

NS-147 - Bio-energy generation and greenhouse-gases mitigation through organic-waste utilization

Pakistan

NAMA Seeking Support for Preparation

A Overview

A.1 Party

Pakistan

A.2 Title of Mitigation Action

Bio-energy generation and greenhouse-gases mitigation through organic-waste utilization

A.3 Description of mitigation action

Pakistan makes a tiny contribution to total global greenhouse gas (GHG) emissions (among the lowest in the world) but it is among the countries most vulnerable to climate change, and it has very low technical and financial capacity to adapt to its adverse impacts. For Pakistan to continue on a development path to achieve the goals articulated in the Planning Commission's Vision 2030 document, it is imperative to prepare the ground to enable it to face this new challenge. While Pakistan is working on a strategy that seeks to conserve energy, improve energy efficiency and optimize fuel mix to support global efforts for reduction in GHG emissions, the more immediate and pressing task is to prepare itself for adaptation to climate change. Only by devising and implementing appropriate adaptation measures will it be possible to ensure water, food and energy security for the country as well as to minimize the impact of natural disasters on human life, health and property. The agriculture and livestock sectors accounted for about 39% of Pakistan's total GHG emissions in 2008. These emissions were essentially all methane (CH₄) and nitrous oxide (N₂O), 79%, and 21% respectively, and originated mainly from four sub-sectors: 1) enteric fermentation in cattle (all in the form of methane); 2) rice cultivation; 3) release of nitrous oxide from agricultural soils/ nitrous fertilizer; and 4) manure management. During 1994-2008 GHG emissions from agriculture and livestock in Pakistan grew at the rate of about 3% per annum (National GHG inventory 2008). There is a pressing need to find ways to contain these emissions or at least slow down their growth rate. This will require technological innovations and financial resources, for which Pakistan will need the support of the International community. To mitigate and minimize GHG emissions from the agriculture and livestock sectors, the Government of Pakistan shall take the following policy measures: Pakistan's greenhouse gas (GHG) emissions are low compared to international standards. As such, the most important targets for mitigation efforts focused on reduction of GHG emissions are the energy and agriculture sectors. In the energy sector, integration of climate change and energy policy objectives is particularly important as today's investment will "lock in" the infrastructure, fuel and technologies to be used for decades to come.

Objective the NAMA Support Project

The overall mission of this project will be to develop and disseminate environment-friendly and cost-effective technologies and management practices of bio-energy generation from organic waste for sustainable development in agriculture and water sectors to attain and sustain cost-effective farming systems and reduce greenhouse gases emission.

- The primary objective of the project will focus on production of biogas from livestock wastes of dairy farms so as to capture and utilize the CH₄ gas as a source of bioenergy.
- Conduct diagnostic studies to evaluate the existing pattern of organic-wastes disposal/utilization and the amount of green-house gases emitted in a time span
- Management and utilization of bio-digesters' slurry as source of bio-fertilizer to substitute the chemical fertilizer; the main source of greenhouse gases at the stage of manufacturing.

Impacts of the overall NAMA Support Project

The NAMA project will not only mitigate the GHG emission and climate change but will also play vital role in energy shortfall in Pakistan. Deforestation, compensating low cost crop production, lesser pollution in the fields and other areas, organic vegetable crops and fruit production and sowing of fossil fuels. Due to reduction in use of chemical fertilizer, and fossil fuel burning lesser GHG will be emitted.

Financial support mechanism

Govt. Of Pakistan Ministry of Food Security and Research will be agreed for overall financial management of the project by PARC/NARC. NARC is a sub-ordinate setup of PARC with full-fledge financial system.

Project outcome

Through NAMA project facility Pakistani dairy sector in building its capacity to channel investments into the development of commercial biogas plants for capturing methane produced at farms and utilize it as a valuable energy resource. The outcome of the project is to build the capacity of the dairy farms in Pakistan for increased gainful investment in commercial biogas sector. This project advances cost-effective, near-term methane recovery and use it as a clean energy source in Pakistan. The project contributes to reduction of greenhouse gas (GHG) emissions by encouraging the application of modern handling and treatment of solid and liquid effluents that result from intensive cattle husbandry and dairy operations.

