

# NS-90 - National Energy Efficient Lighting Program in Mongolia

## Mongolia

### NAMA Seeking Support for Implementation

#### A Overview

A.1 Party

Mongolia

A.2 Title of Mitigation Action

National Energy Efficient Lighting Program in Mongolia

A.3 Description of mitigation action

Mongolia's climatic situation and its specific socioeconomic conditions make it very sensitive to the impacts of climate change. The total emissions of CO<sub>2</sub> in Mongolia were 15,628,000 tons in 2006 and it is expected to reach 33,212,000 tons by 2020, which is approximately five times greater than the base year. GHG mitigation actions are thus essential to combat adverse impacts of climate change in Mongolia. In 2000 and 2011, Mongolian government approved the National Action Programme on Climate Change (NAPCC) to meet the UNFCCC obligations and set priorities to mitigate climate change.

"Reduces the consumption of electricity for lighting" was identified as one of GHG mitigation actions of NAPCC. In addition, the Copenhagen Accord indicated that "improve lighting efficiency in buildings" is one of nationally appropriate mitigation actions of Mongolia.

The outlined project involves the installation of energy efficient lighting equipments (e.g. Light Emitting Diodes, Compact Fluorescent Lamp) in residential, industrial, commercial and outdoor sectors to replace the inefficient lighting lamps in Mongolia. The outlined project will switch the inefficient lamps to energy efficient lighting to potentially save 100,306MWh in annual electricity consumption, which is equal to around 2.25% of total national electricity generation and 26.4% of electricity consumption for lighting. In addition to the energy savings, the outlined project will reduce 110,638 tCO<sub>2</sub>e emission reductions annually.

Beyond the reduction of GHG emissions, the outlined project will offer many benefits:

1. Financial benefits: the project will result in energy cost savings for the residential, commercial/industrial and outdoor lighting users in Mongolia;
2. Energy benefits: the project will result in energy savings in total national electricity consumption and individual electricity consumption for lighting. In addition, energy savings will reduce reliance on imported fossil fuels and strengthen national energy security;
3. Environmental benefits: the project will reduce air pollution by reducing lighting electricity consumption from fossil fuel power generation;
4. Societal benefits: the project will raise public awareness on climate change, and contribute to substantial sustainable

improvement to the society in the long-run. The project will also provide job opportunities to local people and create business opportunities to private enterprises.

A.4 Sector

<input checked="" type="checkbox"/> Energy supply	<input type="checkbox"/> Transport and its Infrastructure
<input type="checkbox"/> Residential and Commercial buildings	<input type="checkbox"/> Industry
<input type="checkbox"/> Agriculture	<input type="checkbox"/> Forestry
<input type="checkbox"/> Waste management	

Other

A.5 Technology

<input type="checkbox"/> Bioenergy	<input type="checkbox"/> Cleaner Fuels
<input checked="" type="checkbox"/> Energy Efficiency	<input type="checkbox"/> Geothermal energy
<input type="checkbox"/> Hydropower	<input type="checkbox"/> Solar energy
<input type="checkbox"/> Wind energy	<input type="checkbox"/> Ocean energy
<input type="checkbox"/> Carbon Capture and Storage	<input type="checkbox"/> Low till / No till
<input type="checkbox"/> Land fill gas collection	

Other

A.6 Type of action

<input type="checkbox"/> National/ Sectoral goal	<input type="checkbox"/> Project: Investment in machinery
<input type="checkbox"/> Strategy	<input type="checkbox"/> Project: Investment in infrastructure
<input checked="" type="checkbox"/> National/Sectoral policy or program	<input type="checkbox"/> Project: Other

Other

A.7 Greenhouse gases covered by the action

<input checked="" type="checkbox"/> CO2	<input type="checkbox"/> CH4
<input type="checkbox"/> N2O	<input type="checkbox"/> HFCs
<input type="checkbox"/> PFCs	<input type="checkbox"/> SF6

Other

### B National Implementing Entity

B.1.0 Name

Ministry of Environment and Green Development

B.1.1 Contact Person 1

Saruul Dolgorsuren

B.1.2 Address

Government Building-2, United Nation's street-5/2, Ulaanbaatar-15160, Mongolia

B.1.3 Phone

976-11-311086

B.1.4 Email

saruul@mne.gov.mn

B.1.5 Contact Person 2

Dagvadorj Damdin

B.1.6 Address

Government Building-2, United Nation's street-5/2, Ulaanbaatar-15160, Mongolia

B.1.7 Phone

976-11-311173

B.1.8 Email

dagvadorj@mne.gov.mn

B.1.9 Contact Person 3

B.1.10 Address

B.1.11 Phone

B.1.12 Email

B.1.13 Comments

The "Climate Change Coordination Office" (CCCO) was established in 2011 under the administration of the Special Envoy for Climate Change, at the Ministry of Environment and Green Development of Mongolia. It was established in accordance with the concept of National Security and the decision of the Government. The main purpose of the office is

to bear main responsibility for the climate change related activities nationwide, to formulate and implement climate change related government policies, strategies and programs, provide inter-sectoral coordination on climate change activities and support implementation of international agreements, conventions, and protocol on climate change within the country. Role of the CCCO with this purpose for the project will be:

