TERMS OF REFERENCE

Scaling-up Renewable Energy Program (SREP)

Scoping Mission

28 April – 02 May 2014

Mongolia

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1. BACKGROUND

1.1 The **Climate Investment Funds (CIF)** support developing countries as they move toward low emissions and climate resilient development. The CIF provides developing countries with grants, concessional loans, and risk mitigation instruments that leverage significant private sector, MDB, and other co-financing. Five Multilateral Development Banks (MDBs) - the African Development Bank (AfDB), Asian Development Bank (ADB), European Bank for Reconstruction and Development (EBRD), Inter-American Development Bank (IDB), and World Bank Group (WB), including the International Finance Corporation (IFC) - are the implementing agencies of CIF funded projects and programs.

1.2 The CIF's financial architecture rests on two trust funds: (i) the Clean Technology Fund (CTF); and (ii) the Strategic Climate Fund (SCF):

- The CTF finances the scaled-up demonstration, deployment, and transfer of clean technologies. The focus is on piloting investments in countries or regions that have the potential for significant greenhouse gas abatement.

- The SCF finances targeted programs that pilot new approaches with the potential for scaling up. The SCF includes the Forest Investment Program , the Pilot Program for Climate Resilience, and the **Scaling Up Renewable Energy Program in Low-income Countries (SREP)**.

1.3 The objective of the SREP is to pilot and demonstrate the economic, social and environmental viability of low carbon development pathways in the energy sector by creating new economic opportunities and increasing energy access through the use of renewable energy. An initial group of six pilot countries was selected to receive funding under the SREP program (i.e., Kenya, Ethiopia, Mali, Nepal, Honduras, Maldives). In addition, a group of 'waitlisted' countries, including Mongolia, was selected to receive SREP funding provided additional resources become available. In March 2012, the SREP sub-committee agreed upon the upper amount of funding and order of priority in which funding would be allocated to these countries: (1) Tanzania, US$50 million; (2) Liberia, US$50 million; (3) Yemen, US$40 million; (4) Armenia, US$40 million; (5) Pacific Regional (Vanuatu, Solomon Islands) with regional capacity building program, US$30 million; and (6) **Mongolia, US$30 million**.

1.4 During Phase I of the implementation of the SREP, ADB, WB/IFC and EBRD will be supporting the Government of Mongolia and other relevant stakeholders - United Nations Organizations, bilateral partners, private sector companies, non-governmental organizations and civil society organizations - in developing the SREP investment plan for Mongolia. The finalization and endorsement of the investment plan by the SREP Sub-Committee marks the beginning of implementation (Phase II).

2. COUNTRY CONTEXT

2.1 Mongolia is a landlocked country spreading across 1.5 million square kilometers of the Central Asian plateau. It has a total population of 2.8 million (2012 estimates) and considered as one of the least densely populated in the world with 2 peope per square kilometer of land[1]. More than 60% of the population concentrates in the urban areas mainly in the capital city of Ulaanbaatar, while less than 40% lives in the extensive pasteurlands as mobile pastoralists or herders.

2.2 Mongolia is a resource-rich economy (i.e. coal, minerals and other natural resoures – livestock, wind and solar) and is considered as one of the world's fastest growing economies. Investments in mining has accelerated the country's Gross Domestic Product (GDP) growth and expected to grow more with large investments coming. Although share of agriculture has declined it still comprises around 15% of the country's GDP.

2.3 Approximately 35% of the country's population live below the poverty line. Based on human development index (HDI) report, urban HDI is higher by 14% than rural HDI, implying significant development gap between urban and rural areas[2]. The remoteness and low population density of the rural areas make them difficult to reach with basic infrastructure and social services support, hence creating a weak rural economy.

2.4 Mongolia experiences harsh climate – from drought and extreme cold. The country's climate is changing rapidly with annual mean temperature having risen by 2.1°C during 1940–2007. Climate change may worsen existing natural resource concerns, such as diminution of water resources and desertification.The pastoral population being dependent on grasslands and water resources for livelihood are among the most vulnerable groups to climate change impacts because of the loss of livestock, malnutrition, and exposure.