Project Outputs

- Improvement in livelihood of the communities where NAMA will be intervened.
- Lower GHG emission as compared to the day-one of the project.

- Promotion in the processing and use of manure rather than chemical fertilizer.
- Growth in dairy and milk business.
- Capacity building of dairy farms for installation of biogas system in solution of trouble shooting.
- New business activities will be generated regarding biogas system installation, repair and maintenance.
- Capacity building of the federal/provincial and NGO peoples regarding management of manure and carbon sequestration.
- awareness about the potential carbon revenue that can be generated from the installation of biogas plants at dairy farms.
- It is expected that this project will provide opportunities for partnership among investors, financial institutions, and technology suppliers.

Potential for transformational change

This NAMA project will be the first initiative in this field in Pakistan. The project will provide also a baseline research and finding to the researchers working on climate change in the country encouraging for future research in the same discipline. Besides the scope of the project, number of other benefits will also be trickled down to the communities involved. The research can further be expended to the other disciplines of agriculture responsible for GHG emission.

A.4 Sector

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

Other

A.5 Technology

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

B National Implementing Entity

B.1.0 Name	Pakistan agriculture Research council PARC, Ministry of National Food Security and Research
B.1.1 Contact Person 1	Dr. Bashir Ahmad (Program Leader, Climate Change)
B.1.2 Address	G 5/1 Islamabad
B.1.3 Phone	+92-51-90733639
B.1.4 Email	bashirad@hotmail.com
B.1.5 Contact Person 2	Dr.Matiullah Khan (Principal Scientific Officer)
B.1.6 Address	G 5/1 Islamabad
B.1.7 Phone	+92-51-90733639
B.1.8 Email	mukhan65pk@yahoo.co.uk
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	<input type="text" value="AED"/>
	Conversion to USD:	1

E Cost

E.1.1	Estimated full cost of preparation	19675335
E.1.2	Comments on full cost of preparation	

F Support required to prepare the mitigation action

F.1.1	Amount of Financial support	19675335
F.1.2	Type of required Financial support	<input checked="" type="checkbox"/> Grant <input type="checkbox"/> Loan (sovereign) <input type="checkbox"/> Loan (Private) <input type="checkbox"/> Concessional loan <input type="checkbox"/> Other <input type="text"/>
		<input type="checkbox"/> Guarantee <input type="checkbox"/> Equity <input type="checkbox"/> Carbon finance
F.1.3	Comments on Financial support	
F.2.1	Amount of Technical support	
F.2.2	Comments on Technical support	
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 <input type="text"/>
F.3.3	Comments on Capacity Building support	
F.4	Financial support required	<input type="checkbox"/>
F.5	Technological support required	<input type="checkbox"/>

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 to generate electricity, improve efficiency of currently installed thermal power plants, improve efficiency of the national grid system and deploy AREs for domestic uses.

According to 2008 statistics, Pakistan's national GHG inventory was 310 million tons of CO₂ equivalents with 4,733 thousand tonnes of CO₂ equivalents as Methane are discharged from waste management disposal facilities in Pakistan of this 2,832 tonnes are generated from solid wastes and the remainder from the management of waste water. In addition 772 thousand tonnes of N₂O, CO₂ equivalent is also discharged from these sources.

Where agriculture of Pakistan contributes 21.2% of the GDP, their livestock has a great contribution. There are 59 million heads of livestock which produce 0.295 million tons of dung per day with a potential of 9.0 million cubic meter biogas per day. The project is in line with the climate change policy of Pakistan and supports the objective of PCCP. The project also supports the energy needs of the country; which is a major issue. This project also supports Article 2 of the Kyoto Protocol.

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

I.2 Within the Registry

Support provided Support Type Amount Comment Date