

CHINA

ENERGY UTILIZATION QUESTIONNAIRE FORM

NONGRID HOUSEHOLD SURVEY¹

HOUSEHOLD SURVEY FORM

Household ID no.:
Date of interview:
Time start:
Time end:
Interviewer's name:
Supervisor's name:

HOUSEHOLD LOCATION IDENTIFICATION

		Coding number
Province		
County		
Town		
Township		
Village		
Type of village		

Code:

- [1] = Farming
- [2] = Herding
- [3] = Mixed herding and farming
- [4] Other; specify: _____

Note: Coding number must be assigned to county, town, township, and village.

Coding:

- [-7] = Do not apply
- [-8] = No answer
- [-9] = Missing value

¹ From Voravate, Tuntivate; Barnes, Douglas F.; Bogach, V. Susan. 2000. *Assessing markets for renewable energy in rural areas of Northwestern China*. World Bank technical paper; no. WTP 492. Washington, D.C.: The World Bank. <http://documents.worldbank.org/curated/en/2000/12/828332/assessing-markets-renewable-energy-rural-areas-northwestern-china>

SOURCES OF ELECTRICITY AND OTHER ENERGY

1. What are your usual sources of energy in the household?

Code:

[0] = No

[1] = Yes

- a. Dry cell battery
- b. Butter
- c. Candles
- d. Kerosene
- e. Diesel for lighting
- f. Gasoline for lighting
- g. Car battery
- h. Small-scale power generator
- i. Electric generator set
- j. Small wind home system
- k. PV-wind hybrid system
- l. PV system (electricity from the household's own PV system)
- m. Firewood
- n. Charcoal
- o. Dried animal dung
- p. Coal and coal briquette
- q. Biogas
- r. Other; specify: _____

OWNERS OF SMALL WIND SYSTEMS

2.1 How many small wind systems does your household have?

(If household does not have any, fill in "0", and go to Q3.1.)

2.2 What do you think about the price of your small wind system?

Code:

[1] = Very expensive

[2] = Expensive

[3] = Right price

[4] = Cheap

I will ask you some questions about your small wind system. Please answer the following questions concerning the size and cost of your system.

(Fill in 20 if the system is 20 watts. If the system is 30 watts, fill in 30. You must then ask to see the system to verify the correct size)

2.3 What is the size of your small wind system? _____watts

2.4 How long has your household had its small wind system installed? _____ months

Please tell me about the total costs of each of your wind power system.

2.5 For the *small wind* system, how much did you pay up front? _____ yuan

(If you paid in full, fill in the total full payment, and go to Q3.1.)

Describe the terms of payment.

2.6 Have to pay _____ yuan per payment,

2.7 ...for a total number of _____ payments.

2.8 How many months does each payment cover? _____months

HYBRID SYSTEMS – OWNERSHIP AND COST OF HYBRID SYSTEMS

3.1 How many hybrid systems does your household have?

3.2 What do you think about the price of your hybrid system?

Code:

[1] = Very expensive

[2] = Expensive

[3] = Right price

[4] = Cheap

I will ask you some questions about your hybrid system. Please answer the following questions concerning the size and cost of your system.

(Fill in 20 if the system is 20 watts. If the system is 30 watts, fill in 30. You must then ask to see the system to verify the correct size.)

3.3 What is the size of your *hybrid* system? _____watts

3.4 How long has your household had its hybrid system installed? _____ months

Please tell me about the total cost of each of your wind power systems.

3.5 For the *hybrid* system, how much did you pay up front? _____ yuan

Please describe the terms of payment.

3.6 Have to pay _____ yuan per payment,

3.7 ...for a total number of _____ payments.

3.8 How many months does each payment cover? _____ months

HOUSEHOLD ATTITUDE TOWARD ELECTRICITY SERVICES

The following statements I am about to read to you concern energy use and other issues. Please tell me if you agree or disagree with these statements and how strong your feelings are.

(Use the following coding for the answers)

Code:

[1] = strongly agree

[2] = agree

[3] = no opinion

[4] = disagree

[5] = strongly disagree

- 4.1 Electricity is very beneficial to production activities.
- 4.2 Because of good light, children would study more at night; this is very important for children's education.
- 4.3 Reading is easier with electric lamps compared with kerosene lamps.
- 4.4 My family feels very secure at night.
- 4.5 My family is extremely happy with the light we get from our current fuel.
- 4.6 Electricity is important for our local water supply.
- 4.7 Car batteries are good source of electricity for lighting.
- 4.8 PV system is a good source of energy for lighting.
- 4.9 Lighting with kerosene or diesel can cause health problems.
- 4.10 It is difficult for my family to get news and information.
- 4.11 Watching television would provide my family with great entertainment.
- 4.12 Television takes study time away from children.
- 4.13 I complete work in my house during the evening after it is dark outside.
- 4.14 We often receive visiting friends, relatives, or neighbors in the evening after it is dark outside.
- 4.15 Today life is better than it was 5 years ago.
- 4.16 I am optimistic that life will get better in the future.
- 4.17 I prefer to pay cash for my major purchase.
- 4.18 Light at night is useful to keep the herd together.

