd. of Mongolia (private)
Pellet and Briquette plant in Mongolia	19,436	NTIC Group Co., Ltd. of Mongolia (private)

PDDs under development

Project Title	Est. GHG Reductions (tCO2e /year)	Participants
Oyu tolgoi wind power project (250 MW Khanbogd High Power Wind Farm)	1,146,708	Qleantech LLC (private)
Waste gas to green energy	26,485	Sharyngol Energy LLC (private)
Sainshand Wind Farm	173,965	Sainshand Wind Park LLC (private) EAB New Energy GmbH, Germany (private)
Energy conservation and emission reduction from poor households	75,000 - 90,000	Ulaanbaatar City Governor's Office (municipality) Ulaanbaatar Business Development Center (municipality) Energy Authority (gov't) Mongolian Energy Association (NGO) Mon Energy Consult Co. Ltd. (private)
CFL distribution PoA	-	Golomt Bank of Mongolia (private)
Reforestation of Grassland in Khyalganat of Selenge Soum of Bulgan Province	19,008 removals until 2030	Mongolia Forest Forum (NGO)
Rehabilitation of HOBs PoA	-	-
Small scale wind power and its hybrid programme project in Monglia (PoA)	56,000	-
Ulaanbaatar Apartment Buildings Energy Efficiency Project	12,988	City Government of Ulaanbaatar (gov't)

Project Title				
Project Description	**Technical description:** Mongolia Forest Forum, NGO intends to a 300 ha of grassland (a single parcel) into a forest land by plating 750,000 two to three years old Scotch pine –Pinus Sylvestris, one of the three most prominent native tree species in the area. The land has been secured through the approval of local Government. 1989 and 2009 satellite images have proven the eligibility of the land for reforestation. The approved baseline and monitoring methodology applied to the proposed project activity is AR-AMS0001 Version 05: Simplified baseline and monitoring methodologies for small scale afforestation and reforestation project activities under the clean development mechanism implemented on grasslands or croplands. The project meets the applicability conditions of AR-AMS0001 Version 05. There will be no public funding on this project and this is not a debundled component of a large scale project. There will no project emission and no leakage. Following the approved methodology, the estimated GHG removal is 950 t CO2e per annum on average over the first 20 year crediting period. An EIA is not required for this type of projects in Mongolia. In any event, reforestation will bring environmental benefits. Also, Mongolia Forest Forum intends not to use equipment for site preparation and no chemicals will be used as fertilizer and pesticides. The local stakeholder consultation has been undertaken and no negative comment has been received. Even the herders near the project site did not oppose the project because there are large grasslands near the site to feed the livestock. This project will create employment for planting and maintenance for the poor community where the site is located. Substantial environmental and social benefits are expected from this project.			
Project Costs (estimates)	Investment: $328,000 over 3-year planting Operating costs: $573,000 over 17 years	Financing Plan	D:E ratio N/A	
Profitability Indicators	**Income streams:** CER only no harvesting for 100 years because of the slow growth due to very cold and dry climate **IRR:** Extremely low **CERs:** $14,250 per annum average assuming $15 per tCO_2e			
Current Status	**Underlying project: Research report by Ch. Dorjsuren, J. Tsogtbaatar, Z. Tsogt, and G. Tsesendash, entitled "The Investigation of Plantation and Natural Pine Forest" Final Report 2001-2003 (Ulaanbaatar, 2003) was used to estimate the bio mass volume of Scotch Pine at different ages. This research was funded by Hyogo Environmental Advancement Association (HEAA) of Hyogo Prefecture, Japan.** **Licenses/ permits: (e.g. EIA) Land use permit to be issued by the local government** **Financing: Not in place** **CDM: A DOE will be retained for validation will start when financing becomes available.**			
Project Start Date	Subject to financing	Time to Complete	Subject to financing	
Requirements/ challenges	A/R projects in Mongolia bring substantial environmental and social benefits but they are not financially attractive because of slow growing trees due to the extremely cold and dry climate.			

Project Title	The Waste Gas to Green Energy Project at Sharyngol Energy, Mongolia		
Project Description	The Waste Gas to Green Energy Project at Sharyngol Energy, Mongolia, (hereinafter 'the project' or 'the proposed project activity' involves the utilization of waste gas from a semi-coke production facility, Sharyngol Energy LLC, for the generation of power in a 3 MW power generation facility. The power generated by the facility will be exported to the Central Energy System (CES) power grid. The current situation, and the baseline scenario in absence of the proposed CDM project activity, is the continued flaring of the waste gas from the semi-coking production facility and the production of an equivalent amount of power by fossil-fuel fired power plants connected to the CES. The current production scale of Sharyngol Energy is 50,000 ton of semi-coke per year. The amount of waste gas generated is 8000Nm3/hr, translating into about 66.24 million Nm3 waste gas/yr. The project is expected to generate approximately 24840 MWh/yr and to supply the grid with a gross amount of 24,012 MWh/yr (before deduction of own consumption by the project entity) and the Sharyngol Energy LLC existing facility with an amount of 828 MWh/yr. The expected own consumption by the project entity is 828 MWh/yr, and the net amount of power delivered to the grid is 23,184 MWh. The amount of 828 MWh delivered to the Sharyngol Energy LLC semi-coking facility was in the baseline supplied by the CES power grid.		
Project Costs (estimates)	Investment: $ 2.4 million Operating costs: $ 183,500	Financing Plan	D:E ratio NA
Profitability Indicators	Income streams: Sale of power to the grid and sale of CERs IRR: 27% project IRR before taxes, without the inclusion of revenues from the sale of CERs. CERs: 26,485 tCO2/y		
Current Status	Underlying project: a feasibility study has been prepared by an independent third party. Licenses/permits: all necessary permits and licenses are in place Financing: Pending CDM: PDD developed, CER buyer needs to make decision on hiring of DOE and start of the validation.		
Project Start Date	Pending	Time to Complete	Pending
Requirements/ challenges	Effective follow through on potential investors introduced to the project developer.		

Project Title	Pellet and briquette plant in Mongolia		
Project Description	The project involves the use of wood waste (from wood processing factories) to produce bio-fuel briquettes to be used in heating stations where the biomass and briquettes will replace coal. In this process, greenhouse gas (GHG) emissions are reduced. In the wood processing factory, a production line will be installed to produce bio-fuel briquettes from wood waste from the wood processing factory (MBMX), from neighbouring wood-processing facilities in Mongolia, and from wood processing factories in Russia. It is not in the current planning to use waste wood from Mongolian forests; in cases this would change, it would be reported in later versions of this PDD and it would be ensured that the waste wood from the forests would comply with the definition of renewable biomass, as discussed in full in Section B. In case of wood waste collected from industrial facilities in Russia, the distance from the project site will be 250 km. The plant will produce biomass briquettes, with a production capacity of 30 tons per day, and we will supply a small heating station in Sukhbaatar (SB) city. The project will supply 30 tons briquettes (per day) to Sukhbaatar heating station. The total amount of briquettes produced each year is 10,560 tons. The project reduces greenhouse gas emission as described below, through the replacement of a fossil fuel with a renewable zero emission fuel (renewable biomass).		
Project Costs (estimates)	Investment: $ 460,000 Operating costs: $ 300,000	Financing Plan	D:E ratio NA
Profitability Indicators	Income streams: Sale of briquettes / pellets to the heating station of Sukhbaatar, sale of CERs. IRR: Not calculated, estimated around 10% without CERs CERs: 19436 tCO2/y		
Current Status	Underlying project: A feasibility study has been prepared by NTIC. Licenses/permits: EIA prepared by Nature, Environment and Tourism department of Selenge local government. Financing: Several financial offers have been obtained by NTIC, which has a good relationship with Mongolian banks CDM: Buyer identified, DOE hired, validation ongoing		
Project Start Date	NA	Time to Complete	NA
Requirements/ challenges	Finalization of the financing, successful validation.		

<table>
<tr><td>Project Title</td><td colspan="4">Replacement and Rehabilitation of Heat-Only-Boilers in Mongolia</td></tr>
<tr><td>Project Description</td><td colspan="4">The Energy Authority (EA) – Implementing Agency under the Ministry of Mineral Resources and Energy – will coordinate the small-scale programme of activities (SSC-PoA) and will support the project implementer(s) in implementing the CDM Programme Activities (CPAs) in Mongolia as the Coordinating or Managing Entity (CME). In these tasks, EA will be assisted by local and international consultants. Note that EA itself owns and operates some of the inefficient heating only boilers (HOBs) that may be replaced under this POA.

Policy/measure or stated goal of the PoA:

<u>Background</u>

Mongolia has a harsh continental climate with very cold winters. The capital of Mongolia, Ulaanbaatar, has the distinction of being the coldest capital in the world, with an annual average temperature below zero. Given this background, it is clear that the provision of heating in winter is of significant importance.

Heating in Mongolia is partly provided through centralized district heating systems, partly though decentralized stoves, and partially through heat-only-boilers that provide heating for larger sized building. Many to most of the heat only boilers in Mongolia are old and inefficient.

Objective of this program of activities is to replace old inefficient polluting coal-fire heat-only-boilers (HOBs) with environment friendly highly energy-efficient boilers in Mongolia. Over 200 heat-only-boilers with average size of 0.5 MW (range 250-860 kW) are operating in 89 HOB stations in Ulaanbaatar, and approximately 400 HOBs are in Aimag (provincial) centers. Under this project, new high efficient and less polluting boilers will be installed for the first program activity in Ulaanbaatar, and the replacement of boilers will be replicated in the remaining parts of Ulaanbaatar and aimag centres at a later stage of the POA. By replacing the boilers, the amount of coal consumption per unit of energy output decreases significantly, thus reducing CO_2 emissions associated with heating supply during the long harsh winters. For each 10MW thermal capacity replaced, average emission reductions of approximately 11,000CO_2/yr will be realized.

The baseline boilers in Mongolia that would be replaced under this program of activities are characterised by being very inefficient (the average efficiencies are 40%-50%), unreliable, dirty and dangerous, and without any desulfurization and dust removal devices. In some instances the boilers broke down leaving no heating supply for extended periods during harsh Mongolian winters, where heating seasons lasts for 7-8 months in a year, and minimum temperature drops to -40°C in winters.
Coal-fired HOBs are the primary source of air pollution in Mongolia. About 5.7 million tons of coal and 160 million cubic meters of fire-wood are used for heating, cooking and energy generation in Mongolia annually, Thousands of small heat-only-boilers without any pollution control devices result in serious air pollution in winter, except for GHS emissions, other pollutants include sulfur dioxide (SO_2), PM, and Nitrogen dioxide (NO_2) . According to the World Bank report, the PM_{10} ambient levels in the winter are 265μg/m^3 in average, which are at least 2-4 times more than that in the summer.</td></tr>
<tr><td>Project Costs (estimates)</td><td colspan="2">Investment: $ Scale-dependent
Operating costs: $ Scale-dependent</td><td>Financing Plan</td><td>D:E ratio
NA</td></tr>
<tr><td>Profitability Indicators</td><td colspan="4">Income streams: Share in the energy cost savings, sale of CERs
IRR: Dependent on baseline efficiency boilers replaced

CERs: Scale dependent</td></tr>
<tr><td>Current Status</td><td colspan="4">Underlying project: Several studies have been conducted by f.i. World Bank and ADB
Licenses/permits: NA
Financing: NA
CDM: NA</td></tr>
<tr><td>Project Start Date</td><td>Pending</td><td colspan="2">Time to Complete</td><td>Pending</td></tr>
<tr><td>Requirements/ challenges</td><td colspan="4">Mobilization of finance, and a clear ownership by a party developing the opportunity.</td></tr>
</table>

Project Title	CFL Efficient lighting in Mongolia		
Project Description	The small-scale CPA (SSC-CPA) involves the distribution of up to 500 thousand energy efficient CFLs to households across Mongolia that are connected to one of the main electrical power grids. Compact Fluorescent Lamps (CFLs) will be made available in exchange for an equivalent number of incandescent light bulbs. As part of the exchange, the CPA implementer will provide a zero-interest loan in an amount equal to the retail value of the CFLs provided, while the CERs are retained by the CPA implementer. The CERs revenues are shared with the retailers that participate in the CPA, as further described in Section B with a ratio CPA implementer at least 75%, retailer at most 25%. The CFL distribution will be promoted through CFL distribution points that will be set up by the CPA implementer, Bodi International and its subsidiaries. In the distribution points, ICLs will be collected and stored, and replaced with a CFL of at least the same lumen output, according to Table A.1 below. The CFLs that are distributed to the households will be marked with the following information: Name of the POA, name of the CPA, Name of the CME, Name of the CER buyer, name of the CPA implementer, unique identification number,[1] power rating, lumen output, correlated colour temperature, voltage, power factor, frequency. A database of participating households will be maintained.		
Project Costs (estimates)	Investment: $ Scale-dependent Operating costs: $ Scale-dependent	Financing Plan	D:E ratio NA
Profitability Indicators	Income streams: Partial payment CFLs, sale of CERs IRR: Dependent on final decision related to payment for CFLs CERs: Scale dependent		
Current Status	Underlying project: NA Licenses/permits: NA Financing: NA CDM: NA		
Project Start Date	Pending	Time to Complete	Pending
Requirements/ challenges	Mobilization of finance, and profitability with falling CER prices.		

[1] A nine digits identification number is used – the first 4 designate the distribution point, and the last 5 designate the CFLs distributed by each of the distribution points.

Annex 4: PROJECT OPPORTUNITIES

Concepts and PINs

Projects and participants are indicative only!

Project Title	Est. GHG Reductions (tCO2e /year)	Participants
Replacement of Coal and Wood Fired Heating by Renewable Heating System	*3 years = 15,445 *10 years =109,369 *7 years = 6,678	Steppe Solar LLC (private)
Reconstruction boilers in Power Plants of Darkhan and Erdenet cities	32-33,000	Energy Authority (gov't) Darkhan power plant (public) Erdenet power plant (public) Mongolian Energy Association (NGO)
Biogas Plant in Mongolia	2,313	NTIC Group Co., Ltd. of Mongolia (private)
Community-Based Heating Supply in Rural Remote Areas of Mongolia	17,000 - 23,000	Energy Authority (gov't) Mon Energy Consult Co., Ltd
Improvement of Heating Systems in Urban Centres of Mongolia	30,000	Energy Authority (gov't) Mongolian Energy Association (NGO)
Energy Conservation with Utilization of Active Mineral Additives (pozzolans) in Cement Production	30,000	Khutul Cement Lime Plant (public) Mongolian Energy Association (NGO)
Energy Conservation with Introduction of Variable Speed Drive Pumps for Heating Distribution in Ulaanbaatar	30,000	Ulaanbaatar District Heating Company (public) Mongolian Energy Association (NGO)
Mass replacement of gers and yurts by affordable passive housing (Geothermal heating supply in ger district)	99,600	Ministry of road transport, construction and urban development (gov't) Ulaanbaatar city governor's office
Geothermal Project in Khangai Region of Mongolia	50,000	Energy Authority (gov't) Energy Authority (gov't) National Renewable Energy Centre (NPPO) Mongolian Energy Association (NGO)
Reduction of CO2 through Introduction of Ladle Refining Furnace in Darkhan Metallurgical Plant of Mongolia	30,000	Darkhan Metallurgical Plant Co., Ltd. (public) Mongolian Energy Association (NGO)
Project of generating energy from garbage treatment	-	Eh oron tsever baigal LLC, Mongolia (private)
Production of Renewable Energy Using Wind Power	180,000	Eh oron tsever baigal LLC, Mongolia (private)
Shubuun Biogas	30,000	MID Co., Ltd. (private) Mongolian Nature and Environment Consortium (NGO)
Solar energy for Ger district	20,250	-
Programme Energy Effiency Power Plant Darkhan	30,000	Energy Authority (gov't) Darkhan power plant (public) Mongolian Energy Association (NGO)
Renewable energy Application for street lights in Ulaanbaatar	60,000-63,000	Ulaanbaatar city governor's office Energy Authority (gov't) Mongolian Energy Association (NGO)
Decreasing coal, mazot, and water use of CHP 4 (Efficiency of water, coal, and mazot usage of Power Plant 4)		

Programmes of Activity (PoAs)

Project Activity	Rationale	Applicable Methodology
Adoption of LED lighting	There are currently two registered PoAs for replacing incandescent light (ICL) bulbs with compact florescent light (CFL) bulbs in residential homes in Mexico and in India.	AMS-II.J revised to include LED lighting through the request for revision to UNFCCC or AMS-II.C
	Although CFLs represent three to four times the energy savings of traditional ICL bulbs, LEDs are by far the most energy-efficient light bulbs available, lasting 10 times longer than CFLs. A CFL contains about 5 mg of mercury. A sudden increase in CFL use could result in an influx of mercury into the waste stream, posing an environmental risk. LEDs, on the other hand, do not contain any toxic chemicals. At present LEDs are much more expensive ($30-40) than CFLs ($4). Despite their high initial cost, LEDs are more cost effective in the long term because of their longevity, high energy efficiency, no environmental or health hazard, and likely continued drop in the price of LEDs due to increasing popularity and price competition.	
	It is recommended that Mongolia implement LED lighting in institutional, commercial, and industrial buildings in addition to residential homes. The two registered PoAs in Mexico and India include only residential homes because it is difficult to prove additionality in non-residential applications due to the reasonable payback time of CFLs. Those PoAs were justified because poor households cannot afford the initial high cost. In case of LED, even non-residential applications can be justified because of the very high initial cost of LED lighting systems.	

Energy efficient heat-only boilers (HOB) and hot water heaters (HWH)	With the long and cold winter, water and space heating is very important in Mongolia. The heating season in Mongolia lasts seven months, from October 15 until May 15. Between 1980 and 1988, approximately 1,200 Russian made boilers were installed in various Soum centres for heating in residences, hospitals, schools, and other public institutions. The maximum heat load of these low-efficiency (0.4-0.45) boilers reaches only 0.8-1.2 MW. In 2005 there were a total of 1,671 small/medium HOBs operating in Mongolia where no district heating is provided.	AMS-II.B
	The proposed project activity will replace the existing low efficiency HOBs and HWHs with modern and high efficiency units on a municipal administration unit basis for each CPA to meet the SSC threshold.	
Biogas generation from livestock manure and organic domestic waste	The largest source of methane emissions in Mongolia is the livestock sector, at approximately 90% of the country's total methane emissions.	AMS-III.R can be applied to this PoA as long as the annual emission reduction at each methane recovery system does not exceed 5tCO_2e. (Systems with an annual emission reduction higher than 5tCO2e are eligible under AMS-III.D. However, methodology AMS-III.D cannot be used in Mongolia as it requires that the annual average temperature of baseline site be higher than 5°C.)
	Because of the nomadic nature of Mongolia's livestock husbandry practices, the manure of the animals is managed on pastures and ranges aerobically. A PoA can be developed to reduce methane emissions from animal wastes through biogas digesters for methane capture and utilization on site and/or in nearby villages. This PoA should be a part of a larger national economic and environmental initiative that seeks to combat desertification of grassland by overgrazing of pastures and to provide proper housing for poor herding families and animals to shelter them from harsh winter conditions. Such an initiative would be able to prevent a recurrence of the tragic event that occurred in early 2010, in which millions of livestock froze to death in Mongolia due to extreme cold winter, leaving many families destitute.	
	Once the construction of the herder housing units with livestock barns are complete, methane recovery and combustion systems can be installed to achieve controlled anaerobic digestion of manure and other organic domestic wastes and subsequent utilization of biogas. The implementation of this PoA will effectively reduce methane emissions from livestock and other domestic/agricultural organic wastes, curtail the desertification resulting from over grazing, improve the local environment, protect human health, promote well-being of the herders, and create job opportunities for skilled labour for construction of houses and barns and operation and maintenance of the manure and organic waste management systems.	
	The biogas PoA project described in # 3 above will free up grassland currently used for grazing, giving rise to an opportunity for a PoA in the forestry sector. In addition, there is 1.7 million ha of abandoned and unused pastureland due to groundwater scarcity. Reforestation through tree planting on some of the grassland would help expand forest land in Mongolia, reduce CO2 in the atmosphere by carbon sequestration, increase the income of the local people by providing employment opportunities in forest maintenance, such as nursery work, planting, weeding, fire protection, thinning and pruning, and alleviate poverty of local communities. This PoA can be undertaken in partnership with local tree planting NGOs.	
Reforestation of grassland	An A/R CDM Programme Activity (CPA) must be developed or implemented by low income communities or individuals. Mongolia defines low income as the income below US$ 60-70 (86,300-101,100 tugrik) per capita in 2009.	AR-AMS0001

Annex 5: Laws, Rules and Regulations Related to the Implementation of CDM Projects

Also look at http://www.legalinfo.mn/pages/1/page1.php or http://www.lexadin.nl/wlg/legis/nofr/oeur/lxwemon.htm

Title and Type* of LLR	#	Date	Issued by	Licenses & Permits/Comments
Business (general)				
Company Law		2-Jul-99	Parliament	Registration of businesses
Civil Code		10-Jan-02	Parliament	
Foreign Investment law		10-May-93	Parliament	The minimum required capital to establish a foreign invested entity is US$ 100,000 cash or the equivalent value of capital.
Business Entities Income Tax Law		29-Jun-06	Parliament	The transfer of funds overseas is subject to a 20% withholding tax.
Concession Law Law on Public and Private Partnership		28-Jan-10	Parliament	The law regulates issues of granting investors concessions over state and local own property.
Resolution approving the List of Priority Projects	#320	14-Oct-09	Government	Two CDM related projects were included in the list namely, biomass project and eco water cleaning project
Labour Law		14-May-99	Parliament	
Resolution determining the percentage of labor force to be received from abroad in 2010	#78	31-Mar-10	Government	The percentage of foreign labor force and specialists working in some sectors is determined in the Annex. The percentage of foreign workers who work in other sectors not listed in the Annex shall be no more than 5 percent of total number of employees, and no more than 30 percent in representative offices of foreign entities and organizations, local non-governmental organizations and foreign nongovernmental organizations with legal permission to conduct humanitarian activities.
Law on Land		7-Jun-02	Parliament	§ Land use license § Land use agreement § Land fee
Resolution determining the total size of land for the possession by business entities for production and service	#28 Res. No 124	2/7/2003 April 2, 2008	Government	The total size of land allowable for use and possession by citizens and business entities depends on the purpose of such use and possession.
Labour Safety and Health		22-May-08	Parliament	Employers are responsible for § Appointing Safety Committee and Safety Officer § Taking risk assessment, work place assessment, and annual safety exam
Regulation on procedures for approval of CDM Projects	#211	7-Aug-09	Minister for Nature, Environment and Tourism	
Regulation on the Sustainable Development Criteria for CDM Projects	#211	7-Aug-09	Minister for Nature, Environment and Tourism	
Law on Liccensing of business activities		01.II.01	Parliament	
XXI Century National Sustainable Development Program	#82	27-May-98	Government	

Title and Type* of LLR	#	Date	Issued by	Licenses & Permits/Comments
Environment (general)				
Law of Mongolia on Air		16-Jun-10	Parliament	Includes Articles establishing: § A National Committee on Climate § A Climate Change Unit (??)
Law on Air Pollution Fee		16-Jun-10	Parliament	
Climate Change National Program	#120	19-Jul-00	Government	The program is currently under revision – to be re-issued soon
Environmental Protection Law		30-Mar-95	Parliament	
Environmental Impact assessment Law		22-Jan-98	Parliament	§ General Environment Impact Assessment (GEIA) Conclusion § Detailed Environmental Impact Assessment (DEIA) § Environment Protection Plan § Environment monitoring program
Regulation on Procedure for conduction evaluation for DEIA	#195	21-Jun-06	MNET	
Law on Water		22-Apr-04	Parliament	§ Agreement and Permit for water use for industrial purpose § Fee for water use
Law on Water and Mineral Water Use Fees		1-Jul-95	Parliament	Companies utilizing water shall pay a water use fee which can be different depending on the purpose of the use.
Regulation on Determination of water and mineral water use fees	#351	25-Nov-09	Government	
Guide for preparation of environmental protection plans and environmental monitoring programs	#87	26-Jul-00	MNET	
Law on Hazardous and Toxic Chemicals		5-May-06	Parliament	

Title and Type* of LLR	#	Date	Issued by	Licenses & Permits/Comments
Energy sector				
Renewable				
Law on Renewable Energy		11-Jan-07	Parliament	§ License for building renewable energy plant § License for producing renewable energy § Energy sales agreement
Resolution approving National Renewable Energy Program	#32	9-Jun-05	Government	The program has set renewable energy targets: § Renewable energy target of 3-5 percent by the year 2010 § Renewable energy target of 20-25 percent by the year 2020
Resolution approving "100 000 Solar Gers" National program	#158	6-Oct-99	Government	It plans to achieve the main target of providing electricity to 100 000 households by 2010 and every rural families by 2020 using renewable energy.
Fossil fuels				
Law on Energy		1-Feb-01	Parliament	§ License for producing and transmitting electricity § License for producing and transmitting heat § License for distributing electricity and heat § License for importing and exporting electricity § License for constructing energy source facility § Permit for the restructuring of the licensed legal body and the changes in operation, ownership etc. § Environmental Impact Assessment § Environmental Protection Plan § Certification and Permit for the utilization of stove, compressed container, pipeline, electric and mechanic equipment § Permit for maintaining stove, compressed container, pipeline that transmits above 115*C hot water, and assembling compressed container
Energy efficiency				
Climate Change National Program [see item #18]	#120	19-Jul-00	Government	For industries, measures to reduce greenhouse gas emissions include good maintenance of industrial machines, improvement of motor efficiency and dry process of cement industry. For construction industries, these measures include the improvement of building insulation and heating system in buildings and lighting efficiency.
Sustainable Energy Sector Development Strategic Plan	#140	4-Jul-02	Government	The policy document outlines major policy guidelines and actions to be taken in short and mid-term. It establishes 5 main principles of the Energy Sector Strategy. § Self-sustainability of energy sector § Private sector participation § Capacity building § Energy access and affordability of the poor and rural people § Energy conservation to and environmental sustainability.

Title and Type* of LLR	#	Date	Issued by	Licenses & Permits/Comments
Waste sector				
Law on Hazardous and Toxic Chemicals [see item #26]		5-May-06	Parliament	§ License for disposing hazardous and toxic chemicals (HTC) § Approval for storage location for HTC § License for emitting chemical substances (tolerance level not determined in the existing standard) into the atmosphere
Law on Household and Industrial Waste		28-Nov-03	Parliament	The government shall be responsible for issues of granting business entities a license to use hazardous waste.
Transport sector				
Law on Auto-transport		24-Jun-99		§ Permit for vehicle for passenger transporting
Regulation on Hazardous Consignment Transporting	#119	19-Apr-00	Minister for Infrastructure Development	§ License for transporting hazardous consignment § Permit for transporting hazardous consignment for one time
Building sector				
Law on Construction		7-Aug-98	Parliament	§ License for conducting architecture and construction work § Approval for design drawing of superstructure § Permission to start construing a superstructure § Permit for designing structures that not specified in the existing construction standard and regulation § Permit for designing and building structures (tower, supporting and reinforcing post, wall) that exceed 30 meters in height and 60 meters in length
Rule on Developing and Approving Engineering Drawings	#204	08.VII.09	Government	
Forestry sector				
Law on Forest		17-May-07	Parliament	Local communities and business entities are able to possess forest through long-term leases or management agreements.
Resolution approving procedures for use of forest by individuals and business entities	#227	22-Jul-09	Government	The total size of the forest possessed by local communities and business entities shall be no more than 1500ha.
Resolution approving Forestry Program	#248	31-Oct-01	Government	This policy document provides a framework and guidance for country driven forest sector development with participation of all stakeholders and in consistence with policies of other sectors and international policies.

