

NS-140 - Strategizing for Grid Strengthening / Improvement for evacuation of power from Wind Power Projects

Pakistan

NAMA Seeking Support for Preparation

A Overview

A.1 Party

Pakistan

A.2 Title of Mitigation Action

Strategizing for Grid Strengthening / Improvement for evacuation of power from Wind Power Projects

A.3 Description of mitigation action

The Government of Pakistan envisages mainstreaming of alternative and renewable energy (ARE) in the development plans of the country. The RE policy of the government of Pakistan invites investment from private sector for: i) Independent Power Projects (IPPs) for sale of power to the grid only; ii) Grid Spill-over Power Projects for self-use and sale to utility; iii) Captive Power Projects for self or dedicated use; and iv) Isolated Grid Power Projects (small, stand-alone). The Government of Pakistan (GoP) has targeted to include a large share of AREs in the energy mix to meet the increasing energy demand through Renewable Energy technologies in the country. The GoP had previously planned to produce at least 5% of the total power generation of the country (i.e. 9700 MW) through renewable energy and more significantly through wind energy sources by 2030.

This NAMA Support project is designed to develop a master plan for development of wind power and prepare a strategy for developing national grid to evacuate the power. This NAMA Support project will also help in addressing the issues related to financing and capacity lackings.

Scope of the NAMA Support Project

Establish master planning for development of wind power in potential areas of Pakistan, create enabling environment and develop the grid infrastructure to evacuate 3,200 MW wind power in next five years. Following related objectives would also be achieved through this proposed NAMA:

- A master plan will be developed for development of wind power in the country.
- A strategy document will be prepared that would facilitate in evacuation of power supply of 3200 MW in the national grid in 5-8 years
- A financing instrument will be created to promote wind power in the country
- A wind power support fund will be established for support development of wind power in Pakistan
- Capacity of the stakeholders will be enhanced to handle wind power infrastructure.

- This will lead towards establishing a strong footing towards significantly reduce emission of greenhouse gases of approximately 5.2 million tCO₂ annually
- Contribution towards improved and sustainable economy by providing relatively cheaper electricity

Potential for transformational change

At present, focus of the current government is to install coal power plants through public and private sector funding. The wind power development lags behind in overall upcoming power projects due to lack of master planning and effective strategy to harness and develop wind power projects in the country. This NAMA Support project would give a short, medium and long term plan for the wind power development, will give a road of attracting private sector investment and will chalk out strategy for establishing network to evacuate power from upcoming wind power project. This NAMA Support project intends to transform the current market scenarios in following manners:

- The master planning will enable the government to invite the private sector to invest in wind power sector at pre-identified places.
- This NAMA Support Project can trigger an investment of US \$ 6 billion in the private sector;
- Wind power is relatively cheaper source of energy as compared to thermal (RFO and HSD) based power. Integration of wind energy will reduce dependency on imported fuel. This will reduce the basket tariff rate of electricity and relieve the end users.
- The NAMA would lead towards improved energy mix of the country. This would increase the confidence level of the government, grid operators and developers towards AREs. This could lead to larger share of AREs coming to national grid which would help in mitigating large quantum of GHGs in future.
- Integrating wind power will reduce consumption of RFO and HSD that would result in reducing fuel import bill of the country to the tune of US \$ 1 billion. This will improve economic conditions of the country and will be having huge transformational impact.
- Addition of targeted 3.2 GW clean electricity would abate GHG emissions that would be developed as a result of this NAMA Support project. Once the sector is triggered and market mechanisms are put in place, this can lead towards establishing much higher capacities through wind power as compared to the target envisaged in this NAMA Support project. This would help in mitigating more GHG emissions. Further, this would support in implementing the envisaged NAMA Implementation Programme in the country.
- This NAMA Support project would overcome the barriers that are currently being faced in developing DG options.

