

Kashis Poultry Farm, Chitwan

Executive Summary: This Environmental and Social Management Plan (ESMP) has been developed for proposed 12.5m³ biogas project within Kashis Poultry Farm in order to mitigate the likely environmental impacts predicted during environmental and social screening. This project is classified as “Category C”, which means there is minimum environment impact and hence there is no need of conduction of further environmental or social assessment. Some of the impacts caused by the project are: health and safety issues of construction workers, increased dust level during construction phase, pit waste (muck) disposal, possible water sources contamination due to leakage of slurry liquid, workers health during slurry handling and foul smell. The possible mitigation measures have been proposed in this ESMP and shall be implemented by the Construction Company and developer. In addition, the monitoring as mentioned in this ESMP shall also be performed accordingly. The likely impacts not identified during screening as well as in this ESMP, if perceived during construction and/or operation phase shall also be avoided or mitigated by the Construction Company and/or developer.

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1. Introduction

For implementation of the biogas project, this environmental and social management plan is prepared for Kashis Poultry Farm, Khairahani-2, Chitwan, Nepal. The poultry farm is going to establish a 12.5m³ large biogas plant in its own compound. The project is supported by AEPC/NRREP/SREP and SNV Netherland.

2. Description of Subproject and Location

The project lies in Khairahani-2, Chitwan district. Locally, the subproject is proposed to be constructed within the poultry farm. The Google map of the proposed location is provided below:



Figure: Location Map of proposed project

A capacity of 12.5m³ biogas plant is proposed to install in Kashis Poultry Farm. The gas produced by the plant will be 3.1m³ per day. The plant will produce 152 kg of slurry per day which will be stored in compost pit to make dry and convert it into compost manure.

The major works that will be carried out during establishment are excavation of earthwork, stone lining, and reinforcement and cement aggregate works. Once after the construction completion, the waste (poultry waste and toilet waste) as mentioned in detailed feasibility study will be fed into the digester. Once after gas production starts, AEPC will perform testing and commissioning and verify the amount of gas production as specified in DFS. The gas produced from the subproject shall be used for thermal process only.

3. Relevancy of preparing ESMP

This Environmental and Social Management Plan (ESMP) has been done for the proposed project in order to mitigate the likely environmental impacts predicted during environmental and social screening. Any land acquisition or displacement of inhabitations will not be involved in the sub project intervention. The negative impacts are not predicted since the project itself reduces wastes and use of waste in order to produce energy. However, negligible impacts identified during screening process might prevail during construction and operation phase. This project is classified as “Category C”, which means there is minimum environment impact and hence there is no need of conduction of further environmental or social assessment. The Environmental and Social Management Plan has been prepared in order to reduce thus identified adverse impacts prior to sub project implementation.

4. Environmental and Social Baseline

Topographically, the project site lies in the plain area of Inner Terai. From environmental aspect there is a forest area within 800m approximately beside there is a rivulet (Kair Khola), tributary of Pampa Khola which ultimately ends in Rapti River. This rivulet flows about 1 km east to the project area. The meteorological data from 2008 to 2010 indicated that the region (Bharatpur) has mean annual maximum temperature is about 31°C and minimum temperature is about 19°C. The total annual rainfall received by the station in 2010 was 2210mm with maximum 24hr rainfall as 165mm on August of that year and similarly from social aspect there is mixed homogeneous settlement of Brahmin and Chhetri community. The land-use pattern of the project area indicates of more agricultural land and less settlement.

5. Environmental and Social Impacts

During feasibility study of Kashis Poultry Farm, considering environmental and social screening performed, it is not predicted to have significant negative environmental and social impacts. The beneficial impact in environment is conversion of waste into compost and gas. Socially the project will demonstrate the renewable energy project in the locality.

5.1 Beneficial impact

Considering benefit to the community, there seems no any direct advantage whereas, from the owners view there seems to be some benefit creating job opportunities to some extent during construction phase. The project will provide renewable energy to the farm.

5.2 Adverse impact

There will be no any major adverse impact to the surrounding community and environment. During construction phase, some minor impacts may be seen such as dust pollution, increased noise level and occupational health and safety of construction workers.