Title and Type* of LLR	#	Date	Issued by	Licenses & Permits/Comments
Coal & Mining				
Minerals Law		8.VII.06	Parliament	
Law on Subsoil		29.Xi.88	Parliament	
Law on Petroleum		18.I.98	Parliament	
Law on Prohibition of mining in the areas of water sources		16.VII.09	Parliament	
Sanitation law		7.V.98	Parliament	
Fire safety		28.V.99	Parliament	
Law on Control over the Circulation of Explosive Substance and Blasting Materials		6.V.04	Parliament	
Law on land Fee		24.IV.97	Parliament	
Law on Environment protection Fund Fee		28.I.00	Parliament	
Agriculture sector				
Law on Agriculture		22.IV.04	Parliament	
Law on cultivated Plant Species		17.VI.99	Parliament	

Annex 6: Category of Projects that Require Environmental Impact Assessment[xvii]

Sector	State central administrative organization in charge of environment	Capital city or Aimak Governor
Mining projects	Exploitation of all types of minerals	Exploitation of common minerals to be used in their respective territories
Metallurgy projects	All types	
Light and Food industry projects	Major national-level entities	Local-level small and medium-sized entities
Agriculture projects	Water pool Irrigation system Agricultural activities in virgin lands	Other service and production activities
Infrastructure projects	Energy station with power of more than 1MW Energy transmitting line with a capacity of more than 30KW Heat transmitting lines Hydropower station Railway Airport Interstate and intercity roads Interstate and intercity communication	Energy station with power of less than 1MW Energy transmitting line with a capacity of less than 30KW Heat transmitting lines in their respective territories Local roads and communication
Service industry projects	Hotels, motels, health resorts with a capacity to receive more than 50 visitors Tourism related activities	Hotels, motels, health resorts with a capacity to receive less than 50 visitors
Other projects:	Eater supply and sterilization facilities and central landfill in cities and villages with population of more than 10 000 people	Water supply and sterilization facilities and central landfill in cities and villages with population of less than 10 000 people
§ Urban development	National-level construction of buildings for the purpose of military and civil defence	Local-level construction of buildings for the purpose of military and civil defence
§ Projects with the purpose of military and civil defence		
§ Water supply system		
§ Sterilization facilities		
§ Central landfill and others		
Biodiversity Projects	Major national-level fish farm Use and reintroduction of animals and plants species and other activities	Animal hunting and forest farm, hunting lodge Fish farm for the purpose of meeting needs of local people
Projects related to toxic chemicals, radiological substances and hazardous waste	Activities related to the production, use, storage, transport, and disposal of toxic chemicals, radioactive substances and hazardous waste	
Activities in special protected area	Activities within territory of state special protected areas	Activities within territory of local special protected areas

Annex 7: Project Types and Indicative Laws, Rules and Regulations

Energy sector

Hydro	Law on Renewable Energy
	Environmental Protection Law
	Environmental Impact assessment Law
	Guide for preparation of environmental protection plans and environmental monitoring programs
	Law on Land
	Resolution determining the total size of land for the possession by business entities for production and service
	Law on Water
	Regulation on Determination of water and mineral water use fees
	Law on Water and Mineral Water Use Fees
	Law on Environment protection Fund Fee

Wind	Law on Renewable Energy
	Environmental Protection Law
	Environmental Impact assessment Law
	Guide for preparation of environmental protection plans and environmental monitoring programs
	Law on Land
	Resolution determining the total size of land for the possession by business entities for production and service

Solar	Law on Renewable Energy
	Environmental Protection Law
	Environmental Impact assessment Law
	Guide for preparation of environmental protection plans and environmental monitoring programs
	Resolution approving "100 000 Solar Gers" National program

Biomass	Law on Renewable Energy
	Environmental Protection Law
	Environmental Impact assessment Law
	Guide for preparation of environmental protection plans and environmental monitoring programs
	Law on Land
	Resolution determining the total size of land for the possession by business entities for production and service
	Law on Hazardous and Toxic Chemicals
	Law on Household and Industrial Waste

Biogas	Law on Renewable Energy
	Environmental Protection Law
	Environmental Impact assessment Law
	Guide for preparation of environmental protection plans and environmental monitoring programs
	Law on Land
	Resolution determining the total size of land for the possession by business entities for production and service

Biofuel	Law on Renewable Energy
	Environmental Protection Law
	Environmental Impact assessment Law
	Guide for preparation of environmental protection plans and environmental monitoring programs
	Law on Land
	Resolution determining the total size of land for the possession by business entities for production and service

Coal	Law on Energy
	Environmental Protection Law
	Environmental Impact assessment Law
	Guide for preparation of environmental protection plans and environmental monitoring programs
	Law of Mongolia on Air
	Law on Air Pollution Fee

Oil	Law on Energy
	Environmental Protection Law
	Environmental Impact assessment Law
	Guide for preparation of environmental protection plans and environmental monitoring programs
	Law of Mongolia on Air
	Law on Air Pollution Fee
	Law on Petroleum

Gas	Law on Energy
	Environmental Protection Law
	Environmental Impact assessment Law
	Guide for preparation of environmental protection plans and environmental monitoring programs
	Law of Mongolia on Air
	Law on Air Pollution Fee

Public Services

Sewage	Environmental Protection Law
	Environmental Impact assessment Law
	Guide for preparation of environmental protection plans and environmental monitoring programs
	Law on Hazardous and Toxic Chemicals
	Law on Household and Industrial Waste
	Law on Water

MSW	Environmental Protection Law
	Environmental Impact assessment Law
	Guide for preparation of environmental protection plans and environmental monitoring programs
	Law on Hazardous and Toxic Chemicals
	Law on Household and Industrial Waste
	Law of Mongolia on Air
	Law on Air Pollution Fee

Transport

Public transport	Law on Auto-transport
	Regulation on Hazardous Consignment Transporting
	Law of Mongolia on Air
	Law on Air Pollution Fee
	Concession Law Law on Public and Private Partnership

Private transport	Law on Auto-transport
	Regulation on Hazardous Consignment Transporting
	Law of Mongolia on Air
	Law on Air Pollution Fee

Mining

Coal	Environmental Protection Law	Minerals	Environmental Protection Law
	Environmental Impact assessment Law		Environmental Impact assessment Law
	Law on Hazardous and Toxic Chemicals		Law on Hazardous and Toxic Chemicals
	Guide for preparation of environmental protection plans and environmental monitoring programs		Guide for preparation of environmental protection plans and environmental monitoring programs
	Law on Environment protection Fund Fee		Law on Environment protection Fund Fee
	Law on Land		Law on Land
	Law on Subsoil		Law on land Fee
	Law of Mongolia on Air		Law on Subsoil
	Law on Air Pollution Fee		Law on Water
			Law on Water and Mineral Water Use Fees
			Regulation on Determination of water and mineral water use fees
			Law on Prohibition of mining in the areas of water sources
			Law on Liccensing of business activities
			Labour Safety and Health
			Sanitation law
			Fire safety
			Rule on Developing and Approving Engineering Drawings
			Law on Control over the Circulation of Explosive Substance and Blasting Materials

Chemical and Construction Industries

Chemicals	Environmental Protection Law	Construction
	Environmental Impact assessment Law	
	Guide for preparation of environmental protection plans and environmental monitoring programs	
	Law on Hazardous and Toxic Chemicals	
	Law on Household and Industrial Waste	
	Labour Safety and Health	Law on Construction
	Law on Licensing of business activities	Labour Safety and Health
		Law on Licensing of business activities
		Sanitation law
		Fire safety
		Rule on Developing and Approving Engineering Drawings
		Law on Control over the Circulation of Explosive Substance and Blasting Materials
		Law on Land
		Resolution determining the total size of land for the possession by business entities for production and service
		Law on Subsoil

Forestry and Agriculture

A&R	Environmental Protection Law	Fertilizer
	Environmental Impact assessment Law	
	Guide for preparation of environmental protection plans and environmental monitoring programs	
	Law on Land	Law on Land
	Law on land Fee	Law on land Fee
	Law on Forest	Law on Agriculture
	Resolution approving Forestry Program	Law on cultivated Plant Species
	Resolution approving procedures for use of forest by individuals and business entities	Resolution determining the total size of land for the possession by business entities for production and service

Annex 8: SUSTAINABLE DEVELOPMENT WORKSHEET

Project

Name:	
Amount of GHG emission reduction:	
Amount of carbon sequestered:	
AC member information	
Name:	
Organization:	
Position:	

Whether the project has complied with relevant regulations*		Impact														
		Environment						Society					Economy and technology			
Other	EIA	(a) Climate Change		(b) Local environment		(c) Resource		(d) Poverty reduction	(e) Equity	(f) Health	(g) Basic need		(h) Efficient resource use	(i) Transfer of technology and know-how	(j) Creation of infrastructure	
Y/N	**Y/N**	1) Reduction of fossil fuel consumption	0	1) Air	0	1) Resource depletion	0	0	0	0	1) Energy	0	0	0	0	
		2)Energy efficiency	0	2) Water	0	2) Biodiversity	0				2) Water	0				
		3) Carbon sequestration	0	3) Soil	0						3) Sanitation	0				
				4) Other waste	0											
	Total		**0**		**0**		**0**	**0**	**0**	**0**		**0**	**0**	**0**	**0**	**0**

Explanation: Minus point = rejection; positive 0 - 5 =counter measures to be taken by the PP ; 5>approval

Annex 9: LIST OF USEFUL CONTACTS IN MONGOLIA

Appraisal Committee Members

	Position/ Name	Affiliation
Chairman :	Director Ecological Clean Technology and Science Division	Ministry of Nature, Environment and Tourism
Members:	Deputy Director Fuel Policy Department	Ministry of Mineral Resources and Energy
	Deputy Director Road Policy Department	Ministry of Road, Transport, Construction and Urban Development
	Deputy Director Strategic Policy and Planning Department	Ministry of Food, Agriculture and Light Industry
	Senior Officer Development Financing and Cooperation Department	Ministry of Finance
	Officer Strategic Planning Department	Ministry of Social Welfare and Labour
	Director	National Renewable Energy Center
	Director Afforestation and Reforestation Policy Division	Forestry Agency
	Officer of Environment Economic Policy Department	National Development and Innovation Committee
	Director Manufacturing Division	Ulaanbaatar City Governor's Office
	Director Clean Production and Energy Efficiency Center	National Chamber of Commerce and Industry
	Secretary General	Mongolian Energy Association
	Professor Geo-Ecology and Environment	National University of Mongolia NUM
	Profesor Power Engineering School	Mongolian University of Science and Technology
Secretary:	Head CDM National Bureau	Ministry of Nature, Environment and Tourism

Extracted from the revised procedures (June 2011)
N.B. Only positions and affiliations shown

Government

Listing of government institutions and their staff consulted during the capacity building programme.

Organization	Name	Position
Air Quality Office	Batsaikhan Ch.	Deputy Director
Energy Authority	Ganbold T.	Leader, Taishir Hydro Power Project
" "	Gansukh M.	
" "	Baatar P.	Hydropower Expert Durgun Hydropower Project
" "	Purevdorj G.	
" "	Enkhtaivan G.	Senior Officer, Research, Information and Evaluation Department
" "	Bayarbaatar Ts.	
" "	Purevbayar D.	
Forestry Agency	Dashdavaa S.	Head, Afforestation Policy Department
Ministry of Food, Agriculture and Light Industry	Suvdaa G.	Officer of Strategic Policy and Planning Department
" " " "	Tsogbadrakh B.	Deputy Director, Strategic Policy and Planning Department
Ministry of Education and Culture	Odgerel D.	Project research officer, Department of Science and Technology
Ministry of Finance	Tuguldur B.	Officer of Loan, Assistance Policy and Collaboration Department
" "	Chimgee B.	
Ministry of Infrastructure	Sukbaatar Ts.	Director General, Fuel and Energy Policy & Coordination Department
Ministry of Mineral Resources & Energy	Boldkhuu N.	Deputy Head of Fuel Policy Department
" " " "	Osgonbaatar J.	Chief of the Projects & Programs Department
Ministry of Nature, Environment and Tourism	Enkhbat A.	Director Ecological Clean Technology and Science Division Chairman Appraisal Committee National Project Director
" " " "	Bat-Ulzii B.	Officer
" " " "	Dagvadorj D.	Mongolian Special Envoy for Climate Change Director, Climate Change Unit
" " " "	Khorolmaa G.	Specialist, Head of Ecologically Clean Technology and Science Division
" " " "	Tsendsuren B.	Head of DNA Chairman of CDM National Bureau Secretary Appraisal Committee
Ministry of Roads, Transportation Construction and Urban Development	Myagmar G.	Deputy Director, Construction, Housing and Public Utilities Policy Department

“ “ “ “	Nerguibaatar T.	Senior Officer of Road Policy Department
“ “ “ “	Nyamdavaa N.	Deputy director, Road and Transport Department
Ministry of Social Security and Labour	Munkhzorig B.	Officer Strategic Planning Department
National Development and Innovation Committee	Undes L.	Environmental Administrator, Economic Policy Department
National Professional Inspection Agency	Odgerel D.	Inspector
Ulaanbaatar City Governor’s Office	Nandinjargal G.	Head, Department of City Development Policy Planning
“ “ “ “	Bat Che.	General Manager
“ “ “ “	Ganbold D.	Deputy Chairman, Production and Ecology
“ “ “ “	Delgerbayar B.	Head of Environmental Pollution and Waste Management Division
“ “ “ “	Gantsetseg B.	Specialist, Department of Social Development Policy
“ “ “ “	Byambasaikhan D.	Head, Production Department
Ulaanbaatar City Mayor’s Office	Tsogtsaikhan Ch.	Official
“ “ “	Bat Che.	General Manager
“ “ “	Ganbold D.	Deputy Chairman, Production and Ecology

Private sector

Listing of private sector institutions and their staff consulted during the capacity building programme.

Agtiin Buyan LLC	Achit B.	
Anod Power LLC	Bat-Erdene B.	Vice Director
“ “	Achit M.	General Director
Badilyag Partnership	Badrakh B.	Director
Clean Energy Co.	Bold B.	
“ “	Suhbaatar Ts.	Advisor (Wind project)
Clean Tech LLC	Enkhmend M.	Engineer
Darkhan Metallurgical Plant Co., Ltd.	Tserennadmid B.	Deputy Director
EAB New Energy GmbH	Greschner J.	Project Manager
EEC Consulting LLC (Energy Environment Consulting Co. Ltd.) CDM-Center	Dorjpurev J.	Director/Senior consultant National PDD Consultant
Energy Network LLC	Amarsanaa T.	Senior engineer (of PXAX)
“ “	Nymdavaa N.	General engineer
Envenco LLC	Chuluuntogtokh E.	Project Manager

Eqoup LLC	Gunbold B.	
Explore Mongolia, Ecological Construction	Bumyalagch O.	General Coordinator
Gem Solutions LLC	Undraa G.	Project manager
Golden Complex Trade LLC	Ganbat B.	Engineer
" " "	Gombosuren J.	Director
Golomt Bank	Anu N.	Project manager, Project loan department
Hydro Power LLC Hydro Energy LLC Usny Erchim Co. Ltd.	Khandmaa D.	Senior Engineer
" "	Ulziisaikhan D.	Senior Engineer
" "	Dagvadorj B.	Director
Khutul Cement Lime Plant	Tsoodol	Chief Technological Engineer
MCS International LLC	Chibat L.	Control manager
Megawatt Boiler LLC	Erdenebaatar I.	
MICG LLC	Battuvshin G.	Deputy Director Project Planning, Research and Marketing
MID Co., Ltd.	Jargal N.	Director
Mon-energy LLC	Dolgormaa E.	Consultant Engineer
" "	Enkhbaatar S.	Consultant Engineer
" "	Erdenedalai L.	General Director National PDD consultant
Monre LLC	Munkhzul Kh.	
NEGUN FM 105	Enkhjargal E.	Accountant
Newcom LLC	Bayarmunkh N.	
" "	Bold B.	CEO
" "	Gankhuyag D.	Manager, Investment and Portfolio Management
Nomad LLC	Davaasuren G.	
NTIC LLC	Batsaikhan B.	Project Leader, CDM oriented projects
" "	Ganbaatar N.	Vice Director
QleanTech LLC	Myagmardorj E.	
" "	Munkhjargal S.	Executive Director
Sainshand Wind Park LLC	Buyanbat	
" " "	Davaanyam R.	Executive Director
" "	Ganhuyag D.	
Sharyngol Energy LLC	Jaminyanjav J.	Director, Mongolian National Consulting Engineer

“ “	Aazai Sh.	Manager
“ “	Batbold J.	General Director
SOAJ LLC	Ganbat P.	Assistant
“ “	Khurelsukh G.	Assistant
“ “	Sambuu S.	Researcher
“ “	Bayarchimeg N.	Teacher ecology
“ “	Oyunchimeg N.	Instructor ecology
Steppe Solar LLC	Enkh-Amgalan D.	Engineer
“ “	Myangatsooj H.	Sales Manager
“ “	Nomondelger T.	Engineer
“ “	Tsolmonbaatar Ts.	Engineer
“ “	Enkhbayar J.	Manager
“ “	Puntsag Ts.	
“ “	Erdenetsetseg D.	
Sumitomo Corporation	Solongo	Secretary
“ “	Gerelchuluun B.	Manager
Ulaanbaatar District Heating Company	Munkhjargal Sh.	Chief Engineer
Water Energy LLC	Dagvadorj D.	Director
“ “	Tsetseglen D.	Accountant
“ “	Chimgee I.	

Academia

Listing of academic institutions and their staff consulted during the capacity building programme.

Organization	Name	Position
Botanical Institute	Dorjsuren Che.	Researcher
Eco Asia University	Batbold D.	Instructor
Institute of Hydrology and Meteorology	Bayasgalan G.	
Institute of Plant Studies and Protection	Javkhlantuya A.	Pesticide laboratory
“ “ “	Otgonjargal Kh.	Microbiology laboratory
Institute of Science and Information Academy	Otgonsuvd B.	
Knowledge Spread Education Center	Erkhemtugus J.	
National University of Mongolia	Ariunaa B.	Law School
“ “ “	Sonomdagva Ch.	Professor Geo-Ecology and Environment
“ “ “	Jambajamts L.	Faculty of Earth Sciences

“ “ “	Byambaatar I.	Doctoral researcher Recovery Policy and Planning Expert
“ “ “	Tsogzolmaa H.	Graduate Student, School of Geology and Geography Faculty of Earth Sciences
Technical University	Nyamhainyam B.	Professor of Energy Engineering School
University of Science and Technology	Javhlan N.	Student

NGOs

Listing of NGOs and their staff consulted during the capacity building programme.

Ecological messenger	Namjilsuren D.	Head
Ecology envoy	Maya T.	
“ “	Batchimeg O.	
“ “	Ninjinmarga B.	
Eh oron tsever baigal LLC	Amarbayasglan	
“ “ “	Enkhtuvshin Kh.	Specialist
“ “ “	Munkherdene N.	Financier
“ “ “	Burmaa S.	
“ “ “	Chuluunbat	Assistant
“ “ “	Erdene S.	Researcher
“ “ “	Erdenetsogt G.	
“ “ “	Lkhagvasuren G.	Director
“ “ “	Ulzii	Assistant
“ “ “	Surmaajav S.	Researcher
“ “ “	Enkhtaivan O.	
“ “ “	Uuganbayar D.	Researcher
“ “ “	Tamir S.	
Green Bell	Tumenbayar T.	
Green Coalition	Ninjin B.	Media Representative
Mongolian Energy Association	Sukhbaatar Ts.	
“ “ “	Purevdorj G.	Secretary General CDM Appraisal Committee Member
“ “ “	Erdenedalai L.	
Mongolian Energy Association Mongolian Erdem LLC	Iderbat	Consultant
Mongolian Forest Forum	Dorjsuren Ch.	Executive Director
Mongolian Green Coalition	Bumyalagch O.	

Mongolian National Chamber of Commerce and Industry	Tumenjargal G.	Director of Clean Development, Clean Production Support Department
" " "	Ganzorig G.	
Mongolian Nature and Environment Consortium	Menbayar B.	
Mongolian Wind Energy Association	Davaanyam R.	Executive Director
" " "	Oyunbat D.	President
National Renewable Energy Center	Bayarmaa L.	Research scientist
" " "	Enebish N.	Director
" " "	Nasanjargal N.	Human resource manager
" " "	Nyamtsetseg I.	Research scientist
" " "	Odontungalag G.	Research scientist
" " "	Batzaya T.	
" " "	Byambatuya D.	
Sustainable Development Fund for Reducing Air Pollution Worldwide	Altantsetseg D.	Executive Director
Train	Tsetsegmaa	Officer
Union of Mongolian Young Scientists	Odgerel D.	Coordinator
United Movement of Mongolian Rivers and Lakes	Tudevdorj	
" " "	Gantulga	

Developers/Consultants

This is a list of Mongolian organizations and persons that are involved in CDM projects that have been developed beyond the concept stage (i.e. at PDD level and further into the official CDM pipeline).

Government & public sector

Organization	Name	Position
Darkhan power plant		
Energy Authority	Ganbold T.	Lead Engineer, Taishir Hydro Power Project
Energy Authority	Bayarbaatar Ts.	General Director
Energy Authority	Oyungerel Ts.	Project manager
Erdenet power plant		
Ministry of Road Transport, Construction and Urban Development	Myagmar G.	Deputy Director, Construction, Housing and Public Utilities Policy Department
Ulaanbaatar Business Development Center	Ganbaatar M.	General Director
Ulaanbaatar Citizens Representatives Hural	Ganbaatar M.	Counsel
Ulaanbaatar City Governor's Office	Bat Che.	General Manager

Private sector

Organization	Name	Position
Clean Energy LLC	Suhbaatar Ts.	Advisor (Wind project)
Golomt Bank	Anu N.	Project manager, Project loan department
Mon-energy LLC	Erdenedalai L.	General Director
Mongol Zuukh XXI Ltd.		
Newcom LLC	Gankhuyag D.	Manager, Investment and Portfolio Management
NTIC LLC	Ganbaatar N.	Vice Director
QleanTech LLC	Munkhjargal S.	Executive Director
Sainshand Wind Park LLC	Davaanyam R.	Executive Director
Sharyngol Energy LLC	Batbold J.	General Director
Hydro Power LLC Hydro Energy LLC Usny Erchim Co. Ltd.	Dagvadorj B.	Director

NGO

Organization	Name	Position
Mongolian Forest Forum	Dorjsuren Ch.	Executive Director
Mongolian Wind Energy Association	Oyunbat D.	President

Annex 10: TRAINEES

Organization	Name	Position
Air Pollution Research Center	Tugjsuren A.	
Air Quality Office of UB city	Seded Che.	
Alliance of the Mongolian Environment Protecting Movements	Bayarmaa	
Altan Eco LLC	Sevjidsuren G.	
Andul LLC	Bayarsaikhan J.	
Anges Felting LLC	Baigal E.	Accountant
Ariunsuvarga	Chagnaadorj G.	
Asian Elders' Mongolian Society	Yundendorj J.	
Associated Union of Environment Protection Institutions in Mongolia / Association of Mongolian Environment Protecting and Rehabilitation	Altantsetseg	
" " "	Urtnasan B.	

" " "	Tsogjavhlan G.	
Association of Employers	Byambadorj B.	Secretary
Association to Fight Against Air Pollution	Damdinsuren D.	
Baganuur	Buyanchimeg	
Baigal Ireedui Fund	Ariunbold Ts.	
Bayan-Undur soum	Badamtsend Ts.	Deputy Governor
Borderless Step	Bayarsaikhan N.	
Bulgan Provinces' Electricity and Line Office, Erdenet	Erdenebaatar L.	Drawing and budget engineer
Chamber of Industry and Commerce	Sarandavaa M.	Head
Chamber of Industry and Commerce in Darkhan	Delgerbayat T.	
Climate change and renewable energy center	Solongo Ts.	
CNU LLC	Chuluunbat A.	
Cottage Friends	Dulamsuren A.	
" "	Munkhtsetseg	
Darkhan Heating Power Plant	Javaral D.	Chief Engineer
Darkhan Huns HK	Erdenebayar U.	Techonologist
Darkhan Nekhii	Tomorbaatar v	Manager
Darkhan Tomorlog Company	Namnansuren G.	Environmental Manager
Darkhan Water and Pipeline	Sarangerel Ya.	Environmental Specialist
Dashvaanjil LLC	Munkhmaa B.	Manager
Department 2, Darkhan Uul province	Erdenebaatar Sh.	
Department of Environment and Tourism	Batjargal B.	Specialist
" " "	Enhselenge S.	Specialist
" " "	Amgalan D.	Specialist
" " "	Jamyanjav Ts.	Senior Specialist
Department of Food, Agriculture, Small and Middle scale Enterprise	Bat-Erdene B.	Specialist
Department of Food, Agriculture, Small and Middle scale Enterprise, Erdenet city	Norson Z.	Senior Zoologist
" " "	Altantsetseg Ya.	Specialist for small and middle scale industry and partnership
Department of Health	Otgontuya D.	Specialist, Nursing Policy and Coordination Division
Department of Land Affairs, Construction and Urban Development	Odbaatar B.	Senior Specialist
Department of Transportation and Road	Zayabaatar J.	Road Engineer
Division of Standard and Measurement	Bolortuya D.	Certification Expert
Dorniin Ilch LLC	Sainzaya N.	Engineer

Eco Hangal LLC	Otgonjargal B.	Drawing engineer
“ “	Munkhbat O.	Heating engineer
“ “	Enkhbayar A.	
Eco renovation LLC	Narantuya T.	
Eco service	Bazarhand Tse.	
Eco-Asia University of Environment	Erdenebayar A.	Instructor
“ “ “	Purevjamts B.	Student
“ “ “	Baasankhuu B.	Student
“ “ “	Enkhtur E.	
Eco-gobi LLC	Oyuntuya B.	
Ecologyn Elch	Namjilsuren D.	
Ecomon LLC	Hairev H.	
Ecoplanet LLC	Baigalmaa B.	
“ “	Tuvshinbayar H.	
Ecos LLC	Boldbaatar B.	
Eco-Sfera LLC	Sodnom D.	
Edem LLC	Boldhuyag v	
Eg Uur-Eh Nutag	Enkhjargal	
Elbeg Dulaan LLC	Byambatsogt A.	Director
Enerco LLC	Samdan D.	
Energy Authority	Munkhtsog L.	
“ “	Nergui S.	
Environment Development Association	Munkhzul M.	
Environmental Protection Fund for Mongolian Desert Region	Sarantuya	
Erdenet city	Zorigt v	Information and communication network
Erdenet Technology Park	Bayaraa L.	Staff
Erdenet Uildver LLC	Haidavdorj D.	Environmental Specialist
“ “	Erdenebaatar S.	Ecological Engineer
Erel Cement Industry	Uranchimeg G.	Head of laboratory
Eternally Green Life Society	Altantsatsralt H.	
Food alliance NGO	Naranchimeg L.	
Forest Ecology NGO	Sarantuya Ts.	

Fund for the Protection of Animals' Right	Damdinsuren S.	
Ger Area Stove Development Association	Adiya J.	
Ger Stove Project Association	Nergui Ch.	
Global environ LLC	Oyuntuul N.	
Government Administration of Orkhon-Uul province	Unurjargal A.	Specialist of Health issues, Division of Social Welfare
" " "	Davaadorj S.	Economic Policy and Planning Specialist,
" " "	Boldbaatar G.	Environmental and Tourism Policy Specialist,
" " "	Olzbaatar H.	Head
" " "	Gansuh L.	Transportation, Electricity, Coordination Policy Specialist
Green Gold Fund	Volodiya G.	
Green stupa LLC	Lhagvasuren H.	
Hairhan Erdene San	Balt S.	
Heating Power plant	Erhbaatar L.	Head of the Engineering Division
Hoyouulaa Khuu LLC	Batsaikhan B.	Executive Director
Huduu Aral Movement	Erdenebat Z.	
Human Centered Environmental Protection	Erdenechimeg B.	
" " "	Bulganmoron	
Human Right - Environment Sustainable Development	Munkhzul G.	
Ikh Baga Bayan Sharga Fund	Bor L.	
Institute of Plant Agriculture Training	Bayarsukh N.	Deputy Director
Jiguur tsamhag LLC	Narangerel B.	
" "	Myagmarsuren S.	
" "	Sarantungalag G.	
Khongor Gobi	Tungalag	
Khuh Gan LLC	Munkhbayar N.	
Labor Union	Bayarjargal T.	Coordinator
Leadership in new area	Erdenebold	
Margad Private University	Chimgee B.	Manager of the training office
MECC	Dolgormaa Ts.	Foreign relations specialist
"	Amaraa M.	Leader of Working Group
Megawatt boiler LLC	Erdenebattar I.	Executive Director

Millenium Challenge Account	Tamir G.	
" " "	Ganbold B.	
Ministry of Environment and Tourism	Kalemshariv A.	Environmental investigator
MON-AME, science research center	Odbayar D.	
" " "	Battogtoh B.	
Mon-Energy Consult	Sed D.	
Mongolian Association to project residents from crime	Javzmaa S.	
Mongolian Consuls in Ukraine	Filimonov S.	Consultant
Mongolian Environment Protection Fund	Narantsetseg	
Mongolian Forestry Students Association	Bilegbaatar	
" " "	Damba S.O.	
Mongolian Students' Union for Environmental Protection	Od T.	
" " "	Soyol-Erdene	
Monvecom LLC	Banzragch N.	
Municipality Office	Ganochir B.	Head, Department of HOB operation and management
Municipality office	Tsogtsaikhan Che.	Specialist
" "	Gan-Ochir Ch.	Specialist
Munkh-Orgil Trade LLC	Aisaree K.	
" "	Erdenebaatar B.	
Nandin Undes Union	Otgonbaatar	
Nation, clean environment	Lhagvasuren	
National Center Against Disaster	Ganbaatar J.	
" " "	Sodbayar S.	
National Chamber of Commerce and Industry	Ganzorig G.	
National University of Mongolia	Dejidmaa P.	Ecological Education Center
" " "	Tuyatsetseg Ts.	Ecological Education Center
" " "	Nasanbayar E.	Ecological Education Center
" " "	Bazarhand Ts.	Faculty of Earth Sciences
" " "	Otgonbayar O.	Dean, School of Economics,
Natural Sustainable Co.Ltd	Ganhuyag M.	
Nature of Ikh Mongol LLC	Tumennast S.	

Nature-ecology LLC	Ikhbayar B.	
" "	Ankhbayar O.	
Nemer international LLC	Batbileg A.	
NIK company	Ganbaatar N.	Chief Engineer
Odkon LLC	Namsrai D.	consulting engineer
Onon and Ulz Rivers' Residents' Movement	Otgontsetseg L.	
Orkhon Chandmani LLC	Mishig	
Parachutists' Union for supporting Environmental Protection	Batbayar Ts.	
Power Plant 3	Hangal-Erdene L.	
Power Plant 4	Natsagdorj Tse.	Director, Technical Inspection Unit
Public Utility Service Organization	Lkhagvadorj M.	
Sain Uils NGO	Baasanjav N.	
Salhyn Sandag Movement	Tuvdendorj J.	
San Oronu LLC	Purevdorj O.	Director
SATU LLC	Tuvaansuren G.	
Selenge construction LLC	Galambek H.	
Selenge Delhii Eej NGO	Bataa D.	
SIC LLC	Hasar E.	Director,
Society of Mentally and Physically Challenged Residents in Khan-Uul District	Erdene S.	
State Professional Investigation Agency	Uranchimeg L.	Inspector
" " "	Erdenebayar G.	State inspector of environmental monitoring
" " "	Suhbat D.	State inspector of environmental monitoring
" " "	Jargal D.	State inspector of hygiene
" " "	Tseren M.	State investigator of Environmental Monitoring
" " "	Bolnim B.	State investigator of Environmental Monitoring
" " "	Ganchimeg Ts.	State Investigator, Environmental Protection
Sunny Trade LLC	Batbold D.	Manager
" "	Adyasuren Tse.	Director
" "	Chuluuntsetseg Che.	
Sustainable Development Fund to Reduce Air Pollution Worldwide	Altantsetseg	

“ “ “	Chuluuntogtoh E.	
Tahico LLC	Chuluuntogtoh E.	Project manager
Talst Erchim LLC	Tuvshin B.	Director
Talyn Nuur LLC	Batbold D.	
Technical Business Advising Center	Galaariidii G.	
Teel Mandal NGO	Narantsetseg S.	
Tod Suvd	Nyamdeleg	
Toson Zaamar	Enkhbayar S.	
Tulga Trade LLC	Battsengel G.	
Tushigthangai LLC	Batjargal Tse.	Director
Undurkhaan LLC	Maamaa H.	
“ “	Tserendash G.	
United Association Mongolian Rivers and Lakes	Chimgee G.	
University of Agriculture	Chagnaadorj D.	Head of Department
Water, Weather, and Environment Study Laboratory	Bolor-Erdene N.	Engineer
	Natsagdorj D.	Director, Professional Monitoring Department
	Battsengel M.	Local monitoring and evaluation specialist, JFPR9106: Community Driven Development for Urban Poor in Ger Area Project
	Purevsuren B.	
	Amarbaysgalan	
	Bayarsaikhan B.	Senior specialist
	Batdorj B.	student

Annex 11: TERMS FROM THE FINANCIAL SECTOR

Golomt Bank: Business and Project Loan Terms and Conditions

GOLOMT BANK

Working capital loans

Loan amount	**Up to MNT 200,000,000**	**More than MNT 200,000,000 or equivalent foreign currency**
Interest rate (month)	To be determined by arrangement between Bank and Borrower	
Service fee	0.5-1.0% from the loan amount 0.5% /extension fee/	1.0% from the loan amount 0.30%-0.5% /extension fee/
Loan term	Up to 24 months	Up to 24 months

Investment Loan

Loan amount	**Up to 20% of bank's capital**
Interest rate (month)	To be determined by arrangement between Bank and Borrower
Application fee	MNT 2000
Service fee	0.5-1.0% from the loan amount
Loan term	From 18 to 60 months

Two-Step-Loan Project for Small and Medium-Scaled Enterprises Development and Environmental Protection (cooperating with JICA)

Loan amount	**Depends on the project**
Interest rate (month)	Variable in every 6 months (as of November 2010, MNT 8.8%, USD 5.35% annually)
Loan term	3-10 years
Grace period	1-3 years
Service fee	0.5%
Application fee	MNT 100,000

Co-Financing with International Financial Institutions

Loan amount	**Vary depending on the applicant**
Interest rate (month)	To be determined by arrangement between Bank and Borrower
Application fee	To be determined
Service fee	0.5-1.0% from the loan amount
Loan term	7 to 10 years

Leasing

Loan amount	**Minimum MNT 10,000,000**
Interest rate (month)	To be determined by arrangement between Bank and Borrower
Service fee	0.5-1.0% from the loan amount
Advanced payment	30-50%
Loan term	Up to 3 years

Eligibility

- Borrower must be established and operating in Mongolia;
- Show adequate experience in running a business successfully and continuously at least one year;
- Project needs to have FIRR of 13% or greater;
- Have adequate collateral;
- Good credit history.

KHAN BANK

Khan Bank is contributing to environmental conservation as well as the creation and preservation of long term social wellbeing in Mongolia. The Bank ensures adequate compliance with its social responsibilities and runs its operations in support of environmentally friendly and sustainable development by pursuing the following policies:

- Implementing best practices related to the environment;
- Supporting and encouraging its customers to operate in an environmentally sound manner and providing them with necessary information;
- Supporting communities and associated groups to conserve the environment, mitigate pollution; and
- Improving public awareness on related issues.

Through its Khan Bank Fund, the Bank implements the 'Forest of Khan Bank' and 'Green Environment – Our Future' and other environmentally sound projects and programmes proposed by non-governmental organizations.

Project proposals are submitted to a Credit Committee for consideration and, if found to be environmentally sound, are granted more favourable and flexible loan conditions.

Regarding the environmentally sound projects and programmes, the Bank:

- In cooperation with the Mobicom Corporation and MIG Insurance LLC, has implemented a project to supply heating systems to households in Ger districts and suburbs of Ulaanbaatar city in order to contribute to reducing air population in the capital city;
- Provides concessionary loans to environmentally friendly and environmental conservation project submissions within the framework of the 'Development of Small and Medium Enterprises and Environmental Conservation' programme that is being implemented with support of the Japanese Government;
- Has signed a Memorandum of Understanding to cooperate with the Millennium Challenge Account Mongolia 'Clean Air' project that deals with reduction of air pollution;
- Will study the carbon market and carbon finance within the framework of the Clean Development Mechanism in order to contribute towards efforts targeted at reducing Mongolia's impact on global warming.