2.5 The population of Ulaanbaatar has nearly doubled since 1995, and the city is now home to more than one million inhabitants (about 40% of the country population). This and the recent economic growth have contributed to a sharp increase of energy demand with a tendency of further growth. As a result, air pollution in Ulaanbaatar, one of the coldest capitals in the world, has become extremely severe, reaching about seven times World Health Organisation (WHO) target values. In fact, according to a recent World Bank study[3], ambient annual average particulate matter (PM) concentrations in Ulaanbaatar are 10-25 times greater than Mongolian air quality standards (AQS) and are among the highest recorded measurements in any world capital. The main sources of ground-level air pollution are coal and wood burning from power plants, heat-only boilers (HOBs), and car and vehicle exhaust.

[1] Source: 2012 population estimates and 2011 estimates Mongolia population density http://data.worldbank.org/indicator/EN.POP.DNST
[2] Source: HDI Report 2003
[3] Mongolia - Air quality analysis of Ulaanbaatar : improving air quality to reduce health impacts , 01/12/2011

2.6 The Mongolian economic sectors are very energy intensive and due to the exclusive use of low quality coal, CO_2 emissions per unit of GDP are three times higher than the world average[4]. Mongolia has a very high carbon emission factor of 1.06 tCO_2/MWh; the carbon intensity is 2.4 times greater than European Union (EU-27: 0.460 tCO_2/MWh).

2.7 Mongolia's energy sector is faced with various challenges. As of 2013, Mongolia's electrification rate is 88% (98% in urban areas and 67% in rural areas)[5]. The electricity demand in Mongolia mainly stems from the industrial sector (59%) and, to a minor extent, to the residential sector (27%). Transmission and distribution (T&D) networks suffer from capacity constraints and reliability issues. Much of the exisitng T&D infrastructure is aging (in many cases over 40 years old) and is long overdue for replacement.

2.8 In 2012, the current installed capacity is 1,062 MW but only 836 MW is made available because of the aging powerplants and around 13.8% of the total energy consumption goes to T&D losses. Of the total installed capacity (1,062 MW), combined heat and power plant contributes largely with 828 MW (88%) and minimal contribution from diesel (74.34 MW, 8%), hydro (27.5, 3%) and solar/wind (6.65 MW, 1%). Though the proportion of wind capacity will grow as the 50 MW Salkhit wind farm became fully operational within the third quarter of 2013 and will generate about 170 GWh per annum.

2.9 By 2030, the forecasted capacity requirement will be 3,080 MW, of which 1,041 MW will be from the mining sector. This means that in order to meet the energy demand, additional installed capacity of at least 2,000 MW is needed.

2.10 Mongolia has great potential to grow as a major coking coal exporter. Based on preliminary estimates, geological reserves of coal in the country is more than 160 billion tons. The estimates include the country as one of the 15 countries of the world with large coal reserves. However, at present, the country is still heavily dependent on coal imports (mainly from Russia and China) with only small coal production. [4]

2.11 The country has good-to-excellent wind power resources equivalent to 1,100 GW of wind electric potential. The Salkhit wind farm (financed in 2012, completed in 2013) was the first sizeable wind farm and independent power producer in the country. On solar enery, the country has 270-300 sunny days per year with an average sunlight duration of 2,250-3,300 hours. The annual average amount of solar energy is 1,400 kWh/m^2 per year with solar intensity of 4.3-4.7 kWh/m^2 per day.[4] However, the poor infrastructures (transport, logistics, transmission) in this landlocked country increases cost and constrains project development.

2.12 The Government of Mongolia (GoM) has taken actions to support energy sector development in the country. Legal frameworks include: Energy Law (updated in 2011), Renewable Energy Law of Mongolia in 2007 and Concession Law in 2010. It has also approved a number of development programs such as: Program on Integrated Energy System of Mongolia, National Renewable Energy Program(renewable energy capacity target: 452.1 MW by 2020), and Comprehensive Policy on National Development which contains concrete short-

[4]Source: World Bank database, CO2 emissions (kg per PPP $ of GDP), 2010 data
5 Source: IEA, World Energy Outlook 2013, Electricity access in 2011 - Developing Asia

term and long-term strategies for the development of the energy sector. From 2000 to 2012 GoM implemented the successful 100,000 Solar Ger Electrification Program, which provided access to modern energy to over half a million nomadic herdrs through Solar Home Systems.

2.13 Although the central government of Mongolia has issued the policies, the renewable energy (RE) development is still in slow progress, mainly due to the difficulty of access to RE technologies and access to finance, as well as weak capacity – technical and financial – of the central grid and regulators. The huge energy demand and abundant RE resource in Mongolia needs the country to scale up its RE development in order to achieve a sustainable energy and economical development.