5.2.1 Adverse impact (Construction phase)

During the construction phase the adverse impact that are expected to happen are:-

- a. Worker health from dust inhalation during excavation and construction work.
- b. Pit waste material transport and disposal

5.2.2 Adverse Impact (Operation Phase)

During the operation phase the adverse impact that are expected to happen can be listed as below:-

- a. Ground water pollution or contamination of water source due to leakage of slurry liquid.
- b. Infection of pathogens during slurry handling
- c. Foul smell due to slurry around surrounding community, during extreme temperature and windy day.
- d. Polluting the road and foul smell from compost while transporting to market

6. Mitigation Measures

The environmental mitigation with their time of action, mitigation cost and responsibility are illustrated in the following table:

ENVIROMENTAL AND SOCIAL MITIGATION MEASURES

Phase	Issue	Mitigating Measure	Cost of Mitigation (If Substantial)	Responsibility*	Start Date	End Date
Construction	Worker health from dust inhalation	<ul style="list-style-type: none"> Workers will be required to wear filter masks and eye protection Dusty areas (construction site) will be sprayed with water, 	Minor	Construction contractor	Digester pit, outlet pit and, manhole construction activities begin	Digester, outlet and compost pit construction is complete
Construction	Pit waste material transport and disposal	<ul style="list-style-type: none"> The waste material will be used for filling up a nearby pit or low land, the useful stone will be 	Minor	Construction contractor	Construction of pit begins	Construction of pit ends.
Construction	Ground water pollution due to leakage of slurry liquid possibility of contamination of	<ul style="list-style-type: none"> Compost pit will be water tight, rain water will be drained avoiding entering into the pit/ Water proofing and sealing while constructing dome, outlet and compost pit during construction 	Minor	Contractor	Compost pit construction/project operation phase	End of compost pit construction/end of project operational phase
Operation	Pathogens harm during Slurry handling to clear compost pit and making dry	<ul style="list-style-type: none"> Workers will be required to provide with appropriate cloths, globe and masks. The equipments should be rinse with clean water after use and kept in 	Minor	Client	Periodic, during clearing up slurry and making dry compost	Till the compost is transported to the market.
operation	Polluting the road and foul smell from compost while transporting to market	<ul style="list-style-type: none"> The transporting trolley will be fully covered 	Minor	Client	After loading the compost in transporting vehicle	Till It reaches to the market or farm field.
Operation	Foul smell due to slurry around surrounding community, during extreme	<ul style="list-style-type: none"> Covering compost pit with plastic, cultivation flower trees for aesthetics 	Minor	client	Till the project runs	Till the project runs

Operation	Flies and mosquito breeding, due to slurry	<ul style="list-style-type: none">• Avoiding waste water pits/ditches near project area	Minor	Client	Till the project runs	Till the project runs
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ENVIROMENTAL AND SOCIAL MONITORING PLAN

Phase	What parameter is to be monitored?	Where is the parameter to be monitored?	How is the parameter to be monitored/ type of monitoring equipment?	When is the parameter to be monitored- frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring	Responsibility	Start Date	End Date
Construction	Worker health Dust levels	At construction site	Visual: Worker wearing equipment	Weekly: random times Weekly, more frequently	Minor	Construction Contractor	Construction activities begin	Till construction work ends.
Construction	Machinery engine emissions	At construction site	Visual: Examine engine exhaust certification	Equipment first comes to project site	Minor	Construction Contractor	Construction activities at site connection line begin	Construction activities at substation and connection line end
Construction	Pit waste material transport and disposal	At construction site	Visual: Trucks covered or watered	daily	Minor	Construction Contractor	Start of construction of pit	Till pit construction ends
Construction	Pathogens harm while filling Digester with feeding material (Chicken waste)	For workers	Visual: provision of personal protective measures	monthly Weekly	Minor Minor	Construction Contractor	Digester filling begins	Till the digester is filled

Operation	Ground water pollution due to leakage of slurry liquid; possibility of contamination of drinking water sources due to the surface and subsurface flow of slurry liquid	In the periphery of 100m of project site	Water testing, slurry properly manage	Yearly	5000	Developer	Entire operation phase	Entire operational phase
Operation	Pathogens harm during Slurry handling to clear compost pit and making dry compost	For workers	Health check up, pathogens lab test	Once in two month	Minor	Developer	Start of Compost pit clearing	End of compost pit clearing
Operation	Polluting the road and foul smell from compost while transporting to market	From project site to market	Visual: Proper procedures followed	During transportation	Minor	Client	Transportation begins	Transportation ends
Operation	Foul smell due to slurry around surrounding community, during extreme temperature	Farm area and surrounding community	Comment from community, and workers in farm	Monthly	Minor	Client	Project operation phase	End of project operation phase.
Operation	Flies and mosquito breeding, due to slurry	Nearby farm area	Physically seen	Weekly	Minor	Client	Project operation phase	End of project operation phase

7. Conclusion

The above mentioned mitigation measures shall strictly be implemented by the responsible individuals as mentioned in this ESMP. In addition, the monitoring as mentioned in this ESMP shall also be performed accordingly. The likely impacts not identified during screening as well as in this ESMP, if perceived during construction and/or operation phase shall also be avoided or mitigated by the Construction Company and/or developer.