Endnotes

[i] *For additional information on the Mongolian energy and renewable energy sector see 'Renewable Energies in Central Asia: Regional Report on Potentials and Markets – 8 Country Analyses', GTZ, 2010*

[ii] *http://cdm-mongolia.com/files/The%20CDM%20Manual%20-%20ENG%20Version.pdf*

[iii] *http://www.cdm-mongolia.com/index.php?option=com_content&view=article&id=58&Itemid=67&lang=en*

[iv] *http://www.cdm-mongolia.com/index.php?option=com_content&view=article&id=27&Itemid=40&lang=en*

[v] *Report On Potential CDM Programme of Activities (PoA) In Mongolia*

[vi] *CDM Project Portfolio: Mongolia*

[vii] *Ministry of Nature, Environment and Tourism*

[viii] *Renamed in Ministerial order A-23, 1st February 2011*

[ix] *This is the Mongolian term for a Letter of No Objection (LoNO)*

[x] *Op cit. Ref viii*

[xi] *http://www.cdm-mongolia.com/index.php?option=com_content&view=article&id=19&Itemid=33&lang=en*

[xii] *At the time of writing, the Fund is not in operation*

[xiii] *http://www.eprc-chemonics.biz/index.php/news/67-usaid-development-credit-authority-signs-agreement-to-guarantee-up-to-25m-in-lending-to-support-smes.html*

[xiv] *http://www.eprc-chemonics.biz/index.php/news/67-usaid-development-credit-authority-signs-agreement-to-guarantee-up-to-25m-in-lending-to-support-smes.html*

[xv] *Source: op cit. Ref. xiii*

[xvi] *Mongol Bank exchange rate for October 14, 2010:US$ 1 = MNT 1,311.44*

[xvii] *Extract from the Environmental Impact Assessment Law*

[xviii] *This compilation is only indicative and it is the responsibility of the project developer to determine and comply with all relevant laws, rules and regulations*

CARBON FINANCE IN MONGOLIA

Volume 2: CDM Development in Mongolia

Edited by Casper van der Tak

With contributions from Ken Beck Lee and Dorjpurev Jargal

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Casper van der Tak
Laveno-Mombello, 2011

INTRODUCTION

This is the second volume in a three volume publication on carbon finance in Mongolia, edited by Casper van der Tak on the basis of contributions made by Ken Beck Lee, Dorjpurev Jargal and Casper van der Tak in the World Bank project on "Capacity Building for Development and Implementation of Carbon Finance Projects" (CBDICFP), implemented at the Ministry of Nature, Environment and Tourism of Mongolia.

This present volume focuses on CDM (Clean Development Mechanism) development in Mongolia and focuses on several practical issues in the development of CDM projects, with a focus on Mongolia. The companion volumes discuss the approval structure and institutional arrangements inside Mongolia (volume 1), and international actions that could be taken by the international community to address remaining barriers towards carbon finance in Mongolia.

This volume covers, by necessity, a lot of grounds.

Chapter 1 sets the stage by discussing the CDM development cycle, focusing both on the formal cycle (to complete all necessary documentation to be able to claim the certified emission reductions (CERs) that are the final products of CDM) and the commercial cycle.

Chapter 2 highlights the status of CDM development in Mongolia, presenting projects that have been developed, are under development, and highlighting the CDM development potential identified through original research.

Chapter 3 focuses on CDM project identification – how to identify suitable projects. It starts with the formal requirements and the commercial requirements, and describes the screening of projects on criteria developed from these two requirements. It briefly mentions two approaches to deal with one of the main issues facing projects in Mongolia: small size. The approaches outlined, bundling and the programme of activities approach, are developed in more details in appendices to this volume.

Chapter 4 provides some general guidance on the preparation of the project design documents (PDDs). This Chapter has been kept short, because it is difficult to say much about CDM development on a general level, and materials that are specific would quickly become outdated through new decisions from the Executive Board for CDM. Some more attention has been given to the stakeholder consultation process, and documents describing the proposed stakeholder consultation procedure have been included in an appendix. One of our main messages is that the formal development of CDM projects is best outsourced to experts with a lot of experience on CDM development.

Chapter 5, in contrast, is a longer chapter dealing with the commercialization of CERs. It describes the fundamentals driving the market for CERs, and the pricing of CERs depending on the stage of development and vis-a-vis other types of greenhouse gas emission reductions *c.q.* greenhouse gas emission rights. It then describes a process of buyer identification that has been successfully used inside the CBDICFP project, and in appendices provides the materials used to support this process. The Chapter ends with a discussion of the outline of an Emission Reduction Purchase Agreement (ERPA) and the key issues to focus on during ERPA negotiations.

Chapter 6 is a cautionary chapter. It describes the various pitfalls and dangers during the development of a CDM project, outlining what can go wrong.

Chapter 7, finally, provides an overview of key information sources that can be used to follow developments on CDM and the carbon markets in general.

1. THE CDM PROJECT CYCLE

The development of a CDM project follows a formal process, the so-called CDM development cycle, but also has an informal process that is equally important, the commercial development process. Both are outlined separately below, but it should be emphasized that the processes often interact: often it will be necessary to obtain the support from a CER buyer early on, to support the transaction cost of the development of the CDM project, and also because the CER buyer, or consultants hired by them, have an in-depth knowledge about the CDM procedures.

To provide a better basis for understanding the commercial process, we have also included a section on the so-called CDM transaction costs: the costs necessary to complete a CDM projects and have the CERs issued. The CDM transaction costs are significant and provide an important motivation of the early identification of the buyer of the CERs, apart from the wish to eliminate price risk from the CDM transaction.

We have also included some text on the timeline, the amount of time required before a project can be registered and CERs can be issued. This is also an important issue to consider when developing CDM projects.

If you take one thing away from the publication, we hope that it is that CDM is complicated, and that it is good to have an external consultant advising in the whole process! Unfortunately, external consultants also carry a cost.

1.1 The formal CDM development process

The formal CDM development process is the process as it follows the requirements of the UNFCCC. Please note that there are also other standards for greenhouse gas emission reduction projects, those of the voluntary market, such as the Gold Standard (GS) and the Verified Carbon Standard (VCS). While the terminology may differ between the various standards, the general principles are the same as described here.

Key development steps:

1. Project Design 2. Validation 3. Registration	One time only
4. Monitoring 5. Verification 6. Certification 7. Issuance	Periodically repeated

Steps 1-3 happen only once, while steps 4-7 happen periodically during the crediting period(s), resulting in the periodic issuance of greenhouse gas emission reductions as Certified Emission Reductions or CERs. The frequency of the steps 4-7 can be determined by the project participants (the seller of the CERs and the buyer of the CERs as stated in the Project Design Document).

It is important to emphasize that the key development steps, as outlined above, are not complete. For example, obtaining the *host country letter of approval* from the Designated National Authority (DNA) is an important step that will be checked during validation and is a requirement for project registration, but has not been included in the above – it is mentioned under the description of project

design below. In the case of projects located within Mongolia, the host country letter of approval need to be obtained from the Mongolian DNA, using the procedures of the Mongolian DNA.

Designated National Authority

A designated national authority (DNA) is the body granted responsibility by a Party to authorise and approve participation in CDM projects. Establishment of a DNA is one of the requirements for participation by a Party in the CDM. The main task of the DNA is to assess potential CDM projects to determine whether they will assist the host country in achieving its sustainable development goals and to provide a letter of approval to project participants in CDM projects. This letter of approval must confirm that the project activity contributes to sustainable development in the country. It is then submitted to CDM Executive Board to support the registration of the project.

http://cdm.unfccc.int/DNA/index.html

It is also important to emphasize that the order in which the various steps are taken is not always set in stone. For example, below we highlight the need for written approvals from each of the parties as part of 'Design'; however, often it will take place during the validation instead. In some cases, this is necessary, because the party[1] (country) issuing the letter of approval wishes to see the draft validation report before issuing the letter of approval. It is important to recognize that the precise order of sub-steps can be different from what is indicated here, but that one should know what steps need to be taken in what order, so one should check and obtain current information about the procedures involved at the moment indicated below.

Let's elaborate on each of the steps in the development process to get a better understanding of what is involved.

1. Project Design

The project design in itself consists of a number of sub-steps, as elaborated below.

a) Project Participants plan a CDM project activity
b) Upload a 'prior consideration form'
c) Make the Project Design Document (PDD) or the POA-DD, Generic CPA-DD and specific CPA-DD.
d) Obtain written approval from each Party involved
e) Use either a previously approved methodology or create a new methodology using CDM-NM

Planning of a CDM project activity

The planning of the CDM project activity usually is carried out by the project developer / owner (one of the project participants) and involves all the usual steps in the preparation of projects (preparation of key documents such as the environmental impact assessment, feasibility study, ... etc, as required for the project under national laws, and obtaining all the necessary approvals. It also involves a check of the commercials of the project, the preparation of a financing plan, and the assessment of the amount of emission reductions resulting from the project.

It is good practice to assess the amount of emission reductions per year early on, and to evaluate

[1] 'Party' formally refers to a Party to the Kyoto Protocol. The PDD mentions the Parties involved in the project; each of the Parties involved should issue a letter of approval for the project. Usually this will mean that there are two letters of approval: one from the Mongolian DNA, and one from the DNA of the investor country (the country indicated by the buyer).

on the basis of the expected amount of emission reductions whether the development of the project as a CDM project activity (or a greenhouse gas emission reduction activity developed under another standard) makes sense.

If the project developer believes that his project will benefit from CDM, it is good practice to include this in all documentation developed for the project, and to make a formal decision (in writing) indicating the wish to develop the project as a CDM project activity.

Uploading of a prior consideration form

This is an important step, which should not be taken too late, at least before 6 months after the project start. The Mongolian DNA can advise on the appropriate procedures to be followed for this step. The reason that a prior consideration form needs to be uploaded to the UNFCCC is to prevent project participants claiming that a project needed CDM[2], whereas they never considered CDM until well after the start of the project.

Preparation of key documentation by the project participants

CDM projects can either be developed as single projects, or as Programs of Activities (POA). In the case of a project, only a PDD (project design document) needs to be developed; in the case of a POA, three documents are needed to register a POA. The reason is that the POA is a framework, in which different smaller sub-projects can be registered as one programmatic activity. To make that possible, three documents need to be prepared for the registration of a POA: The POA-DD (a design document describing the program), the generic CPA-DD (a design document format for the completion of the subproject-specific design documents), and a specific CPA-DD (a completed project-specific design document, completed for a particular case, using the template provided by the generic CPA-DD.

Project participants

In accordance with the use of the term project participant in the CDM modalities and procedures, a project participant is (a) a Party involved, which has indicated to be a project participant, or (b) a private and/or public entity authorized by a Party involved to participate in a CDM project activity. In accordance with Appendix D of the CDM modalities and procedures, the decision on the distribution of CERs from a CDM project activity shall exclusively be taken by project participants.

CDM Glossary

Because POAs are quite difficult to do procedurally, and because the type of information required is similar to the type of information required for a PDD, we focus below on the information that should be included in a PDD.

A PDD provides the following key information:

- Geographical information – where is the project located? This is important to be able to uniquely identify a project
- Who is involved in the project, in other words, who are the project participants?
- Technical project description – how does the project work, what equipment is used, and how does it reduce greenhouse gas emissions
- Description of the baseline – what would happen without the project
- Additionality – Formally, this is a difficult concept. Formally, A CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity. In

[2] Or in the CDM jargon, that a project is 'additional', or that the 'additionality' can be argued.

practice, if you want to argue the additionality of a project, you need to explain why the project would not happen without payment for greenhouse gas emission reductions.
- Monitoring plan – what data will be collected, and how the data will be used to calculate the actual amount of emission reductions
- Emission reductions – an up-front estimate of the amount of emission reductions. This estimate is among others used to calculate the registration fee.
- Description of the crediting period.
- Environmental impacts. CDM projects may not have very adverse environmental impacts; hence it is important to describe how the environmental impacts of a project have been assessed, and that it can be confirmed that the environmental impacts of the project are acceptable.
- Outcome stakeholder consultation. CDM projects may not come at the expense of the local population and other stakeholders in the project. To assure that this is the case, stakeholders need to be consulted so that it can be confirmed that there are no un-addressed concerns of the stakeholders.

Crediting period

The crediting period for a CDM project activity is the period for which reductions from the baseline are verified and certified by a designated operational entity for the purpose of issuance of certified emission reductions (CERs). Project participants shall choose the starting date of a crediting period to be after the date the first emission reductions are generated by the CDM project activity. A crediting period shall not extend beyond the operational lifetime of the project activity.

The crediting period may only start after the date of registration of the proposed activity as a CDM project activity. In exceptional cases, for project activities starting between 1 January 2000 and the date of the registration of a first clean development mechanism project, the starting date of the crediting period may be prior to the date of registration of the project activity if the project activity is submitted for registration before 31 December 2005 (please refer to paragraphs 12 and 13 of decision 17/CP.7, paragraph 1 (c) of decision 18/CP.9 and clarifications by the Executive Board, available on the UNFCCC CDM website).

CDM Glossary

Written approval from each Party involved

As mentioned above, this means that usually two letters of approval need to be obtained: one from the Mongolian DNA (see ... and also the companion volume 1 to this volume for the procedures) and one from the investor country DNA, if any.[3]

According to the UNFCCC rules, a host country letter of approval should contain the following information:
- The Party has ratified the Kyoto Protocol.
- The approval of voluntary participation in the proposed CDM project activity
- A statement that the proposed CDM project activity contributes to sustainable development of the host Party (ies).

The Mongolia letter of approval can only be issued after the Mongolian government has determined that it can issue a letter containing these statements. The Mongolian host country approval procedures have been developed among others with this requirement in mind.

[3] It is not necessarily the case that there will be an investor country identified in the project design; this depends on the project developers, who may decide to develop the project as a unilateral CDM project. In such a case, the project develop carries the costs of the CDM development of the project and decides to sell the CERs after the issuance in the market. Because no buyer is identified up-front, there is no investor country mentioned in the PDD, and hence no letter of approval from the investor country required before the project registration. At the same time, it is also possible that a project mentions more than one investor country; in such a case, each country may issue a letter of approval.

Use previously approved methodology or create a new methodology using CDM-NM

The PDD (or POA documents) need to follow an approved baseline and monitoring methodology that is applicable to the project (or POA). If no suitable approved methodology is available, in principle a new CDM methodology can be developed, by completing a CDM-NM form. This, however, is very complicated and time consuming, and is at this point in time not realistic.

Baseline and Monitoring methodology

A baseline methodology approved by the Executive Board is publicly available along with relevant guidance on the UNFCCC CDM website (http://unfccc.int/cdm) or through a written request sent to cdm-info@unfccc.int or Fax: (49-228) 815-1999.

(...)

A monitoring methodology refers to the method used by project participants for the collection and archiving of all relevant data necessary for the implementation of the monitoring plan.

CDM Glossary

It should be emphasized that the baseline and monitoring methodology should be the same number – you cannot use the ACM0001 baseline methodology with the ACM0002 monitoring methodology, for instance.

2. Validation

The validation is an independent evaluation of the PDD by a DOE, to assess whether the CDM rules and regulations have been correctly followed, whether there is sufficient evidence for assumptions made in the PDD, and whether the PDD is factually correct.

Designated operational entity (DOE)

An entity designated by the COP/MOP, based on the recommendation by the Executive Board, as qualified to validate proposed CDM project activities as well as verify and certify reductions in anthropogenic emissions by sources of greenhouse gases (GHG) and net anthropogenic GHG removals by sinks. A designated operational entity shall perform validation or verification and certification on the same CDM project activity. Upon request, the Executive Board may however allow a single DOE to perform all these functions within a single CDM project activity. COP at its eight session decided that the Executive Board may designate on a provisional basis operational entities (please refer to decision 21/CP.8). (CDM glossary)

All communication with the EB is through the DOE

Again, the validation is a process containing a number of steps. It starts when the DOE posts the PDD on the UNFCCC website for public comments for 30 days. After this period, the DOE will usually ask for additional documents and visit the site of the project to confirm the information in the PDD and to consult with the project developer and the consultants.

After the site visit and desk review, the DOE will issue a draft validation report on the basis of a checklist that it must follow. This report will highlight mistakes in the PDD, as well as missing information that need to be provided (further documents or clarifications). The project participants, together with the consultants, then need to answer the draft report from the DOE, starting an iterative process in which the PDD is regularly updated. The process ends with the final validation report.

The final validation report provides the DOE's validation opinion whether the project activity should be recommended for registration (positive validation opinion) or not (negative validation opinion).

For a successful validation it is important to understand the role of the DOE. The DOE cannot make rules, it needs to follow the rules and assess whether the rules have been correctly followed. Arguing with the DOE is a waste of time in almost all cases. Furthermore, a successful validation requires a fast response to reports and questions by the DOE, and it is also important to have documents ready to support arguments made and to provide proof for facts.

3. Registration

Registration (All types)

Registration is the formal acceptance by the Executive Board of a validated project activity as a CDM project activity. Registration is the prerequisite for the verification, certification and issuance of CERs related to that project activity.

CDM Glossary

After the validation has resulted in a positive validation report, the final version of the PDD, the final validation report, and some supporting documents are provided by the DOE to the UNFCCC starting the request for registration. The process starts with the payment of a registration fee, and is then followed by a completeness check. If the documentation is complete, the formal request for registration period will start; formally this is when the documentation is presented to the Executive Board for CDM (in practice, the operational decision-makers on CDM, based on mandates provides by the parties to the Kyoto Protocol).

Executive Board

The CDM Executive Board (CDM EB) supervises the Kyoto Protocol's clean development mechanism under the authority and guidance of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (COP/MOP). The CDM EB is fully accountable to the COP/MOP.

The CDM EB will be the ultimate point of contact for CDM Project Participants [via the DOE] for the registration of projects and the issuance of CERs.

http://cdm.unfccc.int/EB/index.html

If no issues are raised during the request for registration period, the project will be registered as a CDM project activity at the end of the registration period. If there are issues raised during the request for registration period, there may be correction requests, requests for review, or reviews.

Payment of the registration fee

The registration process starts with the payment of the registration fee, and it is important to make sure that the registration fee is paid as soon as possible to avoid delays. The registration fee depends on the expected average amount of emission reductions during the first crediting period and the location of the project, based on the following rules:

- An upfront payment of the estimated amount due for the Administration Share of Proceeds (SOP-Admin) for the 1st year of project
- SOP-Admin is USD 0.1/CER for the first 15,000tCO_2 and USD 0.2/CER for >15,000tCO_2
- Maximum registration fee is USD 350,000
- The registration fee paid will be deducted from the SOP-Admin due at issuance of CERs
- No registration fee for small-scale projects with ≤ 15,000tCO_2
- The rules for the registration fee are differentiated between countries with less than 10 registered CDM projects and countries with more than 10 registered CDM projects (EB55 decision). If, at the date of the submission for the request for registration, the number of registered CDM projects is less than 10, no registration fee needs to be paid.[4]

[4] In addition, a loan scheme has been under discussion for countries with less than 10 registered CDM projects to cover the CDM development costs, but no decision appears to have been made yet. For more information on this scheme, see: http://unfccc.int/resource/docs/2010/cmp6/eng/12a02.pdf#page=13

Request for review

In case of a request for review, the DOE and the project participants should answer the questions raised by the Executive Board for CDM. Normally, if there is a request for review, the number of issues raised is limited. If the issues are successfully answered, the issues can be closed and the project registered, if not, a formal review will follow.

Request for review and review

The registration by the Executive Board shall be deemed final four weeks after the date of receipt by the Executive Board of the request for registration, unless a Party involved in the project activity or at least three members of the Executive Board request a review of the proposed CDM project activity.

The review by the Executive Board shall be made in accordance with the following provisions:
(a) It shall be related to issues associated with the validation requirements
(b) It shall be finalized no later than at the second meeting following the request for review, with the decision and the reasons for it being communicated to the project participants and the public.

CDM Modalities and Procedures

4. Monitoring

Monitoring of a CDM project activity

Monitoring refers to the collection and archiving of all relevant data necessary for determining the baseline, measuring anthropogenic emissions by sources of greenhouse gases (GHG) within the project boundary of a CDM project activity and leakage, as applicable.

CDM Glossary

Monitoring involves the project participants measuring the GHG emissions from the project within its boundary to determine the volume of emission reductions. To this end, they should follow the monitoring plan submitted as part of the PDD as well as separate, more detailed monitoring plans. It is extremely important to follow the monitoring plan exactly, for instance with regards to placement of meters (including back-ups), calibration procedures, recording of meter readings, safe-keeping of bills and receipts, etc. If there is any deviation, this should be highlighted as early as possible.

The product of the monitoring is a monitoring report covering the monitoring period, stating the amount of emission reductions achieved in the monitoring period, the calculation method, and all the required supporting documentation and evidence. This is the documentation that is verified by the DOE.

5. Verification

Verification

Verification is the periodic independent review and ex post determination by a designated operational entity of monitored reductions in anthropogenic emissions by sources of greenhouse gases (GHG) that have occurred as a result of a registered CDM project activity during the verification period. There is no prescribed length of the verification period. It shall, however, not be longer than the crediting period.

CDM Glossary

The verification is performed by an independent DOE, using a process that is essentially the same as outlined for the validation, but with more emphasis on the checking of documents and (during the first verification only) the checking of the accuracy of the PDD in describing the actual project implementation.[5] An early first verification may be a good idea, so that potential issues with the implementation of the monitoring plan are identified early on and can be addressed with a limited loss of CERs.

6. Certification

Certification is the written assurance by a DOE that a project activity achieved the GHG reductions as verified. The certification report is a request to the EB for issuance of CERs equal to the verified amount of GHG reductions. Note that whereas a validation ends with a validation report, the verification ends with a certification report.

7. Issuance

Issuance of certified emission reductions (CERs)

Issuance of CERs refers to the instruction by the Executive Board to the CDM registry administrator to issue a specified quantity of CERs for a project activity into the pending account of the Executive Board in the CDM registry, in accordance with paragraph 66 and Appendix D of the CDM modalities and procedures.

Upon issuance of CERs, the CDM registry administrator shall, in accordance with paragraph 66 of CDM modalities and procedures, promptly forward the CERs to the registry accounts of project participants involved, in accordance with their request, having deducted the quantity of CERs corresponding to the share of proceeds to cover administrative expenses for the Executive Board and to assist in meeting costs of adaptation for developing countries vulnerable to adverse impacts of climate change, respectively, in accordance with Article 12, paragraph 8, to the appropriate accounts in the CDM registry for the management of the share of proceeds.

CDM Glossary

The process of the issuance of CERs is similar to the process for registration, involving completeness checks and the possibility of a review. We refer to the section on registration for a description. However, what is important is that there are two sorts of fees assessed at this stage:

- An amount, the share of proceeds for administration, has been paid by the project participants. This amount is calculated on the basis of the rules for the registration fee, applied to the actual amount of emission reductions (instead of the expected average as for the registration fee), and offsetting the registration fee that has already been paid.
- 2% of the issued CERs will be deducted to assist developing Parties in adapting to the adverse effects of climate change, the so-called share of proceeds for adaptation.

This description of the CDM process shows that the formal requirements are quite complicated. There are a lot of projects that have come up for registration and issuance, lots of decisions, information is available in different sections of the UNFCCC website for CDM, and it requires experienced experts to correctly navigate the CDM process. That is why the following list of key actors in the process also includes the project advisor/consultant.

Key actors:

- Project Participants
- Project advisor/consultant
- DNA
- DOE
- CDM-EB

[5] One of the main problems that can occur is that the project, as implemented, deviates from the PDD that is registered. This is something that project developers should avoid, if at all possible, because it may result in a need to revalidate and re-register the project.

1.2 CDM development costs

Not only is CDM complicated, there are also quite some costs involved in getting a CDM project registered and CERs issued. It is important to bear this in mind when considering the development of a project as CDM project activity. Typical costs to consider are:

Pre-registration

The most important costs are those incurred before the registration of the project, because these are the most 'at risk'.

- PDD fee. Usually in the range of 20,000-40,000 EUR, depending on the complexity of the methodology involved and the consultant.
- DOE fee for validation. Usually in the same range of 20,000 to 40,000 EUR, again depending on the complexity of the methodology and also on the DOE.
- Registration fee – this depends on the scale of the project, as indicated above. For a typical project that is attractively sized, the costs would be around 15,000 EUR.

Putting it together, the CDM transaction costs, pre-registration, may be in the order of between 50,000 to 100,000 EUR. This is the amount that is put at risk, and that may be lost if a decision is made to develop a project and the project fails to be registered or cannot be financed.

Post-registration

The main post-registration costs are:

- Monitoring costs – about 7,500 EUR per year,
- Verification costs – about 10,000-15,000 EUR per year
- Share of proceeds for administration
- Share of proceeds for adaptation

These development costs need to be taken into account when a developer considers developing a project as a CDM project activity. Depending on your financial situation, you may wish to finance these costs yourself in an effort to get a maximum revenue from the sale of emission reductions by selling the emission reductions after their issuance, or you may wish to identify a buyer upfront, so that you can cover the development costs and lock in a price that might help you to get the project financed.

It should also be mentioned that costs for alternative standards may be significantly lower, making it in some cases more attractive to develop projects according to alternative standards, also depending on the pricing.

Timeline

Another important part in the CDM process is the timeline. Typically, it will take somewhere between 10-20 months from the start of a project to registration (assuming experienced project participants and/or consultants), then usually one year of monitoring, then about half a year before the first revenues are obtained (so first revenues say about 3 years after the start of the project).

This means that the cost of capital (in the case of borrowed money, the interest rate on the loan) becomes an important factor to consider when deciding whether or not to go ahead with the project. The same can be set for the likelihood of successful registration of a project. Together with the CDM development costs mentioned above and information on CER pricing and margins, it is possible to estimate minimum annual CER amount cut-offs below which CDM development does not make much sense on the basis of the amount of emission reductions. This is further described in Chapter 3.

1.3 The commercial process

The commercial process is equally important as the formal CDM cycle. There are two possible road maps that can be followed:

Early buyer identification

This is the most common development process although this may change in the current market environment (December 2011). It is based on the following considerations:

- CDM is a difficult process. There are many documents, many years of experience, language barriers. For a normal Mongolian businessman or government official impossible to master. In addition, the financing of the development steps may be very difficult.
- For most, a simple approach is needed to screen opportunities, followed by engaging services of experts.
- This suggests the following development roadmap:

Project concept ➔ screening ➔ hiring of consultant for marketing ➔ Marketing documentation ➔ Identification of Buyer ➔ contract negotiation ➔ further development.

Self-development

This may become relatively more attractive over time because of the recent collapse in the CDM market and the lack of clear long-term prospects. In this case, the following process could be chosen

Project concept ➔ screening ➔ hiring of consultant for development ➔ further development.

We focus mostly on the first process of <u>early buyer identification</u> and explain each of the steps in turn.

<u>Project Concept</u>

Starting point is that there should be a project concept. This means

- A basic idea about the project you would want to develop
- Some clear ideas about potential sources of financing, partners during development and implementation, discussions held, and concrete evidence that potential partners are interested in the project.
- Background research and market research has been conducted.
- Project concept should be a real prospect, not just a dream.

<u>Screening</u>

The next step is the screening of the project idea as to the suitability for CDM. Several points are important and are elaborated in Chapter 3. The main issues are:

- Screening can be done by the developer or by a carbon consultant. It should answer several questions:
  - Is the amount of greenhouse gas emission reductions sufficient?
  - Is the project additional?
  - Is there a methodology available that can be applied?
  - Have similar projects been developed in other countries?

If the answer to either of these questions is 'no', the project is not suitable for development as a CDM project activity (or another greenhouse gas emission reduction activity)

- In most cases, it is best to hire an experienced consultant for such a screening. Such a consultant could be selected on the basis of track record and prior CDM experiences, and could be hired on a lump-sum basis. This should not cost more than 1,000 EUR for a 5-page report.
- There are several sources of advice on screening, and on consultants that could be selected for this work, including:

- The CBDICFP project
- The Mongolian DNA

Hiring of a consultant for marketing

The next step is the hiring of a consultant for the marketing of the project. The objective of this activity is to find a buyer to support development costs of the project and provide technical expertise. The terms of reference of the consultant should include the development of marketing documentation, the approach of buyers; selection of buyer; negotiation with buyer.

As in the previous step, it is important to select on the basis of multiple offers from several consultants. Important selection criteria are:

- Price: This should be less than 5,000 EUR
- Experience and track record
- Independence – you do not want a consultant that is committed to a specific CER buyer.
- A detailed proposal explaining the services that will be provided.

Development of marketing documentation

The key step is to develop documentation that is used to gain the interest from CER buyers. To do this, the documentation should provide a clear idea about how the project aims to achieve greenhouse gas emission reductions, how many emission reductions it will achieve, how likely it is that the project will achieve the greenhouse gas emission reductions, and how attractive the project is in terms of its environmental and social impacts. Therefore, the marketing documentation should provide the following information in an attractive manner:

- The amount of emission reductions that will be achieved, and from when onwards?
- What does the project involve? How will it create emission reductions?
- What is the methodology that will be used?
- Who is the project developer? What is the track record of the project developer?
- How will the project be financed?
- What other parties are to be included?
- Sustainability aspects; contributions to national policy goals

In short, the marketing documentation should include all information that show that the project is sound and will be able to successfully generate a certain amount of emission reductions. Photos will make the documentation more attractive and may increase the interest in the project.

Buyer identification

The next step is the identification of the buyer you wish to work with. Some practical pointers:

- The buyer selection can be based on a competitive process based on fixed conditions with only one or two parameters that can be varied in the bidding, to make it easy to compare different buyers and make an objective selection. The consultant should be able to draft the conditions in consultation with you.
- Normally, the bidding documentation will specify that the buyer should be paying for the project development costs
- The buyer should provide a clear picture on how they would develop the PDD, will they use in-house resources, or will they use an external PDD developer.
- It is very important to check the credentials of the buyer: does the buyer have experience, what is the buyer's creditworthiness, what is the buyer's reputation to stick with the project if market conditions deteriorate?
- Select on the basis of price, but also consider other 'intangibles' such as the amount of support that the buyer can provide, pace, and experience.
- The selection process should be done by the consultant, but the project owner should have the final say on the basis of recommendations by consultant.

Contract negotiations

The next step is the contract negotiations. Some pointers:

- Usually there will first be a letter of intent (or MOU, or term sheet, or option agreement), which provide for a framework for checking the project (due diligence). After the due diligence, a long-term emission reduction purchase agreement (ERPA) will be signed.
- The ERPA provides the amount of emission reductions that will be transacted and the price or pricing formula, but also establishes who pays for the costs of CDM development: the PDD, DOE, and UNFCCC fees. As mentioned, this should be buyer
- The LOIs and ERPAs are complicated legal documents. Therefore, it is important to seek professional assistance. This can be a lawyer, but should include someone who has negotiated CDM LOIs and ERPAs before for CDM projects. If a lawyer has not seen a CDM LOI or CDM ERPA before, the net impact of the lawyer will often be negative, because the lawyer will focus on the wrong issues.

Further development

The further development of the project usually will start in parallel to contract negotiation, to avoid significant delays in the process. This should be supported by the buyer of the CERs, at least financially, but sometimes the buyer will be able to provide development services. In other (most) cases, an experienced consultant will do the work; the buyer may have selected the consultant. Very important is that the consultant should be someone who has successfully registered CDM projects before.

The project owner's role will be to provide information to the consultant preparing the PDD for registration; later, the project owner's role will be to implement the monitoring plan. Usually the project owner will also apply for host country approval. Documentation is very important to make sure that statements made can be supported and evidenced.

The self development track, outlined above, is in the beginning very similar to the track in which a CER buyer is identified early on. However, after the screening, a consultant needs to be selected who can support the development of the PDD, validation, and registration. Usually such a consultant will quote a fee of between 20,000 to 40,000 EUR, depending on the complexity of the methodology, and also depending on the allocation of risks. Selection of the consultant should be based on the track record, the consultant should have produced PDDs that have been registered, should have experience working on similar projects, and should have worked in countries similar to Mongolia. Usually the Mongolian DNA will be able to provide appropriate suggestions.

