Fossil Solution Pvt Ltd. Shuddhodhan-1, Kapilvastu

#### **Environmental and Social Impact:**

The purpose of this checklist is to identify potential environment and social issues related to subproject.

#### (A) Project Background

1.	Name of Proposed Project	Waste to Energy Large Scale Biogas Subproject
2.	Subproject Location	Shuddhodhan-1, Kapilvastu.  Coordinates: [27°35'44.69"N 83° 9'25.76"E]
		Coordinates. [27 33 11.05 17 03 5 25.70 E]
3.	Subproject objectives	CNG and Fertilizer production
4.	Subproject Developer	Fossil Solution Pvt Ltd.
5.	Contact Details	Name: Mr. Ramesh Kumar, Phone: 9802672861 Email: fossilsolution@gmail.com
6.	Brief description of the subproject	The subproject will be Continuous Stirred Tank Reactor (CSTR) based biogas plant for the efficient production of biogas through the continuous digestion of organic waste with an anaerobic digester.
		The organic material such as agricultural waste, animal waste (cow dung, Poultry) manure, and plants material etc. will be used as feedstock in the subproject.
		This subproject aims to establish through the technical and financial support of GoN (AEPC) and World Bank to establish a sustainable and circular economy where organic waste is transformed into valuable energy and agricultural inputs, promoting environmental, social, and economic sustainability and resource efficiency.
7.	Define project's boundaries and area of influence	Area of Influence E: Pragati Nagar (approx. 500 m) W: Agriculture Land (approx. 500 m) S: Agriculture Land (approx. 500 m) N: Parnita Market (approx. 500 m)
8.	Capacity or size of the subproject	2400 m <sup>3</sup>
9.	Relevant E&S national requirements (assessment, threshold limits etc.)	Technology service provider is Green Plant and Approved ToR of Initial Environmental Examination (IEE)
10.	Relevant E&S required as per ESMF of MGEAp and World Bank	Environmental and Social Impact Assessment (ESIA)
11.	Total Project Cost	NR s. 19,86,00,000 (Estimated)

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## (B) Social Screening Checklist

otent	ial Social Impacts			
SN	Screening Questions	Yes	No	Comments (Provide information)
1.	Permanent land acquisition	1		The proposed land for the subproject is privately owned land. As the land is agricultural, developer cultivates seasonal crops on it. During the field visit on June 16 17, 2024, the proposed land was barren and not under cultivation.
2.	Temporary land acquisition		✓	Not required as the developer's private land is sufficient than required for the development of subproject
3.	Type of land Private land  Public land Government land Leasehold land	<b>✓</b>		The proposed site for the subproject development is implemented in private land of developer.
4.	Type of land procurement Voluntary donation Involuntary acquisition Negotiation			The proposed land is privately owned
5.	Loss of productive land	<b>✓</b>		The land intended for the subproject is agricultural, where developer has been cultivating the seasonal crops. However during the field visit the land was found to be uncultivated and left barren.
6.	Impacts on livelihoods/ economic displacement?		✓	No such impacts is envisioned
7.	Impacts on ecosystem services for local communities (e.g. fishing)?		<b>√</b>	As the land is privately owned and subproject will not obstruct the ecosystem services of local people, the impacts on ecosystem services for local is not envisioned.
8.	Is there any household need to be relocated?		<b>✓</b>	The nearest settlement from the proposed subproject site is within approx. 50 m, and there are no structures on the proposed land. The subproject development does require relocation of any household.
9.	Is the resettlement site environmentally and/or culturally sensitive?		1	No need of resettlement. There is a Malda Mai Temple which is approx. 1 km away from the proposed subproject area.
10.	Project's construction will cause any damage to the existing local roads system.		<b>√</b>	Accessible vai earthen road which is accessible throughout the year.
11.	Will project activities have adverse impact on school, drinking water supply system, and other		✓	There is no drinking water supply or irrigation exist in the proposed subproject area. The

