

# Final survey

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Start of Block: Section 1;Consent

## Q0 Assessment and Acceptability of Solar Photovoltaic Power Generation and its Potential Impact on Household Electricity Demand in the Kingdom of Saudi Arabia

**Ethics/ERGO number:** 79322

Thank you for your interest in this study. Before you can decide whether or not you wish to take part in the survey, please review the following Participant Information Sheet which will explain the study and type of data collected

[Participant Information Sheet](#)

In order to take part in the study you are required to read and consent to the following statements. Please carefully consider the statements below and only provide consent if you agree with all points and understand what this will mean for you.

**Please add your initials to the boxes below if you agree with the statements:**

**Mandatory Consent Statements:** I confirm that I am over the age of 18 and have read the Participant Information Sheet explaining the study above and I understand what is expected of me. I agree to take part in this study and understand that data collected during this research project will be used for the purpose of this study. I understand that my participation is voluntary and that the responses I provide are anonymous and I am free to withdraw from the survey before I submit it and all responses to that point will be deleted. **Additional Consent Statements:** I understand that the gathered information will undergo analysis and incorporation into the researcher's report, constituting a significant portion of the thesis.

- I consent to taking part in this survey (1)
- I do not consent (2)

End of Block: Section 1;Consent

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Start of Block: Section 2: Geographic Data and Characteristics

**Please note, to take part in the survey you need to live within the Kingdom of Saudi Arabia.** If you are not, Kindly click the button bellow to end the survey.

- I live in KSA (1)
  - I don't live in KSA, End the survey (2)
- 

**Q1 Please note, to take part in the survey you need to live within the Kingdom of Saudi Arabia.** If you are not, please click the button below to end the survey.

Please select the administrative region that you currently live. Once selected, please write the city name in the accompanying text box

If you have multiple households, for the purpose of this survey please select your main household and answer all questions in references to this particular residence.

- Riyadh (40) \_\_\_\_\_
- Mecca (41) \_\_\_\_\_
- Medina (39) \_\_\_\_\_
- Asir (28) \_\_\_\_\_
- Jazan (29) \_\_\_\_\_
- Najran (30) \_\_\_\_\_
- Al baha (38) \_\_\_\_\_
- Northern Borders (31) \_\_\_\_\_
- Al qassim (34) \_\_\_\_\_
- Tabuk (35) \_\_\_\_\_
- Hail (36) \_\_\_\_\_
- Al jouf (37) \_\_\_\_\_
- Eastern province (32) \_\_\_\_\_

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**End of Block: Section 2: Geographic Data and Characteristics**

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**Start of Block: Section 3: Household information**

The following questions will ask you about your current household.

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Q2 Number of household members

- Less than 5 people (4)
  - 5 People (5)
  - More than 5 people (6)
- 

Q3 Please state the nationality of the head of the household

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Q4 What is the age of the head of the household?

- Under 20 (1)
- 20-34 (4)
- 35-49 (5)
- 50-64 (6)
- Over 64 (7)
- Prefer not to say (8)

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Q5 What is the highest level of education for the head of the household?

- Incomplete high school (1)
  - High school (4)
  - Bachelor (5)
  - Masters (6)
  - Doctoral (7)
  - Prefer not to say (8)
- 

Q6 Please state your household monthly income band

- Less than 5000 S.R. (9)
- 5000 – 10000 S.R. (10)
- 10000 – 15000 S.R. (11)
- More than 15000 (12)
- Prefer not to say (13)

**End of Block: Section 3: Household information**

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**Start of Block: Section 4: House data**

The following section will ask you about your current homes house type.

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Q7 What type of house do you live in currently?

- Villa (1)
  - Traditional house (2)
  - Apartment (4)
  - Other, please state (5) \_\_\_\_\_
- 

Q8 Please select the most appropriate apartment type from the 4 options below

- Apartment in a multi-storey building (1)
  - Apartment in a villa (2)
  - Apartment in a traditional house (3)
  - Other, please state (4) \_\_\_\_\_
- 

Q9 Please state whether you own, rent or provided your home by your employer

- Own (1)
  - Rent (2)
  - Provided by employer (3)
  - Other (state please) (4) \_\_\_\_\_
-

Q10 Please approximate the total area of your home?

- Less than 100 m2 (2)
  - 100- 150 m2 (3)
  - 150-200 m2 (4)
  - 200- 250 m2 (5)
  - 250-300 m2 (7)
  - More than 300 m2 (8)
- 

Q11 Approximate age of your house (in years)?

\_\_\_\_\_

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Q12 How many rooms are in your home, please write the number of rooms for each room type.