Project Impact

Pakistan's poor performance in international financial markets, its lower credit rating and difficulty in handling financing related issues like circular debt has made it very difficult for the lenders to easily finance the power projects in Pakistan. The lenders who choose to finance the projects charge very high financing rates that make the power generated through ARE power plants expensive. If the situation is not handled adequately then materializing GoP plans for developing AREs would be difficult. Further, the GoP has included coal as key source for generation of electricity in its energy generation planning. Future perspective of cheap coal power will make it difficult for ARE projects to materialize. By undertaking this NAMA, the GoP would be able to set a clear direction towards developing ARE market in Pakistan. This

will enable easy financing available for the projects in the country and will smoothen the ways for setting up 3.2 GW clean wind power into its national energy mix. This will also help in reducing GHGs to the tune of 5.2 million tCO₂ annually. Further, the NAMA is designed to attract private sector to invest in the DG options and install such options at their premises to meet their energy needs. It is estimated that through an investment of US\$ 14.27 million, this NAMA will trigger an investment of US \$ 6 billion from the private sector till 2020 and quantum can increase more as the time passes and such options are being adopted by the end consumers in different sectors of economy. Development of wind power will lead towards attaining goal of sustainable development, self-reliance and self-sufficiency in meeting energy needs of the end consumers and promoting clean sources of energy.

Financial Ambition

The estimated cost of this NAMA Support project is around €14.27 Million. The host country will not only facilitate the implementation of NAMA activities but will contribute financially by various policy and strategic initiatives in the form of duty exemptions on renewable/energy efficiency equipment. This NAMA Support project will create mechanisms for the lenders and the financiers and will enable them to lend these projects with relatively lower interest rates, accessing Clean Technologies Fund and Green Climate Fund as and when this will be established will be sougthed out at later stage. The successful implementation of proposed actions in the NAMA would spur private sector investment.

Mitigation Ambition

By successful implementation of NAMA, a way forward will be set forth for connecting 3.2 GW of wind power projects to the national grid which would also help in mitigating 5.2 million tCO₂ annually. This will improve overall environmental conditions in the country.

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 type="checkbox"/> Energy Efficiency	<input type="checkbox"/> Geothermal Energy
<input type="checkbox"/> Hydropower	<input type="checkbox"/> Solar Energy
<input checked="" 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"/> CO ₂	<input type="checkbox"/> CH ₄
<input type="checkbox"/> N ₂ O	<input type="checkbox"/> HFCs
<input type="checkbox"/> PFCs	<input type="checkbox"/> SF ₆

Other

B National Implementing Entity

B.1.0 Name	Alternative Energy Development Board, Ministry of Water and Power
B.1.1 Contact Person 1	Irfan Yousuf, Director (CDM)
B.1.2 Address	2nd Floor, OPF Building G-5/2, Islamabad
B.1.3 Phone	+92-51-9241288
B.1.4 Email	irfanyousuf@aedb.org
B.1.5 Contact Person 2	
B.1.6 Address	
B.1.7 Phone	
B.1.8 Email	
B.1.9 Contact Person 3	
B.1.10 Address	
B.1.11 Phone	
B.1.12 Email	
B.1.13 Comments	

C Expected timeframe for the preparation of the mitigation action

C.1	Number of months for completion	36
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D Currency

D.1	Used Currency	AED
		Conversion to USD: 1

E Cost

E.1.1 Estimated full cost of preparation	14270000
E.1.2 Comments on full cost of preparation	<p>Pakistan's performance in international financial markets, its lower credit rating and difficulty in handling financing related issues like circular debt has made it very difficult for the lenders to easily finance the power projects in Pakistan. The lenders who choose to finance the projects charge very high financing rates that make the power generated through ARE power plants expensive. If the situation is not handled adequately then materializing GoP plans for developing AREs would be difficult. Further, the GoP has included coal as one of the sources for generation of electricity in its energy generation planning. Future perspective of cheap coal power will make it difficult for ARE projects to materialize. By undertaking this NAMA, the GoP would be able to set a clear direction towards developing ARE market in Pakistan. This will enable easy financing available for the projects in the country and will smoothen the ways for setting up 3.2 GW clean wind power into its national energy mix. This will also help in reducing GHGs to the tune of 5.2 million tCO₂ annually.</p> <p>Further, the NAMA is designed to attract private sector to invest in the DG options and install such options at their premises to meet their energy needs. It is estimated that through an investment of US\$ 14.27 million, this NAMA will trigger an investment of US \$ 6 billion from the private sector till 2020 and quantum can increase more as the time passes and such options are being adopted by the end consumers in different sectors of economy.</p>

Development of wind power will lead towards attaining goal of sustainable development, self-reliance and self-sufficiency in meeting energy needs of the end consumers and promoting clean sources of energy.

