

## Appendix A

**Table A1.** Grade of questions and how respondents (biogas plant owners) contradicted the semi-structured interview. Part A: Demographic characteristics of the respondents (biogas plant owners).

<b>Part: A Demographic feature of the Respondents (biogas plant owners)</b>			
<b>Variables</b>	<b>Characteristics</b>	<b>Frequency</b>	<b>%</b>
Gender	Male	44	86.27
	Female	7	13.7
Age	Less than 25	3	5.9
	26–30	7	13.7
	31–40	11	21.56
	41–55	13	25.49
	56–65	10	19.6
	65 and above	7	13.7
Owner's education	Under metric	18	35.29
	Metric	19	37.25
	Faculty of Arts	11	21.56
	Bachelor	7	13.7
	Master	6	11.76
Owner's experience	1–2 years	21	41.17
	3–4 years	11	21.56
	5–6 years	7	13.7
	7–8 years	5	9.8
	9–10 years	3	5.9
	11- and above	4	7.8
Biogas plant names, currently working Floating drum			

A mild-steel gas storage drum	9	17.64
inverted over the slurry	8	15.68
Fixed drum		
Chinese fixed-dome plant	7	13.7
Janata model	12	23.52
Deenbandhu	9	17.64
Camartec model	6	11.76

**Table A2.** Part B: Influencing factors of sustainable improvement of biogas plant adoption.

Variables	Items	Questions	%
Availability of technicians for biogas plants	ABT1	The availability of technicians is a supportive element to adopting biogas plant	12.3
	ABT2	The technician's availability can enhance the level of trust for biogas plant owners	19.2
	ABT3	A trained technician can save time for biogas plant owners with the easy availability	14.3
	ABT4	Expert technicians of a biogas plant can play a better role in economic development	13.2
	ABT5	Easy availability of technicians can reduce the fear of adopting biogas plant	17.2
	ABT6	The repairing facility of a biogas plant can enhance the sale capacity	6.4
	ABT7	Biogas plant repairing security can make careless about the price to the purchaser	11.9
	ABT8	The regular biogas plant visit of technicians is an attractive element for the plant owners	5.5
Operational and maintenance government support	OMGS1	Operational and maintenance government support can enhance biogas plant adaptability	20.3

	OMGS2	villagers can adopt biogas plants with confidence through operational and maintenance government support	19.8
	OMGS3	The sale turnover of a biogas plant can be increased through operational and maintenance government support	14.5
	OMGS4	Operational and maintenance expenditure paid by the government for biogas plants can attract farmers to adopt	23.5
	OMGS5	There is a need to encourage rural areas to adopt biogas plants by giving them an incentive and operational support	21.9
	LCCP1	There is a need to adopt a low-cost and clear policy by the government to encourage biogas plant users	28.6
Low-cost and clear policy	LCCP2	A low-cost and clear policy for biogas plants can reduce the load of grid-connected energy due to biogas plant adoption	14.3
	LCCP3	More than 60% of the population is connected with rural areas, and we need to motivate them to adopt biogas plant	12.4
	LCCP4	A low-cost and clear policy for biogas plants is an attractive element for off-grid areas and farmers	10.1
	LCCP5	Renewable energy can play an important role in removing energy crises through clear policy and low-cost biogas plant	17.5
	LCCP6	A cost-effective renewable energy policy can encourage the biogas plant users	9.7
	LCCP7	Government needs to revise its renewable energy policy to motivate the off-grid rural farmers for biogas plant adoption	7.4
	USPQ1	User satisfaction and plant quality are important to attract new biogas plant users	25.2
User satisfaction and plant-quality	USPQ2	plant quality increases the satisfaction of currently using biogas plants	21.6
	USPQ3	Biogas plant quality can induce new users by analyzing the plant performance of current users	18.9
	USPQ4	The current user's satisfaction is important by using biogas plant for new users and investors	16.7
	USPQ5	Biogas plant quality with current user satisfaction can play an important role in reducing the energy crisis in China	17.6

Awareness and understanding of AOBT	AUAOBT1	Awareness and understanding of adopting biogas technology is a critical issue	31.4
	AUAOBT2	Awareness of biogas plant benefits is needed to the rural area farmers	17.6
	AUAOBT3	Renewable energy-related government institutions should provide information and awareness to the villagers	11.8
	AUAOBT4	Cost-effective energy can be produced through the awareness of the biogas plant	13.9
	AUAOBT5	A proper understanding of biogas plants can enhance the satisfaction level of plant users	9.8
	AUAOBT6	There is a lack of awareness and understanding of operating biogas plants, benefits, and quantity of energy production	15.5
Adoption of biogas technology	AT1	There is hesitation in adopting biogas technology the rural investor and common farmers	24.3
	AT2	The government can authorize the dealer for biogas and information provider	21.4
	AT3	A biogas plant is the best energy choice for farmers to reduce their energy costs and energy shortage	16.2
	AT4	Farmers can easily perform their activities at a low cost by adopting biogas technology	19.5
	AT5	The farmers of rural areas need to adopt biogas technology to use animal dung cake	8.4
	AT6	There is a lack of information about biogas technology in rural areas to adopt and enjoy benefits	10.2

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