MARKETING OF SOLAR PV SYSTEMS - AWARENESS AND WILLINGNESS TO PURCHASE INDIVIDUAL RENEWABLE ENERGY DEVICES

The following are lists of small, medium, and large PV systems.

A *small PV system* (20 watts) could provide energy for two lamps and 10 W radio for 5 hours per day and would cost about Y 1,700.

A *medium PV system* (50 watts) could provide energy for two lamps and one 14-inch black-and-white television for 5 hours per day and would cost about Y 3,800.

A *large PV system* (70 watts) could provide energy for two lamps and one 18-inch color television for 3 hours per day and would cost about Y 6,000.

I am going to ask you if you have already owned it, if you have heard about it, and if you are interested in purchasing one.

Small PV System (20 watts)

It can provide energy for two lamps and one 10 W radio for 3 hours' use per day, and costs about Y 1,700.

5.1 Does your household own any 20-watt PV systems?

Code:

[0] = Do not own any

[1] = Yes, already owned

(If "Yes," go to Q5.6)

5.2 Have you heard about this 20-watt PV system?

Code:

[0] = No, never heard of it

[1] = Yes, from newspaper or magazine

[2] = Yes, from radio, television

[3] = Yes, from neighbors or friends

[4] = Yes, saw it in store

[5] = Yes, saw a system installed at friend's, government's, or neighbor's

[6] = Yes, other source; specify: _____

5.3 Are you interested in buying such a 20-watt PV system with cash for about Y 1,700?

Code:

[0] = No

[1] = Yes but no money to pay

[2] = Yes

(If "Yes," go to Q5.6)

5.4a Are you interested in buying this 20-watt PV system with down payment and credit of 1-year period?

Code:

[0] = No

[1] = Yes but no money to pay

[2] = Yes

(If "Yes," go to Q5.6)

5.4b Are you interested in buying this 20-watt PV system with a down payment and credit for a 2-year period?

Code:

[0] = No

[1] = Yes, but no money to pay

[2] = Yes

(If "Yes," go to Q5.6)

5.5 The following are lists of reasons your household has not purchased a 20-watt PV system. What are your primary and secondary reasons for not purchasing?

Code:

[0] = for no reason

[1] = for main reason

[2] = for secondary reason

5.5a I don't know about the system.

5.5b System costs too much.

5.5c No convenient location to buy.

5.5d Cannot get credit to buy system.

5.5e Worry about low quality; not easy to operate; service; etc.

5.5f Have had electricity supply, or have had small wind, small diesel generator set, etc.

5.5g Will get grid connection soon or will buy small diesel soon.

5.5h Capacity of the system is not enough for family to use.

(If this is the main reason, continue. If it is not the main reason, go to Q6.1)

Medium Solar PV System (50 watts)

This system could provide energy for 2 lamps and 1 14-inch black-and-white television for 5 hours per day and costs about Y 3,800.

5.6 Do you own a 50 W PV system?

Code:

[0] = Do not own any

[1] = Yes, already owned

(If "Yes," go to Q5.16)

5.7 Have you heard about 50 W PV systems?

Code:

[0] = No, never heard of it

[1] = Yes, from newspaper or magazine

[2] = Yes, from radio, television

[3] = Yes, from neighbors or friends

[4] = Yes, saw it in store

[5] = Yes, saw a system installed at friend's, or government's or neighbor's

[6] = Yes, other source; specify: _____

5.8 Are you interested in buying a 50 W PV system with cash for about Y 3,800?

Code:

[0] = No

[1] = Yes, but no money to pay

[2] = Yes

(If "Yes," go to Q5.11)

5.9a Are you interested in buying this 50 W PV system with a down payment and credit for a 1-year period?

Code:

[0] = No

[1] = Yes, but no money to pay

[2] = Yes

(If "Yes," go to Q5.11)

5.9b Are you interested in buying this 50 W PV system with a down payment and credit for a 2-year period?