- Bedrooms (3) \_\_\_\_\_
  - Living rooms (5) \_\_\_\_\_
  - Guests living rooms (2) \_\_\_\_\_
  - Kitchen (6) \_\_\_\_\_
  - Bathrooms (4) \_\_\_\_\_
  - Annexes (7) \_\_\_\_\_
  - Other (14) \_\_\_\_\_
- 

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The following questions will ask you about your household electricity usage.

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Q13 What is your electricity source?

- Public Network (1)
  - Private Network (2)
  - Private Generator (8)
  - Nothing (9)
  - Other ,state please (10) \_\_\_\_\_
- 

Q14 If you have an electrical meter in what form is it?

- Shared with several houses. (1)
  - Private electricity meter (2)
- 

Q15 How do you split the electricity bill between those that share the meter?

- Divide the bill by the number of houses (1)
  - Each house pays an appropriate fixed price (2)
  - Other, Please state (3) \_\_\_\_\_
-

Q16 Do you use electrical devices with high-efficiency ratings represented in ( a label on the device with levels of 7 colours that indicates the efficiency in your appliance from green colour A level to red colour G level)? as shown below ( the air conditioning efficiency label).

Yes (1)

No (4)

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Q17 Please tell us which of the appliances from the following with a high-efficiency rating with high efficiency (A-D)level, you use at home, (multiple choice), please write the letter (A-D)of the efficiency level in the empty box, for each device.

Air conditioning (5)

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Dish washer (4) \_\_\_\_\_

Fridge or freezer (6)

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LED lights (8)

Other, please state (7)

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Q18 Please state one or more reasons about why your appliances are not the highest efficiency

- I don't see the value in changing to new appliances (1)
  - Expensive price (2)
  - I am not concerned by my electricity bill (3)
  - There will be no difference in the electricity bill if i upgrade (5)
  - My current appliances work, there is no need to upgrade (6)
  - There is no A rated replacement available (7)
  - Other, please state (8)
- 

End of Block: Section 5: Electricity Usage in 2023

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Start of Block: Section 6: Opinion about photovoltaics on buildings

The following questions concern solar energy (photovoltaics) on buildings.

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Q19 Do you use solar energy (Photovoltaic) to provide electricity in the house?

- Yes (1)
  - No (2)
  - Not sure (4)
-

Q20 What type of photovoltaics do you have?

- Photovoltaic, not connected to the grid (1)
  - Photovoltaic, connected to the grid (4)
  - Photovoltaic, garden's lights or fountains (6)
  - Other, please state (5) \_\_\_\_\_
- 

Q21 Was the photovoltaic system already installed in your home when you moved in?

- Yes (1)
  - No, I chose to install it on my house (4)
  - Not sure (3)
  - Other, please state (5) \_\_\_\_\_
- 

Q22 Please tell us the reason you installed a photovoltaic (PV) system in your home.

- Reduce bills (1)
  - Contribution to environmental protection (4)
  - Both of above (5)
  - Other, please state (6) \_\_\_\_\_
-

Q23 As a household are you interested in reducing your household electricity consumption?

- Very interested (1)
  - Interested (4)
  - Not interested (5)
- 

Q24 In a few words, please indicate the reason for you want to reduce your household electricity consumption, or why not.

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Q25 Would you consider using solar energy (Photovoltaic) generating electricity to your home?

- Yes (1)
  - No (4)
  - Unsure (5)
-

Q26 If you don't have a PV system, what might encourage you to install one in your house? (multiple choice)

- (1) Energy Cost -photovoltaic systems become more affordable and cost-effective.
  - (4) Environment- solar power can help reduce the carbon footprint of a household.
  - (5) Property value, as potential home buyers may be attracted to homes with photovoltaic systems.
  - (6) Self-reliance - photovoltaic system allows homeowners to become more self-sufficient and less dependent on the traditional power grid.
  - (7) Other, please state
- 

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Q27 What is your primary concern when it comes to using photovoltaic system. (multiple choice)

- (1) Cost for installing and maintenance
  - (2) Availability of the sun light at your area
  - (3) Financial returns
  - (4) The local regulations for installing
  - (5) The amount of electricity from the PV will not be significant
  - (7) Aesthetic of your home
  - (6) System lifetime
  - (8) Others, please state
-

Q28 In a few words, please explain whether you think the government should be encouraging people to adopt photovoltaic systems. If you think they should please also state what you think they should do to encourage adoption.

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Q29 A. If the government was to provide subsidy and net metering programs (which allows homeowners to sell excess electricity back to the grid with a fixed price per kWh) , would that encourage you to have a PV system in your building ?