2.14 The Government is committed to promoting the development of renewable energy in the country and to that end expressed its interest to be one of the pilot countries under SREP and was included in the reserve list.

3. PREPARATORY ACTIVITIES

3.1 The Government of Mongolia, with support of MDBs, undertook a number of preparatory activities: (a) confirmation of the interest to start with the development of the SREP investment program; (b) collaboration with SREP/MDB technical mission to agree on key actions to initiate preparation of SREP investment plan, including preparation of the TOR for selection of the consultant to support the Government with development of investment plan; and (c) identification of key stakeholders.

3.2 On 31 December 2013, the Government confirmed its interest to start with the preparation of the SREP investment plan and submitted the Confirmation of Interest Form.

4. SCOPING MISSION - OBJECTIVES

4.1 The MDBs are organizing this Scoping Mission to assist the Government of Mongolia in planning and preparing the development of the SREP investment plan and the first MDB Joint Mission.

4.2 The objectives of the Scoping Mission are:

a. Identify and agree with Government of Mongolia, in particular with the Ministry of Energy, regarding the task force responsible for preparing the SREP Investment Plan;
b. Identify relevant government counterparts, development partners and stakeholders (especially private sector), to establish a committee for the proposed SREP activities;
c. Hold discussions about the objectives of the SREP programme, its benefits and the modalities of its implementation in Mongolia to ensure a common understanding by all stakeholders;

d. Get to know the current RE development, the gap of technologies and finance for the design of SREP development;
e. Draft the plan to pilot what kinds of RE technologies in Mongolia;
f. Initiate discussions and consultations with the identified stakeholders and development partners;
g. Undertake a stocktake of existing invesments (including experience from the Salkhit wind farm) activities and documentation available on a range of analytical, strategic and programming activities related to renewable energy, which are considered important aspects of preparing the investment plan;
h. Agree on the scope and outline of the investment plan;
i. Agree on the timeline as well as financial and human resources required to prepare the investment plan;
j. Prepare the terms of reference for the selection of the consultant to support the Government with the preparation of the SREP investment plan; and
k. Agree on the terms of reference for the next MDB Joint Mission.

4.3 At the completion of the scoping mission, the MDB team will jointly prepare an aide memoire that describes the key issues discussed, agreements reached and the next steps.

5. DATES

5.1 The proposed dates for the Scoping Programming Mission are 28 April to 2 May 2014.

6. PARTICIPANTS AND PROPOSED AGENDA

6.1 The Scoping Mission will be coordinated by the Government through the Ministry of Energy which is the focal point for SREP in Mongolia.

6.2 The SREP mission team will include: Jiwan Acharya (Senior Climate Change Specialist, Clean Energy, ADB), Teruhisa Oi (Senior Energy Specialist, ADB), Wooyul Lee (Energy Specialist, ADB), Hisaka Kimura (Principal Investment Specialist, ADB), Peter Johansen (Senior Energy Specialist, World Bank), Gailius Draugelis (Senior Energy Specialist, World Bank), Yun Wu (Energy Consultant, World Bank), Remon Zakaria (Principal Manager, EBRD), Tuul Natsag (Principal Banker, EBRD), Tuyen Nguyen (Resident Representative, IFC), Hemant Manda (Senior Energy Specialist, IFC), and Laura Gaensly (SREP Focal, IFC). Representatives from other bilateral agencies (e.g. Japan and Germany) may also join the mission.

6.3 The MDBs focal points for SREP are: WB: Gevorg Sargsyan (gsargsyan@worldbank.org); IFC: Joyita M. Mukherjee (jmukherjee1@ifc.org); ADB: Jiwan Acharya (jacharya@adb.org); EBRD: Andreas Biermann (BiermanA@ebrd.com).

6.4 The government focal point is: Mr. Makhbal Tumenjargal (Specialist for Renewable Energy Policy, Strategic Policy and Planning, m.tumenjargal@energy.gov.mn, m.tumee@ymail.com).