2. CURRENT STATUS OF CDM PROJECT DEVELOPMENT IN MONGOLIA AND CDM OPPORTUNITIES

CDM development has been concentrated in a few countries where projects are easily developed and projects resulting in large volumes of CERs can easily be identified. In particular, China and India have seen lots of CDM projects, followed by countries like Brazil, Mexico, etc. In contrast, many smaller economies have been largely ignored by the CDM community.

2.1 Status of CDM Development in Mongolia

Mongolia has been one of the countries that have seen relatively few CDM projects, because of the size of the economy and the relatively small size of the greenhouse has emission reductions projects that could be developed. In this chapter, we provide an overview of the current status of CDM project development in Mongolia and the opportunities. In turn, we focus on:

- Registered projects
- Projects submitted for validation
- Projects submitted to the Mongolian DNA
- Other opportunities

2.1.1 UNFCCC registered CDM projects in Mongolia

At the moment of writing, three Mongolian projects have been registered as CDM projects:

0295: A retrofit programme for decentralised heating stations in Mongolia.
0787: Taishir Hydropower Project in Mongolia
0786: Durgun Hydropower Project in Mongolia

Numbers are the UNFCCC reference numbers. At the moment of writing, more than 3700 projects have been registered with the UNFCCC, which demonstrates that Mongolia has had some difficulties attracting CDM projects. Two of the projects have had CERs issued; the third did not yet result in issued CERs.

2.1.2 Mongolian project under validation

At the moment of writing, the following projects are under validation:

- Salkhit Windpark
- Pellet and briquette plant in Mongolia

The last project was one for which the PDD was developed under the CBDICFP project.

2.1.3 Projects available at the Mongolian DNA

Several projects are available at the Mongolian DNA in PIN form, a form that is an example of marketing documentation as outlined in Chapter 1. See the website of the Mongolia DNA.

Table 2.1 Projects endorsed by the Mongolian DNA

Name	Annual CERs (tCO2e)
Building Energy Efficiency MON/09/301 Project	63 thousand
Project of generating energy from garbage treatment	459 thousand
Energy conservation and emission reduction from poor households	75.0 – 90.0 thousand
Community based heating supply in rural remote areas of Mongolia	17.0-23.0 thousand
Sainshand wind farm project	174.0 thousand
Biogas Plant Project in Mongolia	2.3 thousand
WGGE-waste gas to green energy	28.5 thousand

Oyu tolgoi wind power project (250MW Khanbogd high power wind farm)*	1,412 thousand
Replacement of coal and wood fired heating by renewable heating system	15.4 thousand
Reconstruction boilers in Power Plants of Darkhan and Erdenet cities	32 – 33 thousand
Energy efficiency rehabilitation for pre-cast panel buildings	100.0 –110.0 thousand

Table 2.2 Projects approved by the Mongolian DNA

Name	Annual CERs (tCO2e)
Maikhan small hydropower project (12MW)	36,377

Note that projects that have been registered or that are under validation have been excluded.

Table 2.3 Other projects available at the Mongolian DNA

Name	Annual CERs (tCO2e)
Improvement of heating systems in urban centers of Mongolia	30,000
Energy conservation with utilization of active mineral additives (pozzolans) in Cement production	30,000
Energy conservation with introduction of variable speed drive pumps for heating distribution in Ulaanbaatar	30,000
Mass replacement of gers and yurts by affordable passive housing (Geothermal heating supply in ger district)	99,600
Geothermal Project in Khangai region of Mongolia	50,000
Reduction of CO2 while introducing the Ladle Refining furnace in Darkhan metallurgical plant of Mongolia	30,000
Biogas (chicken and cow farm) project	30,000
Produce renewable energy using windpower	180,000
Biofuel (pellet plant) project	15,200

2.2 Greenhouse gas emission reduction opportunities in Mongolia

What are the main greenhouse gas emission reduction opportunities in Mongolia, and to what extent can these be developed under CDM? To answer that question, the CBDICFP project commissioned some original research that was conducted by Dorjpurev Jargal. The research consisted of a comprehensive survey in Darkhan-Uul, Orkhon and Selenge *aimag*. The main findings of the research are summarized below. In addition, we have highlighted some general comments about the potential for CDM projects (or more general, greenhouse gas emission reduction projects) in Mongolia, based on knowledge about the Mongolian economy.

2.2.1 Darkhan-Uul aimag

Key data, Darkhan-Uul aimag
- Territory - 3,280 sq. km
- Center - City of Darkhan, located 230km from Ulaanbaatar.
- Number of soums - 4 (Darkhan, Sharyn Gol, Khongor, Orkhon)
- Darkhan-Uul aimag was established in 1994

The aimag (province) has well developed infrastructure services and situated on international road in the direction of Ulaanbaatar to Altanbulag and on the junction of international railway from Ulaanbaatar to Sukhbaatar. The advantage of the province is that it has connected to the central energy system and has a cheap and regular public transportation vehicles compared to other aimags. In addition to this, the living cost of this place is relatively low. The total population is 91,093, from

which 74,526 people live in Darkhan city. 64.5 % of the total population is the youth up to 35 years old. There are 24,989 households in the aimag, from which 67.5% live in public apartment buildings. Administratively, the aimag is divided into four soums of Darkhan, Orkhon, Khongor and Sharyn gol and 24 bags.

Darkhan-Uul aimag occupies 327.5 thousand of land on the north-east valley of Kharaa river, among the Khentii chain mountains on the northern part of Mongolia. From the total territory of the province 231.7 thousand hectare or 70.7 percent is the agricultural land. The province territory has resource of gold, limestone, coal and various raw materials of construction.

The maximum air temperature in July is 42.6°C, the minimum temperature in January Reaches -43.7°C. Average year precipitation is 310-320 mm, from which 284-290 mm or 85-90% is in warm season.

Darkhan-Uul province was first established with city status as an industrial base to provide the construction field of Mongolia with raw materials. There are main factories of construction materials as metallurgy plant, bricks, concrete, cement and food productions, and meat factories. The biggest factories of "Darkhan Thermal Power Plant", "Darkhan Metallurgical Plant", "Darkhan Nekhii (sheepskin)" company, "Erel Cement" company and etc. are running their activities.

From the total territory of the province 70.7 percent or 231.7 thousand hectare of field is agricultural land, from which 81.5 percent or 188.5 thousand hectare is pasture. There are 345.3 thousand heads of livestock. The agricultural production of the province is the important strategic field, which provides the population with 90 percent of meat and meat products, 100 percent of flour and 100 percent of potato and vegetables by 100 percent own domestic production.

Opportunities for greenhouse gas emission reductions in Darkhan-Uul aimag

To identify opportunities for greenhouse gas emission reductions in Darkhan-Uul, the research focused on the main energy users and producers, analyzed the production processes involved, and identified the main technical options available.

Erel cement factory

Erel Cement is a cement producer in Darkhan, Mongolia. The Darkhan Cement plant was established in 1967 and was privatized and renamed as the Erel Cement in 1998 and has 365 employees. The plant operates between 10 pm and 6 am to benefit from lower electricity tariffs, but the kiln operates 24 hours per day. The plant is closed between December and February because of the cold Mongolian winters. The company's annual production capacity is 185,000 tons.

The production process is illustrated below. Most important inputs include limestone, electricity, coal, water, and iron ore and gypsums. Most important outputs include cement, dust, waste, and emissions.

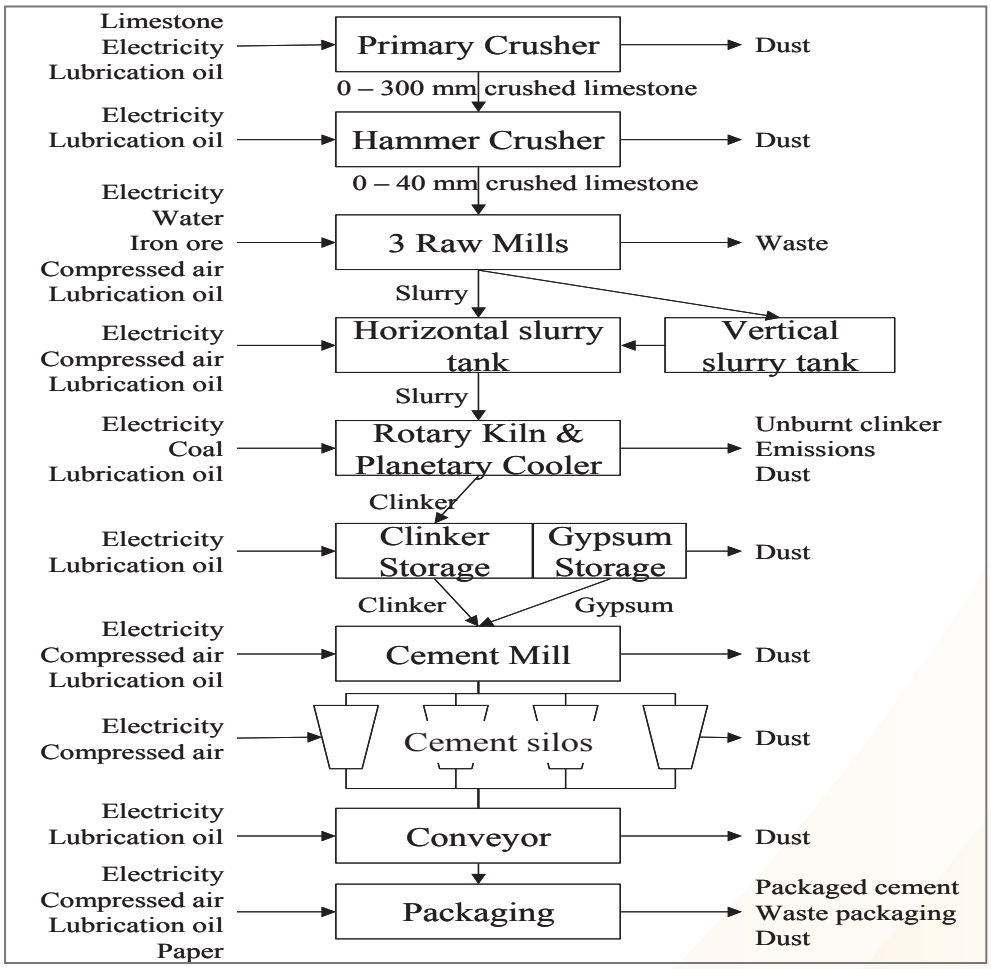


Figure 2.1 Cement production technology flow chart

During the site visit we have identified the following potential options for GHG emission reduction in the factory:

- Change kiln system from wet to dry type
- Use of waste heat from rotating kilns
- Change of fuel
- EMC cement replacement
- Improvement of sealing of dust system

1. Change kiln system from wet to dry type

The feasibility Study on Energy Conservation and Modernization of Darkhan Cement was carried out by New Energy and Industrial Technology Development Organization (NEDO) of Japan in 2001. The objective of this study was the reduction of Greenhouse gas emissions by introduction of Japanese energy conservation technology to cement industry in Mongolia.

According to this study, the conversion of technology from wet dry will reduce GHG emissions by 50.8%. The volume of GHG emission reductions is shown in Table 2.4. However the investment cost was prohibitively high. The Erel Cement factory still could not implement this project because of high investment cost. The management staff of thus factory said that recently they are not going to implement this project because of high investment cost and not profitability.

Table 2.4 Emission reductions from wet to dry conversion

Portion	Single year	Cumulative	
		13 years	20 years
Reduction of heat consumption	92,151	1,156,592	1,801,649
Reduction of power consumption	3,685	43,012	68,807
Total	95,836	1,199,604	1,870,456

The amount of emission reductions from conversion from wet to dry kiln technology is relatively large, close to 100,000 tCO2 per year. However, investment costs are very high, and there are no examples of CDM projects involving a switch from wet to dry technology.

2. Use of waste heat from rotating kilns

During the production of clinker discharged from kiln, lot of heat is wasted to environment air. The clinker temperature is 1100 ^{0}C and clinker is cooled by heat exchanger. Also the rotating kiln with surface temperature of 200-300 ^{0}C emits heat to air. The reuse of wasted heat from clinker production could save energy and reduce GHG emissions.

To get a handle on the amount of emission reductions from the utilization of waste heat, we can use the rule of thumb that the capacity of a waste heat to power project is approximately 2MW per 1000 t/d clinker production capacity. Given the plant size of around 500 t/d, a waste heat to power project would result in an installed capacity of 1 MW, annual power supply to the grid of about 7,000MWh, and about 8,000 tCO2 emission reductions. The applicable methodologies are AM0024, ACM0012, and ASM-III.Q.

3. Fuel switch

One of the options for GHG emission reductions is a fuel switch. In principle, it is possible to use gas or other fuels instead of coal, or alternatively, renewable fuel sources could be used, such as waste and/or biomass. There is an approved methodology that would cover this type of project in cement plants, ACM0003.

However, fuel availability is an issue. The Erel cement factory could in principle use waste gas from neighboring semi coke making factory of Sharyngol energy company. However, this would imply a diversion of the planned use of waste gas for power generation, so it would not result in net greenhouse gas emission reductions.

Additionally, the local availability of renewable fuels is limited. The population is too small to generate a large amount of municipal solid waste, although this is an issue that could be further explored and assessed.[6] The amount of crop production is too limited to provide a lot of agricultural residues that could be used as fuel. In practice, fuel switch may not be feasible because of lack of resources.

4. Introduction of Portland cement substitutes

Concrete is greenhouse gas emission intensive because it uses a large amount of Portland cement. The production of Portland cement causes a large amount of emissions, because the amount of energy required during production is large (resulting in CO2 emissions from the use of fossil fuels) and the emissions associated with the calcinations reaction in the production of clinker:

$CaCO3 \rightarrow CaO + CO2$

[6] If waste is used as a fuel, a concern is that the burning of the waste should not result in significant air pollution.

However, it is possible to replace Portland cement in concrete with other materials that have cementitious properties (cement-like behavior; note that cement, reacting with water, acts as glue holding the sand and small stones in the concrete together.

EMC (short for Energetically Modified Cement) is a technology to replace Portland Cement in concrete with other cementitious materials, using fly ash, volcanic ash, steel slags or quartz sand as raw materials. The main advantage is that it provides concrete with superior properties to concrete made with Portland cement only. The EMC technology has very high CO2 emission savings.

The more detail information about EMC technology is giving in the Box below. The amount of emission reductions that can be achieved are considerable: a 350,000 t/y plant would reduce greenhouse gas emissions with approximately 350,000 tCO2/y. There is a methodology available that would cover this type of project: ACM0005. However, the methodology is very complicated and requires a lot of data.

EMC Introduction

EMC stands for energetically modified cement. It is a technology, owned by EMC BV, to replace cement in concrete with other cementitious ("cement-like") materials. Cementitious materials react with water in a hydraulic reaction that creates a 'glue' that will hold the aggregates (sand, small stones) together. This technology can use many raw materials – such as quartz sand, volcanic ash, steel slag, and fly ash, and can receive very high replacement levels, with a blend mix of 30% Portland cement to 70% replacement cementitious materials with a fixed amount of total cementitious materials per m3 of concrete.

The blending percentage that can be achieved is much higher than other technologies can achieve; moreover, the EMC technology can use raw materials that others cannot use (quartz sand, volcanic ash). The latter is very important, because raw materials for cement production are becoming scarce. A final advantage of EMC is that it provides concrete with superior properties to concrete made with Portland cement only.

The technology has been proven and validated by renowned international organizations such as Sintef from Norway, and is recognized by, for example, the Department of Transport of Texas and Pennsylvania and Caltrans of California in the USA. The technology has also been identified in a report by the World Business Council for Sustainable Development as the technology for the future.

Key EMC benefits

The key benefits of this technology are:

1. Much lower investment costs than for ordinary Portland cement (1/5th for same production capacity). Putting a 350,000 t EMC plant in place would require about 15 million US$; possibly a bit more in Mongolia due to transportation costs.
2. Very substantial savings in energy use (1/10th for same production capacity)
3. Very high CO2 emission savings (per ton EMC product 0.8-1.0 tons of CO2 emission reduction, or about 10US$ per ton EMC product in additional benefits)
4. Potential to achieve over 1 billion tCO2 emission reductions per year worldwide
5. Solves the projected scarcity of limestone (a key ingredient for the production of clinker, which is a major input in the production of cement)
6. Short payback periods (less than 2 years, based on normal market conditions)
7. EBITDA margins are 2-3 times EBITDA margins for ordinary Portland cement, meaning much higher profitability than production of Portland cement.
8. Lower emissions of air pollutants.

No other cement replacement technology offers the same, comprehensive benefits as EMC cement. The EMC technology is a result of decades of research, which started in the former USSR, and was further developed in Sweden by the original USSR researchers. There are a large number of academic publications on the EMC technology that could be supplied for review. The technology is protected by a wide patent portfolio. A commercial EMC plant has been in operation in Texas, USA, since 2004.

5. Improvement of sealing of dust system

According to the study of regional project "Greenhouse Gas Emission Reduction from Industry in Asia and the Pacific (GERIAP)", the improvement of sealing of dust system will give following benefits:

Environmental benefits:

- Annual coal savings: 4500 tons of coal
- Annual electricity increase: 302 MWh
- **Annual GHG emissions reduction: 11007 tons CO2 per year**

Other Benefits:

- Improved working conditions around dust conveyers and bunkers
- Reduced dust emissions
- Reduced raw material consumption (as recovered dust is recovered product

The problem is that there is no available methodology that readily fits this type of activity.

Darkhan CHP

The Darkhan combined heat and power plant (CHP) is connected to central grid and supplies about 300 million kWh/year to the grid through 35 kV and 110 kV transmission lines. The plant also supplies heat, hot water and steam. The technical data of Darkhan CHP is shown in Table 2.5.

Table 2.5 Technical data of Darkhan CHP

Boiler type	Boiler capacity	Number of boilers
BKZ 75-39 FB	75 tons/h	9
Turbine type	**Turbine capacity**	**Number of turbines**
APT 12-35-10	12 MW	4

Table 2.6 GHG emission reduction options in Darkhan CHP

Focus areas	GHG emission reduction options	Expected results/energy savings	GHG Emission reduction potential
Turbine shop	Installation of PT 30 turbine	Improvement of working regime of existing boilers	No data for estimation of GHG emission reduction
		Increase electricity production	
		Reduce share of internal use in total electricity generation	
Boiler shop	Renovation of existing boilers	Reduction of Electricity consumption (6.1 million kWh/year)	6500 tons/year
Boiler shop	Convert cooling water pumps in variable speed drivers	Reduction of electricity consumption (280,000 kWh/year)	310 tons/year
Lighting	Automatic Control of lighting system	Reduction of Electricity consumption	

It seems worthwhile to further investigate the possibilities to reduce greenhouse gas emission reductions in Darkhan CHP through the installation of PT30 turbines, as the amount of emission reductions available from this activity may be considerable (a relatively small increase in efficiency would imply emission reductions in the 30,000 – 50,000 tCO2 range). The other greenhouse gas emission reduction activities identified are relatively small, and are difficult to justify on the basis the greenhouse gas emission reduction potential.

Darkhan metallurgical factory

The technology for the production of metal products is shown in Table 2.7 and Figure 2.2.

Table 2.7 The technology for the production of metal products

Section	*Technology line*	
	Name	*Number*
Steel melting facilities	Electric Arc Furnace (25 tones)	2
	Continuous casting machine	1
	Oxygen generating facilities	1
	De-dusting and scrap preheating	1
	Continuous casting machine	11
	Crane and hoist	1
	Automatic charging system	1
Rolling facilities	Preheating furnace	1
	Roughing mill	1
	Intermediate mill	10
	Shear	3
	Bundling machine	2
	Water cooling pump	7
	Cooling bed	1
	Crane and hoist	13

1. Reduction of CO_2 while introducing the Ladle Refining furnace

The purpose of project is to improve a technology process in Darkhan metallurgical plant while installing Ladle Refining Furnace at the smelting section. According to the existing technology, an electric arc furnace is used for smelting processes of metal, resulting in high CO2 emissions during the smelting process. In order to limit CO_2, there is need to reduce a melting time in furnace. Using "Ladle Furnace", significant emission reductions can be achieved. According to the primary estimation, energy consumption will be reduced with 20 percent after implementation of the project, resulting in annual greenhouse gas emission reductions of 30,000 tCO2.

This is a complicated project type, and it is unclear whether at this moment there exists an approved methodology that can be applied to this project activity.

2. Optimization of working regime of cooling water pumps

There are 37 cooling water pumps with various electric capacities, up to 55 kW. Currently the cooling water pumps are operated manually. It is important to install an automatic controlling system of pumps, depending on water temperature. These measures will save electricity and reduce GHG emissions. The emission reductions, however, are small: the total electricity saving would be 280MWh/yr, or about 310 tCO2/year.

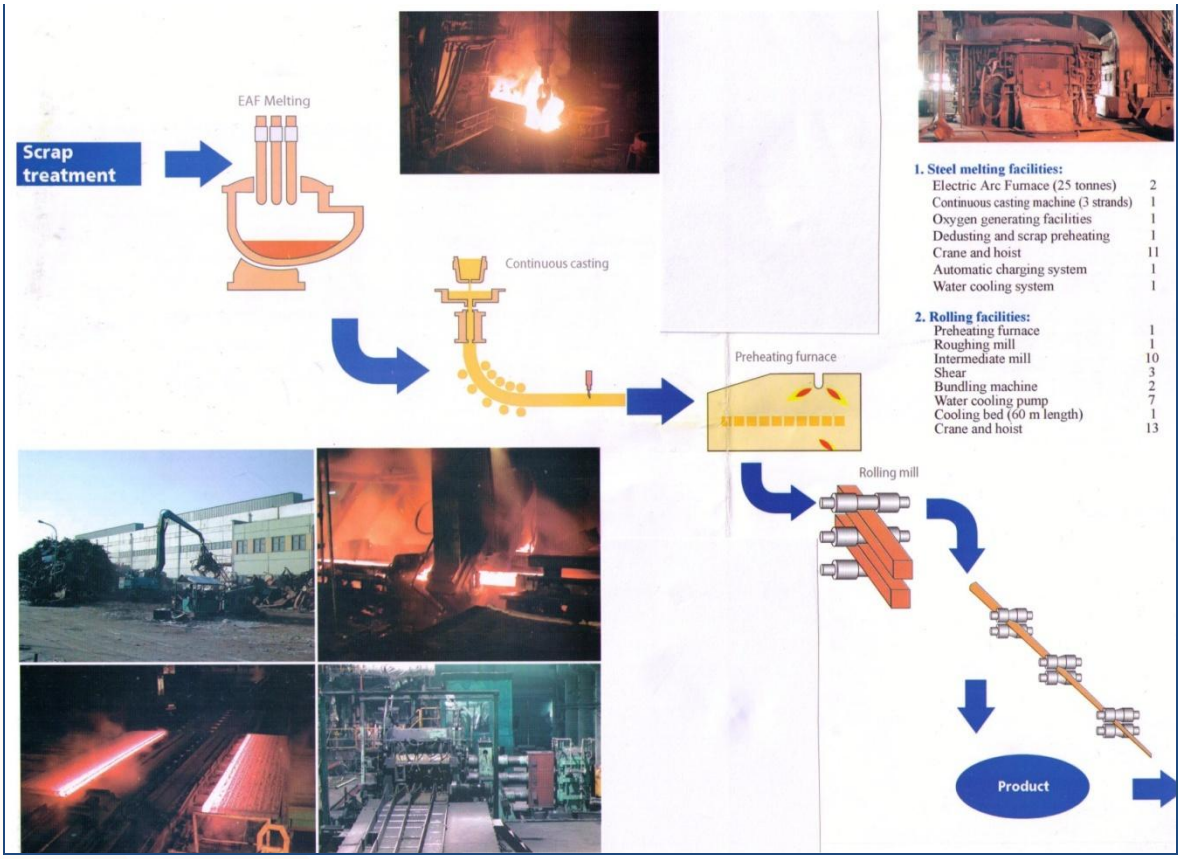


Figure 2.2 Technology scheme of Darkhan metallurgical factory

Darkhan Nekhii

The energy consumption of Darkhan Nekhii factory is not very substantial big. The electricity consumption is 1,427,800 kWh/year and steam consumption-10,000 Gcal/year. The biggest capacity of electric motors is only 17 kW. The total CO2 emissions from Darkhan Nekhii are about 5,500 tCO2/year; therefore, the potential for greenhouse gas emission reductions is small.

Brick and lime factory

The production capacity of the factory is:

- Lime – 22,000 tons/year
- Light brick – 50,000 m^3/year

The energy consumption of this factory is not high. The electricity consumption is 603,700 kWh/year, steam consumption is around 12,000 Gcal/year and coal consumption is around 6800 tons/year. The lime production line is old and inefficient. Therefore the factory wants to change the lime production technology with new modern technology. Implementation of the new technology will result in coal savings in 30% and GHG emission reduction will be about 2,000 tons/year.

Darkhan Selenge Electricity Distribution company

The company services not only Darkhan-Uul aimag also Selenge aimag and some soums of Tuv aimag (See figure 2.3.)

- Total territory of service – 74000 m^2
- Number of households – 374210 households
- Electricity distribution – 450 million kWh/year
- Electricity losses – 14.6% of electricity distribution

1. Reduction of Energy losses

The company is starting to implement a rehabilitation project focusing on the existing 0.4kV electricity distribution lines, with the technical and financial support from DANIDA (around 23 million Euro). The project will reduce technical losses and increase reliability of electricity supply to consumers. If we assume that the project could reduce electricity losses by 10%, then the electricity saving will be 20.7 million kWh/year and CO_2 emission reduction will be around 23,000 tons/year. However, as this project is already under way, it is unlikely that this project could be successfully developed as a CDM project.

Figure 2.3 Service area of Darkhan-Selenge electricity distribution company

Semi-coke production factory of Sharyn gol Energy Company

Sharyngol Energy LLC is planning to implement project named “Waste Gas to Green Energy”. The project involves the utilization of waste gas from a semi-coke production facility, Sharyngol Energy LLC, for the generation of power in a 3 MW power generation facility. The power generated by the facility will be exported to the Central Energy System (CES) power grid.

By displacing power generated by power plants connected to the CES, using a waste gas resource that in the baseline scenario is flared without the use of the energy content of the waste gas, the project reduces greenhouse gas emissions. The amount of greenhouse gas emission reductions is documented elsewhere in the Project Design Document (PDD) that has been prepared with the support of the CBDICFP project. The project is expected to reduce greenhouse gas emissions with the equivalent of around 26,000 tCO2e/yr.

The following table summarizes the greenhouse gas emission reduction opportunities identified in this aimag, subject to further confirmation. Note that there may be some overlap between opportunities, and that in the case of uncertainty, the middle of an emission reduction range has been used.

Table 2.8 Greenhouse gas emission reduction opportunities, Darkhan-Uul aimag

Entity	Amount of annual emission reductions (tCO2)
Erel cement factory	464,843
Darkhan CHP	46,810
Darkhan metallurgical factory	30,310

Darkhan Nekhii	NA
Brick and lime factory	2,000
Darkhan Selenge Electricity Distribution Company	23,000
Sharyngol Energy Company	26,000
Total	**592,963**

2.2.2 Orkhon aimag

Key data, Orkhon aimag

- Territory - 840 sq. km
- Center - Erdenet, situated 410 km from Ulaanbaatar
- Number of soums - 2
- Orkhon aimag was established in 1994.

A rich deposit of copper and molybdenum was discovered by Mongolian, Russian and Czechoslovakian geologists in the territory of the aimag in 1967-1970. In 1974, the "Erdenet" Soviet-Mongolian copper ore dressing enterprise was established. Now the enterprise is considered as one of the ten biggest plants in the world. Construction of the enterprise became the first step in building a new city of Erdenet, the center of Orkhon aimag.

According to the Bulletin of Statistics of Orkhon aimag, the total population of Orkhon aimag in 2009 was 90266, from which 96.5% live in Erdenet (Bayan-Undur soum. In the autonomous municipality of Orkhon, and Erdenet is Mongolia's third-largest city. The reason for Erdenet's existence is the copper mine, which employs about 8000 people and is the lifeblood of the city.

The copper was first seriously prospected during the 1960s, and by 1977 a train line to Ulaanbaatar was installed for hauling the ore. In 1981 an ore-processing plant was commissioned and Erdenet began exporting copper concentrate (30% copper), mostly to the former Soviet Union.

The regional GDP is very much dominated by the Erdenet company. Agriculture and services account for only small percentages of the regional GDP.

Opportunities for greenhouse gas emission reductions in Orkhon aimag

To identify opportunities for greenhouse gas emission reductions in Orkhon, the research focused on the main energy users and producers, analyzed the production processes involved, and identified the main technical options available.

Erdenet Mining Corporation

Erdenet Mining Corporation is one of the biggest Ore mining and Ore processing factories in Asia. The main mineral deposit, extracted by the Corporation is the Erdenetiin-Ovoo area which locates 400 kilometers northwest from Ulaanbaatar, 180 kilometers east from Darkhan city. The Corporation's operation includes prospecting, mining, mineral processing and sales. Erdenet Mining Corporation is a Mongolian-Russian joint venture, 51% of shares are owned by the state property committee of Mongolian government and 49% of shares are owned by the Russian government.

At present it is a fairly large complex processing 25 million tons of ore per year and producing over 530.0 thousand tons of copper concentrate and 3.0 thousand tons of molybdenum concentrates annually. Energy use is significant:

- Annual electricity consumption: 780-805 million kWh/year (25% of distributed electricity from Central energy system)

- Maximum load: 105 MW (17% of maximum load of Central energy system)
- Annual heat consumption: 380,000 Gcal.

This means that the total CO2 emissions from the Erdenet Mining Corporation are well in excess of 1 million tCO2 per year, indicating a potentially large potential for greenhouse gas emission reductions.

Erdenet Mining Corporation has own thermal station for heating of buildings and technology steam supply. The thermal station has 6 boilers type BKZ-75-39 FB with capacity 75 tons/hour (53.4 Gcal/hour) each. Annual coal consumption is 180,000 tons/year.

The GHG emission reduction potentials are shown in Table 2.9.

Table 2.9 GHG emission reduction potential

Focus areas	GHG mitigation options	Expected results/ Energy savings	GHG Emission reduction potential
District heating steam supply pipelines	Convert from dependent system to independent system	Reduction of electricity consumption for additional water (2,300,000 kWh/year)	2,500 tons/year
		Increase of reliability	
		Reduction of coal consumption (3,000 tons/year)	3,900 tons/year
	Insulation Improvement of district heating and steam supply pipelines	Reduction of heat losses in district heating system	No data for estimation of GHG emission reduction
		Fuel savings (1,850 tons/year)	2,400 tons/year
	Reduce diameter of steam supply pipelines	Fuel savings (8,000 tons/year)	10,400 tons/year
Heat consumers	Change existing old ventilation system by new modern one	Reduction of electricity consumption	No data for estimation of GHG emission reduction
Heating Station	Convert heating station into a small capacity CHP	Fuel and electricity savings	No data for estimation of GHG emission reduction
Technological Water	Construction of a 1.5MW Hydro power plant.	Electricity savings by generating electricity from own Hydropower plant	10,000 tCO2/y

The following energy saving technology can be implemented in Erdenet Copper ore mining:

- Soft start-up motor equipment on the main motors of Copper ore Enrich Factory
- Variable Speed Drivers on the pump stations
- Energy efficient pumps and motors
- Power factor improvement measures
- Control and regulation of heating

Erdenet Combined heat and power plant

The Erdenet combined heat and power plant (CHP) is connected to central grid and supplies about 113 million kWh/year to the grid. The plant also supplies heat, hot water and steam. The technical data of Erdenet CHP are shown in Table 2.10.