			Shuaanoanan-1, Kapiivasia
	facilities?		nearest school from the subproject site is approx. 1 km away.
12	Will project need to use existing or open new access roads? What will be the impacts of increased traffic on communities?	•	The subproject area has road access. Dust and noise related impacts are envisioned which can affect the nearby settlement, due to the increased traffic during the transportation of construction materials to the subproject site. Thus, it recommended to prepare traffic management plan during the ESIA study with detail assessment.
13	Will project cause encroachment on historical/cultural/religious areas?	<b>✓</b>	There are no historical, cultural, and religious area within a radius of 500 meters radius from the proposed subproject site. Thus the subproject activities will not impact these places.
14	Acquisition of private land leading to loss of shelter and livelihood	<b>✓</b>	The developer owns approx. 10 Bigha of land, of which only about 10 Katha will be used for purpose of subproject development. Therefore, the land used for the subproject will not result in any loss of shelter or livelihood.
15	Involuntary land taking resulting in loss of income, livelihood, sources of livelihood, loss of access to common property resources and/or private residential and/or property resources	<b>✓</b>	The proposed subproject will be implemented inside developer's private land. There will be no involuntary land acquisition for the subproject.
16	Possible conflicts with and/or disruption to local communities	<b>✓</b>	As the subproject have a small settlement nearby its subproject site, households may have concerns regarding dust and noise from the transportation of construction materials to the site. Therefore, it is recommended to conduct an Environmental and Social Impact Assessment (ESIA) for further examination.
17	Is there a possibility of activities supported by the project that have impacts on international waterways? If yes, what are the potential impacts?	<b>*</b>	There is not any major waterways such as lake, pond and river within the 1 km radius distance from the subproject site.
18	. Is the project site located in disputed territory?	1	The subproject area is not located in disputed territory. All the construction of subproject related activities will be confined within the private land of developer.
19	Uncontrolled human migration into the area, made possibly by the subproject activities	•	During the construction period of the subproject, approximately 30-40 labours will be employed daily for about 6-7 months. Nearby households have expressed their happiness knowing they will have short-term employment opportunities coming near their settlement. Additionally, the developer is willing to hire labours/staff based on their interest and qualifications from nearby settlements that ensure there will be no

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			uncontrolled human migration into the subproject area. However few skilled workers who are not available locally will be hired from outside.
20.	Disproportionate impacts on the poor, children and other vulnerable groups	,	The subproject is carried out within the confined area of private land of developer. The impacts on livelihood and private assets of community people is not anticipated. However ESIA is recommended to carry out for the detail assessment of impacts.
21.	Community health and safety risks due to the transport, storage, and use and/or disposal of materials likely to create physical, chemical and biological hazards		The subproject area has road access and does not require to open new access road. Dust and noise related impacts are envisioned which can affect the nearby settlement, due to the increased traffic during the transportation of construction materials to the subproject site. However risk of Community health and safety to community due to the storage and disposal of material will not be as the all these activities will be with in enclosed area in private land of developer. There is a private clinic at Pragati Nagar which is approx. 1 km away from the subproject area.
22.	Will the project potentially cause community- related impact due to temporary influx of labor?	,	As per discussion with the developer, people form surrounding villages from the subproject site will be given priority for employment opportunities based on their skills, qualification, and availability of the preferred workforce in subproject area. It is expected that mostly the unskilled workforce will be employed from the local area as far as available which ensure negligible impact to community due to temporary labor influx. ESIA will assess the impact in detail.
23.	Are there Vulnerable Groups (Adibasi/Janajati/Dalit/Women headed households residing within or adjacent to project site?	1	There is a settlement nearby the subproject area. People from heterogeneous caste and ethnicities reside in the village. The majority of the residents belong to Brahmin, Tharu, and Muslim. People migrated from hilly regions such as Palpa, Gulmi, Syanja, and Agrgakhanchi are residing in the villages.
24.	Community Perception toward project		During the consultation with local people, there were found positive towards the subproject development. Additionally they have few expectations from the subproject;  • The possibility of starting and running eateries due to labor force during construction and operation of subproject  • Employment opportunity during construction and operation phase