- Promotion and coordination of the activities within sectors and between organizations
- Reporting on the implementation of project activities
- Cooperation with international and regional organizations on the project issues and making arrangements for the implementation the project
- Providing public and private entities as well as general public with proper information of the project through seminars and also through an official web-site with updated information

**C Expected timeframe for the implementation of the mitigation action**

C.1	Number of years for completion	5
C.2	Expected start year of implementation	2015

**D Currency**

D.1	Used Currency	AED Conversion to USD: 1
-----	---------------	-----------------------------

**E Cost**

E.1.1 Estimated full cost of implementation 7500000

E.1.2 Comments on full cost of implementation

Mongolia National Action Program on Climate Change (NAPCC) have identified number of GHG mitigation programmes/projects as high priority (as well as NAMAs of Mongolia in Appendix II of Copenhagen Accord) and high effectiveness and cost beneficial, and estimated a budget for each. For example, 12 million US\$ was budgeted for efficient lighting and 65.5 million US\$ in total was budgeted for the GHG mitigation projects in general. However financing issues has not yet been resolved. As a result, lack of financial resources for the initial investments is a significant obstacle to implement mitigation measures. Mongolia NAPCC therefore will take advantage of any possible financial sources such as NAMA to implement the identified mitigation strategies and projects to meet UNFCCC obligations. The outlined NAMA support project does not foresee financial contribution from the private sector. However, note that the grant will be used to create a revolving fund in support of energy efficiency in Mongolia; ultimately the private sector will therefore repay the loan sum into the revolving fund, which will remain available to support energy efficiency measures in Mongolia.

Without the support from the international financial sources, the outlined project will not be implemented and the country would continuously use inefficient lighting and consume more carbon intensive electricity generated from fossil fuel fired power plants. The table below is outlines the annual disbursement of the budget for effective implementation of the project.

	Requested financial support	Government in-kind contribution

2015	1,200,000	150,000
2016	1,500,000	100,000
2017	1,500,000	100,000
2018	1,500,000	100,000
2019	1,300,000	50,000
2020		
<b>Total</b>	<b>7,000,000</b>	<b>500,000</b>

E.2.1 Estimated incremental cost of implementation

E.2.2 Comments on estimated incremental cost of implementation

F Support required for the implementation the mitigation action

F.1.1 Amount of Financial support

7000000

F.1.2 Type of required Financial support

<input checked="" type="checkbox"/> Grant	<input type="checkbox"/> Guarantee
<input type="checkbox"/> Loan (sovereign)	<input type="checkbox"/> Equity
<input type="checkbox"/> Loan (Private)	<input type="checkbox"/> Carbon finance
<input type="checkbox"/> Concessional loan	
<input type="checkbox"/> Other	<input type="text"/>

F.1.3 Comments on Financial support

Lack of financial resources for the initial investments is a significant obstacle to implement mitigation measures in Mongolia. Mongolia therefore will take advantage of any possible financial sources such as NAMA to implement the identified mitigation strategies and projects to meet UNFCCC obligations.

Mongolia was one of about 50 developing countries till September 2012 which submitted a list of NAMAs for international support after the Copenhagen climate conference. NAMA will offer an opportunity to accelerate the use of additional funding sources to overcome a financial barrier due to the high initial cost of the GHG mitigation projects.

The outlined project will be integrated into the energy sector and applicable for the fourth mitigation action. It involves the installation of advanced technological energy efficient lighting (e.g. Light Emitting Diodes, Compact

Fluorescent Lamp) in residential, industrial, commercial and outdoor sectors to replace the inefficient lighting that align with the energy efficiency improvement strategies of energy sector of Mongolia. The grant will be used to create a revolving fund in support of energy efficiency in Mongolia. The outlined project will save 100,306 MWh in annual electricity consumption and correspondingly save 3.23 million Euro lighting energy costs per year.