Table 2.10 Technical data of Erdenet CHP

Boiler type	Boiler capacity	Number of boilers
BKZ 75-39 FB	75 tons/h	7
Turbine type	Turbine capacity	Number of turbines
PT 12-35/10M	12 MW	1
P12-2/3	12 MW	2

Table 2.11 GHG emission reduction potential in Erdenet CHP

Focus areas	*GHG mitigation options*	*Expected results/energy savings*	*GHG Emission reduction potential*
Turbine shop	Installation of PT 30 turbine	Improvement of working regime of existing boilers	No data for estimation of GHG emission reduction
		Increase electricity production	
		Reduce share of internal use in total electricity generation	
Boiler shop	Renovation of existing boilers (Shuud uleelgend shiljuuleh)	Reduction of Electricity consumption (6.1 million kWh/ year)	6500 tons/year
	Installation of Control automatization system		
District heating	Convert district heating pumps in variable speed drivers	Reduction of electricity consumption (2,450,000 kWh/year)	2800 tons/year

It seems worthwhile to further investigate the possibilities to reduce greenhouse gas emission reductions in Erdenet CHP through the installation of PT30 turbines, as the amount of emission reductions available from this activity may be considerable (a relatively small increase in efficiency would imply emission reductions in the 15,000 – 20,000 tCO2 range). The other greenhouse gas emission reduction activities identified are relatively small, and are difficult to justify on the basis the greenhouse gas emission reduction potential.

Erdenet-Bulgan electricity distribution company

The key data of the Erdenet-Bulgan electricity distribution company are provided below:

Total electricity sales - 930 million kWh/year
From which:
Electricity sales to Erdenet Copper Mining - 750 million kWh/year
Electricity sales to other consumers - 180 million kWh/year

Technical losses - 12.3% (22.14 million kWh)

The following table provides an estimate of the emission reductions from the reduction of power transmission losses in the Erdenet-Bulgan electricity distribution company.

Table 2.12 GHG emission reduction potential in Erdenet-Bulgan electricity distribution company

Focus areas	GHG mitigation options	Expected results/ energy savings/	GHG Emission reduction potential
Electricity grid 0.4 kV	Change grid by cable line	Reduction of technical losses up to 4% (14.9 million kWh)	16,000 tons/year

Erdenet Carpet Company

The "Erdenet Carpet" is one of the largest carpet manufacturing companies in Mongolia producing and providing wide variety of choices with its 6 types of carpet and rugs with over 720 patterns and differing in design, color and size.

Table 2.13 Main information of Erdenet Carpet factory

Purpose	To manufacture 1.3 million sq. meters of carpets and to produce 2000 tons of washed wool, and 2444 tons of spun thread annually
Origin of equipment	From Germany, UK, France, Poland, Japan, China and Russia.
Technology	Incorporate Cut-pile 3-1 shoot, double base
Material	92-100% sheep wool
Number of employees	Over 900 employees
Brand names	Hunny, Chinggis, Erdenet
Products	Carpet, Carpeting, Hand tufting, Felt and Felt products, Blankets, Souvenirs, Washed wool, Spun thread
Exports	To Russia, China, Australia, Italy, Hungary, Sweden, Japan, USA, England, Spain, Jordan, Kazakhstan, Kyrgyzstan and Tajikistan
Electricity consumption	3,800,000 kWh/year
Steam consumption	6,320 Gcal/year
CO2 emissions	8,000 tCO2/year

The information on the electricity and steam consumption can be used to calculate the gross CO2 emissions for which the company is directly or indirectly responsible. The total amount of CO2 emissions, 8,000 tCO2, clearly indicates that the potential to reduce greenhouse gas emisisons is quite limited.

The following table provides an overview of the identified greenhouse gas emission reduction options.

Table 2.14 GHG emission reduction potential in Erdenet Carpet factory

Focus areas	GHG mitigation options	Expected results	GHG Emission reduction potential
Waste water cleaning	Adjustment of motor capacity of air blowers	Reduction of electricity consumption (460,800 kWh)	500 tons/year
Lighting	Installation of LED lighting	Reduction of electricity consumption (190,000 kWh)	200 tons/year

The following table summarizes the greenhouse gas emission reduction opportunities identified in this aimag. Note that there may be some overlap between opportunities, and that in the case of uncertainty, the middle of an emission reduction range has been used.

Table 2.15 Greenhouse gas emission reduction opportunities, Orkhon aimag

Entity	Amount of annual emission reductions (tCO2)
Erdenet Mining Corporation	29,200
Erdenet CHP	26,800
Erdenet-Bulgan electricity distribution company	16,000
Erdenet Carpet Company	700
Total	**72,700**

2.2.3 Selenge aimag

Key data, Selenge aimag

- Territory - 43,000 sq. km
- Center - Sukhbaatar town, located 335 km from Ulaanbaatar.
- Number of soums – 17

Selenge province is located in the North part of Mongolia in a basin formed by the Orkhon -Selenge, Kharaa and Yeruu rivers in the forest steppe zone. It borders on North with Russia, on west with Bulgan and Orkhon province, on South with Tuv province, on East with Khentii province and encloses Darkhan Uul province completely.

Selenge province has relatively well-developed infrastructure and is connected to Ulaanbaatar and other central provinces with railway and highway road. Selenge province has the territory of 43 thousand square kilometer and 42 percent of the territory is covered with broad-leaved and coniferous forest, 47 percent of the territory is pasture, 7 percent is hay field. It covers 2.7percent of the national territory and 20 percent of the forest resource of the country. 55 percent of the running water flows through Selenge province.

Administratively, Selenge aimag is divided into 17 soums, 5 villages and 49 bags. It contains 3 local towns named Sukhbaatar, Zuunkharaa and Hutul. Total population of the aimag is estimated as 94.5 thousand and there are 24.5 thousand families.

Agriculture and industry are the leading sectors of Selenge aimag. 2084.6 thousand ha area which is 50.6% of the total territory of the aimag is agricultural land in use. Every year approximately 150 thousand ha enters cultivation. The aimag produces 65% of Mongolia's total crop production, 15% of Mongolia's potato production, and more than 20% of Mongolia's vegetable production. Thus it has the leading position in the production of crops and the second place in the production of potato and vegetable. Animal husbandry is one of the main sectors of agricultural industry; the aimag has 1.5 million livestock.

The aimag is also industrially well-developed. It produces 90% of spirit, 90% of lime, 80% of cement, 35% of flour, and 40% of gold of Mongolia and it has many factories such as spirit plant in Zuunkharaa, cement and lime factory in Hutul, "Boroo gold" gold deposit mining in Bayangol -Mandal soum, "Yeruu - Boldtumur" iron ore mining and "Altan taria" wheat milling factory. There are many useful minerals in Selenge aimag such as coal, iron ore, gold, silver, and mercury, lead, marble and lime stone. Coal, gold, and lime stone have been used in the manufacture.

Opportunities for greenhouse gas emission reductions in Selenge aimag

To identify opportunities for greenhouse gas emission reductions in Selenge, the research focused on the main energy users and producers, analyzed the production processes involved, and identified the main technical options available.

Hutul cement and Lime factory

The Hutul cement and lime factory was constructed from 1981 with financial and technical assistance from the USSR and started operation in 1986 with 2 wet kilns (production capacity: 500,000 tons/year). Before the breakup of the USSR and the communist system, the two production lines produced at almost full capacity under planned economy system and achieved maximum production of 510,000 t in 1989. But the financial and technical assistance stopped after 1991. The Mongolian Economy became sluggish so that cement production decreased sharply and remains weak. Hutul Cement factory is still state-owned share holding company but cannot respond to significant changes and cement production decreased to about 40-50% of the installed capacity.

1. Energy Conservation with utilisation of active mineral additives in Cement production.

Use of active mineral additive could improve the quality of cement, and also could reduce greenhouse gas emissions by reducing amount of fuel for producing clinker. In developed countries, factory waste and artificial materials such as slag from metallurgy, aluminum waste Calcium silicates, which are a set of four compounds obtained by reacting calcium oxide and silica in various ratios from aluminum factory, are used as an active mineral additive. But in Mongolia, on the other hand, there is no waste from heavy industry. So we have to find active mineral additives from waste materials from nature and small and middle industry. The Hutul cement factory submitted the Project Idea Note (PIN) on "Energy Conservation with utilisation of active mineral additives in Cement production". The PIN can be finding in website of CDM DNA Mongolia. According to the PIN, the annual CO_2 emission reduction is 30000 tons/year. The required investment cost is 0.6-0.8 million US$.

An alternative is to use EMC cement, which is described in the section on Erel (Darkhan-Uul aimag). This would require a more substantial investment, but would lead to much larger greenhouse gas emission reductions (around 350,000 tCO2 for a typical plant).

2. Change to dry method technology of producing clinker

Hutul Cement and lime factory studied to implement dry technology for cement production. The study was executed by Japanese project experts. On the bases of this study the factory prepared pre-feasibility study to convert one of two kilns to dry technology. According to this study, in order to implement this technology, 38 million US dollars is required for reduce length rotary kiln, building dry storage of mixing raw material, pre-homogenization of dry raw materials, building heat exchanger on the surface of kiln and other changes. However, these changes will have number of advantages such as improvement of cement quality and increase of annual production, reduction of specific coal consumption for clinker production. The description of the technology changes are shown in below.

Table 2.16 Comparison of production capacity of kilns after changes of one kiln to dry technology

		Measuring unit	Kiln 1	Kiln 2	Total
Capacity	Recent	tons/hour	25	21	46
	After project implementation	tons/hour	25	83	108
Production amount after project implementation					
Number of working months per year		Month	12	12	12
Annual production	Clinker	tons/year	200000	600000	800000
	Cement	tons/year	250000	750000	1000000

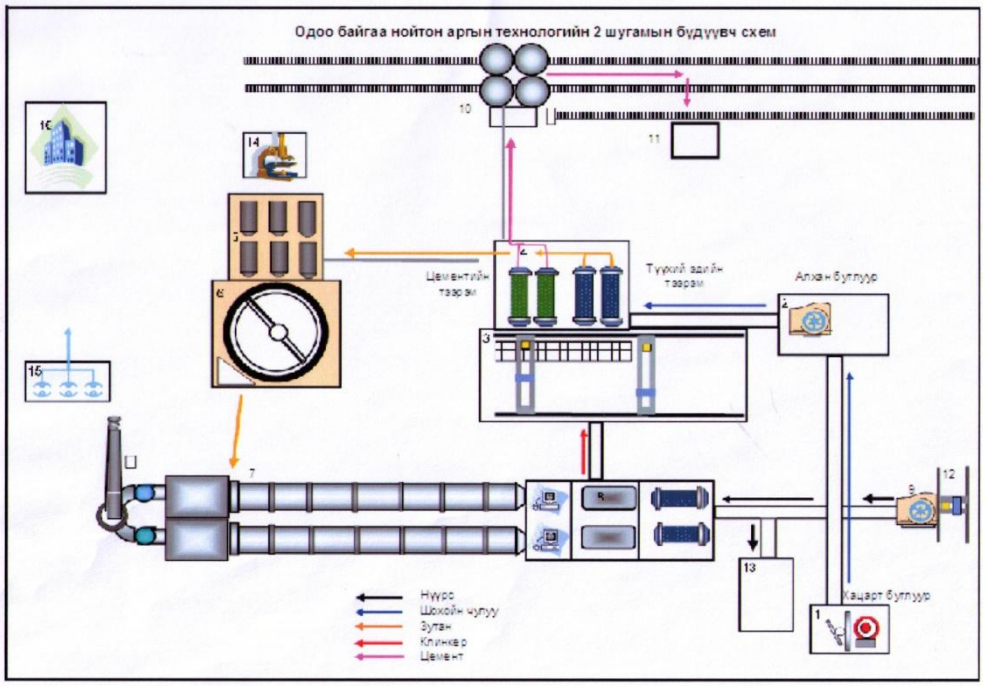


Figure 2.4 The existing wet technology of cement production

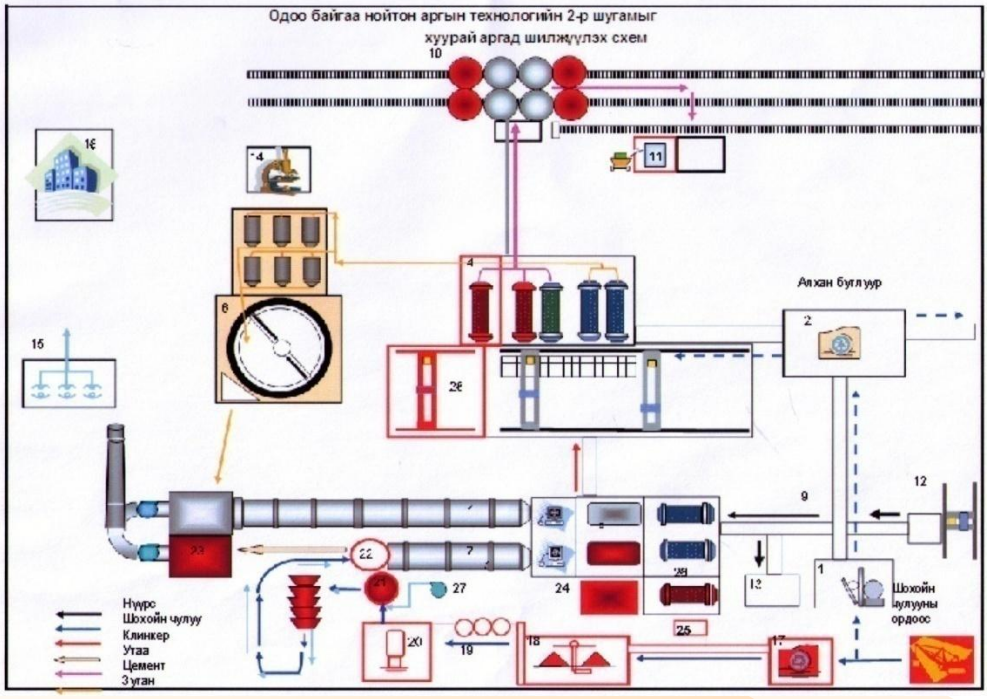


Figure 2.5 The scheme to convert one kiln to dry technology of cement production

According to the pre-feasibility study, the production of 1 ton clinker by old technology needs 0.29 tons of coal with heat content 5500 kcal/kg. After implementation of dry technology the coal per unit (1 ton) of clinker production will be 0.15 tons. Coal saving for production 600,000 tons of clinker by dry technology will be 86,200 tons/year and Greenhouse gas emission reductions will be 112,000 tons/year.

Table 2.17 GHG emission reduction potential in Hutul cement and lime factory.

Focus areas	GHG mitigation options	Expected results/ energy savings/	Investment cost	GHG Emission reduction potential
Rotating kiln	Energy Conservation with utilisation of active mineral additives in Cement production	Improvement of quality of cement, Reduction of fuel amount for producing clinker	0.6-0.8 million US$/year	30,000 tons/ year
Rotating kiln	Change to dry method technology of producing clinker:	Increase of annual production, reduction of specific coal consumption for clinker production	38 million US$/ year	112000 tons/ year
Cement replacement	EMC cement to partly replace Portland cement	Improved quality of the concrete, reduced greenhouse gas emissions, reduced water and lime use	15 million US$/ year	350,000 tons/ year

"Selenge-Energy" heating station

In the heating station, there are commissioned 4 steam boilers of KE-25-14 type capable to produce 25 tons of steam each hour and a main district heating line in 1989. There is also space available to install one additional boiler. In 2003, 2004 and 2005 boilers 1, 2 and 4 were respectively transferred to become HOBs, leaving the boiler No. 3 as a steam processing unit. The available capacity of the TP is 20 Gcal/h. During winter peak hours 2 HOBs operate and 1 stands in reserve and generate 16-20 Gcal/h heat.

Heating season starts on October 1 and ends on May 1.

Some key data of the heating station:

- Number of employees – 120;
- Annual coal consumption – 25000-30000 tons/year;
- Annual electricity consumption – 2.2- 2.7 million kWh/year;
- Annual water consumption – 140000 m^3;
- Heat production – 54.6 thousand Gcal/year;
- Heat consumers – 250 state organizations and enterprises; 1500 households

Table 2.18 Energy production and consumption data

	Measuring unit	October 2010	From the begging year
Heat production	GJ	26000	193746
Heat distribution	GJ	25000	188702
Coal consumption	Tons	4474.3	20657.8
Coal consumption	TCE	2000	9300
Specific coal consumption	Kg/GJ	80.00	49.28
Electricity consumption	kWh	273504	1713456
Specific electricity consumption	kWh/GJ	10.94	9.08
Water consumption	m^3	18876	97148
Added water (water losses)	m^3	16070	80335
Added water	%	8513	82.69

The peak total heat demand is currently 28.3 Gcal/h. Therefore the generation capacity needs to be increased. The district heating system has 2 pumps of Д-630-90 type capable to increase pressure of 630 ton water by 9 atm in an hour and also other 2 pumps of TsN-630-105 type capable to increase pressure of 400 ton water up to 10.5 atm within an hour. There are 2 de-aerators of DSA-100 in the district heating system. There are 3 filters for primary chemical treatment and 2 for secondary

chemical treatment. Because of high water hardness the water treatment requires a lot of salt. Of the 3 K-35/45 pumps designed for additional water one is working permanently and adds 20-35 t/h water. Of the 6 heat substations, in total, 3 installed in apartments have domestic hot water heaters. At the same time 1 in hospital and 7 in school have their own domestic hot water heaters installed. Old apartments designed for one or two households have no domestic hot water heaters. Railway HSs have small HOBs to heat domestic hot water.

The total length of district heating line and branch double lines is 25.5 km.

The working regime was calculated for 120/70^{0}C and produce 28.3 Gcal/h heat by 470 ton/h became unable to heat network water above 90/55^{o}C or volume of district heating water used to be higher than required due to insufficient boiler capacity, non-automated system, corroded and rusted heating facilities and adjustment inaccuracy. Heat loss of apartment buildings constructed by pre-fabricated blocks does not meet standard requirements or is extremely high. The TP and heat transmission and distribution networks are under the ownership of the local government.

There are several options available to reduce greenhouse gas emissions, including

1. Convert existing heating system to an independent system:

The utilization rate of the consumers heating facilities is very low. The technical condition of branch pipelines, manholes and chambers is poor. Consumers who have no domestic hot water system take hot water from district heating system illegally. Domestic hot water heat exchangers are worn out and deteriorated and temperature control device are missing. Because of insufficient head at the end users it is recommended to convert to an independent system. The water losses with temperature 60^{0}C are 20 tons/hour. In order to heat 20 tons of water from 5^{0}C to 60^{0}C, it is requires 300-500 kg coal. The coal consumption for heating of 20 tons/h during the heating season will be 2880 tons/year.

2. Installation of modern energy efficient water heating boilers and improvement of coal quality

Generation capacity of thermal station can be improved by converting boiler to fluidized bed combustion technology or install new efficient boilers. The existing boilers consume 60 tons coal/ day. If we assume that the coal consumption can be reduced by 20%, then annual coal savings will be 6000 tons.

Table 2.19 GHG emission reduction potential

Focus areas	GHG mitigation options	Expected results/ Energy savings	GHG Emission reduction potential
District heating system	Convert existing heating system to an independent system	Reduction of water losses (20 tons/hour)	
		Increase of heat supply reliability	
		Reduction of coal consumption for water heating (2,880 tons/year)	3,700 tons/year
Heating station	Installation of modern energy efficient water heating boilers and improvement of coal quality	Increase of heat supply reliability	
		Reduction of coal consumption for water heating (6,000 tons/year)	7,800 tons/year

The following table summarizes the greenhouse gas emission reduction opportunities identified in this aimag. Note that there may be some overlap between opportunities, and that in the case of uncertainty, the middle of an emission reduction range has been used.

Table 2.20 Greenhouse gas emission reduction opportunities, Selenge aimag

Entity	Amount of annual emission reductions (tCO2)
Hutul Cement and lime factory	492,000
"Selenge-Energy" heating station	11,500
Total	**503,500**

2.2.4 Greenhouse gas emission reduction potential in Mongolia, general comment

The preceding sections show that finding good (i.e., sizable) greenhouse gas emission reduction projects in Mongolia is not easy in the industrial and energy supply sectors. The reason is the small size of the Mongolian economy, and the wide dispersion of the people – which means that most industrial companies are relative small, and that the energy supply stations also tend to be relatively small. Both mean that the possibilities for greenhouse gas emission reduction projects are small.

An additional issue is that in Mongolia, energy supply to a relatively large extent is related to the provision of heat[7] rather than power, whereas most CDM methodologies that target the energy sector focus on the power sector. More methodologies focus on the supply of power than on the supply of heat, and also the methodologies that focus on power are simpler to apply than those that focus on heat supply.

Greenhouse gas emission reduction through renewable power projects

Does Mongolia have a potential for power projects that has not been mentioned? It does. Mongolia covers a large surface area, has a large solar influx, and has also good wind locations. This offers opportunities:

- Off-grid renewable power for communities: This is a sector that has potential and also covers a social need, the provision of power to areas of Mongolia that are not covered by the power grid. Typically, such projects would replace diesel-fired power with windpower and solar power. The small size of these projects, however, remains a problem.
- Off-grid renewable power for companies: This may be more significant, a source of power supply to mining companies in Mongolia. A question is what factors could compel mining companies to use renewable power: often there will be coal resources available that would provide a cheaper off-grid power supply source.
- On-grid renewable power, Mongolia: Renewable power supplied to the power grid of Mongolia. This is the most straightforward option. However, it should be recognized that the amount of renewable power that can be absorbed by the Mongolian grid is limited, unless there is also a possibility to store power to make it dispatchable. Other studies indicate that at this moment, the Mongolian grid could absorb about 100MW of non-dispatchable power.
- On-grid renewable power, exported: In principle, renewable power projects could also export power to other countries. This would also result in greenhouse gas emission reductions and at least in theory, the amount of greenhouse gas emission reductions could be sizable. One question is whether such projects are realistic (conditions for the export of power), and another question is whether the grid tariff offered would be attractive enough. If such projects are developed as CDM projects, both the host country and the power importing country should provide a letter of approval for the project. If the power is exported to a country that is not member of the Kyoto Protocol, or one that has a greenhouse gas emission reduction target, the situation becomes more complicated to analyze.

[7] Mongolia's capital has the lowest average temperature of all countries. Of course, CDM projects can only be hosted by countries that are not in the Annex I, and most of these countries have much warmer climates (located closer to the equator).

LULUCF

Another sector that may produce significant greenhouse gas emission reductions is the so-called LULUCF (Land Use, Land Use Change and Forestry) sector. The sheer size of Mongolia means that this sector can be a quite significant source of greenhouse gas emission reductions (despite the slow forest growth rate caused by the cold climate and long winters), typically through afforestation and reforestation projects (A/R CDM) and through avoided deforestation (REDD).

The issue with these type of projects is that the commercial demand is limited, because emission reductions from A/R CDM and/or REDD cannot be used in the main compliance greenhouse gas emission reduction markets (the EU ETS). That means that most of the demand for the emission reductions from projects in this sector come from the voluntary market.

3. CDM PROJECT IDENTIFICATION AND DESIGN – HOW TO IDENTIFY PROJECTS?

This Chapter focuses on how to identify CDM projects that are suitable for further development. It focuses on questions such as:

- What are suitable projects?
- What to do with small projects to make them more attractive?

3.1 What projects are suitable for CDM?

To be suitable for CDM, a project should:

- Reduce greenhouse gas emissions that are targeted in the Kyoto Protocol. Sometimes projects are proposed that do not target a greenhouse gas that is mentioned in the Kyoto Protocol, such as NO2. In such a case, the project in question cannot be a CDM project.

The Kyoto gases

The Kyoto Protocol targets the following gases:

- CO2
- CH4. A greenhouse gas resulting from decay processes, but also occurring in mines. CH4 is 21 times stronger as greenhouse gas than CO2.
- N2O. A greenhouse gas resulting from some chemical factories, and from the animal husbandry sector. It is a relatively powerful greenhouse gas.
- SF6. A very powerful greenhouse gas, used in special applications such as magnesium production, in switching stations, etc. Projects targeting SF6 emission reductions are highly unlikely in Mongolia.
- PFCs – perfluorocarbons. This is a series of compounds consisting solely of carbon and fluorine atoms. Projects targeting PFC emission reductions are highly unlikely in Mongolia.
- HFCs – hydrofluorocarbons. This is, again, a series of compounds, consisting solely of carbon, fluorine and hydrogen atoms. Projects targeting HFC emission reductions are highly unlikely in Mongolia.

- Result in a large enough amount of emission reductions. Projects that result in greenhouse gas emission reductions below 15,000 tCO2/y are unlikely to be attractive in the current market environment. If you wish to attract the interest of a buyer of CERs, the annual amount of greenhouse gas emission reductions in all likelihood should be in excess of 75,000 tCO2 per year.[8]
- Be additional. Not only should the project be additional, you should also be able to argue this! This means that you need to be able to show that without CDM, the project could not happen, because the profitability was too low, because you could not arrange the financing, because there are technological barriers, or because of some other barriers. There are also some (smaller) project types that are automatically considered additional.
- Have an approved methodology that can be applied. You need to identify the methodology you want to use, and then you need to check that all the applicability criteria have been met.
- Meet the timeline for registration before 31 December 2012. If the project cannot be registered before 31 December 2012, the value of the greenhouse gas emission reductions becomes quite uncertain, so that development becomes less attractive. This is one of the reasons why we advocate working on project types that have already been developed in other countries; these tend to be simpler, there are examples to work from, the DOE is likely to be more familiar with the requirements, etc., all meaning that the project can be quicker developed.

[8] These numbers are based on the market prices as of December 2011, typical project development costs, and typical chances of successful registration. On the basis of these numbers, a cost-benefit analysis can be set up. The suggested cut-off numbers result from the Cost-Benefit Analysis.

As indicated in Chapter 1, we believe it is best that a proper screening is done by an experienced consultant. However, it can also be done by a project developer. In appendix 1, we have provided a screening tool that focuses on all these issues in a bit more detail, using operational questions. Here we delve deeper in a few of the issues mentioned.

Amount of emission reductions – early screening of Mongolian projects

During the process of project identification and screening, only rough number are needed; no exact calculation is necessary because the calculations are for screening purposes only. The rules of thumb indicated below can be very useful in this stage. Please note that the rules of thumb are Mongolia-specific, and do not apply to other countries.

Rules of thumb

- Projects reducing coal consumption ➔ depends on NCV and coal type. Around 1.4 tCO2 per ton coal
- Project reducing power supplied by the grid ➔ about 1.1 tCO2/MWh. The same number applies for projects supplying power to the grid from renewable sources.
- Projects reducing power off-grid ➔ varies, 0.8 tCO2/MWh or more.
- A/R CDM projects – about 3 tCO2/ha per year.
- REDD – about 2 tCO2/ha per year, 20 years.
- CMM utilization projects – per million Nm3 pure CH4 equivalent, around 15,000 tCO2.
- Most other project types are not relevant for Mongolia, due to climate. For example, very little baseline methane production from waste and manure.

Additionality

A key question for a project developer considering to develop a CDM project activity is whether the developer would also develop the project if it cannot be registered as CDM project. If that is the case, in all likelihood the project is not additional. If the answer to the question is no, then it is good practice to identify why not, and to see whether that matches with the arguments that can be provided for additionality, using the latest tools available (see Chapter 7 for sources of information). In most cases, you will show that without CDM, the project is not profitable.

For small projects – projects that are below 5MW (renewable energy projects), have below 20 GWh energy savings (energy efficiency project), or result in less than 20,000 tCO2 (most type III small-scale projects), automatic additionality may apply. This depends in part on actions taken by the Mongolian DNA, who can confirm with you on the basis of actual cases whether the automatic additionality rules apply.

Methodology check

If you have a project that is additional and that you believe results in sufficient emission reductions, the next step is to identify a suitable methodology. This means, depending on the project type and the scale of the project, looking for either a large-scale or small-scale methodology, focusing on either normal projects or A/R (afforestation or reforestation projects) CDM projects. The UNFCCC website has a search feature that helps with screening the methodologies; this can be found on:
http://cdm.unfccc.int/methodologies/index.html

On the webpage, there are 4 types of approved methodologies. By clicking on any of these, it is possible to enter a subpage with more information and a search form that can be filled in. For example, if you have a large scale project in the transport sector, you use approved baseline and monitoring methodologies for large-scale projects, select the search form, select transport, and you will see a total of 3 matching methodologies. You can then select each of these and read through, focusing on the first part which describes when the methodology is applicable to your project and when not. This can be complicated, and in cases of doubt it would be best to consult an expert.

3.2 Small projects – bundling or programs of activities (POA)

One of the main problems facing projects in Mongolia is that the amount of emission reductions is often too small to make the CDM development of such projects attractive. To address this issue, somehow several smaller projects can be combined into one larger. That can be done in two ways: through bundling (several sub-projects covered in one PDD) and through a Programme of Activities, in which a framework is created for the fast registration of the smaller projects as CPAs, after the POA has been registered. POAs provide more flexibility than bundles, however, they take more time to be registered, time that may now be lacking.

Bundling

Bringing together of several small-scale CDM project activities, to form a single CDM project activity or portfolio without the loss of distinctive characteristics of each project activity. Project activities within a bundle can be arranged in one or more sub-bundles, with each project activity retaining its distinctive characteristics. Such characteristics include its: technology/measure; location; and application of simplified baseline methodology. Project activities within a sub-bundle belong to the same type. The sum of the output capacity of projects within a sub-bundle must not be more than the maximum output capacity limit for its type.

CDM Glossary

Programme of Activity (POA or PoA)

A programme of activities is a voluntary coordinated action by a private or public entity which coordinates and implements any policy/measure or stated goal (i.e. incentive schemes and voluntary programmes), which leads to anthropogenic GHG emission reductions or net anthropogenic greenhouse gas removals by sinks that are additional to any that would occur in the absence of the PoA, via an unlimited number of CPAs

CDM Glossary

CDM Programme Activity (CPA)

CPA - CDM programme activity - a project activity under a programme of activities. A CPA is a single, or a set of interrelated measure(s), to reduce GHG emissions or result in net anthropogenic greenhouse gas removals by sinks, applied within a designated area defined in the baseline methodology. The applied approved methodology shall define whether the CPA is undertaken in a single facility/installation/land or undertaken in multiple facilities/installations/land.1 In the case of CPAs which individually do not exceed the SSC threshold, SSC methodologies may be used once they have first been reviewed and, as needed, revised to account for leakage in the context of a CPA.

CDM Glossary

We provide a detailed overview about bundling in Appendix 2, and a detailed overview about programmes of activities in Appendix 3 to this volume. A summary overview of the various approaches is included here.

	PoA	Bundle
Implementation of local/ regional/national mandatory policy/regulation	Eligible for CDM if enforcement of such policy/regulation is absent or limited	Not eligible for CDM
Size	Unlimited	A bundle should not exceed the small-scale threshold
CDM Status of Individual Activities	Individual CPAs are not considered as an individual CDM project activity	Each project activity within a bundle is a CDM activity
Crediting Period	7 years (20 for A/R) with 2x renewal or 10 years (30 for A/R) with no renewal	7 years (20 for A/R) with 2x renewal or 10 years (30 for A/R) with no renewal
	Project duration up to 28 years (60 for A/R CDM)	
Methodology	All CPAs must apply the same methodology	Same methodology if same type, category, measure/technology. Different methodologies if (i) same type but different category, technology/ measure or (ii) different type
Flexibility	Any CPA can be added to the PoA at any time. One project cannot hold up all	Composition of a bundle cannot change over time One project can hold up all
Validation	One DOE	One DOE

As mentioned, the main difficulty at this moment in time is that it is difficult to register a POA before the 31 December 2012 deadline. For that reason, a bundling approach is likely to be more appropriate at this moment in time (December 2011).

4. PDD DEVELOPMENT – HOW TO WRITE A PDD?

It is very difficult to provide a detailed discussion about PDD writing in a limited number of pages – either the text should be very long, with many concrete examples, or the text should concentrate on some general principles.

We believe that it is best to outsource PDD development, because it would be very difficult for a Mongolian project developer to familiarize themselves with many years of decisions on over 3700 projects that have until date been registered. Especially now that time is at a premium, outsourcing the PDD development work makes sense.

What are general principles that apply when writing PDDs? The first is to make sure about the starting point. PDDs need to be prepared on the basis of the most recent format available at the UNFCCC, so this form should be downloaded as the basis for the PDD development. The forms can be found at: http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html
It is important that the right form is selected depending on project type and scale.

Next, the guidance for the preparation of the PDD is important, to make sure that these are developed providing the right information in the correct places. The guidance can be found at
http://cdm.unfccc.int/Reference/Guidclarif/pdd/index.html
Again, it is important that the right guidance is selected depending on project type and scale.