- Yes (1)
- No (4)
- Not sure (5)

Q30 What do you think is a reasonable price for exporting electricity to the grid per unit (1 kWh) if as a household you consume less than 6000 kWh per month

- 18 hallalah/ 1 Unit, same price of the importing electricity price (5)
- 9 hallalah/ 1 Unit , half the importing price (2)
- 7 hallalah/ 1 Unit, less than half the importing price , (3)
- A different value to any of the above, please write an amount in hallalah / unit (6)

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Q31 What do you think is a reasonable price for exporting electricity to the grid per unit (1 kWh) if as a household you consume more than 6000 kWh per month

- 30 hallalah/ 1 Unit, same price of the importing electricity price (1)
  - 15 hallalah/ 1 Unit , half the importing price (2)
  - 13 hallalah/ 1 Unit, less than half the importing price (3)
  - 7 hallalah/ 1 Unit, less than half the importing price (5)
  - A different value to any of the above, please write an amount in hallalah / unit (4)
- 

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Q32 What would you be prepared to purchase a PV system that could on average meet half of your monthly electricity demand?

- Nothing (7)
  - Less than 10000 Saudi Riyal (1)
  - 10000-20000 Saudi Riyal (4)
  - 20000-40000 Saudi Riyal (5)
  - More than 40000 Saudi Riyal (8)
-

Q33 What financial payback time would you expect in order for you to seriously consider purchasing such a PV system?

- Less than 12 months (1)
  - 1-2 years (4)
  - 2-5 years (5)
  - 5-10 years (6)
  - More than 10 years (7)
  - Other, please state (8) \_\_\_\_\_
- 

Q34 Would you be prepared to pay more per month on your electricity bill to help address the climate change impact of electricity generation?

- No, I prefer not to pay anything (1)
- less than 10 S.R. (5)
- 10-50 S.R. (2)
- 51-100 S.R. (3)
- More than 100 S.R. (4)

**End of Block: Section 6: Opinion about photovoltaics on buildings**

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**Start of Block: Section 7: The average electricity consumption at home winter / the rest of year**

The following questions concern information on your household's average electricity consumption.

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Q35 How often do you check your electricity consumption, in terms of cost (Riyal) or consumption (kWh)?

- Weekly (1)
  - Monthly (2)
  - Twice a year (3)
  - Annually (4)
  - Not at all (5)
  - Other please specify (6) \_\_\_\_\_
- 

Q36 Please estimate your monthly electricity usage in terms of kWh in **winter period** (when you use the Heating devices AC or Others).

- Less than 1000 (1)
  - 1000-3000 (2)
  - 3000-6000 (3)
  - 6000-10000 (4)
  - More than 10000 (5)
  - I don't know (6)
-



Q37 Please estimate your monthly electricity bill in terms of cost (in Saudi Riyal) during **winter period** (when you use the Heating devices AC or Others).

- Less than 200 (1)
  - 200-500 (2)
  - 500-1800 (3)
  - 1800-3000 (4)
  - More than 3000 (5)
  - I don't know (6)
- 

Q38 Estimate your monthly electricity usage in terms of kWh during the **rest of year period** (April - November), when you use the cooling devices AC or Others.

- Less than 1000 (1)
  - 1000-3000 (2)
  - 3000-6000 (3)
  - 6000-10000 (4)
  - More than 10000 (5)
  - I don't know (6)
-

Q39 Estimate your monthly electricity bill in terms of cost (in Saudi Riyal) during the rest of the year period (April - November),when you use the Heating devices AC or Others.

- Less than 200 (1)
  - 200-500 (2)
  - 500-1800 (3)
  - 1800-3000 (4)
  - More than 3000 (5)
  - I don't know (6)
- 

Q40 Please select which season (winter or summer) your household will have the largest household electricity bill.

- Winter season (1)
  - Summer season (13)
  - Other,please state (14) \_\_\_\_\_
- 

Q41 Could you please provide an approximate price (Saudi Riyal) for the aforementioned most expensive electricity month bill in the year.

\_\_\_\_\_

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Q42 Please estimate the annual electricity bill price in Saudi Riyal (the total months electricity bills in the year)

\_\_\_\_\_

End of Block: Section 7: The average electricity consumption at home winter / the rest of year

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Start of Block: Section 8: The temperature used for air conditioning inside the house

The following questions will ask you about the temperature used for air conditioning inside your home.

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Q43 Do you have an air conditioning system for cooling/ heating?

- Yes (1)
  - No (2)
  - Not used (4)
-

Q44 What is the average age of your air conditioning system for cooling/ heating?