6.5 Table I presents a tentative agenda and timetable for the activities for the Scoping Mission.

Table I: Tentative Agenda and Timetable

Date	Morning	Afternoon
27 April 2014	Arrival of Scoping Mission Team in Ulaanbaatar, Mongolia	
28 April 2014	MDB team meeting	Kick-Off Meeting with Ministry of Energy
29 April 2014	Meeting with Government Agencies	Meeting with Government Agencies
30 April 2014	Meeting with Government Agencies	Meeting with development partners
31 April 2014	Meeting with development partners	Meeting with private sector (including solar and wind power project developers)
1 May 2014	Meeting with local financial institutions, commercial banks	Stakeholder workshop with NGOs and Private Sector
2 May 2014	MDB drafting of Aide Memoire	Wrap-up meeting with Government
3 May 2014	Departure of Scoping Mission Team	

Note: Delegation may split up for different meetings (e.g. IFC will focus more on private sector).

ANNEX 1. PRELIMINARY LIST OF STAKEHOLDERS

GOVERNMENT
• Ministry of Economic Development • Ministry of Finance • Ministry of Energy • Ministry of Environment and Green Development • Ministry of industry and agriculture • Ministry of Construction and Urban Development • National Renewable Energy Center • Energy Development Center • Energy Regulatory Commission • National Dispatching Center • Central Region Transmission Company • Ulaanbaatar Distribution Network Company
DEVELOPMENT PARTNERS
• German Development Bank (KfW) • Deutsche GesellschaftfürInternationaleZusammenarbeit (GIZ) GmbH • Japan International Cooperation Agency • United States Agency for International Development • Korea International Cooperation Agency • United Nations Development Programme
CIVIL SOCIETY
• World Vision • The Asia Foundation • Mongolian Foundation For Open Society (Soros Foundation)
PRIVATE SECTOR
• Mongolian Bankers Association • Mongolian Chamber of Commerce and Industry • Business Council of Mongolia • Trade and Development Bank of Mongolia LLC • Khan Bank LLC • XacBank LLC • Golomt Bank • Development Bank of Mongolia • State Bank • General Electric • Nova Terra • Ferrostaal • Newcom Company • Irradiance Co. Ltd • Malchin Co. Ltd • Sopoco LLC • Water Energy Co .Ltd • Institute of Physics & Technology, Mongolian Academy of Sciences • Sainshand Wind Park Co. Ltd • Mongolian University of Science and Technology • Local entities with RE project plans/proposals (typically with an international partner) • Operating mining companies with potential need for RE supply: Oyu Tolgoi, Energy Resources, Erdenes Talvan Tolgoi, MAK, Erdenes Mining Corp.

Annex 2: Criteria for the Sub-Committee to Assess the Investment Plan

a) **Increased installed capacity from renewable energy sources:** A high priority for most low income countries is expanding their generation capacity in order to ramp up modern energy use and energy access. Therefore, SREP-funded investments should result in increased MW from renewable energy, as well as increased energy (GWh) per capita in the country.

b) **Increased access to energy through renewable energy sources**: SREP may support grid extensions and decentralized energy systems with a view to expanding the percentage of the population with access to non-fossil-fueled electricity. Investment proposals should demonstrate how the investments are part of the Government's long term commitment to increasing energy access.

c) **Low Emission Development**: SREP may support the use of renewable energy technologies for electricity generation and services to replace fossil fuel technologies that would be deployed in a business-as-usual scenario aimed at substantially increasing commercial energy use in low income countries. In particular, benefits from SREP investments will often arise from "leap-frogging" technologies, in which low income countries will be assisted to mainstream renewable energy technologies into the overall energy system.

d) **Affordability and competitiveness of renewable sources:** Affordability is essential for increasing access and for ensuring the long term renewable energy market development. SREP funding should address clearly-defined cost barriers to adoption of renewable energy technologies, such as connection costs for rural consumers, higher capital costs of new technologies, transmission costs related to grid-connected renewables, and risk adjusted rates of return sought by investors.

e) **Productive use of energy**: SREP programs should promote the generation and productive use of energy.

f) **Economic, social and environmental development impact**: Investment proposals for SREP financing should demonstrate the generation of economic, social and environmental benefits.

g) **Economic and financial viability**: Investment proposals should demonstrate the economic viability of investments and the financial viability with the inclusion of time bound SREP resources.

h) **Leveraging of additional resources**: Activities should maximize the leverage of funds from other partners.

i) **Gender:** SREP investments should seek to strengthen the capacity of women to be active participants in the economic sector and avoid negative impacts on women.

j) **Co-benefits of renewable energy scale-up:** SREP investments should include decreased air pollutants from energy production and consumption as well as the potential to reduce stress on forest resources. Investments and activities should elaborate on the potential positive effects on air quality and natural resource management through the adoption of renewable energy technologies.