F Support required to prepare the mitigation action

F.1.1 Amount of Financial support

6790000

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

It is noted that the sustainability, reliability and long term impacts are one of the corner stone's for successful implementation of any development project/ programme around the world. This NAMA proposal includes an important section in form of creating a financial instrument that would ensure sustainability of the whole program.

The financial support required under this NAMA Support project will enable in creating conducive environment for development of wind power. The wind power development support fund created under this NAMA Support project will enable to address barriers related to data collection, resource updation and assisting in developmental activities. The financial instruments that this NAMA Support project is targeting to develop will facilitate in attaining the objectives of this NAMA Proposal.

F.2.1 Amount of Technical support

7480000

F.2.2 Comments on Technical support

The NAMA Support Project would result mitigating the risks involved in diversion from Business As Usual (BAU) growth trajectories. This will be done through removing technical, technological and financial barriers and improving the systems in vogue. This NAMA Support project is expected play an important role in overall Greening of Economy and Green Growth as is envisaged is Pakistan National Climate Change Policy of Government of Pakistan.

Development of wind power as envisaged under the NAMA Support project with a vision to encourage private sector investment coming to the development. This NAMA Support project is expected to leverage the private sector investment and create an enabling environment for trigger development of wind power in the country. This NAMA Support project targets developing this entirely a new venue in Pakistan to level that 3.2 GW wind power may be installed by 2020. This NAMA would enable the country to proficiently develop wind sector in Pakistan and contribute in mitigating GHG emissions.

F.3.1 Amount of capacity building support

F.3.2 Type of required capacity building support

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

F.3.3 Comments on Capacity Building support

Human resource development, its capacity building and orientation towards latest models, techniques and trends is one of the components of this

NAMA. The country would benefit from the experience of developed human resource in implementing similar projects in other parts of the country.

F.4 Financial support required

F.5 Technological support required

F.6 Capacity support required

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

G.1 Relevant National Policies

National Climate Change Policy approved in 2012 outlines goals and strategies to achieve targets in the Adaptation and Mitigation sectors. It guides the implementing agencies to exploit clean energy sources (i.e. alternative and renewable energy resources) to generate electricity, improve efficiency of currently installed thermal power plants, improve efficiency of the national grid system and deploy AREs for domestic uses.

Moreover, Policy of Development of Renewable Energy for Power Generation, 2006 has been announced by the Government of Pakistan to attract private sector investment for developing clean ARE power projects with objectives of sustainable development, energy security, environmental protection and socio-economic uplift. The Power Policy 2013 of the Government of Pakistan (GoP) emphasises development of AREs for providing inexpensive and clean electricity to every household in Pakistan with deep interest of reducing GHG emissions. Please describe the national and international climate policy context: Describe the current framework for addressing climate change in the target country. Please include a description of the country's mitigation strategy and plans to address climate change. Specify whether/how national targets relate to international agreements, especially to emission reduction pledges.

The projected electricity demand of Pakistan's growing economy is expected to within the range of 306,797 GWh by 2020, and 889,583 GWh by 2035^[1]. The planned projects in power sector indicate that most of the power is likely to be sourced from the country's vast coal reserves. The GoP is planning to harness local as well as imported coal for generation of 6,600 MW power in next five years. The installed capacity of coal power plants is planned to be enhance to 13,200 MW by 2025.^[2] By 2050, energy related emissions are expected to increase to 2,730 MtCO_{2e}, i.e., equal to 64% of total emissions that year^[3] – evidence that the energy sector in Pakistan will become increasingly carbon-intensive without intervention.

Pakistan is currently categorized as non-Annex-I country that does not have any binding to reduce GHG emissions. However, as a commitment to play a role in the global GHG emission reduction initiatives, GoP in its plans has keen interest to set up ARE power projects. The GoP, in its long term plans i.e. upto 2030, is targeting to set up around 15 GW ARE power through different applications in different parts of the country. This will result in increasing share of AREs in the energy mix from zero to around 12%.

[1] State of Industry Report, 2012, NEPRA. (www.nepra.org.pk)

[2] Power Policy 2013 (www.ppib.gov.pk)

[3] Ministry of Climate Change, Government of Pakistan

G.2 Link to other NAMAs

H Attachments

H Attachments

Title Description

H.1 Attachment description

H.2 File

Browse...

I Support received

I.1 Outside the Registry

Nil

I.2 Within the Registry

Support provided Support Type Amount Comment Date