- 1 (1)
- 2 (2)
- 3 (4)
- 4 (6)
- 5 (7)
- 6 (8)
- 7 (9)
- 8 (10)
- 9 (11)
- 10 (12)
- 11 (13)
- 12 (14)
- 13 (15)
- 14 (16)
- 15 (17)
- 16 (18)
- 17 (19)
- 18 (20)
- 19 (21)
- 20 (22)
- 21 (23)

- 22 (24)
  - 23 (25)
  - 24 (26)
  - 25 (27)
  - 26 (28)
  - 27 (29)
  - 28 (30)
  - 29 (31)
  - 30 (32)
  - I do not know (33)
- 

Q45 Could you kindly provide whether it ( the air-conditioning system)was acquired new or reconditioned from second-hand sources?

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Q46 If you have a (second hand air-conditioning system) could you write how many?

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Q47 Please select all of the air conditioning systems you use within your home.  
Select all that apply

- Centralised system (1)
  - Split system (2)
  - Window air condition (3)
  - Fan (6)
  - Evaporative cooler (7)
- 

Q48 How many rooms in your home use air conditioning for either cooling or heating during the **winter** period(December-March)?

- Bedrooms (3) \_\_\_\_\_
  - Living rooms (5) \_\_\_\_\_
  - Guests living rooms (2) \_\_\_\_\_
  - Kitchen (6) \_\_\_\_\_
  - Bathrooms (4) \_\_\_\_\_
  - Annexes (7) \_\_\_\_\_
-

Q49 Please select the operation time for the air conditioning during the day/ night time in **winter?**

	Morning (7:00 am - 12:00 pm) (35)	Afternoon (12:00 pm - 6:00 pm) (36)	Evening (6:00 pm - 12:00 am) (37)	Over night (12:00 am - 6:00 am) (38)	All hours (24) (44)
Bedrooms (18)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Living rooms (19)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Guests living rooms (17)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kitchen (21)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bathrooms (20)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Annexes (22)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, please state (44)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q50 How many rooms in your home use air conditioning for either cooling or heating during the **rest of the year** ( April-November)?

- Bedrooms (3) \_\_\_\_\_
  - Living rooms (5) \_\_\_\_\_
  - Guests living rooms (2) \_\_\_\_\_
  - Kitchen (6) \_\_\_\_\_
  - Bathrooms (4) \_\_\_\_\_
  - Annexes (7) \_\_\_\_\_
-



Q51 Please select the operation time for the air condition during the day/ night time during the rest of the year?

	Day (7:00 am -12:00 pm) (35)	Day (12:00 pm -6:00 pm) (36)	Night (6:00 pm -12:00 am) (37)	Night (12:00 am -6:00 am) (38)	All hours(24) (41)
Bedrooms (18)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Living rooms (19)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Guests living rooms (17)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kitchen (21)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bathrooms (20)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Annexes (22)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other please state (44)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Q52 At what temperature are the most used rooms in the house set for cooling.

- (16-19) ° C (1)
  - (20- 22) °C (4)
  - (23-26) °C (5)
  - Other (without degrees) 3 selections (6)
  - Not used (7)
  - Other (8) \_\_\_\_\_
- 

Q53 At what temperature are the most used rooms in the home set for heating.

- (27-30) ° C (1)
  - (24-26) ° C (7)
  - (20-23) °C (5)
  - Other (without degrees) (6)
  - Not used (8)
- 

Q54 How many rooms use a window air conditioning system in your home, Please select.

- Not used (5)
  - 1-3 rooms (1)
  - 4-6 rooms (2)
  - 7- 10 rooms (3)
  - More than 10 rooms (4)
-

Q55 What impact do you think the following scenarios would have on your bill?

	increase (1)	no impact (2)	decrease (3)	don't know (4)
Raise set temperature by one degree in summer (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lower set temperature by one degree in winter (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Q56 In the summer by what percentage do you think your bill will be reduced from increasing the set point of the air conditioning temperature by one degree?

- 0% (1)
  - 1% - 5% (2)
  - 5% - 10% (3)
  - More than 10% (4)
  - Other, please state (5) \_\_\_\_\_
-

Q57 In the winter by what percentage do you think your bill will be reduced from decreasing the set point of the air conditioning temperature by one degree?

- 0% (1)
- 1% - 5% (2)
- 5% - 10% (3)
- More than 10% (4)
- Other, please state (5) \_\_\_\_\_

**End of Block: Section 8: The temperature used for air conditioning inside the house**

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**Start of Block: Section 9**

Q58 Here is the end of the survey, I appreciate your time and if you have any suggestion to develop the survey's questions to can meet people interest, please state yours in the box below.

Please click "Next" to submit the survey. Thank you for your participation!

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**End of Block: Section 9**

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