F.2.1 Amount of Technological support

500000

F.2.2 Comments on Technological support

At this point, Mongolia is seeking various opportunities for financing NAMA related actions, including bilateral and multilateral financial resources including ODA and soft loan. Also, in order to scale up the level of finance and facilitate transfer of technologies, finances through mechanisms such as the NAMA Facility and other innovative means of finance are also expected. Mongolia has made significant progress in identifying the technical, institutional, and policy dimensions for a NAMA. Additional work, however, is required, particularly with respect to stakeholder consultations and the NAMA framework.

Government of Mongolia and Japan has signed the bilateral document of the Joint Crediting Mechanism (JCM) in pursuit of the ultimate objective of the UNFCCC as stated in its Article 2 and of achieving sustainable development, and in order to promote the Low Carbon Development Partnership. Under the partnership, capacity building projects has been taken in NAMA. Those capacity building projects are considering to develop detailed NAMAs implementation plan, identify methods to quantify emission reductions to be achieved, look into possibilities of establishing domestic MRV system, to identify BAU and NAMA scenario in the energy supply sector, to calculate grid emission factors, training for validation & verification bodies of Mongolia.

F.3.1 Amount of capacity building support

F.3.2 Type of required capacity building support

<input type="checkbox"/>	Individual level
<input type="checkbox"/>	Institutional level
<input type="checkbox"/>	Systemic level
<input type="checkbox"/>	Other <input type="text"/>

F.3.3 Comments on Capacity Building support

F.4 Financial support for implementation required

F.5 Technological support for implementation required

F.6 Capacity Building support for implementation required

### G Estimated emission reductions

G.1 Amount

110,638tCO<sub>2</sub>e per year

G.2 Unit

G.3 Additional information (e.g. if available, information on the methodological approach followed)

Lighting energy use is significant and also is a contributing factor to GHG emissions in Mongolia. The potential for reducing lighting energy use, associated costs and GHG emissions is clearly substantial, To replace inefficient lamps with energy efficient lights such as CFL and LED lighting system in

Mongolia is an effective way to reduce GHG emissions associated with lighting energy use. Mongolian government has approved Mongolia National Action Programme on Climate Change (NAPCC) to meet the UNFCCC obligations to mitigate climate change, and lighting efficiency improvement is one of NAMAs of Mongolia as included in the Appendix II of Copenhagen Accord. Therefore the outlined project is an initiative and priority action of the NAPCC and nationally appropriate mitigation actions to mitigate climate change and GHG emissions.

The outlined project will replace the inefficient lighting in the residential, commercial, industrial and outdoor sectors in Mongolia by energy efficient lamps. The outlined project will annually save 100,306MWh of electricity that would be supplied by the fossil fuel fired power plants, which is equal to 2.25% of total national electricity consumption and 26.4% of electricity consumption for lighting in Mongolia..

Based on the publicly available data published by CDM National Bureau (DNA) of Mongolia (<http://www.cdm-mongolia.com/>), the combined baseline emission factor (EF) of the grid (EFgrid, CM) of Mongolia is 1.103 tCO<sub>2</sub>/MWh. Therefore, the annual GHG emission reductions of the outline NAMA support project are estimated to be approximately 110,638tCO<sub>2</sub>e per year (i.e. 100,306 MWh×1.103 tCO<sub>2</sub>/MWh=110,638tCO<sub>2</sub>e).

The outlined project will save electricity through energy efficient lighting thus mitigate the air pollution indirectly by the reduced energy use from the fossil fuel power plant.

According to the preliminary study and estimation, the outlined project is expected to lead to over 3 million Euro lighting energy costs savings annually by the replacement of the inefficient lighting in the residential, commercial, industrial and outdoor sector to the efficient lighting.

## H Other indicators

### H.1 Other indicators of implementation

The outlined project is in conformity with the GHG mitigation measures of Mongolian National Action Program on Climate Change. The project is to utilize the existing energy resources efficiently and sustainably to reduce energy consumption and imports, increase national/local energy security, reduces the investment in energy infrastructure of national energy sector; and achieves environmental benefits by the reduction of national and global GHG emissions and local air pollution. The major lamp types in the residential, commercial, industrial and outdoor sectors in Mongolia are energy inefficient incandescent light bulbs (ILB) and short lifecycle lamps. The outlined project will switch the major inefficient lamps to energy efficient lighting to potentially save 100,306 MWh in annual electricity consumption, which is equal to 2.25% of total national electricity consumption and 26.4% of electricity consumption for lighting. (Reference:“Mongolia power sector” presented by Ministry of Energy Mongolia; “Global Lighting Energy Bill”; “Appendix II of Copenhagen Accord”). In addition to energy savings, the outlined project will result in 110,638 tCO<sub>2</sub>e annual emission reductions and help Mongolia meet its climate goals. The NAMA will help overcome systemic financial and technical barriers in Mongolia. For instance, In Mongolia three significant obstacles to reducing GHG emissions in the electricity sector are (1) insufficient financing because investments are channeled to the mining and infrastructure sectors; (2) obsolete techniques as most of the technologies applied in electricity/energy sector (such as lightings) in Mongolia are old and low efficient; and (3) lack of public awareness and educational activities on climate change mitigation related to lighting electricity use.