Code:

[0] = No

[1] = Yes, but no money to pay

[2] = Yes

(If "Yes," go to Q5.11)

5.10 The following are lists of reasons your household has not purchased a 50 W PV system. What are your primary and secondary reasons for not purchasing?

Code:

[0] = for no reason

[1] = For primary reason

[2] = For secondary reason

5.10a I don't know about the system.

5.10b System costs too much.

5.10c No convenient location to buy.

5.10d Cannot get credit to buy system.

5.10e Worry about low quality; not easy to operate; service; etc.

5.10f Have had electricity supply, or have had small wind, small diesel generator set, etc.

5.10g Will get grid connection soon or will buy small diesel soon.

5.10h Capacity of the system is not enough for family to use.

(If this is the main reason, continue. If it is not the main reason, go to Q6.1)

Large Solar PV Systems (70 watts)

It could provide energy for 2 lamps and 1 18-inch color television for 3 hours per day and costs about Y 6,000.

5.11 Do you own a 70 W PV system?

Code:

[0] = Do not own any

[1] = Yes, already owned

(If "Yes," go to Q5.21)

5.12 Have you heard about 70 W PV system?

Code:

[0] = No, never heard of it

[1] = Yes, from newspaper or magazine

[2] = Yes, from radio, television

[3] = Yes, from neighbors or friends

[4] = Yes, saw it in store

[5] = Yes, saw a system installed at friend's, government's, or neighbor's

[6] = Yes, other source; specify: _____

5.13 Are you interested in buying 70 W PV system with cash, about Y 6,000?

Code:

[0] = No

[1] = Yes, but no money to pay

[2] = Yes

(If "Yes," go to Q6.1)

5.14a Are you interested in buying this 70 W PV system with down payment and credit of 1 year period?

Code:

[0] = No

[1] = Yes, but no money to pay

[2] = Yes

(If "Yes," go to Q6.1)

5.14b Are you interested in buying this 70 W PV system with a down payment and credit for a 2-year period?

Code:

[0] = No

[1] = Yes, but no money to pay

[2] = Yes

(If "Yes," go to Q6.1)

5.14c Are you interested in buying this 70 W PV system with a down payment and credit for a 3-year period?

Code:

[0] = No

[1] = Yes, but no money to pay

[2] = Yes

(If "Yes," go to Q6.1)

5.15 The following are lists of reasons your household has not purchased a 70 W PV system. What are your primary and secondary reasons for not purchasing?

Code:

[0] = for no reason

[1] = For primary reason

[2] = For secondary reason

5.15a I don't know about the system.

5.15b System costs too much.

5.15c No convenient location to buy.

5.15d Cannot get credit to buy system.

5.15e Worry about low quality; not easy to operate; service; etc.

5.15f Have had electricity supply, or have had small wind, small diesel generator set, etc.

5.15g Will get grid connected soon or will buy small diesel soon.

5.15h Capacity of the system is not enough for family to use.

MARKETING OF HYBRID SYSTEMS - AWARENESS AND WILLINGNESS TO PURCHASE INDIVIDUAL RENEWABLE ENERGY DEVICES

I am going to ask you if you have already owned a hybrid system, if you have heard about it, and if you are interested in purchasing one.

Small Hybrid Power System

The capacity is 38 watts of PV and 100 watts of wind power, and it costs about Y 3,500–4,000.

6.1 Do you own any small hybrid power system?

Code:

[0] = Do not own any

[1] = Yes, already owned

(If "Yes," go to Q7.1)

6.2 Have you heard about small hybrid power systems?

Code:

[0] = No, never heard of them

[1] = Yes, from newspaper or magazine

[2] = Yes, from radio, television

[3] = Yes, from neighbors or friends

[4] = Yes, saw them in store

[5] = Yes, saw a system installed at friend's, government's, or neighbor's

[6] = Yes, other source; specify: _____

If you have heard of small hybrid power system,

6.3 Are you interested in buying it with cash and paying it cash?

Code:

[0] = No

[1] = Yes, but no money to pay

[2] = Yes

(If "Yes," go to Q7.1)

6.4 Are you interested in buying a small hybrid power system with a down payment and credit?

Code:

[0] = No

[1] = Yes, but no money to pay

[2] = Yes

(If "Yes," go to Q7.1)

6.5 The following are lists of reasons your household has not purchased a small hybrid power system. What are your primary and secondary reasons?

Code:

[0] = for no reason

[1] = For primary reason

[2] = For secondary reason

6.5a I don't know about the system.

6.5b System costs too much.