Then, if not already done, the applicable methodology should be identified, as described earlier in this volume in Chapter 1. Make sure to download from the UNFCCC website the latest version of the methodology and of all tools to which it refers. This usually includes the latest tool for the determination and assessment of additionality and the latest guidance for the assessment of investment analysis.

Next, before preparing the PDD, it is important to do some research: use the UNFCCC website to search for recently registered projects that are similar, and read through the PDDs and the history of registration, to get an idea about the type of questions that have been asked by the EB during request for reviews and reviews. This provides a good background in understanding the problems that may be encountered during the preparation of the PDD and the subsequent validation and registration.
For the projects search form: http://cdm.unfccc.int/Projects/projsearch.html

On the basis of this information it is possible to identify the right documents to work from. The problem then becomes one of preparing the PDD, in English. Often this will involve a statement of the choices that the methodology or tool offer, and then a choice, with a justification of the choice made.

A very important principle is that a PDD should lend itself to checking by the DOE. That means that the PDD should refer to sources and documents that can be checked by the DOE, such as feasibility studies that are prepared by third parties and that can be confirmed against standard data found for other, similar projects. This is a requirement that is often difficult to meet for Mongolian project developers, because often no formal feasibility study is being prepared by an independent and accredited organization. But it is important to keep in mind that a PDD should be written on the basis of data provided from an independent source.

It is also important to make sure that the PDD corresponds with the actual implementation of the project. Differences between the description in the PDD and the actual situation in the project may make it necessary, during verification, to re-validate the project.

A PDD also contains a number of calculations. It is important to prepare the calculations in a spreadsheet, and one that can easily be shared with others, so one that clearly labels the various variables used, and makes it possible to easily change values of parameters, with automatic recalculations of all outcomes. It is a good idea to check the UNFCCC website via the projects

search for examples of spreadsheets, so that a proper and clear spreadsheet can be developed taking good examples into account.

A PDD is divided in several sections:

- Section A provides a description of the project, the project participants, the project location, the technology and the emission reductions expected during the first crediting period.
- Section B is the most critical section of the PDD. It provides a selection of a methodology and the justification for the selection; a description of the baseline; the additionality argument; the method, formulas and estimates for the baseline emissions, project emissions, and leakage, as well as the emission reductions from the project; data available at the time of validation of the project; data to be collected during monitoring, and the method of data collection; and finally, the monitoring plan.
- Section C is usually just one page, describing the crediting period – when it starts, when it ends, and whether it can or cannot be renewed.
- Section D describes the environmental impacts from the project. Usually that will be a summary of the Environmental Impact Assessment. In most cases, there are no serious consequences from the project, and no further actions need to be taken.
- Section E describes the process of the stakeholder consultation and the outcome of the stakeholder consultation. A suggestion for the stakeholder consultation procedures developed under the CBDICFP project has been provided to the Mongolian DNA and has been included as Appendix 6 to this volume. It consists of three files: a script, an announcement, and a questionnaire.

These five sections provide the main body of the PDD. Then there are a few annexes: a description of key data from the project participants, an annex stating any public funding from Annex 1 countries that has been obtained by the project, an annex with baseline information, and an annex with monitoring data.

5. COMMERCIALIZATION OF CERs

This chapter discusses the commercialization of CERs, dealing with questions such as how to identify a CER buyer? What does an ERPA look like? What to watch out for in an ERPA? To set the stage, it is useful to give some background on the market for greenhouse gas emission reductions, so that is where we start. While the description may be very basic at start, it is important to lay the foundations for what follows. A key point that cannot be emphasized enough is that CDM is not a form of official development assistance; it is a mechanism that companies and governments use to fulfill obligations to reduce greenhouse gas emissions. That means that questions such as how many reductions will be delivered, when, and at what costs, become very important.

5.1 The market for greenhouse gas emission reductions.

The market for greenhouse gas emission reductions finds its basis in the UNFCCC, which set the stage for the Kyoto Protocol and subsequent legislation at the national / regional level to reduce greenhouse gas emissions.

The UNFCCC

- The UNFCCC (United Nations Framework Convention on Climate Change) was adopted in 1992 in reaction to the realization that the earth's climate was changing.
- The UNFCCC provides a framework for further actions and negotiations on climate change
- The ultimate objective is "to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."
- The UNFCCC makes a distinction between Annex I countries with high historical responsibility for climate change and non-Annex I countries without such responsibility.
- The Kyoto Protocol was negotiated in 1997 as part of the UNFCCC, during the 3rd conference of Parties of the UNFCCC.

The Kyoto Protocol

- The Kyoto Protocol requires the Annex 1 parties (the 'rich countries') to reduce or limit the emissions of Greenhouse Gases (CO2, CH4, N2O, SF6, PFCs, HFCs)
- The emission reductions to be achieved within and outside the Annex 1 countries.
- The Kyoto Protocol includes some flexibility, to make it less costly for the Annex 1 countries to limit their greenhouse gas emissions. One opportunity is to obtain emission reductions – buy emission reductions achieved in countries without emission reduction obligations, for example Mongolia, through CDM, the Clean Development Mechanism.

The emission reductions that can be achieved through CDM can therefore be used in compliance markets, to comply with international and/or regional/domestic obligations. The characteristics of compliance markets are therefore quite important.

Characteristics of carbon compliance markets

- Compliance markets are high volume – the more the better. Difficult to sell small amounts, easier to sell large amounts.
- It is easy – or at least, until recently, it used to be easy – to sell forward the CERs from 'to be registered' projects, and very easy to sell already issued emission reductions, whether 'old' or not.
- In compliance markets, 'feel-good' factors and 'nice story' considerations are not important – reliability and predictability of delivery are much more important.
- Compliance carbon markets are based on national or international greenhouse gas emission reduction obligations that are enforced, with high penalties for non-compliance.
- Examples:

- Kyoto Protocol: Annex 1 countries have targets to limit greenhouse gas emission reductions
- EU ETS (Emission trading scheme): national allocation plans put caps on market participants, who can trade surplus emission allowances to other companies with a shortage.
- Japan, Australia (?), USA (?)
- The most important market is the EU ETS. EU ETS serves as a price reference for allowances (EUAs) and emission reductions (CERs).

There are a large number of different players in Annex 1 countries active in the purchase of greenhouse gas emission reductions: governments, energy intensive companies (such as power utilities, iron and steel companies, and cement companies), banks, established trading houses, and specialized funds. CER buyers can easily be identified from the CDM Bazaar: http://www.cdmbazaar.net/

One important question is how CDM and CER fit into the compliance markets. There are several factors that are relevant:

- CDM results in CERs, certified greenhouse gas emission reductions. Some formal schemes requiring the reduction of greenhouse gas emissions have allowed CDM to be used to meet the requirements. Examples are:
- The Kyoto Protocol: annex 1 governments can hand in CERs to fulfill obligations.
- EU ETS (The European Union Emission Trading Scheme): the 'linking directive' allows CERs to be used by entities covered to fulfill commitments.
- It is important to realize that the ability to use CERs for compliance is not automatic. It needs to be defined in the greenhouse gas emission reduction regulations.
- Uncertainty over the future, after 2012: different classes of CERs may emerge, depending on the project type and the country from which the emission reductions originate.

The important point to remember is that CERs are bought because they can be used to comply with greenhouse gas emission reduction obligations. The price of CERs, which we will discuss in more detail below, is therefore dependent on the extent to which CERs can be used for compliance, and how sure it is that they can be used for that purpose.

5.2 CER pricing

In this section, we look at some common principles for CER pricing and some information sources.

Pricing of carbon and CERs

- A good source of price information is Point Carbon.
- Daily prices are published:
- Of EUAs (EU emission allowances; rights to emit carbon under the EU ETS) and of CERs (certified emission reductions).
- For direct delivery (spot market) and for delivery under standard contracts at specific dates (Dec-11, Dec-12...).
- These are prices for delivery of EUAs and CERs that will be delivered, with very large penalties on non-delivery.
- CERs are cheaper than EUAs because of the larger uncertainty in whether they can be used.
- Prices for CERs that are 'to be generated' (primary CERs) will be set in reference to these prices on carbon exchanges, but with a discount.

The last point may raise a question. Why are prices for CERs that are 'to be generated' quoted at a discount? There are several factors to consider:

- The CDM development costs of the project;
- Lack of certainty of delivery – the project may not get registered, may get delayed, or may

deliver less emission reductions than expected. Primary CERs are more risky, and that lowers the price.
- Note, however, that it need not be necessary that primary CERs are at a discount relative to issued CERs – if the seller guarantees delivery, and have sufficient financial resources to make the guarantee meaningful (penalty on non-delivery), then prices can be the same.

Finally, it is also interesting to see what general factors determine prices of all types of greenhouse gas emission reductions, whether CERs, EUAs, or any others. There are a few primary drivers of carbon prices:

- Growth rates – high growth means that it is more difficult to comply with greenhouse gas emission reduction regulations, and hence high prices.
- Oil and gas prices vs. coal prices. If coal is relatively cheap, more coal will be burnt in power plants, meaning higher CO2 emissions (coal produces more CO2 than oil and gas for the same amount of energy).
- Any regulation relating to eligibility of greenhouse gas emission reductions for compliance purposes.
- Right now, all fundamental factors listed above point towards low prices, and indeed can we now see a 5-year low...

5.3 How to identify a CER buyer?

The process of identification of a CER buyer can be quite simple: prepare a list of potential buyers on the basis of, for example, information in the CDM Bazaar; prepare good marketing materials for the project, describing the project and the emission reductions; decide on the required/desired contract structure and formalize this in a term sheet; prepare bidding instructions, indicating the required type of response and the selection process. Then wait for the responses, and select the most suitable. Appendix 4 and 5 provide a sample term sheet and bidding instructions that were used in the CBDICFP project to select a CER buyer for one of the projects.

5.4 Outline of an ERPA

An ERPA is the Emission Reduction Purchase Agreement between the seller and the buyer. Usually, this is an agreement covering a number of years, although also short term ERPAs exist (relating to spot transactions). Below we focus on the usual long-term ERPAs.

To provide an idea of what an ERPA looks like, we have used a table of contents of a fairly standard ERPA, and have made some comments for each of the headings. Note that there are different ERPAs in use, and that they may differ in their contents and locations of the various clauses. That should not be a cause for alarm; there are many different ways how an ERPA can be prepared.

Interpretation	This section explains how the ERPA needs to be interpreted. It is usually fairly standard, saying things like that 'including' is not limiting, that the singular also implies the plural and the other way around.
Term	Describes the commencement and the duration of the ERPA.
Preconditions	Usually, several clauses in the ERPA are pre-conditioned: that means that certain conditions need to be met before certain clauses of the ERPA enter into force. For example, if key approvals for project construction have not been obtained, the ERPA will usually specify that the buyer will only need to incur costs after this key approval has been obtained.

Purchase and Sale of CERs	This Section describes the transaction – the amount of CERs that will be sold as well as the pricing covering the transaction.
Transfer	This Section describes how the CERs will be delivered to the buyer, after the issuance of the CERs.
Payment	This Section describes the process and procedures for the invoicing and payment for the CERs, after delivery.
Cost, fee and taxes	This Section describes who is responsible for the payment of what costs and fees, and what party is responsible for what taxes.
Project Participants and focal point	This Section describes who the project participants are, and who the focal point is. The focal point is responsible for communication with the UNFCCC. Buyer and seller can be joint focal point.
Monitoring, verification and certification	This Section describes the responsibilities and the process related to the monitoring of the emission reductions, the verification, and the certification.
Agreements, representations and warranties	This Section describes that the ERPA is the sole understanding of the parties, and also states certain 'guarantees' provided by the parties. For example, usually both parties will represent that they are legally established in the stated country of registration.
Force Majeure	This Section describes what happens in the case of, for instance, natural calamities, that prevent the project from operating normally and thus reducing the amount of greenhouse gas emission reductions that can be delivered.
Events of default and termination	This Section describes what happens in case one of the parties does not fulfill its obligations under the agreement, and what the rights of the non-defaulting party are.
Confidentiality	This Section describes that the terms on which the parties transact the CERs are confidential and cannot be disclosed.
Arbitration	This Section describes the language version of the agreement that will govern in case of conflict between different language versions of the agreement; the ruling body of law; and the process of dispute settlement (court system or arbitration)
Change in Law	This Section among others describes what happens if part of the ERPA becomes unenforceable at law.
Schedule 1. Definitions	This Schedule contains all the key terms that are capitalized in the main text of the agreement, and provide a definition for each.
Schedule 2. Project details and transfer schedule	This Schedule describes the project that results in the greenhouse gas emission reductions and the timing of the different transfers expected.
Schedule 3. Statement of modalities of communication	This Schedule provides a format to be concluded and signed by the project participants indicating how they will communicate with the EB (who is focal point, for example).

5.5 ERPA: key issues

In this section we describe key issues to watch out for in an ERPA, as well as some of the key discussion points. We usually recognize 9 key issues:

1. Moment of concluding an ERPA
2. Guaranteed or non-guaranteed delivery.
3. Pricing.
    - Fixed, flexible, or flexible with cap and floor
    - Level
    - Reference
4. Options.
5. Payments of transaction costs (CDM related costs).
6. Term. Until 2012, or including after 2012.
7. Conditions precedent.
8. Abandonment
9. Default, willful misconduct, gross negligence

We discuss each of these in turn.

Moment of concluding an ERPA

- The ERPA can be concluded (1) before the start of PDD writing; (2) after PDD preparation, before validation; (3) before registration; (4) after registration, before issuance; and (5) after issuance.
- Earlier ERPAs are more complicated and have a lower price, but as compensation, the buyer can help with CDM development costs. Also an early ERPA will be an asset in the arrangement of financing.
- A post issuance ERPA will have highest price as percentage of the reference price, but implies that the seller is taking all CDM development risk.

Guaranteed delivery

The distinction between guaranteed and non-guaranteed delivery is the most important for 'early ERPAs'. Below we set out the key principles for guaranteed delivery, followed later with non-guaranteed delivery.

- Guaranteed delivery means that you *must* deliver a certain amount of CERs.
- If you cannot deliver the promised amount from your own project, you *must* buy in the market and deliver. If prices have gone up since you sold the CERs, you'll make a (potentially big) loss.
- Guaranteed delivery only makes senses with a fixed price.
- Guaranteed delivery is more risky than non-guaranteed delivery, but as compensation results in a higher price.
- Entering into an agreement with guaranteed delivery requires financial strength – the buyer will want to know that you can keep commitment if project does not deliver and prices go up.

Non-guaranteed delivery

- Non-guaranteed delivery means that you are not obliged to deliver a certain amount of CERs. But usually you are obliged to deliver what you generate (sometimes up to a maximum).
- Non-guaranteed delivery means that there is no obligation to deliver if the project is not registered, is not commissioned, or is not issued CERs
- This means that non-guaranteed delivery carries less risk, but also has a lower price, compared to guaranteed delivery.
- Non-guaranteed delivery might be the usual way of working in most CDM countries, because the developing countries' companies generally do not have the financial standing to enter into contracts with a guaranteed delivery.

Types of pricing

- There are three types of pricing: fixed pricing, flexible pricing, flexible pricing with a floor and a cap.
- Fixed pricing means an agreed price that will remain unchanged no matter what happens in the market
- Flexible pricing means that a price is agreed as a percentage of a market index, usually exchange-traded CERs.
- Flexible pricing with a floor and a cap means that the price is flexible, but that there is a maximum and a minimum to the price between which the price will be allowed to 'float'; a collar.
- Flexible pricing with or without collar is most appropriate for post-2012.

Level or pricing

What is a reasonable price depends on a lot of factors:

- Is the pricing flexible of fixed?
- Are we looking at post-2012 only, or only pre-2012?
- How certain is delivery of CERs (financial closure, construction, successful registration, successful issuance, amount delivered)?
- What is the project type and CER type
- Where is the project located?
- Treatment of development costs – who pays?
- In case of an early ERPA with flexible pricing, pre- and post-2012, development costs prepaid by CER buyer and deducted: between 60%-85% of index.

Options

- Usually the buyer likes to include buyer's options in the ERPA: things that the buyer can do, and if the buyer wants to do it the seller has to comply, but that the buyer is not obligated to do.
- Examples: an option to buy post 2012 emission reductions at a fixed price of 8 EUR/tCO2. Or: an option to buy CER over a certain amount at the same conditions as in the ERPA.
- Buyers will only execute the option if it is in their advantage. Options are very valuable for buyers because of huge price fluctuations and large uncertainty. Try to avoid them. It is very important to make sure that you understand the options you are giving the buyer.

Payment of CDM development costs

- The reason for entering into an early ERPA is usually to make sure that the buyer will pay or prepay the CDM development costs – PDD writing costs, validation costs, and UNFCCC costs.
- There are two different mechanisms: Either the buyer pays the CDM development costs, or the buyer prepays the CDM development costs and deducts from payment for CERs, if any such payment for CERs occurs. These two mechanisms may be combined (for different parts of the costs).
- If the buyer does not take the CDM development risks, then normally an early ERPA will make little sense, and the discount should be low.

Term

- The seller should usually want the ERPA to cover post-2012 as a sale and purchase obligation. In contrast, buyers want to have it in as a buyer's option. It is much better for the seller, and increasingly common, to have it as an obligation for both parties.
- Usually post-2012 pricing should be based on flexible pricing (with or without collar) because of the large uncertainties in post-2012 rules.
- Post-2012 may also carry additional pre-conditions, such as EU ETS eligibility. It is important to watch out for this, so that developers don't make decisions in the anticipation of future CER sales that may never materialize.

Conditions precedent (preconditions)

- Conditions precedent or pre-conditions are conditions that should be met before the ERPA enters into force. Usually the preconditions are for the benefit of the buyer, and can only be waived by the buyer.
- There is a legitimate reason for conditions precedent (or 'preconditions'): e.g. a buyer does not want to be forced to spend considerable amount of money on projects that cannot get financed.
- For the seller, the concern is to give a free option: What often happens is that the buyer will conduct due diligence, and in the meantime watch the market: If the prices have gone up, they are happy with the deal, if prices went down, they will find something wrong.
- The latter risk can be partly mitigated by using flexible prices or fixed prices that are set at the date the DD (due diligence) is completed, with the fixed price set according to a pre-agreed formula.
- Knowing counterparties helps: some companies do little DD, others are sensitive about reputation.
- Usually big trading houses and utilities are the more reliable counterparties compared to specialized carbon funds and banks.
- Typical conditions precedent:
- The project achieving financial closure
- The amount of emission reductions not falling below a certain threshold.
- The buyers being convinced, after due diligence, of the project's additionality, eligibility.
- Acceptability into EU ETS (post-2012)
- (Environmental and social DD)

Abandonment

- Some ERPAs will contain clauses about what would happen if a project is terminated / abandoned by the project developer.
- In such a case, the ERPA might specify that there are penalties on the project developer. Such ERPAs are quite risky for the project developer and are therefore better avoided.

Default, willful misconduct,...

- ERPAs will always contain text about what happens in case of default by the seller. Makes sure it also contains text with regards to default by the buyer!
- If no delivery guarantee has been given, the seller should be OK if default is not the result of willful misconduct and/or gross negligence.
- But the seller will be in trouble if he sells the CERs after issuance to a third party, if information provided is clearly wrong, if he does not inform buyer of changes in the implementation of the project vs. original planning....

6. CDM PITFALLS

As mentioned before, there are many things that can go wrong during the development of CDM projects. There are several areas where pitfalls can occur:

- Contracting
- Methodology
- Versions & forms
- Guidance & guidelines
- Additionality & prior consideration
- Time for development
- Mismatch between PDD and reality
- Support & advise

In this Chapter, we elaborate on each of these areas, outlining the main pitfalls that we have encountered in the development of CDM projects. The purpose of this is to provide an overview of problems one should seek to avoid during the development of CDM projects.

Contracting

Contracting is an area in which many problems can occur. We wish to highlight the following issues:

- Not understanding the contract, obligations, rights... This may appear straightforward, however, due to Mongolia's history, it is quite common to see people enter into contracts without completely understanding their rights and obligations.
- Having no advisor or other examples to compare offered contracts against. CDM contracts are often quite complicated and difficult to navigate. Usually they are written in English, using concepts for which no go Mongolian translation exist; often they are based on the laws of England and Wales, which are substantially different from Mongolian laws. Given these considerations, it is important to have an advisor during the contract negotiations, and also, to be able to confirm that some conditions are reasonable and standard (normally included in agreements related to CDM).
- Delivery conditions – guarantees. It is important for the project developer to be aware whether or not they give a delivery guarantee. If the project developer provides a delivery guarantee, they must deliver a certain amount of CERs, whether or not the project is successful. This means that if the project fails (does not get registered, does not get completed, or underperforms), the project developer needs to buy CERs from other sources in order to deliver them. If prices have gone up, this means running a significant risk. If a project developer provides a delivery guarantee, the price received for the CERs should be a lot higher than without a delivery guarantee. As stated in Chapter 5, we suggest strongly that it is best to sell without a delivery guarantee, especially under the current market conditions (if prices go up, and there is scope for that, contracts with a delivery guarantee become very dangerous).
- Pricing and costs. Another issue is that the pricing should reflect who pays for the CDM development costs. Normally the buyer will pay the consultant cost, validation fee and registration fee, and in return for running this risks gets a discount on the price. This is fair. But if the buyer does not prepay the cost of CDM development and (for example) bears the cost of non-registration of the project, such a discount is not reasonable. Therefore, it is important to ensure that the pricing matches the allocation of costs.
- Options. As already remarked in Chapter 5, buyers love options. It is OK to provide the buyer with options, but one should be aware that the buyer is provided with one or more options and that these have been accurately priced. For example, at the moment of writing, contracts with post-2012 options for the buyer imply a huge give-up from the side of the

seller. It is quite common for sellers to provide significant options to the buyer, without obtaining any (or sufficient) compensation.

- Pre-conditions. Preconditions or conditions precedent are conditions that need to be fulfilled before an agreement enters into force. Again, this is something that buyers like. While in some cases preconditions are justified, in other cases buyers insert preconditions that are impossible to meet, and that only they can waive or defer. In such a case, pre-conditions become, in effects, an option for the buyer. Project developers need to be aware of this possible use of preconditions and make sure that the preconditions are reasonable.
- Post-2012 clauses. Until recently, ERPAs specified that until 31 December 2012 CERs would be bought, and that the buyer has an option on CERs to be generated and issued after 31 December 2012. Recently, this has changed to a clause that CERs will be bought by the buyer, provided that they are eligible in the EU ETS. It is important for the project developer to understand that in such a case, the off-take of the CERs is not secure; the project developer should also plan for the eventuality that the CERs cannot be used in the EU ETS. This will, for example, likely be the case if the project is registered after 31 December 2012.
- Compare offers – both for purchase and support. It is very important to orient one about the various contract conditions that are available in the market for the purchase of the CERs and for the support in the project development. Terms can differ markedly between different buyers and service providers.

Methodology

Again, there are several possible failures:

- Failure to identify an approved methodology applicable to the project. This is a quite common mistake, especially in countries where CDM is not well-developed. It is not enough that a project results in a lot of greenhouse gas emission reductions, the project developer should be able to claim these. Without an approved methodology, a project cannot be developed as a CDM project.
- Failure to check applicability conditions. Another common mistake is to assume that because the name of the methodology seems to fit the project, that it would also fit in practice. This need not be the case, and it is important to check the applicability conditions. For example, some methodologies only apply to modifications of *existing* facilities, whereas others can apply to *new* facilities, implying a modification relative to the facilities as they would have been build in absence of the CDM. And again other methodologies only apply to facilities that became operational before a certain cutoff date. Don't assume that the methodology will be applicable, check the applicability conditions.
- Failure to realize that any departure from the methodology should be approved. CDM is a very rule based activity. Departures from methodologies, even if completely justifiable and conservative, can jeopardize any project. If you are going to depart from an approved methodology, make sure that this departure has been approved before proceeding.
- Wrong implementation of the methodology. It is also quite common to see that methodologies are incorrectly applied. This is one of the reasons why we advocated in Chapter 4 to also check other PDDs of similar project using the same methodology that were recently registered. This provides a point of reference for understanding how the methodology should be applied.

Version and forms

The PDD needs to be developed using the latest versions of the methodologies, tools and standard formats. Therefore, always go to the UNFCCC website and work from the latest methodology version, latest PDD form, latest tool versions, etc., and make sure to check during the process of preparing the PDD that no changes (new versions) have been approved by the EB.

Guidance & guidelines

CDM rules, unfortunately, cannot all be found in one place. You need to check the guidances and guidelines, the glossary, etc. Sometimes the methodology will not refer to other documents, but these other documents nevertheless would still apply. This is one of the reasons to work with experienced consultants, and also to check other PDDs. For example, to understand the requirements for the registration and issuance of CERs, it is not sufficient to check the methodology, use the latest PDD format, and apply the latest guidance for the completion of the PDD; it is also important to check, for instance, the latest EB decisions and the Validation and Verification Manual.

Additionality & prior consideration

- Additionality is probably the most important issue and requirement in CDM. Consider in a very early stage how you can prove that the project would not happen in absence of CDM. Failure to do this may cause a developer to waste a significant amount of time and money.
- Failure to file a prior consideration document to the UNFCCC and Mongolian DNA early on in the development process. Again, failure to timely file a prior consideration form risks ruining an otherwise perfectly fine project.

Time for development

CDM rules change. When you start a CDM project, work on it as fast as possible and also make sure that the DOE is 'on' it. This minimizes the chances for an adverse change in the rules of the game before the project is registered. In addition, the deadline of registration before 31 December 2012 provides another impulse for fast development of the project.

Mismatch between PDD and reality

It is important that the PDD reflects accurately what is implemented on the ground. For example, if you say that you are going to implement a 10MW hydropower project consisting of one 5 MW, one 3MW and one 2MW projects, it is not OK if in practice it is 4MW, 4MW and 2MW. Differences between the PDD and the reality on the ground often mean that a project will need to be revalidated, or that there are significant delays before the issuance of the CERs.

Support & advice

CDM is a difficult process. Failure to use expert support and advice is a common pitfall. It is best to make sure that professionals advise you in the process of developing the projects. In order to select an expert, compare offers from different advisors and consultants, checking prices and conditions, but also checking track records. You can ask the Mongolia DNA for advice and suggestions.

7. KEEPING ABREAST OF DEVELOPMENTS

As mentioned in several places, CDM rules change often, as do market conditions. What can be done to keep one informed? Below we provide a review of resources that can be used, with a short indication of the type of information that can be found.

Mongolian developments

- Mongolian DNA website. http://www.cdm-mongolia.com/ This provides a wealth of information about CDM in Mongolia and the Mongolian host country approval requirements, as well as projects that have been submitted to the Mongolian DNA.

News services

- Point Carbon. http://www.pointcarbon.com/ Offers a large amount of information about carbon markets (including prices) and policies related to greenhouse gas emission reductions. Point Carbon also offers various subscription packages.
- Climate Connect. http://www.climate-connect.co.uk/Home/ Offers a large amount of information about carbon markets (including prices) and policies related to greenhouse gas emission reductions, and offers various subscription packages as well as various webinars.

Pricing

- ICE. An exchange trading a variety of commodities, including greenhouse gas emission reductions. Information about greenhouse gas emission reduction pricing can be found on several pages:
  - CER futures: https://www.theice.com/productguide/ProductDetails.shtml?specId=814666
  - ERU futures: https://www.theice.com/productguide/ProductDetails.shtml?specId=893868
  - https://www.theice.com/productguide/ProductGroupHierarchy.shtml?groupDetail=&group.groupId=19

UNFCCC website

- UNFCCC site. http://unfccc.int/2860.php This is the UNFCCC's official website, providing information on all UN-based development related to climate change.
- UNFCCC's CDM site. http://cdm.unfccc.int/index.html. This is the official CDM site of the UNFCCC, with several subpages of special interest that are outlined below.
- CDM Methodologies page of the UNFCCC. http://cdm.unfccc.int/methodologies/index.html This is the general page with information on methodologies, both approved and under consideration.
  - http://cdm.unfccc.int/methodologies/PAmethodologies/approved Approved methodologies for large scale CDM project activities
  - http://cdm.unfccc.int/methodologies/SSCmethodologies/approved Approved methodologies for small scale CDM project activities
  - http://cdm.unfccc.int/methodologies/ARmethodologies/approved Approved methodologies for large scale afforestation and reforestation CDM project activities
  - http://cdm.unfccc.int/methodologies/SSCAR/approved Approved methodologies for small scale afforestation and reforestation CDM project activities
- Rules and References. http://cdm.unfccc.int/Reference/index.html This is the page that links to all the documents that provide the CDM rules and references, ordered by document type. This page, among others, provides a link to the CDM glossary.
- PDDs and new methodologies guidelines. http://cdm.unfccc.int/Reference/Guidclarif/pdd/index.html Describes how the PDDs need to be completed.
- http://cdm.unfccc.int/Reference/Guidclarif/reg/index.html Guidelines, Guidance and clarification for validation and registration. One important document that can be found

here is 'Guidelines on the assessment of investment analysis'.

- Tools. http://cdm.unfccc.int/Reference/tools/index.html This page contains a number of tools that are, depending also on the methodology, sometimes mandatory. An important tool that can be found here is the 'Tool for the demonstration and assessment of additionality'
- Forms for completing PDDs http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html This page contains the forms that need to be completed when you write a PDD. Depending on the type (normal vs. Afforestation / reforestation) and scale (small-scale vs. large-scale), the right form can be selected
- Forms for completing POAs http://cdm.unfccc.int/Reference/PDDs_Forms/PoA/index.html This provides the forms for completing the POA-DD and CPA-DD, again with a differentiation for type and scale.
- Guidance for completion POA. http://cdm.unfccc.int/Reference/Guidclarif/PoA/index.html. This among others explains how POA documentation needs to be completed.
- http://cdm.unfccc.int/Reference/Guidclarif/index.html General link to guidance, guidelines and clarifications.
- CDM glossary http://cdm.unfccc.int/Reference/glossary.html Direct link to the CDM glossary.
- EB. http://cdm.unfccc.int/EB/index.html Direct link to a page about the work of the Executive Board for CDM, including the EB meeting archives.
- Registered projects. http://cdm.unfccc.int/Projects/projsearch.html This is the search page for registered projects which can, among others, be used to find similar project to better understand how the PDD needs to be completed. More information about a specific project – after completing the search – can be found by clicking on it. Project history gives a good idea about any difficulties encountered during the registration process.
- Registered POAs. http://cdm.unfccc.int/ProgrammeOfActivities/registered.html List of registered POAs.

Verified Carbon Standard. http://www.v-c-s.org/ Website of the main standard for voluntary greenhouse gas emission project development.

Gold Standard. http://www.cdmgoldstandard.org/ Website of the main standard for high quality / high sustainable development benefits greenhouse gas emission reductions.

Appendix 1. A SIMPLE PROJECT SCREENING TOOL

The following is meant to provide a tool for the first screening for the eligibility of projects for CDM. It is not comprehensive, and due to changing guidelines by the Executive Board for CDM, any comprehensive set of requirements would become quickly outdated. Projects that are, according to this tool, ineligible for CDM, will be extremely unlikely to be eligible; projects that are deemed unattractive to CER buyer will be have severe difficulties finding a buyer. Some of the projects that this tool assesses as eligible may not be eligible due to specific of the approved methodologies for RES projects.

A. Early CDM consideration

	Action	Date
1.	Signing date of the contract for the equipment	...
2.	Signing date of contract for construction	...
3.	Start construction	...
	Starting date = Earliest of the dates mentioned under 1-3	...
4.	Date of CDM consideration	...

Comment

The date of CDM consideration should be before the starting date. If no contracts have been signed, and the construction has not started yet, the project entity should report in writing its intention to develop the project as a CDM project in writing to the Mongolian DNA (and keep a copy of the letter).

Eligibility assessment criteria

Is the requirement that the starting date is after the date of CDM consideration met?

- If yes, move to the next item.
- If no, stop. The project is not eligible.

