

NS-250 - Biogas for onsite power generation for medium/large pig Farms

Viet Nam

NAMA Seeking Support for Implementation

A Overview

A.1 Party

Viet Nam

A.2 Title of Mitigation Action

Biogas for onsite power generation for medium/large pig Farms

A.3 Description of mitigation action

General objective: To develop a favourable environment for use of biogas power at pig farms that enhance sustainable development in medium and large-scale farms in rural areas and contribute to reduce GHG emissions.

Specific objectives:

- *To develop a policy and institutional framework to incentivize investment in commercial biogas-electricity generation at pig farms in Viet Nam.*
- *To enhance the development of biogas-electricity generation at pig farm in order to reduce GHG emission and contribute to agricultural sector target which described in “National Climate Change Strategy of Viet Nam: To reduce 20% of GHG emission from agricultural sector after each 10 year”.*
- *To improve pig farm capacity on affection abiding national regulatory standard for waste treatment.*

A.4 Sector

- | | |
|---|--|
| <input checked="" type="checkbox"/> Energy supply | <input type="checkbox"/> Transport and its |
| <input type="checkbox"/> Residential and Commercial buildings | 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 program |
| <input checked="" type="checkbox"/> National/Sectoral policy or program | |

A.7 Greenhouse gases covered by the action	<input type="checkbox"/> infrastructure <input type="checkbox"/> Project: Other	
	<input type="checkbox"/> Other <input type="text"/>	
	<input checked="" type="checkbox"/> CO2 <input type="checkbox"/> N2O <input type="checkbox"/> PFCs <input type="checkbox"/> Other <input type="text"/>	<input checked="" type="checkbox"/> CH4 <input type="checkbox"/> HFCs <input type="checkbox"/> SF6

B National Implementing Entity

B.1.0 Name	Department of Livestock Production, Ministry of Agriculture and Rural Development of Viet Nam
B.1.1 Contact Person 1	Mr. Tong Xuan Chinh
B.1.2 Address	No. 16 Thuy Khue street, Ha Noi, Viet Nam
B.1.3 Phone	+84437332219
B.1.4 Email	chinhtx.cn@mard.gov.vn
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 implementation of the mitigation action

C.1	Number of years for completion	5
C.2	Expected start year of implementation	2016

D Currency

D.1	Used Currency	<input type="text" value="AED"/> Conversion to USD: 1
-----	---------------	--

E Cost

E.1.1 Estimated full cost of implementation	239600000
E.1.2 Comments on full cost of implementation	<p>Assuming that 50% of pig farms will implemented the biogas NAMA in 2020, so there will be about 2150 farms installed biogas power generation system with total capacity in 2020 is 215 MW (2150 farms x 100 kw/farm).</p> <p>Investment for biogas power generation system of one farm, including for buying power generation machinery and equipments; cost of installation and O&M, etc. is about USD 100,000/one system for one farm (According to the quotation of BIGWN.Lt.Co.). Therefore, total investment cost of biogas electricity generation system for 2150 farms is 215 million USD.</p> <p>Finance for the biogas NAMA will be received from three sources: International support, State contribution and Farm owner's capital with the total of USD 239.6M. These sources are divided to three</p>

types of funding: (1) Grant for program implementation; (2) Investment cost for 2150 systems; and (3) Loan insurance.

E.2.1 Estimated incremental cost of implementation 14000000

E.2.2 Comments on estimated incremental cost of implementation

With 2150 farms which install biogas power generator in 2020, total estimated electricity generation capacity is 215 MW, the expected GHG reduction to 2020 from power generation is about 2.2 million ton of CO₂e. The incremental cost of GHG reduction is about 14-15 million USD (price for GHG reduction is \$6-8/per ton of CO₂e).

F Support required for the implementation the mitigation action

F.1.1 Amount of Financial support

196600000

F.1.2 Type of required Financial support

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

F.1.3 Comments on Financial support

The total financial support from international donors are \$100.6 M including \$86M for concessional loan, \$10M for loan insurance and \$4,6 M for capacity building.

The total financial support from Government are \$96 M including \$86 M for concessional loan and \$ 10 M for loan insurance.

F.2.1 Amount of Technological support

215000000

F.2.2 Comments on Technological support

Technology investment cost of 2150 biogas electricity generation system is USD 215 M:

- 40% of total investment cost (USD 86 M) come from concessional loan support by international donors.

