



**Alternative Energy Development Board
Ministry of Water and Power
Government of Pakistan**

Title: Pakistan - Waste Sector NAMA
Country: Pakistan
Sponsoring Agency: Alternative Energy Development Board, Ministry of Water & Power
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Executive Summary

Introduction

Municipal Solid Waste Sector:

Worldwide methane (CH₄) from the landfilling of municipal solid waste (MSW) accounted for over 788 million metric tons of carbon dioxide (MtCO₂eq) equivalent in 2012 and represented over 12 percent of total global CH₄ emissions. Global CH₄ emissions from landfills are expected to grow to 816 MtCO₂eq by 2020. CH₄ Emissions from landfilling of Municipal Solid Waste in Pakistan accounted for 3.6 MtCO₂eq in 2012 and is expected to grow to 3.82 MtCO₂eq by 2020.

Pakistan has regulations that will constrain and potentially reduce future growth in CH₄ emissions from landfills. Waste to Energy projects are being encouraged in Public and Private Sectors.

Wastewater Sector:

Worldwide CH₄ from wastewater accounted for more than 629 MtCO₂eq in 2012. Wastewater is the fifth largest source of anthropogenic CH₄ emissions, contributing approximately 9 percent of total global CH₄ emissions. Global CH₄ emissions from wastewater are expected to grow to 665 MtCO₂eq by 2020. **In Pakistan, CH₄ from wastewater accounted for more than 23 MtCO₂eq in 2012. CH₄ emissions from wastewater are expected to grow to 27 MtCO₂eq by 2020 in Pakistan.**

Cattle and Buffalo Waste:

Pakistan being an agricultural country has large numbers of livestock. According to the Economic Survey (2009 – 10), Pakistan has 34.3 million cattle and 30.8 million buffalo heads respectively. This amounts to a daily generation of waste amounting to over 600 million kg of manure daily. In the context of the prevailing energy crisis in the country, the livestock waste presents an opportunity for Pakistan to promote both small-scale and utility-scale biogas that would greatly reduce the GHG emissions resulting from livestock waste produced in the country as well as provide alternate sources of energy both at the individual farm and utility level. The

prevalent renewable energy policy in Pakistan (Short-term RE Policy, 2006) provides the government the mandate to promote biogas in the country that can potentially reduce GHG emissions resulting from the anaerobic decomposition of manure.

Estimated GHG emissions reductions are expected to be 30.8 MtCO₂eq from Municipal Solid Waste and Wastewater Sectors in Pakistan as a result of the NAMA by 2020. Country will have enormous benefits in terms of environment and health as by controlling pollution from the waste sector, huge amounts of funds being spent on health sector will be saved and by products of sanitary landfills and wastewater treatment plants (Methane, Carbon dioxide and organic fertilizer) will be sources of income hence will bring economic uplift.

NAMA Description

1. Integrated Municipal Solid Waste collection, and conversion of Waste to Energy NAMA for Pakistan's cities (includes organic waste separation, recycling, establishment of Waste to Energy Plants and Feed-in-tariff study, electricity generation).
2. Wastewater treatment and Wastewater to Energy NAMA (includes anaerobic treatment, gas separation, organic fertilizer production, electricity generation)
3. Nationwide promotion of both domestic and utility-scale biogas as a NAMA targeting the reduction of GHG emissions resulting from the waste generated from over 60 million cattle and buffalo heads in the country.

Environmental Pollution control, energy generation, organic fertilizer production, reduction in GHGs.

Recently, Waste to Energy and Bio-Energy have been added to Pakistan's Renewable Energy Policy which has been approved by the Economic Committee of the Cabinet. Waste Sector NAMA will help transform the Renewable Energy Policy in this sector.

The overall objective is the reduction of emissions from solid and liquid wastes from the urban cities. With this NAMA, Pakistan wants to development a programme to promote alternative use of waste, specifically for energy production. The scope of the programme will include different forms of energy and technologies. Emissions reductions will results from the avoidance of emissions from waste and additionally the replacement of conventional fuels with bioenergy.