B. Barriers towards implementation

A CDM project should be additional, which means that at least one of the following barriers would prevent the project from being implemented in absence of CDM. The project entity would be required to state what barrier applies, and how the existence of the barrier can be proven:

Barrier	Barrier present (Yes/No)	Proof
1. Project lacks profitability	...	Project IRR without CDM revenues should be below 6.5% (Real, after taxes, US$ nominated); or The project's IRR (nominal, tg or US$) is below the interest rate of bank loans (in tg or US$) of the duration of the project This would automatically be satisfied if the suggestions on the conditionality of the higher feed-in tariffs are followed
2. Project cannot be financed	...	Bank loan rejection letters without CDM. Bank loan approval letters with CDM
3. Project faces technological barriers	...	Case-by-case argumentation
4. Project is first of its kind	...	Demonstration that no other similar projects exist in Mongolia. Need to be combined with the other arguments

Eligibility assessment criteria

Is the requirement that the project faces an insurmountable barrier towards implementation met?

- If yes, move to the next item.
- If no, stop. The project is not eligible.

C. Amount of emission reductions

1. Is the amount of CO2 to be delivered, per year, larger than 15,000?
2. Is the amount of CO2 to be delivered, per year, larger than 75,000?

Eligibility assessment criteria

Are the answers to 1 and 2 both yes?

- If yes, the project is likely to be attractive for self-development by the project developer, and likely to attract interest of CER buyers. Move to the next item.
- If no to the second question and yes to the first, the project is unlikely to attract interest of CER buyers, so it would need to be developed by the developed (self-financing of the CDM development costs), or alternatively, it may need to be bundled (one PDD or part of a Programme of Activities). The project remains eligible potentially for CDM. Move to the next item.
- If the answer to both questions is no, the project is not attractive for CDM development. It may be OK for development for the voluntary market.

D. Project financing (with CDM)

Is financing for at least 80% of the total investment available?

- If yes, the project is likely to attract interest of CER buyers. Move to the next item.
- If no, the project is unlikely to attract interest of CER buyers, because they will worry that the project cannot be implemented. The project remains eligible for CDM. Move to the next item.

E. Number of displaced people and compensation offered

1. Is the number of displaced people limited (less than 5 per MW installed capacity)?
2. Has compensation been offered to displaced people in compliance with the Mongolian laws?
3. Are the displaced people satisfied with the compensation offered?

Eligibility assessment criteria

Are the answers to all the questions 1, 2 and 3 Yes?

- If yes, the project is eligible. Move to the next item.
- If no, the project may be ineligible, and will have difficulties during the global stakeholder consultation. Also, CER buyer will not like the project. Undecided. Move to the next item.

F. Gas targeted

1. Does the project target a greenhouse gas that is recognized under the Kyoto Protocol?

We have seen cases where the gas targeted is not a greenhouse gas! Then: no CDM...

G. Project type specific criteria

1. Is there an approved methodology that can be applied? Check whether the applicability criteria of the proposed methodology have been met.
2. In case of hydropower projects above 20MW, the project should meet the recommendations of the World Commission on Dams, as interpreted by the DNA of the country where the

investor country approval is made. No specifics can be given, as the interpretation differs from country to country. For CER buyers outside the EU, this may not be a concern at all.

3. For all hydropower projects, calculate the power density (capacity in W, divided by the surface area of the reservoir at full capacity.
   - In case the power density is above 10 W/m^2, there is no problem.
   - In case the power density is above 4 W/m^2 but below 10 W/m^2, a reduction on the amount of emission reductions will be included
   - In case the power density is below 4 W/m^2 , the project is ineligible (no approved methodology)

H. Timeline

1. Can the project realistically be registered before 31 December 2012? If yes, the project can be used in the EU ETS. If not, it is unclear whether the CERs can be used in the EU ETS, and the value of the emission reductions from the project is much more uncertain.
2. Can a DOE be contracted, and when can the DOE start work? DOEs do not take all projects, and sometimes it is just not possible to find a DOE willing, and with the time, to validate a project. It is therefore important to identify a DOE early on, and to make sure that the DOE has the time to validate the project without delays. This also impinges on the first question.

Appendix 2. BUNDLING

1. What is bundling?

EB 21 Annex 21

- Bundling involves bringing together several SSC CDM project activities, to form a single CDM project activity or portfolio without the loss of distinctive characteristics of each project activity.
- Such characteristics include:
  - Technology/measure
  - Location
  - Application of simplified baseline methodology

Why bundle?

- Pool the risks
- Reduce transaction costs

2. Sub-bundles

EB 21 Annex 21

- Project activities within a bundle can be arranged in one or more sub-bundles, with each project activities retaining its distinctive characteristics.
- Project activities within a sub-bundle belong to the same type (i.e. Type I, II or III).
- The sum of the output capacity of project activities within a sub-bundle shall not exceed the maximum output capacity limit for its type (*not* applicable to SSC A/R CDM):
  - Type I (Renewable Energy) <15MW
  - Type II (Energy Efficiency) <60GWh
  - Type III (Other) <60ktCO_2e

3. General principles

EB 21 Annex 21

- Project activities wishing to be bundled shall indicate this when making the request for registration.
- Once a project activity becomes part of a bundle for a project cycle stage, it shall not be de-bundled for this stage. The EB may consider de-bundling in exceptional situations.
- The composition of bundles shall not change over time.
- All project activities in the bundle shall have the same crediting period (i.e. same length and same starting date of the crediting period).
- A form with information related to the bundle must be included in the submission (F-CDM-SSC-BUNDLE).
- The form should cover issues such as title of the bundle, general description, project participants, locations, types and categories, estimated amount of emission reduction, crediting period, and monitoring plans.
- It should be demonstrated that the bundle will remain under the limit for the type every year during the crediting period.
- If a bundle goes beyond the limits for the selected SSC CDM project activities type, the emission reduction that can be claimed for this particular year will be capped at the maximum emission reduction level estimated for the bundle by the project participants.

- **Project activities with of the same type, same category, and technology/measure**
  - Project activities may use the same baseline
  - One DOE can validate this bundle
  - A common monitoring plan can be utilized

- One verification report is adequate, one issuance will be made at the same time for the same period, and a single serial number will be issued for all the project

- **Project activities of a) the same type, same category and different technology/ measure; (b) same type, different categories and technology/measure; and (c) different types:**
  - Project activities may use the same baseline under some conditions
  - One DOE can validate this bundle
  - Different monitoring plans will be required for the bundle and separate monitoring reports be prepared
  - One verification report will be adequate, one issuance will be made at the same time for the same period, and a single serial number will be issued for all the project activities

EB 34 Annex 10

- Bundled project activities shall be submitted in a single submission to the EB and pay only one fee proportional to the amount of expected average annual emission reductions of the total bundle
- Total emission reductions is capped at the small-size limit.
- At registration, provide:
  - The agreement of all project participants to bundle their individual activities
  - One project participant who shall represent all project participants in order to communicate with the EB
  - If three EB members or a Party involved in a project activity requests the review of the project activity, the total bundle remains under review

Form for Submission of Bundled SSC CDM Project Activities (F-CDM-SSC-BUNDLE)

Section A. General description of the Bundle

- Title
- Version and date
- Description of the bundle and sub-bundles
- Project participants

Section B. Technical description of the Bundle

- Location
- Host Party(ies)
- Details of physical locations
- Types of category(ies) and technology(ies)/Measure(s)
- Estimated amount of emission reductions

Section C. Duration of the project activity/crediting period

- Duration of the bundle
- Starting date of the bundle
- Expected operational lifetime
- Choice of crediting period

Section D. Application of a monitoring methodology

- State whether an overall monitoring plan or separate monitoring plans are being applied

Annex I. Contact information on participants in the Bundle

Appendix 3. PROGRAMS OF ACTIVITIES

What is a POA?

- A voluntary coordinated action
- Coordinated by a public or private entity – "Coordinating or Managing Entity"
- Implementation of any policy/measure or stated goal
- Leading to GHG emission reductions or removals by sinks that are additional
- PoA can be composed of an unlimited number of CDM-Programme Activities (CPA)
- A POA may use a normal-scale methodology; it does not need to be small-scale.
- A POA can cover more than one country, but each host country should provide host country approval separately

CPA

- A project activity under a PoA
- A single or a set of interrelated measure(s) Leading to GHG emission reductions or removals by sinks
- All CPAs of a PoA should apply the same approved methodology in the same type of facility/ installation/land
- Individual CPAs of a PoA cannot be registered as an individual CDM project Activity
- Individual CPAs of a PoA cannot be included in another registered PoA
- CPAs that individually do not exceed the SSC threshold can apply SSC methodologies once they have first been reviewed
- Any CPA can be added to the PoA at any time during the duration of PoA by the Coordinating or Managing Entity
- The Entity shall inform the EB of the adding of CPA(s) through a DOE using a pre-defined format (CDM-CPA-DD)

Duration

- Crediting Period of a CPA
- Max 7 years (max 20 years for A/R) which may be renewed at most twiceor
- Max 10 years (max 30 years for A/R) with no option of renewal
- Duration of crediting period of any CPA shall be limited to the end date of the PoA regardless of when the CPA was added to the PoA
- Duration of PoA shall not exceed 28 years (60 years for A/R)

Documents to be developed

- The coordinating/managing entity shall submit the following to a DOE:
- A completed CDM-POA-DD
- A PoA Specific CDM-CPA-DD with generic information relevant to all CPAs
- A completed CDM-CPA-DD which is to be based on the application of the PoA to one *real* case

Appendix 4. SAMPLE TERM SHEET (as used)

TERM SHEET: BIOFUEL (PELLET) PLANT PROJECT

Project:	Biofuel (pellet) plant project
Project description:	See attached PIN
Seller:	NTIC Co., Ltd.
World Bank Grant	World Bank Grant No TF090653 PHRD grants project "Capacity Building for Development and Implementation of Carbon Finance Projects"
Consultant:	Until 6 November 2010: Dorjpurev Jargal, Erdenedalai Lodon, Casper van der Tak, funded by the World Bank Grant. After 6 November 2010: to be determined by Buyer and Seller on an as needed basis
Buyer:	[…] {TO BE FILLED IN BY THE BIDDER}
Emission reductions:	All CERs to be generated during the first crediting period. The expected annual amount of emission reductions is 20,000 tCO2. The project is expected to be registered by 31 December 2011 and to generate CERs from 1 January 2012 onwards.
Pricing:	At the Buyer's option, a floating price of X% of the Index or a floating price of X% of the Index with a Cap (price maximum) and Floor (price minimum). The Buyer has selected: […] {TO BE FILLED IN BY THE BIDDER} The Cap is: […] {TO BE FILLED IN BY THE BIDDER. FILL IN NOT APPLICABLE IS A STRUCTURE WITHOUT CAP AND FLOOR HAS BEEN SELECTED} The floor is: […] {TO BE FILLED IN BY THE BIDDER. FILL IN NOT APPLICABLE IS A STRUCTURE WITHOUT CAP AND FLOOR HAS BEEN SELECTED} The percentage X = […]% {TO BE FILLED IN BY THE BIDDER. SELLER IS ONLY BOUND TO ACCEPT A WINNING BID OF 75% OR HIGHER}
Index	The Seller and Buyer shall in advance of issuance agree on an index of exchange-traded greenhouse gas emission reductions that best reflects the value of the greenhouse gas emission reductions, taking into account the characteristics of the emission reductions (a small-scale biomass project in Mongolia). In absence of agreement on an appropriate standard, the Index shall be determined as the average of price quotes of 5 different leading brokers. In the last case, 3 of the brokers shall be selected by the Seller, and 2 of the brokers shall be selected by the buyer.

Third Party Costs: Third Party Costs comprise the fees paid to the DOE for validation and verification, share of proceeds for administration, and registration costs. Third Party Costs shall be based the actual documented costs. To the extent that Third Party Costs are not covered by the World Bank Grant, Third Party Costs shall be prepaid by CER Buyer, deducted from payment for CERs. The World Bank's grant contribution of 18000 US$ shall not be deducted from the payment for CERs.

Consultants' costs: If any beyond 6 November 2010, paid for by CER Buyer, for a consultant of its choosing. Consultants' costs prior to 6 November shall be covered by the World Bank Grant.

Project participant: Buyer and Seller shall be listed as project participants and shall form a joint focal point.

ERPA negotiations: Buyer shall provide seller with a draft Emission Reduction Purchase Agreement (ERPA) in English language within 2 weeks from the signing of the Letter Agreement. The law system covering the ERPA shall be the Laws of England and Wales, and the place of Arbitration shall be London. Both Parties shall aim to have the ERPA signed within 2 months.

Consultant shall facilitate the ERPA negotiations.

Preconditions: The obligations of the Buyer under this Term Sheet, with the exception of the ERPA negotiations, shall be conditional upon: (1) a satisfactory outcome of the due diligence to be carried out by the Buyer or by consultants appointed by the Buyer as to the eligibility and additionality of the project as CDM project activity; and (2) confirmation to the satisfaction of the Buyer that the amount of emission reductions is not significantly below the amount stated. The preconditions are for the benefit of the Buyer and can only be waived by the Buyer and shall be included in the ERPA.

Signed and agreed to be legally bound by the above terms:

For The Buyer: [...]
{TO BE FILLED IN BY THE BIDDER}

Date:
Name:
Title:
{TO BE SIGNED BY THE BIDDER}

For The Seller: NTIC Co., Ltd

Date:
Name:
Title:

Appendix 5. BIDDING INSTRUCTIONS (as used)

Bidding instructions: Mini-auction NTIC's Biofuel (pellet) plant project

Date: 26 August 2010
Version 1.1
Draft: CT

1. Introduction

This bidding involves the CERs from a project Biofuel (pellet) plant project, which is described in mode details in the attached PIN. This project is one of the projects supported by the Ministry of Nature, Environment and Tourism of Mongolia, acting in its capacity as the implementing agency of the World Bank Grant No TF090653 PHRD grants project "Capacity Building for Development and Implementation of Carbon Finance Projects".

The support includes the development of the PDD (up to validation, but not including answering issues raised during validation after 6 November 2010), the identification of a CER buyer, and the support of the ERPA negotiations by a team of national and international experts. Additionally, a contribution of 18000 US$ towards the cost of the DOE for validation will be provided through the above grant project.

This mini-auction is described in the attached PIN, these bidding instructions, and the attached term sheet.

2. Bidding instructions.

Nature of the bidding

Interested CER buyers are requested to make a bid based on the attached term sheet for all the CERs to be generated during the first crediting period. The pricing used is either a pure flexible price, or a flexible price with a cap and a floor that shall be set symmetrically around 10 EUR/tCO2 with a minimum difference between floor and cap of 4 (e.g. a floor of 8 EUR/tCO2 and a cap of 12 EUR/tCO2, a floor of 7 EUR/tCO2 and a cap of 13 EUR/tCO2, etc.). The CER buyer with the highest percentage (whether or not including a cap and floor or a complete float) will win the auction, provided the minimum bid exceed 75% of the Index.

Bidding formalities

Bids are to be sent to by e-mail to Casper van der Tak and Batsaikhan Balsandorj, using the e-mail addresses indicated below, before 8 September 2010 5pm CET. Confirmations of receipts of bids will be sent by Casper van der Tak. Bids received after the deadline shall not be accepted. However, it is acceptable to make a sealed (password-protected) bid, and to send the password to Casper van der Tak and Batsaikhan Balsandorj after the deadline but before 9 September 2010 5pm CET. That way we can guarantee that your bid does not become known to competitors before the end of the bidding.

After 9 September 2010 5pm CET, Casper van der Tak shall make a summary of all bids received and send this together with all the bids received to NTIC for confirmation of the summary; that it is complete and correct.

The winner of the bidding shall be notified on 10 September, and the project owner NTIC Co., Ltd shall return a scan of the countersigned term sheet (see below) within three business days from

the announcement of the winner. Other buyers will be informed on the date that they did not win the mini-auction on the same day. The name of the winner and the winning bid will not be disclosed to any other party. Once notified that a bid has been rejected, a CER buyer will not be bound by its bid.

The format of the bid shall be conform the attached term sheet, with the name of the buyer filled in, with the percentage filled in and the cap and floor, if applicable, filled in as well. Only correctly completed and signed term sheets shall be accepted as valid bids.

3. Confidentiality

Both signatories of this document and their organizations, if applicable, agree to be legally bound under the laws of England and Wales to keep all bids received confidential and not in any way to divulge information to third parties.

4. Fair judgment

Casper van der Tak agrees to be legally bound under the laws of England and Wales to conduct the mini-auction in a fair and impartial manner.

5. Acceptance of the result of the mini-auction

NTIC Co., Ltd agrees to be legally bound under the laws of England and Wales by the outcome of the mini-auction conducted as described herein, provided the winning bid shall be at least 75% of the index, be conform the attached term sheet, and be presented in a correct way.

6. E-mail addresses

Casper van der Tak: info@caspervandertakconsulting.com; caspervdtak@yahoo.com
Batsaikhan Baldandorj: batsaikhan_baldandorj@yahoo.com

7. Signatures

Name: Casper van der Tak
Date:
Acting in his private capacity

Name:
Date:
Title:
Organization: NTIC Co., ltd

Name: Batsaikhan Baldandorj
Date:
Title:
Organization: NTIC Co., Ltd

Appendix 6. STAKEHOLDER CONSULTATION PROCEDURE SUGGESTIONS

During the CBDICFP project, a suggestion has been made for the stakeholder consultation procedure, based on three documents: a script, an announcement, and a questionnaire. These documents are provided below. Translations into Mongolian are likely to be available at the Mongolian DNA.

Appendix 6.1 Stakeholder consultation script.

Script Stakeholders Consultation process

1. Personal invitations

The project developer personally invites important stakeholders:

-Local residents
-Local environment protection, water resource, forestry bureaus
-Local development and reform bureau or similar (economic and finance departments)
-Other relevant government representatives

NB: It is important to remind the project owner the importance of having an appropriate panel of residents, originating from all impacted locations and representatives from expropriated / relocated population (if applicable).

2. Newspaper announcement / website

Find separately an example of a newspaper announcement of a stakeholder consultation. This meeting should be announced at least two weeks in advance. A project description should be provided on the Mongolian DNA website, along with a downloadable questionnaire. (All these materials should be provided in Mongolian)

Keep an original of the newspaper announcement and make a scan of it. The announcement should be in Mongolian, and should be published in a newspaper that is well read by the residents living close to the project. In some cases, it may also be a good idea to post announcements as appropriate places near to the project location.

3. Collection and analysis of questionnaires

All questionnaires received should be checked to make sure there are no double submissions. Analysis after the period for commenting has finished includes a simple tabulation of answers received (how many positive, how many negative, how many neutral; same as percentages).

4. The stakeholders meeting

The language of the meeting is Mongolian, or bilingual. The meeting venue should be close to the project, and should be big enough for the expected number of participants (aim for 25 participants). Rent of the meeting room, if any, should be paid by the project entity, and the project entity should also pay for drinks and refreshments, and possibly lunch or dinner.

a. Agenda

The usual agenda is:

- Opening by project entity
- Speeches by government officials
- Project owner gives an introduction of the project and answers questions related to the description of the project

- Consultant or project entity gives an introduction of CDM (plus answering questions if any)
- Consultant or project entity explains the purpose of the meeting (see c. speech)
- The participants are invited to introduce themselves and to express their views, concerns, comments and/or opinions one after the other, plus possible follow on questions.
- Project owner answers questions and/or gives clarification
- Additional questions from consultants to participants on specific issues, to check whether there are any economic, social, or environmental or cultural concerns. This is especially important if not much was said in the initial round of comments.
- Filling in of questionnaire (you can use the same as will be published on the DNA website)
- Signing of presence sheet by the participants

b. General issues

The most important is to give villagers a chance to express their opinion. It is often necessary to ask them questions directly (What do you do for a living? Have you received compensation? What did you do with the money?).

c. Speech

Find below an example of a speech:

I am... and I work for .... I would like to explain to you the background and purpose of today's meeting:

The Clean Development mechanism was established to support projects in developing countries that 1: Reduce GHG, 2: Contribute to sustainable development.

1. Reduce greenhouse gases in order to prevent global warming

There is no doubt this project contributes to the reduction of GHG because a part of the electricity now supplied to the power grid in this region will be displaced by this project, and the consumption of fossil fuels will be mitigated

2. Contribute to sustainable development

What does "contribute to sustainable development" mean?

The concept of sustainable development refers to a development process that balances the development of the economy with the environment, well-being of the population and the society in general. When we consider this project and its impact, the requirement of contributing to sustainable development means that the project should on balance, weighing both positive and negative impacts, have a positive effect.

That's why we're having this meeting today: To confirm the impact of the project and also to provide all stakeholders with an opportunity to express comments, ideas and opinions with regard to the project.

We will pay special attention to the comments from the local residents and villagers, because they are primarily impacted.

Together with today's meeting, we have established a website that provides information on the project and offers the opportunity to submit comments for stakeholders unable to attend this meeting.

After the consultation period, we will draft a summary report which will be an integral part of the CDM application.

Thank you very much for attention and I look forward to good interaction with all of you.

5. Report

Meetings are subject to reports written by the CDM consultant or the project entity. Meetings should also be recorded using MP3 device and/or video devices. It is also a good idea to make several photos during the stakeholder consultation meeting. It is a good practice also to have a banner with the name of the project and the words 'stakeholder consultation meeting' and the date, and to make a photo of the participants standing near to the banner.

Appendix 6.2. Stakeholder consultation announcement

Stakeholder consultation meeting of name project project.

Name project entity is planning to construct the name project project in project location. The project involves description project. Name project entity is planning to have the project registered as a Clean Development Mechanism (CDM) project with the United Nations Framework Convention on Climate Change (UNFCCC). The registration of the project with the UNFCCC as CDM project will allow us to generate Certified greenhouse gas Emission Reductions (CERs) and sell the CERs to other countries and companies, to help in the fight against climate change.

Part of the process of registration of a project with the UNFCCC involves a stakeholder consultation, to make sure that the project is not against the interests of the community. Name project entity will consult stakeholders in two ways:

On the website of the Designated National Authority for the CDM in Mongolia, a description of the project is published, along with a questionnaire. If you want, you can download the questionnaire from specific webpage, **fill in the questionnaire**, sign it, and send it to address project entity or scan the signed version and send it to e-mail address project entity. Only questionnaires received before fill in date, calculated as the date of publication announcement plus 20 days will be considered.

Additionally, you can **attend the stakeholder consultation meeting** that will be held on **date and time** at **location**.

After the meeting, we will within 10 days publish the results of the stakeholder consultation meeting report on DNA webpage address.

For further information, please contact contact person project entity with full contact details.

Appendix 6.3 Stakeholder consultation questionnaire outline

Stakeholder consultation questionnaire

[Name project] "The Project" is [Description project, project owner, purpose of the project, timeline]

The Project will be seeking registration with the United Nations Framework Convention for Climate Change (UNFCCC) as Clean Development Mechanism (CDM) project activity. CDM project activities are projects in countries with lower incomes, such as Mongolia, that reduce greenhouse gas emission reductions that are documented according to UNFCCC approved procedures and standards. The greenhouse gas emission reductions from the project can be used by other, richer, countries to fulfill their obligations on climate change as established under the Kyoto Protocol and the Copenhagen Accords. The richer countries will either invest in the project and own the greenhouse gas emission reductions, but the emission reductions, or invest and buy. CDM helps the richer countries reduce the cost of reducing greenhouse gas emission reductions.

More information about CDM can be found on the UNFCCC website for CDM (http://cdm.unfccc.int/index.html) and the website of the Mongolian Designated National Authority for CDM (Mongolia DNA: http://www.cdm-mongolia.com/)

One of the requirements of the international CDM approval procedures is that a stakeholder consultation be held. The purpose of this is to make sure that the CDM project satisfies the criteria of sustainable development, and does not harm local people. For example, if a project is constructed

and people are forced from their land without adequate compensation, this is something that needs to come out so that the problem can be addressed.

Stakeholder consultations can be carried out in various ways, involving questionnaires, meetings, or a combination of both. Below we present a questionnaire that we use as part of the stakeholder consultation process (separate meetings may be held as well). Please return the signed questionnaire either by post to ... or as a scan of the signed questionnaire by e-mail to ...

Many thanks for your cooperation!

[Signature DNA]
Title
Name

[Signature project owner]
Title
Name

Questionnaire for the proposed CDM project: "Name project"

Personal data

1. Family name:
2. Given name:
3. Age:
4. Education (highest degree obtained):
5. Gender

Relationship with the project

In this section, we like to learn more about how the project relates to you personally, and how it affects you personally. In the following section we will ask you about how you believe the project will affect the whole community, but here we would like to hear about the impacts of the project on yourself.

6. Please check what describes your relationship with the project the best. You are:

□ A resident living near to the project site

□ A government employee. (please provide function and name of the department)
Function: …
Department: …

□ An employee of the project developer

□ An employee of an NGO (please provide function and name of the NGO)
Function: …
NGO: …

□ Other, namely …

7. Please describe how the project would affect you:

8. How do you think the project would affect you?

□ Positively □ Neutral □ Negatively

Could you explain why?

Wider impacts of the project

In this section, we are interested in you assessments of the wider impacts of the project on the community, looking at economic aspects, social aspects, environmental aspects and cultural aspects. Please provide your opinion from the perspective of the whole community

9. What do you think are the main economic impacts of the project?

☐ Employment	☐ Positive impact	☐ Neutral impact	☐ Negative impact
☐ Local tax revenues	☐ Positive impact	☐ Neutral impact	☐ Negative impact
☐ Economic development	☐ Positive impact	☐ Neutral impact	☐ Negative impact
☐ ...	☐ Positive impact	☐ Neutral impact	☐ Negative impact
☐ ...	☐ Positive impact	☐ Neutral impact	☐ Negative impact

(Please check the impacts you believe are important, and also check the type of impact – positive, neutral, or negative. You can add impacts that we did not indicate in the table above, and the impacts we mention should be considered examples)

10. How do you rate the economic impacts of the project?

☐ Positively ☐ Neutral ☐ Negatively

Could you explain why?

11. What do you think are the main social impacts of the project?

☐ Poverty reduction	☐ Positive impact	☐ Neutral impact	☐ Negative impact
☐ Quality of life	☐ Positive impact	☐ Neutral impact	☐ Negative impact
☐ Access to land	☐ Positive impact	☐ Neutral impact	☐ Negative impact
☐ …	☐ Positive impact	☐ Neutral impact	☐ Negative impact
☐ …	☐ Positive impact	☐ Neutral impact	☐ Negative impact

(Please check the impacts you believe are important, and also check the type of impact – positive, neutral, or negative. You can add impacts that we did not indicate in the table above, and the impacts we mention should be considered examples)

12. How do you rate the social impacts of the project?

☐ Positively ☐ Neutral ☐ Negatively

Could you explain why?

13. What do you think are the main environmental impacts of the project?

☐ Noise	☐ Positive impact	☐ Neutral impact	☐ Negative impact
☐ Air quality	☐ Positive impact	☐ Neutral impact	☐ Negative impact
☐ Water quality	☐ Positive impact	☐ Neutral impact	☐ Negative impact
☐ …	☐ Positive impact	☐ Neutral impact	☐ Negative impact
☐ …	☐ Positive impact	☐ Neutral impact	☐ Negative impact

(Please check the impacts you believe are important, and also check the type of impact – positive, neutral, or negative. You can add impacts that we did not indicate in the table above, and the impacts we mention should be considered examples)

14. How do you rate the environmental impacts of the project?

□ Positively □ Neutral □ Negatively

Could you explain why?

15. What do you think are the main cultural impacts of the project?

(In some cases, projects may result in the destruction of temples, or may affect landscapes that are considered holy, or may affect places where ancestors are buried. It is difficult to make a complete list, so please fill in if you believe there are any important cultural impacts, and explain whether you see them as positive or negative.)

16. How do you rate the cultural impacts of the project?

□ Positively □ Neutral □ Negatively

Could you explain why?

17. Overall, how do you judge the impact of the project on the community?

□ Positively □ Neutral □ Negatively

Signature:

Date:

CARBON FINANCE IN MONGOLIA

Volume 3: International Actions to Promote Carbon Finance in Mongolia

Edited by Casper van der Tak

With contributions from Ken Beck Lee and Peter Noel Pembleton

ACKNOWLEDGMENTS

This publication has been prepared with the financial support from the World Bank project on "Capacity Building for Development and Implementation of Carbon Finance Projects" (CBDICFP), implemented at the Ministry of Nature, Environment and Tourism of Mongolia. It has benefited much from discussions within the expert team, outside experts, World Bank experts, and officials within the Mongolian government.

Casper van der Tak
Laveno-Mombello, 2011

INTRODUCTION

This is the third volume in a three volume publication on carbon finance in Mongolia, edited by Casper van der Tak on the basis of contributions made by Ken Beck Lee, Peter Noel Pembleton and Casper van der Tak in the World Bank project on "Capacity Building for Development and Implementation of Carbon Finance Projects" (CBDICFP), implemented at the Ministry of Nature, Environment and Tourism of Mongolia.

This present volume focuses on the barriers towards the development of carbon finance / greenhouse gas emission reduction projects in Mongolia, the actions that the donor community has taken to address the barriers, possible actions to remove remaining barriers, and an assessment as to the efficacy of these actions. In terms of methodology, we first set out the various barriers that have, at some point of time, paid an important role in hindering the development of carbon finance / greenhouse gas emission reduction projects in Mongolia. We then assess the historical and current significance of these barriers. After that, we proceed with matching donor actions against barriers, demonstrating on the one hand that international cooperation has been effective in eliminating some of the main barriers, however, also showing a gap between donor actions and currently relevant barriers. This 'gap analysis' allows us to focus on important barriers that are not yet successfully addressed. This provides a potential agenda for action. After this, we proceed with an analysis of how the 5 barriers identified could be addressed, and evaluate the effectiveness of the proposed actions. In the final concluding chapter we note that some activities or clusters of activities could address a multitude of barriers.

In terms of contents, this volume is set up as follows:

Chapter 1 discusses the extent to which Mongolia has been able to attract CDM projects and has been able to have CERs issued. We conclude that Mongolia has not been very successful so far, note that this is unfortunate because Mongolia's greenhouse gas emission reduction projects tend to have high social and environmental benefits, and then identify the barriers that have hindered the development of greenhouse gas emission reduction projects in Mongolia.

Chapter 2 discusses how international actions have addressed the barriers mentioned in Chapter 1. We note that some currently relevant barriers have not been addressed, or have not successfully been addressed. This 'gap analysis' results in 5 priority barriers that need to be addressed.

Chapter 3 elaborates on actions that could be taken to address the 5 identified priority barriers. It ends with a discussion of the various actions, and note to what extent the action have a priority. Note that in this analysis, we have not considered synergy – some actions to address one barrier may also contribute significantly to another barrier.

Chapter 4 provides a comprehensive conclusion and recommendation that considers the synergies available, and ranks 4 actions / clusters of actions on the basis of the perceived attractiveness in terms of costs and benefits.

As we emphasize in closing, this analysis could be seen as an identification of possible follow up actions to the CBDICFP. If there is an interest within the international community to support these actions, a next step would be to formulate a program and develop the implementation modalities.

We like to emphasize that we will use 'carbon finance' and CDM interchangeably unless the context requires a clear distinction between 'carbon finance' as a means of financing related to the value of greenhouse gas emission reductions which can, in principle, be realized through a variety of mechanisms (including CDM, REDD, and voluntary schemes), and CDM as the main mechanism to translate greenhouse gas emission reductions in revenues.

On a final note, we like to mention that what is often called 'carbon finance' has been, in effect, mostly a carbon off-take – an investment in development costs for CDM projects, that results in an additional revenue stream, which in turn makes financing attractive. It is not often the case that projects are financed (whole or in part) in exchange for the greenhouse gas emission reductions to be delivered. In that sense, carbon finance is a misnomer. One of our proposals, however, would involve a true from of carbon finance.

1. BARRIERS TOWARDS GREENHOUSE GAS EMISSION REDUCTION PROJECTS

1.1 Introduction

In volume 2 of this publication, Mongolia's experience with CDM, until now, has been summarized. For ease of reference, we copy the main findings here:

At the moment of writing, three Mongolian projects have been registered as CDM projects:

0295: A retrofit programme for decentralised heating stations in Mongolia.
0787: Taishir Hydropower Project in Mongolia
0786: Durgun Hydropower Project in Mongolia

Numbers are the UNFCCC reference numbers. At the moment of writing, more than 3700 projects have been registered with the UNFCCC, which demonstrates that Mongolia has had some difficulties attracting CDM projects. Two of the projects have had CERs issued; the third did not yet result in issued CERs.

