

## **APPENDIX**

### **APPENDIX 1. Survey questionnaire**

#### QUESTIONNAIRE

##### Introduction

I am Thaddeus Tawiah Bilson, a student of Czech University of Life Sciences Prague. I am currently conducting a study leading to the award of Master of Science degree in TFS, Sustainable Technologies. The purpose of the study is to determine factors that influence the adoption of biogas technology as a renewable energy source in central region, Ghana. I humbly ask for a sacrifice of your time to partake in the administration of questionnaires which will last for barely less than an hour. Your co-operation is therefore highly needed to empower the success of the study.

All responses will be kept confidential. This means that your responses will only be shared with research team members, specifically, my supervisor and the Department of Sustainable Technologies. We will also make sure that any information we include in our report does not identify you as a respondent. Please note that you are not obliged to talk about anything you do not want to and as such, you may withdraw from this exercise at your own will. Thank you for the acceptance to participate in the study.

Yours Sincerely,

Thaddeus Tawiah Bilson

##### Part 1: Demographic Data

(Instruction: Please tick where appropriate)

1. What is your Gender?
  - (a) Male [ ]
  - (b) Female [ ]
  
2. Age range
  - (a) 25-30yrs [ ]    (b) 31-35yrs [ ]
  - (c) 36-40 yrs [ ]    (d) 41+yrs [ ]

3. What is your occupation?

- (a) Civil Servant [ ] (b) Health person [ ]
- (c) Trader [ ] (d) Bank personnel
- (e) Other, pls specify.....

Part 2: Importance of biogas technology

4 Do you use biogas?

- (a) Yes [ ] (b) No [ ]

5. What do you use your biogas for?

- (a) Cooking [ ] (b) Lighting [ ]
- (c) Heating [ ]

(d) others (specify).....

6. Who introduced you to the use of biogas?

- (a) Wife [ ] (b) Husband [ ]
- (b) Children [ ] (d) Friends [ ] (e) other relatives [ ]

7. Since when have you been using biogas as a renewable source of energy?

- (a) 2-3 years [ ] (b) 4-5 years [ ]
- (b) (c) 6-7 years (d) more than 7 years [ ]

8. What do you use for the production of your biogas?

- (a) Animal manure [ ] (b) Municipal waste [ ]
- (c) Plant materials [ ] (d) Food or sewage waste [ ]
- (e) Others, please specify.....

9. Why did you adopt biogas technology?

- (a) Acute problem of fuel wood for domestic use [ ]
- (b) High costs of other energy sources [ ]
- (c) Influenced by friends who have already adopted [ ]

(d) others(specify).....

10. Is biogas technology sufficient to meet your energy needs?

- (a) Yes [ ] (b) No [ ]

11. Have any of the household members ever faced any health problems associated with the use of fuel?

- (a) Yes [ ] (b) No [ ]

12. If yes, for Q. 11, which health problem(s) has (have) faced your household member(s)?

- (a) Eye diseases due to smokes [ ] (b) Coughing [ ]  
(c) Difficulty of breathing [ ] (d) Burning accidents  
(e) Injury/violence during collection [ ] (d) others, specify.....

### Part 3: Factors for the adoption of biogas technology in Ghana

The following statements relate to factors that influence the adoption of biogas technology in Ghana. Please tick the response that best suits you considering your experience with the use of biogas so far.

13. Biogas technology is expensive as compared to other sources of energy.

- (a) Yes [ ] (b) No [ ]

14. Biogas is environmentally friendly

- (a) Yes [ ] (b) No [ ]

15. Raw materials for biogas production is cheaper and easy to obtain

- (a) Yes [ ] (b) No [ ]

16. Installation of biogas plant do not require a lot of space

- (a) Yes [ ] (b) No [ ]

17. Biogas fuel produces clean energy which do not compromise human health

- (a) Yes [ ] (b) No [ ]

18. I adopted biogas because of the positive testimonies of people concerning its use

- (a) Yes [ ] (b) No [ ]

19. I adopted biogas due to the education I receive concerning biogas technology

- (a) Yes [ ] (b) No [ ]

20. Biogas is a reliable source of energy

(a) Yes [ ] (b) No [ ]

21. Biogas technology reduces the volume of waste due to human activities

(a) Yes [ ] (b) No [ ]

## **APPENDIX 2. Interview questions**

### INTERVIEW-GUIDE

What factors influence the adoption of biogas technology as a renewable energy source in Ghana.

1. Can you please tell me about your role /work in this organization?
2. How are you involved in biogas technology as a renewable source of energy in Ghana?
3. What can you say about the importance of biogas technology as a renewable source of energy in Ghana?
4. Do you believe Ghana has the capacity to produce renewable energy and if 'yes' why?
5. Can you please tell me more about consumption of renewable energy in Ghana?
6. From the perspective of your company, what do you think is the motivation for the adoption of biogas technology in Ghana?
7. How does the Ghana government encourage investors to invest in the renewable energy sector?
8. Do you think there are limitations of investments in renewable energy generation in Ghana?
9. If 'yes' or 'no' can you please explain?
10. In your own view, how can these limitations be addressed effectively?
11. Is there anything else you think I should know about your experiences in the renewable energy sector?

### APPENDIX 3: data collection pictures

Images from some biogas digestors installed by Green Gas Technology for an individual.