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			•	Subsidies fertilizer from the farmers Regular maintenance of road that used by subproject
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#### (C) Environmental setting of the project locality

Is the project located in forest area or close to	forest	Yes	No
If Yes,			
II Tes,			
Name of forest			
Management regime			
Does vegetation need to be			
Removed for the project? Give estimate?			
1 3			
Permission to operate in the			
forest?			
Is the project located in the protected area or a	any protected area in	Yes	No☑
is the project located in the protected area of a	any protected area in	168	NOV
X7			
Vicinity			
Is yes, please provide details on			<u>l</u>
(a)name of PA			
(b)area to be acquired			
(b) area to be acquired			
(c)distance to PA from the			
Project site			
(d)access from the project tothe PA			
rA			
1. Water sources/water bodies			
Area there any water sources/water bodies in	and around the	Yes	No
Project site			
If yes provide details on			
in yes provide details on			
Location/Type			

Use of water						
Potential impact by the project						
2. Air pollution						
Number and type of vehicles to be us	sedper day	3, most	3, mostly for transporting substrate from various locations			
Capacity of vehicles		10 – 15	tons			
Condition of the road (asphalted, earthen)		Good. 1	Pakadi to Pipra Roa	d 200m from highway		
3. Land use						
Land required for the project and typ 12.43 Bighas; currently owned by or		opers				
Facilities	Required A	rea	Land use type	Location		
(1) Biogas Plant	nt 10 Katha (4 Square meter		Private	Shuddhodhan-1, Kapilvastu.		
4. Impact due to land use change						
a)Loss of private land: Yes b) Loss of agricultural product: Seasonal Crop (Paddy, wheat, Sugarcane, Red lentils etc) c)Loss of private structures/community structures: No d) Loss of Forest and vegetation: No e)others: No						
5. Waste input for the project						
Define waste (type)  Press mud, and Cattle Manure						
Quantity of waste	Quantity of waste 65 tons per day					
Location of collection Nawalparasi, Rupandehi						
Workers involved  14 (1 plant manager, 1 electrical engineer, 1 mechanical engineer, 1 marketing manager, 1 admin manager, 2 operators and 7 skilled workers)						

Legal clearance required	No				
6. Technology					
Туре	CSTR				
Capacity	Digester Volume: Total 4,000 cu.m (Nos. 2)	igester Volume: Total 4,000 cu.m (Nos. 2)			
Gas production	Gas Production: 2400 m³ per day				
Slurry production	Slurry Production: 135 tonnes per day				
7. Waste from the project imple	mentation	Yes	No		
Generation of solid waste? If yes,			$\square$		
Are any wastes required to be stored disposal? Ifyes,	on-site either for reuse or off-site		Ø		
Are effluents required to be discharg system? If yes,	_		Ø		
8. Health and Safety Issues	Yes	No			
a. Does project intervention af	✓				
<ul> <li>b. List out likely health and safe</li> <li>Construction related</li> <li>Emissions of dust ar</li> </ul>					
<ul> <li>c. List out likely health and safety issues during implementation period</li> <li>Handling of slurry (with pathogens)</li> <li>Effluence from substrate store</li> <li>Vehicle emissions from transport of slurry</li> <li>Accidents associated with firing and explosion</li> <li>Spreading of diseases due to increased disease vectors, flies, mosquitoes etc.</li> </ul>					
9. Other observations					
Can vector disease spread to the adjoining settlements?					
Can foul odor affect the adjoining No settlement?					
Slurry use(proposed) Organic fertilizer					

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Climate Benefits			
Will project activities contribute in the			
reduction of GHG emissions?			
Description on the activities that			