The outlined project is a typical energy efficiency project which can be replicable and applicable in other regions, countries and internationally. However, there is not a “one fits all” approach to promoting an effective transition to efficient lighting. Each country therefore should adapt appropriate approaches according to national circumstances.

The project will attract the local small/medium private lighting manufacturing and distribution enterprises to participate and/or newly established local manufacturing facilities for the efficient lighting products.

## I Other relevant information

### I.1 Other relevant information including co-benefits for local sustainable development

Beyond the reduction of GHG emissions, the outlined project will offer many benefits:

1. Financial benefits: the project will allow energy costs savings for the residential, commercial/industrial and outdoor lighting sectors in Mongolia;
2. Energy benefits: the project will result in energy savings in total national electricity consumption and individual electricity consumption for lighting. In addition, energy savings will reduce the imported fossil fuels to strengthen the energy security in Mongolia;
3. Environmental benefits: the project will reduce air pollution by reducing lighting electricity consumptions from fossil fuel power generation;
4. Societal benefits: the project will raise public awareness on climate change, and contribute to substantial and sustainable improvements to the society in the long-run. The project will also provide job opportunities to the local people and create business opportunities to private enterprises.

## J Relevant National Policies strategies, plans and programmes and/or other mitigation action

### J.1 Relevant National Policies

In order to address challenges relevant to climate change, Mongolia has developed its National Action Programme on Climate Change (NAPCC) and the programme was approved by the State Great Khural (Parliament) in 2000 and updated in 2011. The action programme includes the national policy and strategy to tackle the adverse impacts of climate change and to mitigate greenhouse gas emissions. NAPCC is aimed not only at meeting the UNFCCC obligations, but also at setting priorities for action and to integrate climate change concerns into other national and sectoral development plans and programmes.

“Reduce the consumption of electricity for lighting” is one of identified GHG mitigation projects of NAPCC, which is a broader action program on climate change at national level, the outlined project will reduce the electricity consumption and GHG emissions through energy efficient lighting and contribute to adapt to climate change and mitigate GHG emissions. The outlined project will contribute to ensure the effective implementation and achievement of NAPCC for climate change mitigation strategies. The climate change concerns will be integrated into other national and sectoral development plans and policy documents and lead to transformational changes to the existing environmental regulations, social and economic or other sectoral development policy documents, and other related laws. The outlined project also provides a

new opportunity for policymakers to accelerate energy efficiency for a long-term policy planning in Mongolia. In addition, the outlined project will also promote the market transformation for energy efficient lighting by changing the types of lights offered in the market; the purchase and behavioral decisions; the type or number of manufacturers or participants in the energy efficient lights market; and expand the role of energy efficient products and services in the market.

J.2 Link to other NAMAs

#### K Attachments

K Attachments  
 K.1 Attachment description  
 K.2 File

**Title Description**

Browse...

#### L Support received

L.1 Outside the Registry

January 8, 2013, Government of Mongolia and Japan has signed the bilateral document of the Joint Crediting Mechanism (JCM) in Ulaanbaatar, Mongolia. As a result, the JCM will be officially launched. Japan and Mongolia has established a joint committee to govern and operate the JCM. The committee develops and adopts rules and guidelines, registers projects, and issues JCM credits for greenhouse gas emission reductions or removals. The committee is also tasked to prevent JCM projects from being registered under any other international climate mitigation mechanisms, to avoid double counting on emission reductions. Within Japan's financial and technological support through the JCM, model (1) and demonstration (2) projects and feasibility studies (5) in the field of replacement of HOBs, establishment of solar power plants, upgrading cement plant in Mongolia has been taken. For example, capacity building cooperation and joint study project for NAMAs in a MRV manner were implemented to identify potential NAMAs in energy sector and study outcomes were finalized. Since Combined Heat and Power plant (CHPs) contribute a major part in the total GHG emissions of Mongolia, improving the efficiency of CHPs and reducing internal use are listed up as GHG emission reduction measures in the Mongolian NAMAs list which was submitted to UNFCCC in accordance with Copenhagen Accord. Therefore, as a prioritized action, improving efficiency of CHPs in view of tackling their dominant GHG emissions is analyzed in this project.

L.2 Within the Registry

**Support provided Support Type Amount Comment Date**