Incentives

Government of Pakistan has resolved to extend all existing benefits under ARE Policy 2006 to Waste to Energy and Bio-Energy Projects. Specific proposed incentives are given below:

Fiscal Incentives

- No customs duty or sale tax for plant, machinery, equipment and spares (including construction machinery, equipment, and specialized vehicles imported on temporary

basis) meant for the initial installation or for balancing, modernization, maintenance, replacement, or expansion after commissioning of ARE projects subject to fulfillment of conditions under the relevant SROs. All imported plant, machinery, equipment and specific items used in the production of Alternative Fuels shall also be exempted from Customs Duty and Sales Tax

- Parties may raise local and foreign finance in accordance with regulations applicable to industry in general. GoP approval may be required in accordance with such regulations.
- Non-Muslims and non-residents shall be exempted from payment of Zakat on dividends paid by the company.

Financial Incentives

- Non-residents allowed purchase of securities issued by Pakistani companies without State Bank of Pakistan's permission, subject to prescribed rules and regulations.

Risk Cover

GOP has developed a security package consistent with international best practices which offers protection against "political" risk in a manner consistent with GOP policies in other infrastructure and related projects;

Incentives Exclusive for ARE-IPPs,

Fiscal Incentives

- Exemption from income tax, including turnover rate tax and withholding tax on imports.
- Repatriation of equity along with dividends freely allowed, subject to rules and regulations prescribed by the State Bank of Pakistan.

Financial Incentives

- Permission for power generation companies to issue corporate registered bonds.
- Permission to issue shares at discounted prices to enable venture capitalists to be provided higher rates of return proportionate to the risk.

- Permission for foreign banks to underwrite the issue of shares and bonds by ARE-IPPs to the extent allowed under the laws of Pakistan.
- Independent rating agencies in Pakistan to facilitate informed decision-making by investors about the risk and profitability of project company's bonds/TFCs.

Risk Cover

Significant risks covered are:

- GOP guarantees payment obligations under the EPA in respect of projects to whom AEDB issues LOI and/or LOS;
- Safeguards in the event of privatization of any power purchaser or other constituent public sector entity;
- Protections against change in law, including tax and duty impositions;
- Foreign Exchange approvals and facilities commensurate with those in place for conventional power projects;
- Ensure convertibility of Pakistani Rupees into US Dollars at the prevailing exchange rate and the remittance of foreign exchange to cover necessary payments related to the project, including debt servicing, payment of dividends, and repatriation of equity.
- Indexation of tariff to cover exchange rate and inflation etc. consistent with that available to conventional power projects.

On the recommendation of Alternative Energy Development Board, the State Bank of Pakistan has enhanced capacity limit of all renewable power projects from 10MW to 20MW for financing under Scheme for Financing Power Plants Using Renewable Energy.

Banks, Development Finance Institutions DFIs can consider financing requests of sponsors, who intend to set up power projects up-to a maximum capacity of 20MW, using all types of renewable energy sources eligible under Scheme. Maximum financing limit to a single renewable power project under Scheme has also been fixed at Rs 3 billion to accommodate larger number of borrowers. However, banks, DFIs may continue to provide financing facilities as per their credit policies over and above maximum limit from their own sources subject to adherence to Prudential Regulations. SBP took these steps to promote Power Plants using Renewable Energy in the country after receipt of feedback from Alternative Energy Development Board AEDB.

Moreover US OPIC, IFC, ADB, US EXIM Bank etc. have shown interest and are financing Renewable Energy projects in Pakistan on 25% equity basis.

Support Requested

The support could be in the form of grant assistance from donor agencies. Host country will provide experts from Alternative Energy Development Board to supervise the development of NAMA in the waste sector.

Proper estimation is required to give an amount. Considering the scope of work US\$ 5.0 million seems to be a conservative estimate.