

## Supplementary material for

### The extent, characteristics and potential of solar powered irrigation systems in South Africa

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#### Solar Powered Irrigation System Questionnaire (SPIS users/farmers)

The purpose of this questionnaire is to assist in the research to develop a model for a low cost solar powered irrigation system (SPIS) in South Africa. The research is funded by the Agricultural Research council (ARC) and the Water Research Commission (WRC), and done through the University of KwaZulu-Natal (UKZN).

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- This questionnaire is confidential
- Please note that your answers are anonymous
- The questionnaire consists of 4 pages
- The information collected is strictly for research purposes

1. What is your gender?

- Male
- Female

2. What is your age?

- 18 to 24
- 25 to 34
- 35 to 44
- 45 to 54
- 55 to 64

- 65 to 74
- 75 or older

3. Which race/ethnicity best describes you? (Please choose only one)

- African
- Coloured
- Indian
- White
- Other (Please specify)

4. What is the highest level of education you have completed?

- Matric
- Diploma
- Undergraduate Degree
- Post-graduate Degree
- Other (Please specify)

5. In which province is your farm located?

- Eastern Cape
- Free State
- Gauteng
- KwaZulu- Natal
- Limpopo
- Mpumalanga
- Northern Cape
- North West
- Western Cape

6. In which district municipality is your farm located?

7. What is the type of farm?

- Commercial
- Smallholder
- Subsistence
- Other (Please specify)

8. What is the water source?

- Borehole
- River/Dam
- Other (Please specify)

9. What solar powered irrigation system or technique is used at the farm?

- Sprinkler
- Furrow
- Micro-sprinkler
- Drip Irrigation
- Centre Pivot
- Other (Please specify)

10. What type of solar panels are used?

- Thin film
- Mono-crystalline
- Poly-crystalline
- Other (Please specify)

11. Does the system have batteries?

- Yes
- No

12. What type of pump is used for the system?

- Submersible multistage centrifugal motor pump set
- Submersible pump with surface mounted motor
- Reciprocating positive displacement pump
- Floating pump set
- Surface suction pump set
- Other (Please specify)

13. Is the system connected to the grid?

- Yes
- No

14. Does the system make use of a generator for backup power?

- Yes
- No

15. Does the system have a water tank to store excess water pumped?

- Yes
- No

16. What is the size (ha) of the farm area under solar powered irrigation?

17. When was the solar powered irrigation system installed?

18. What crops are under irrigation

19. How many, if any, maintenance or repairs have been done on the SPIS?

20. Do you ever have pressure or flow rate problems?

- Yes
- No

21. What was the motivation to switch to solar power?

22. What would you improve about your system, if anything?

- Add batteries or a generator
- Increase security
- Change irrigation technique (e.g change from sprinkler to drip)
- Other (Please specify)

23. What was the power source before solar energy?

- Grid electricity
- Diesel power

- No power
- Other (Please specify)

24. If there is any additional information on your system you think was not covered in the question, please would you comment below.