- 40% of total investment cost (USD 86 M) come from concessional loan support by Government-

- 20% of total investment cost (USD 43M) come from farm owners (private investors)

F.3.1 Amount of capacity building support

4600000

F.3.2 Type of required capacity building support

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

F.3.3 Comments on Capacity Building support

- **Training**
- **A help desk to support biogas power generation**
- **Support for grid connection**

- Raising awareness
- Feasibility studies.
- Three demonstration models.
- MRV.

- 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 6.51
- G.2 Unit
- G.3 Additional information (e.g. if available, information on the methodological approach followed)

H Other indicators

H.1 Other indicators of implementation

GHG emission reduction impacts: GHG emission reduced

Sustainable development impacts:

- *Number of jobs created by the program*
- *Impact on the balance of payments*
- *Increasing pig farm revenues by selling the electricity to national grid*
- *Increasing pig farm revenues by reducing the use of conventional electricity.*

I Other relevant information

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

Economic benefits:

- *National energy self-sufficiency is increased with the use of cheap, renewable and indigenous energy resources, which correspondingly decreases dependence on imported fossil fuel and a reduction in negative impacts of fuel imports on the nation's balance of payments;*
- *Incremental reduction on the need for new build power plants at a national level;*
- *Increasing the income of pig farm through selling the electricity from biogas power generation;*
- *Improving on diversify the source of the energy supply through biogas production system. The effort will substitute biogas energy for fossil fuel, reducing the use of coal. It will also help to ease power shortages.*

Social benefits:

- *Creating employment opportunities for the operation and maintenance of electricity generation systems for the communities, especially for farmers around the farms' area. Creating opportunities for expansion of business investors in small type biogas power generator;*

- *To help raising awareness of the community about sanitation, clean technology, greenhouse gas, and renewable energy;*
- *Protecting human health and the environment, demonstrate a sustainable model to solve animal manure pollution problems for other livestock operations, facilitate agricultural restructuring, and increase farmers' incomes;*
- *Establishing a positive model of animal manure management practice for other animal operations. NAMA will apply new, advanced, and environmental friendly technologies in treating animal wastes and associated utilization, which can be replicated on other livestock farms, dramatically reducing livestock-related GHG emissions and providing the potential for new sources of revenue and green power.*

Environmental benefits:

- *Global environmental protection is supported by the capture of fugitive GHGs' specifically methane, and the reduction in energy related emissions;*
- *A healthier and safer work place is developed with improvements in local air quality, and control of highly combustible methane emissions;*
- *Considerable reduction in odor from the existing treatment facility that currently affects local communities;*
- *Control of leach ate that would otherwise pollute groundwater resources.*

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

J.1 Relevant National Policies

- *Decision 432/QĐ-TTg dated 12 April 2012 by Prime Minister on approving the Sustainable Development Strategy in Viet Nam for the period 2011-2020.*
- *Decision No. 2139/QĐ-TTg dated 05 December 2011 by Prime Minister on approving the National Strategy on Climate Change.*
- *Decision 1393/QĐ-TTg dated 25 September 2012 by Prime Minister on approving the National Green Growth Strategy.*
- *Decision No. 1775/QĐ-TTg dated 21 November 2012 by Prime Minister on approving the Plan of Greenhouse Gases Management, Management of Carbon Trading Activities to the World Market.*
- *Decision 543/QĐ-BNN-KHCN dated 23 March 2011 by Minister of Agriculture and Rural Development on issuing action plan of Agriculture and Rural Development sector to cope with climate change in the period of 2011-2015 and projection to 2050.*
- *Decision No 3119 /QĐ-BNN-KHCN dated 16 December 2011 by Minister of Agriculture and Rural Development on approving the Plan of GHG emission in the agriculture and rural sector to 2020.*

J.2 Link to other NAMAs

K Attachments

K	Attachments	Title Description
K.1	Attachment description	
K.2	File	<input type="text"/> <input type="button" value="Browse..."/>

L Support received

L.1 Outside the Registry	Support for the development of this NAMA was provided by the Facilitating Implementation and Readiness for Mitigation Project funded by the Danish International Development Agency through UNEP-DTU Partnership.
L.2 Within the Registry	Support provided SupportType Amount Comment Date