Description on the activities that	
D) Conclusion	
E&S Risk Category of the Subproject (High Medium, Low):	, Select one of the following based on the guidance provided below.
	( ) <b>High-risk</b> : Subprojects that is likely to have significant adverse environmental and/or social impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. Any subproject that needs an EIA according to GoN regulations shall be classified as high risk.
	( ✓ ) Medium Risk: Subprojects that involve potential adverse environmental or social impacts on human populations or environmentally important areas-including wetlands, forests, grasslands and other natural habitats-are less adverse than those of high risk projects. These impacts are site-specific, reversible; and in most cases mitigation measures can be designed more readily than for high risk projects. Moreover, a proposed subproject is classified as medium risk that displaces less than 50 families in the mountain region, less than 75 families in the hills, and less than 100 families in the Terai plains due to involuntary land acquisition (unless such impacts are, in the judgement of AEPC, are exacerbated by other contributing factors). A project can be classified as medium risk regardless of whether it needs IEE as per GoN regulations.
	() <b>Low Risk</b> : Subprojects that likely to have minimal or no adverse environmental and social impacts. Moreover, a proposed subproject does not displace any family and none of affected person loses more than 10% of their productive assets.
Main reasons/justification for the selection of E&S risk category above	Subprojects will have minimal or no adverse environmental and social impacts. Further, the proposed subproject does not displace any family and community people will not lose their productive assets. However, as per the capacity of the subproject, IEE required to be done as per the requirement of EPR, 2020. So, due to the IEE requirements of the subproject it is classified as <b>Medium Risk.</b> Therefore, as provisioned of ESMF of MGEAP, a

subproject classified as Medium Risk needs to undergo an ESIA.

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E&S Instruments to be prepared for the Subproject (ESIA, ESMP, RAP, Biodiversity	Thus, it is recommended to carry out the ESIA to identify further risk associated with the subproject.  Recommended to carry out ESIA
Management Plan, OHS plan, Cultural Heritage Management Plan etc)	
Beneficial impacts and augmentation opportunities for any issues? Etc.	<ul> <li>The possibility of starting and running eateries near subproject area</li> <li>Cheap Availability of fertilizer</li> <li>Creation of short term employment during the construction and operation phase of subproject</li> <li>Increase the prospect of energy based enterprises</li> </ul>
The outcome of screening summarizing entire table's information with assessor's candid opinion on way forward and future actions limiting in one paragraph.	The subproject will be Continuous Stirred Tank Reactor (CSTR) based biogas plant for the efficient production of biogas through the continuous digestion of organic waste with an anaerobic digester. Organic material such as agricultural waste, animal waste (cow dung, Poultry), manure, press mud, and plants material etc. will be used as feedstock in the subproject.
	The subproject is accessible throughout the year and does not require to construct separate access road. Similarly, the project will be constructed on private land owned by subproject developer and does not require to obtaining land from community people. Furthermore, the subproject will not require to relocation people and any infrastructure.
	In addition, subproject is not located in ecologically sensitive area.  Thus, based on the field observation the impact on environmental and social aspects due to the implementation of the subproject is seems negligible. However, as per the subproject categorized as Medium Risk. Thus the study team recommends to conduct ESIA to identify the potential risk and its mitigations measures in detail before the commencement of subproject.

#### **E&S Screening Team**

- 1. Shreejan Ram Shrestha, Climate and Carbon Specialist AEPC/MGEAP
- 2. Shiva Hari Budhathoki Social Safeguard Specialist AEPC/MGEAP

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Annex 1: Subproject area map



Boundary layout of the proposed site

GPS coordinates

27°35'44.69"N

83° 9'25.76"E

The project site is located in Shuddhondhan-1 Kapilvastu that is 47 Km away from the Bhairahawa



The company owns 10 Bighas of land with various agricultural production with 12

Katha allocated for the biogas plant.

The proposed site is an agricultural land

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Earthen Access Road to the site



Nearest settlement is within approx. 150 m radial distance

Shuddhondhan-1
People living in the community

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The proposed land and nearest house from the subproject site