Mongolia has only received limited benefits from CDM, and it is important to get a good understanding why. However, before dealing with this question, we discuss why we should care about the limited Mongolian benefits from CDM.

1.2 Side benefits of Mongolian greenhouse gas emission reduction projects

Let's digress and elaborate on why we should care about the limited number of CERs (and other emission reductions, verified according to another standard) from greenhouse gas emission reduction projects in Mongolia. After all, if a Mongolian project produces and sells CERs, it will only substitute for greenhouse gas emission reductions elsewhere.

First, it is an obligation of Annex I countries to assist non-Annex I countries, including Mongolia, in addressing climate change through adaptation and mitigation activities. Therefore, it could be considered an obligation under treaties for the international community to try to assist Mongolia in formulating CDM projects.

Second, Mongolia is a potential source for CERs that could help Annex I countries to fulfill their emission reductions and limitation obligations. In that sense, there is a potential self- interest in promoting CDM projects in Mongolia. This argument, however, was a lot more powerful when economies were growing fast and oil prices were high – at that time, the emission reduction and limitation obligations of Annex I countries truly were 'biting', meaning that the development of sources of CERs was strongly in the Annex I countries own interest. With the current limited demand for CERs, it becomes a much less strong argument.

The third argument may currently be the strongest for the donor community: greenhouse gas emission reduction projects, and especially Mongolian greenhouse gas emission reduction projects, have significant local environmental and social benefits. Consider:

- Mongolian greenhouse gas emission reduction projects often address directly the use of coal for power and/or heat generation (through renewable power projects, through energy efficiency projects, through fuel switch projects). This means that greenhouse gas emission reduction projects can directly contribute to combating air pollution. Air pollution, especially in winter in UB, but also inside homes heated by coal stoves, is a significant cause of health problems. Addressing the problem of air pollution has significant environmental and social benefits.

- Another set of greenhouse gas emission reduction projects could result in energy services in areas that are not yet well covered, for example through the provision of off-grid renewable power to *soums*, *bags*, and individual *gers* that are not connected to the power grid. This means that such types of greenhouse gas emission reduction projects would have significant social benefits.
- A final type of greenhouse gas emission reduction projects would focus on the forestry sector. Deforestation has been (and is) an environmental problem in Mongolia, and the creation of a shelterbelt is seen as one of the possible ways to combat desertification. Support of greenhouse gas emission reduction projects in the forestry sector would therefore have considerable environmental benefits.

We can conclude that supporting greenhouse gas emission reduction projects in Mongolia will have strong additional social and environmental benefits and truly contribute to Mongolia's sustainable development, much more than, say, supporting N2O emission reduction projects in, say, nitric acid producing companies in China or India (which lead to large amounts of emission reductions, but do not produce any sustainable development benefits in themselves). The strong social and environmental benefits from greenhouse gas emission reduction projects in Mongolia also mean that Mongolia could be an important source of voluntary greenhouse gas emission reductions (verified under the VCS (http://www.v-c-s.org/) or Gold Standard (http://www.cdmgoldstandard.org/), for example), because for projects sold in the voluntary market, side benefits and a compelling story are very important.

1.3 Barriers towards the development of CDM projects in Mongolia

1.3.1 Size of the economy and populations

A first point to realize is that Mongolia's economy and population size are small. In that sense, it cannot be concluded from a limited number of projects that Mongolia has, somehow, benefited less than it should from CDM. To draw such a conclusion, an explanatory model would need to be established that links the number of projects and the number of emission reductions issued to variables such as population size, size of the economy, location, etc. While such a research is outside the scope of this research, we note that the number of registered projects (3) may be what reasonably could be expected (a bit less than 1‰, while Mongolia's economy and population account for far less than 1‰ of total non-Annex 1 economy and population). However, the total amount of emission reductions until date 15,354 for Mongolian projects, compared to 815,684,768 globally (end December 2011), thus accounting for 0.0188 ‰, remains well below expectations.

To further illustrate this, we can also look at the pipeline of projects and emission reductions, available at the DNA and identified in volume 2, which also seems to indicate an untapped potential for greenhouse gas emission reduction projects.

Mongolian project under validation

At the moment of writing, the following projects are under validation:

- Salkhit Windpark
- Pellet and briquette plant in Mongolia

The last project was one for which the PDD was developed under the CBDICFP project.

Projects available at the Mongolian DNA

Several projects are available at the Mongolian DNA in PIN form. See the website of the Mongolia DNA.

Table 3.1 Projects endorsed by the Mongolian DNA

Name	Annual CERs (tCO2e)
Building Energy Efficiency MON/09/301 Project	63 thousand
Project of generating energy from garbage treatment	459 thousand
Energy conservation and emission reduction from poor households	75.0 – 90.0 thousand
Community based heating supply in rural remote areas of Mongolia	17.0-23.0 thousand
Sainshand wind farm project	174.0 thousand
Biogas Plant Project in Mongolia	2.3 thousand
WGGE-waste gas to green energy	28.5 thousand
Oyu tolgoi wind power project (250MW Khanbogd high power wind farm)*	1,412 thousand
Replacement of coal and wood fired heating by renewable heating system	15.4 thousand
Reconstruction boilers in Power Plants of Darkhan and Erdenet cities	32 – 33 thousand
Energy efficiency rehabilitation for pre-cast panel buildings	100.0 –110.0 thousand

Table 3.2 Projects approved by the Mongolian DNA

Name	Annual CERs (tCO2e)
Maikhan small hydropower project (12MW)	36,377

Note that projects that have been registered or that are under validation have been excluded.

Table 3.3 Other projects available at the Mongolian DNA

Name	Annual CERs (tCO2e)
Improvement of heating systems in urban centers of Mongolia	30,000
Energy conservation with utilization of active mineral additives (pozzolans) in Cement production	30,000
Energy conservation with introduction of variable speed drive pumps for heating distribution in Ulaanbaatar	30,000
Mass replacement of gers and yurts by affordable passive housing (Geothermal heating supply in *ger* district)	99,600
Geothermal Project in Khangai region of Mongolia	50,000
Reduction of CO2 while introducing the Ladle Refining furnace in Darkhan metallurgical plant of Mongolia	30,000
Biogas (chicken and cow farm) project	30,000
Produce renewable energy using windpower	180,000
Biofuel (pellet plant) project	15,200

Greenhouse gas emission reduction potential research in Darkhan, Orkhon and Selenge

Finally, we also note the research reported in the companion volume 2 of this publication, in which on the basis of additional research in three *aimags*, an emission reduction potential of over 1 million tCO2/yr was identified.

Conclusion

We therefore state, without further analysis, our opinion that while Mongolia is doing reasonably in terms of registered projects given its economy and population size, it does not benefit enough in terms of issued CERs. As financial flows are ultimately linked to the amount of issued CERs, economy and population size, a further analysis of the barriers towards CDM is warranted.

1.3.2 Size of potential projects and CDM transaction costs

Size of potential projects is definitely a reason why Mongolia does not have more CDM projects. The size of the Mongolian electricity grid is limited, which poses a limit on the size and number of renewable power projects; and Mongolia does not have the large heavy industrial enterprises that are suitable hosts for waste heat and waste gas projects. This results in a limited size for many of the potential CDM projects in Mongolia.

For small projects, it is difficult to justify the investment in the CDM development of a project. This money is at risk in case the project will fail, and if the project succeeds, the small size of the projects limits the returns available to the investment in the development. To make it attractive to develop projects for CER buyers at current pricing (December 2011), a typical project should provide 70,000+ CERs/yr, while for development by the project owner, the cut-off would be around 15,000+ CERs/yr.

Size – transaction cost barrier

A barrier that arises from the relatively high transaction costs for smaller CDM projects, making it relatively unattractive to invest in the CDM development of the project, based on a cost-benefit analysis.

This barrier is a sizable barrier affecting the possibilities to develop CDM projects in Mongolia.

Greenhouse gas emission reduction projects that do not use CDM but that make use of voluntary schemes may be able to handle these projects better. Although, in general, the price for the greenhouse gas emission reductions will be lower, so will be the CDM development costs.

1.3.3 Types of potential projects

Mongolia has a very cold climate, and that results in a lot of the energy use being for heating purposes. The methodologies that focus on emission reductions from reductions in heating demand (such as isolation of building) and efficient supply of heat (heating efficiency and heating from renewable resources) are complicated, and also do not cover a large variety of options.

Type – methodological complication barrier

A barrier that arises from the uncommon nature of a significant portion of the technical greenhouse gas emission reduction project opportunities in Mongolia, which focus on the relatively large use of energy for heating purposes.

Mongolia is sparsely populated and covers a large area. This provides for a large potential for greenhouse gas emission reductions in the LULUCF sector (Land Use, Land Use Change and Forestry), in particular afforestation and reforestation projects (A/R projects). However, it is very difficult to use emission reductions from A/R projects for compliance purposes, severely restricting the demand for this type of emission reduction project.

A/R market barrier

A barrier that arises from the fact that a large part of Mongolia's greenhouse gas emission reduction potential is in the forestry sector, resulting in greenhouse gas emission reduction that are either excluded from compliance markets or that are only considered temporary – both restricting market demand.

Both barriers mentioned here are quite significant.

1.3.4 CDM Development capacity

A potential barrier towards the development of CDM projects in Mongolia is the lack of sufficient domestic CDM development capacity, meaning that the required skills to develop projects are not available.

CDM Consultant barrier

A barrier that arises from the insufficient availability of local experts who are able to develop CDM projects.

In our view, the CDM Consultant barrier is certainly not a major barrier. Setting aside the question of the Mongolian domestic CDM capacities, if projects are attractive, and other conditions are good, buyers will be attracted to the opportunities and use international consultants to prepare the registration documentation.

1.3.5 Lack of institutional infrastructure

A necessary condition for the development of CDM projects is that it must be possible to obtain a letter of approval from the host country's government.

Institutional barrier

A barrier that arises from the lack of possibilities to obtain Mongolian CDM letters of approval – a necessary condition for registration of Mongolian projects as CDM projects with the UNFCCC.

For a period of time, the institutional barrier would have prevented projects from being developed, as there was no active Mongolian DNA, and no approval procedures. Currently Mongolia has an active DNA and working approval procedures, so this barrier currently appears less relevant.

1.3.6 Project approval procedures

In CDM projects, it is important to have independent, objective data sources that can be used as reference during the preparation of the registration documentation. In some countries, where feasibility studies need to be approved by the government, it is easy to find such data sources. In Mongolia, independent third party documentation appears difficult to find.

Documentation barrier

A barrier that arises from a lack of independent third party documentation that can be used as reference and data source in the preparation of CDM projects.

This barrier is present, but its significance is hard to determine.

1.3.7 Financing

A greenhouse gas emission reduction project is only good if the project can be constructed and realize the greenhouse gas emissions. It is important that the project can be financed, and that other stakeholders in the project (such as consultants and potential buyers of the CERs) are aware of this. If there are severe doubts about the possibility of a project to raise the required finance, then the project will appear unattractive as greenhouse gas emission reduction project.

Financing barrier
A barrier that arises from the difficulty in arranging financial close for Mongolian projects, irrespective of the registration of the project under CDM or other, similar schemes.

Lack of longer-term financing in Mongolia is a very significant factor hindering the development of CDM projects in Mongolia.

1.3.8 Awareness

Awareness barrier
A barrier that arises from a lack of knowledge among potential Mongolian stakeholders about CDM.

Especially in the beginning of CDM, potential CDM projects are missed because people are not aware about the possibility. This has also been the case in Mongolia. However, a lot of awareness raising has been carried out in Mongolia. It is hard to believe that this still remains a significant barrier.

1.3.9 Demand

Demand barrier
A barrier that arises from a lack of demand, the result of the current lack of clear international rules and regulations.

This is certainly a barrier at this moment in time. If you successfully develop and register a CDM project in Mongolia, what can be done with the CERs that result from it?

1.4 Conclusions

In this section, we summarize the conclusions from the preceding section 1.2 in table format.

Table 3.4 Findings on barriers

Barrier	Historical significance	Current significance
Size – transaction cost barrier	Medium	High
Type – methodological complication barriers	High	High
A/ R Market barrier	High	High
CDM consultant barrier	Low	Low
Institutional barrier	High / prohibitive	Very low / none
Documentation barrier	Medium/low	Medium/low
Financing barrier	High	High
Awareness barrier	Medium/High	Very Low
Demand barrier	None	High

2. BARRIER REMOVAL ACTIONS BY THE INTERNATIONAL COMMUNITY IN MONGOLIA

2.1 Introduction

Mongolia has received its share of development cooperation projects (including projects by the World Bank, ADB, EBRD) focusing on CDM capacity development and removal of barriers that hinder CDM development in Mongolia. Below we highlight some of the activities and how they target the barriers identified in the preceding section.

2.2 Analysis of international donor barrier removal actions

We provide a short description and analysis of international donor barrier removal actions below, dealing with each barrier in turn.

Size – transaction cost barrier

This barrier has been addressed by development cooperation actions, typically by providing advice on how smaller projects can be bundled or can be combined in a POA (programme of activities). However, it should be mentioned that these approaches are both complicated, and also impose their own costs. In practice, these approaches have not yet been used for projects that are in the official (UNFCCC) project development pipeline. Therefore, we consider this barrier not yet comprehensively addressed.

Type – methodological complications barrier

It does not appear that this barrier has been addressed so far.

A/R market barrier

It does not appear that this barrier has been addressed so far.

CDM Consultant barrier

This barrier has been addressed by a number of projects typically focusing on training through workshops and seminars, and on co-developing PDDs through a learning-by-doing approach. A limit in this approach is that it is difficult to effectively transfer PDD development skills, and that usually the project stops before the project enters into validation. A significant part of the successful development of CDM projects is to guide projects through the validation and registration process, and capacity building for this aspect of the work has not been supported by donors.

Institutional barrier

This barrier has been successfully addressed through a number of projects. There is a Mongolian DNA that is active, promotes CDM projects, is able to answer questions, and there is a host country approval procedure that can produce the required letters of approval. The interventions of the donor community in this field can be considered very successful.

Documentation barrier

This barrier has not been targeted by donors. It should be mentioned that targeting this barrier in a comprehensive manner would require a rewriting of the laws that describe how projects are developed and what regulatory requirements need to be met.

1. What are the barriers towards development of projects leading to greenhouse gas emission reductions in Mongolia?
2. What actions have been taken by the international community to address these barriers?
3. What further actions could be taken by the international community? (This will be written with the donor community in mind)

Financing barrier

This barrier has been recognized and has been targeted by the donor community, typically by providing consulting and support services for the arrangement of finance. Apart from this, other donor activities provide schemes that can be used to finance projects, including certain types of greenhouse gas emission reduction projects. Nevertheless, it remains very difficult to obtain financing for worthy greenhouse gas emission reduction projects in Mongolia.

Awareness barrier

This barrier has been addressed through a number of projects in Mongolia, through workshops, seminars, publications, etc. It appears that all stakeholders with a legitimate interest in Mongolia, by now, are aware about CDM. Again, it appears that the intervention from the donor community worked very well to remove this barrier.

Demand barrier

It does not appear that this barrier, so far, has been addressed by donors. However, it should be emphasized that the need to address this barrier is something that only emerged during this year, 2011, in the face of increasingly unclear international regulations and policies and slow international growth, limiting demand for greenhouse gas emission reductions.

2.3 Conclusions

Table 3.5 Donor actions and historical significance of barriers

Barrier	Historical significance	Donor actions
Size – transaction cost barrier	Medium	Yes, but relatively unsuccessful
Type – methodological complication barriers	High	None
A/ R Market barrier	High	None
CDM consultant barrier	Low	Yes, but not very successful
Institutional barrier	High / prohibitive	Yes, very successful
Documentation barrier	Medium/low	None
Financing barrier	High	Yes, but not very successful
Awareness barrier	Medium/High	Yes, very successful
Demand barrier	None	None, but not relevant historically

In this section, we review the donor actions to remove barriers using the table provided at the end of Chapter 1. We provide two tables, one outlining the historical relevance of donor actions to remove barriers, and one forward looking, to identify areas for intervention by new donor actions.

Table 3.6 Donor actions and current significance of barriers

Barrier	Current significance	Donor actions
Size – transaction cost barrier	High	Yes, but relatively unsuccessful
Type – methodological complication barriers	High	None
A/ R Market barrier	High	None
CDM consultant barrier	Low	Yes, but not very successful
Institutional barrier	Very low / none	Yes, very successful, barrier removed

Documentation barrier	Medium/low	None
Financing barrier	High	Yes, but not very successful
Awareness barrier	Very Low	Yes, very successful, barrier removed
Demand barrier	High	None

In the last table, we have highlighted barriers where there appears to be a mismatch between the current significance of the barrier and donor actions so far. These are barriers where we can see a prima facie case for donor projects.

The next Chapter further elaborates on these barriers and how they could be addressed.

3. NEW INTERNAL ACTIONS ON CARBON FINANCE IN MONGOLIA

The preceding section has identified 5 potential areas for future donor actions related to carbon finance, of which 3 have the highest priority and 2 high priority; this is based on the 'gap analysis' of the preceding chapter, and does not take into account how effectively and efficiently the identified barriers can be addressed. Below we discuss each of the identified barriers, and discuss what actions could be taken to remove or lower the barrier in question.

3.1 Barrier removal options

3.1.1 Size – transaction cost barrier – high priority

The approach taken so far to address this barrier has focused on the CDM rules, and how these can be applied to combine projects to realize some economies of scale in development. As mentioned, this approach has not been very successful. We see three alternative approaches that could be proposed:

1. *Funding of the CDM and voluntary carbon development costs*

This proposal is similar to a proposal that at this moment is with the UNFCCC, to provide loans for the coverage of CDM development costs in countries with less than 10 registered CDM projects, but adds voluntary carbon standards to the scope of this proposal. No action on this UNFCCC proposal has been made yet, however. A scheme to fund CDM and voluntary carbon development costs through a loan, that becomes repayable if the project has been registered and produced a certain minimum of greenhouse gas emission reductions, makes development of projects certainly attractive, and at the same time, could function as a *pilot* for the UNFCCC scheme.

If this proposal is taken further, it becomes necessary to develop guidelines for eligible project sizes (minimum and maximum expected annual emission reductions), other project selection criteria, selection criteria for service providers, loan repayment rules, and other rules for the development facility.

2. *Simplified CDM methodologies for mini-projects*

The international community could promote the adoption of simplified CDM rules for small-sized projects (here labeled mini-projects) that better suit the small scale of projects encountered in Mongolia and other smaller economies and thus would reduce the transaction costs. This would contain an element of advocacy, but would also involve the engagement of experts that could draft reasonable methodologies.

Relatively recent developments concerning micro-scale projects, for which special additionality rules have been adopted, shows that there may well be support inside the UNFCCC and the EB (Executive Board) for CDM for this line of thinking.

3. *Simplified voluntary methodologies combined with purchase of voluntary credits*

Similar to the above for CDM, we would also propose the development of simplified methodologies for mini-projects under voluntary standards, but combined with a guaranteed demand (or at least promoted demand) for such emission reductions.

As an example of promoted demand, the international community could promote MIAT to offer the possibility of offset carbon emission from MIAT flights using only domestic voluntary emission reductions (note that international airlines have been an important source for demand for voluntary credits).

4. Exploration of new sources of carbon finance

Finally, we note that international negotiations on climate change recently have resulted in new mechanisms to address climate change mitigation projects, such as NAMAs. The details of these mechanisms still need to be worked out. However, in principle these mechanisms would offer the possibility to address a certain type of greenhouse gas emission reduction activity country- and sector-wide, through a number of smaller subprojects.

It would be worthwhile for the international community to mobilize expertise that would help Mongolia in navigating the new opportunities and to develop concrete proposals, which may also function as pilots for the new schemes, and could help to formulate the operational details of the new mechanisms, resulting in *global* benefits.

Efforts related to new sources of carbon finance would also contain an element, possibly large, of capacity development inside Mongolia in how the benefit from these new mechanisms, or alternative carbon mechanisms, that have been proposed internationally.

3.1.2 Type – methodological complications barrier – highest priority

1. CDM methodology development

This would involve the hiring of experts to draft new methodologies and to prepare proposals for the modification of existing approved methodologies, both to make sure that methodologies focused on the heating sector would become (1) easier to use and (2) more comprehensive in coverage.

This is a type of intervention where we are not sure about the effectiveness, cost and benefits – it may be too costly and too uncertain, with the benefits too much restricted to Mongolia only.

2. Voluntary methodology development combined with purchase of voluntary credits

This concept is similar to 1 above, but focuses on the voluntary sector, where, relative to the CDM, it may be easier to get new methodologies approved. This would need to be combined with promotion of voluntary demand and could be combined with the promotion of 'mini-methodologies' development, as described under point 3 of Section 3.1.1.

Compared to 1 above, the likelihood of success are larger (voluntary standards are less restrictive and more flexible than the CDM).

3. Exploration of new sources of carbon finance

See point 4 under Section 3.1.1 above.

3.1.3 A/R market barrier – highest priority

1. Purchase of A/R credits combined with methodologies integration

The main problem for A/R projects is that the emission reductions are considered temporary – if the forest planted is later removed, the amounts of CO2 sequestered during the growth of the forest will

be released. This means that the use of CERs from A/R projects in the compliance market is severely restricted, and involves a type of loan, in which temporary credits at some point in time need to be replaced with permanent CERs.

REDD involves, among others, protection of existing forests against deforestation, and issues carbon credits for avoided deforestation.

The proposal would be to hire experts to develop methodologies and mechanisms to combine these two mechanisms into one: A/R CDM, combined with a commitment to protect the forest planted through REDD, to guarantee permanence. While credits from such combined methodology/ mechanism would certainly have a demand in the voluntary market, the main challenge is to ensure that there would also be a compliance demand for activities under such methodologies/mechanisms.

One of the benefits of this proposed action is that the benefits from the systems developed would be global – the same mechanism would also benefit projects in, for instance, Africa.

2. Exploration of new sources of carbon finance

See point 4 under Section 3.1.1 above.

3.1.4 Financing barrier – high priority

1. Provision of carbon loans and guarantees.

One factor that is hindering the development of Mongolia in general is the difficulty in obtaining long-term financing, even for worthy projects. Financial intermediation, so far, has not been very successful in mobilizing savings for long-term investments. This is a general problem, but also one that harms the development of greenhouse gas emission reduction projects.

This problem suggest the development of a financing scheme, in which some type of financing support (loans, guarantees) is provided on the basis of the expected amount of greenhouse gas emission reductions and their assessed value. In the case of carbon loans, one possibility is to make the carbon loan subordinate to other loans, but to provide the greenhouse gas emission reductions as collateral. Such a scheme would not carry undue risks to the providers of the carbon loans, while providing the other financial partners with improved conditions for providing financing.

Experts could be mobilized to further develop this idea into a detailed proposal, describing the management arrangements, amounts of loans in relation to total financing required and expected amount of greenhouse gas emission reductions, requirements on own capital contributions, etc.

2. Exploration of new sources of carbon finance

See point 4 under Section 3.1.1 above.

3.1.5 Demand barrier – highest priority

1. Voluntary demand

See point 3 under Section 3.1.1 above. Promotion of voluntary demand may be important. To effectively promote the voluntary demand for Mongolian projects, especially international voluntary demand, it would be important to find ways to communicate clearly and credibly the sustainable development benefits from the Mongolia projects, and expertise could be provided on how to best accomplish that.

2. Exploration of new sources of carbon finance

See point 4 under Section 3.1.1 above.

3. Advocacy

In the international markets for greenhouse gas emission reductions, there are special provisions that favor projects in LDCs and (to a lesser extent) SIDs. Mongolia is a landlocked country, which in itself is a handicap and could be a reason for favorable treatment. However, we believe that the most powerful argument for favorable treatment of Mongolia and other, similar countries, is that they have not benefited much from CDM yet. It would be reasonable, for example, to argue that countries that issue less than 1 million CERs per year should be treated equally favorable as LDCs.

It would not make sense to, on the one hand, have favorable policies to promote CDM in countries with less than 10 registered CDM projects, and on the other hand have policies and regulations in place that restricts demand for CERs from such countries.

Advocacy along the lines mentioned above would need to be taken up politically and may focus, for instance, on the EU and its Emission Trading Scheme.

3.2 Barrier removal – summary of findings

The following table (see next page) summarizes our findings with respect to the proposed barrier removal actions. We have indicated which barrier removal actions we believe promise the best ratio between cost and reward, and would be the most suitable to take further.

Table 3.7 Assessment of proposed barrier removal actions

Barrier	Priority	Action	Success likelihood	Costs	Global benefits	Recommendation
Size – transaction cost barrier	High	Funding of the CDM and voluntary carbon development costs	High	Low-medium	Mongolia only	High
		Simplified CDM methodologies for mini-projects	Low	Medium	Significant	No
		Simplified voluntary methodologies combined with purchase of voluntary credits	Medium	Low-medium	Significant	Medium
		Exploration of new sources of carbon finance	Medium-high	Low-medium	Significant	High
Type – methodological complication barriers	Highest	CDM methodology development	Low	Medium-high	Not significant	No
		Voluntary methodology development combined with purchase of voluntary credits	Medium-high	Medium	Not significant	Medium
		Exploration of new sources of carbon finance	Medium-high	Low-medium	Significant	High
A/ R Market barrier	Highest	Purchase of A/R credits combined with methodologies integration	Medium-high	Medium	Significant	High
		Exploration of new sources of carbon finance	Medium-high	Low-medium	Significant	High
Financing barrier	High	Provision of carbon loans and guarantees	Medium-high	High	Mongolia only	Medium
		Exploration of new sources of carbon finance	Medium-high	Low-medium	Significant	High
Demand barrier	Highest	Voluntary demand	Medium-high	Low-medium	Mongolia only	Medium
		Exploration of new sources of carbon finance	Medium-high	Low-medium	Significant	High
		Advocacy	Medium	Low	Significant	Medium

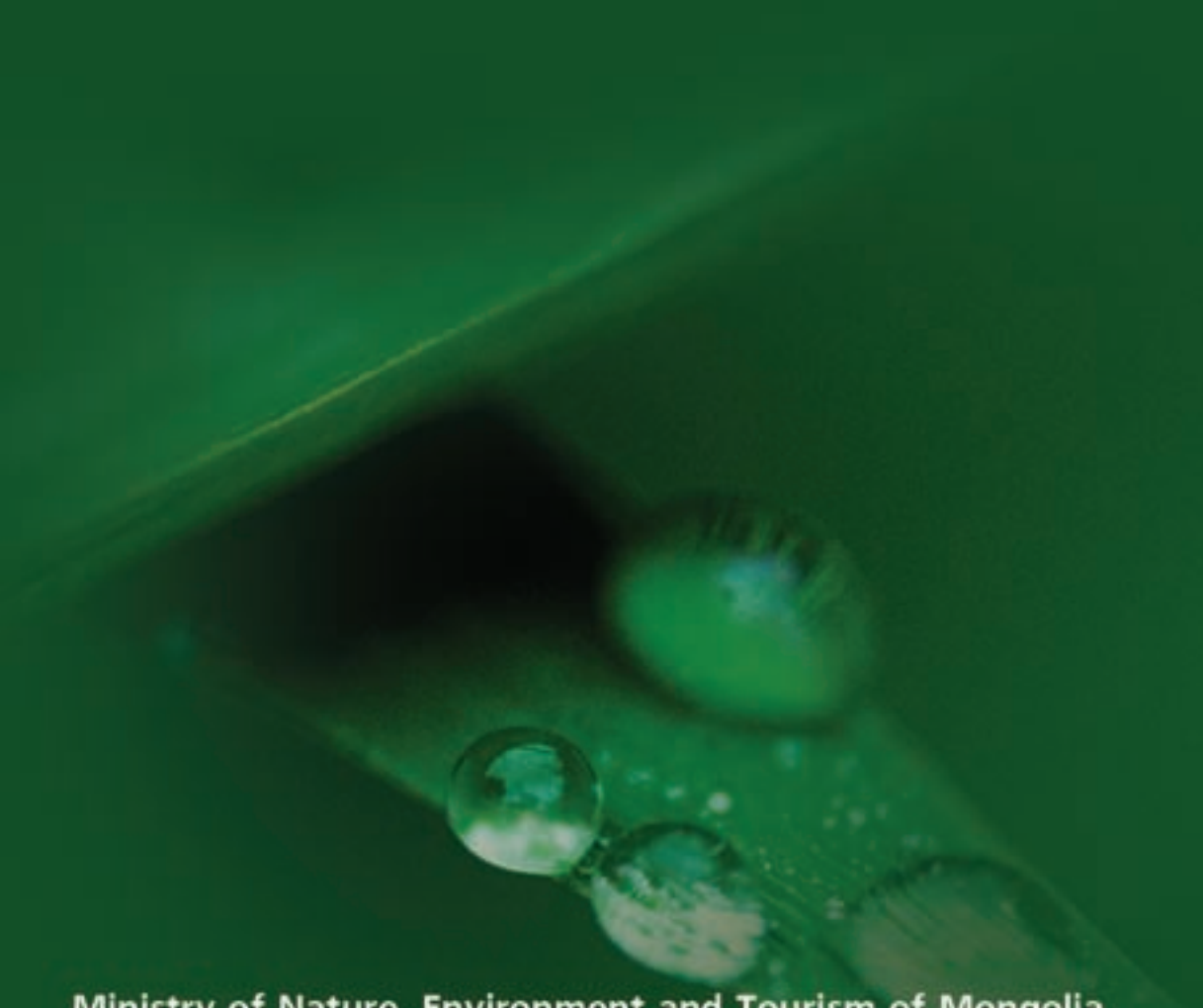
4. CONCLUSION

The analysis above has resulted in the identification of a number of actions that could be helpful in the removal of barriers towards carbon finance of greenhouse gas emission reduction projects in Mongolia. Because of the large social and environmental benefits from greenhouse gas emission reduction projects, these actions are worth exploring and implementing.

The identified actions could be seen as two activity clusters of similar activities, or single activities addressing multiple barriers, and two stand-alone actions. We summarize these in what we believe is the order of descending merit (starting with what we believe is the most suitable action). BTW, note that these activities do not exclude each other, several actions could be combined.

1. Exploration of new sources of carbon finance. This is the one activity that addresses all remaining significant barriers towards carbon finance projects in Mongolia, and also would, through pilot activities, have significant global benefits. It involves mobilizing expertise that would help Mongolia in navigating the new opportunities offered by new carbon finance mechanisms (*alternative carbon finance*) and to develop concrete proposals, which may also function as pilots for the new schemes, and could help to formulate the operational details of the new mechanisms, resulting in *global* benefits.
2. The voluntary sector. This is a cluster of activities focusing on the development of methodologies under voluntary carbon standards to make them more suitable for smaller sized projects, projects in the heating sector, and forestry sector projects, and promoting voluntary demand for greenhouse gas emission reductions, all of which are closely interlinked. Some of the proposed activities, especially the methodological work would have considerable global benefits. An advantage of this cluster of activities is that they do not depend on uncertain international actions under the UNFCCC.
3. Funding of CDM and voluntary carbon development costs. The idea is to develop a scheme to fund CDM and voluntary carbon development costs through a loan, which would become repayable if the project has been registered and produced a certain minimum of greenhouse gas emission reductions. Such a scheme would address the mismatch between development costs and project size, and would make carbon finance development of Mongolian greenhouse gas emission reduction projects certainly attractive. At the same time, such a scheme, focused on Mongolia, could function as a *pilot* for a similar proposed UNFCCC scheme for countries with few registered CDM projects. This is a more narrowly focused proposal, but one that targets an important barrier for carbon finance projects in Mongolia.
4. Provision of carbon loans and guarantee. This would involve the development of a financing scheme, in which some type of financing support (loans, guarantees) is provided on the basis of the expected amount of greenhouse gas emission reductions and their assessed value. In the case of carbon loans, one possibility is to make the carbon loan subordinate to other loans, but with the greenhouse gas emission reductions as collateral to balance the risks. While this would have significant benefits, it would require mobilizing significant funds, with uncertain repayment of any loans.

Of course, the analysis above only provides an identification of possible actions. Additional work would be needed to assess the possibilities to fund such activities or activity clusters, and to further formulate the contents and the appropriate implementation modalities.



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