6.5c No convenient location to buy.

6.5d Cannot get credit to buy system.

6.5e Worry about low quality; not easy to operate; service; etc.

6.5f Have had electricity supply, or have had small diesel generator set, etc.

6.5g Will get grid connection soon or will buy small diesel soon.

6.5h Unsafe; if the wind turbine is broken down by strong winds, it will damage my house.

OWNERS OF SOLAR PV SYSTEMS

Ownership and Cost of Solar PV Systems

7.1 How many PV systems does your household have?
(If household does not have any, fill in "0", and end the interview.)

7.2 What do you think about the price of your PV system?
Code:

[1] = Very expensive

[2] = Expensive

[3] = Right price

[4] = Cheap

I will ask you the about the size of each of the solar PV systems you have. If you have only one system, answer only the first question. If you have two, answer the first and second system, and so forth.

(Fill in 20 if the system is 20 watts. If the system is 30 watts, fill in 30. You must then ask to see the system to verify the correct size)

7.3a What is the size of your *first* PV system? _____ watts

7.3b How long has your household had your *first* PV system installed? _____ months

Please tell me about the total cost of each of your PV systems.

7.3c For the *first* system, how much did you pay up front? _____ yuan

(If you paid in full, fill in the total full payment, and go to Q7.4a)

Describe the terms of payment.

7.3d Have to pay _____ yuan per payment,

7.3e for a total number of _____ payments.

7.3f Number of months per payment _____ months per payment

7.4a What is the size of your *second* PV system? _____ watts

7.4b How long has your household had its *second* PV system installed? _____ months

Tell me about the total costs of your *second* PV system.

7.4c For the *second* system, how much did you pay up front? _____ yuan

(If you paid in full, fill in the total full payment, and go to Q7.5a)

Describe the terms of payment.

7.4d Have to pay _____ yuan per payment,

7.4e for a total number of _____ payments.

7.4f Number of months per payment _____ months per payment

System Quality

7.5 How many times has your PV system broken down since you bought it? _____ times
(Enter "0" for never broken down, and go to Q7.11)

7.6 Do you have to change any of your PV panel?

Code:

[0] = No

[1] Yes

When the systems have broken down, which of the following parts have broken down?

Code:

[0] = No

[1] = Yes

7.7a Battery

7.7b Lamp (light bulb or tube)

7.7c Charge or discharge controller

7.7d Solar panel

7.7e AC/DC Adapter

7.8 What is the average cost per repair? _____ yuan

7.9 How long has your last battery lasted? _____ months

7.10 How long does your light bulb or tube last? _____ months

Quality of Services from Your Solar PV System

- 7.11 Last year, what was the total number of days your PV system was out of order?
- 7.12 What are the reasons your household has to live without electricity from PV system? _____

Code:

- [1] = Normal waiting time for repair when it is out service
- [2] = Difficult to find spare parts
- [3] = Could not find any repair person, or repair person is not available
- [4] = Repair is too costly
- [5] = Have to go long distance to repair or buy part
- [6] = System is under warranty, and service provided is slow
- [7] = Other reasons; specify: _____

- 7.13 When or if the PV system breaks down, how do you have it repaired?

Code:

- [1] = Technician or repair person come to our home to repair
- [2] = Take to repair shop
- [3] = No services available in township area
- [4] = No services available in county area
- [5] = Other; specify: _____

When or if you have to take your PV system for repair, what is the mode of transportation, the distance, and the travel costs incurred?

- 7.14 Travel by:

Code:

- [1] = Bicycle
- [2] = Motorcycle
- [3] = Bus or truck
- [4] = Horse
- [5] = Cart
- [6] = Combination of the above transportation modes
- [7] = Other; specify: _____

- 7.15 Distance to repair shop: _____ kilometers
(Enter "0 km" for repair services provided at home)

- 7.16 To have your system repaired, how much do you spend on travel (to and from) costs for each repair?
_____ yuan

Uses of Electricity from Your Solar PV System for Household Activity

7.17 Generally, how many hours per evening does your household have light on for general area lighting? _____ hours per evening

7.18 Generally, how many hours per evening do household members usually use light for reading, writing, or studying? _____ hours per evening

7.19 Generally, how many hours per evening do household members usually use light for handicrafts in the home industry? _____ hours per evening

7.20 Generally, how many hours per evening is the television set in your home turned on? _____ hours per evening. (Enter "0" for "Do not have television set.")

7.21 Do you use light for herding (for example, for collecting sheep in bad weather, such as during storms)?

Code:

[0] = No

[1] = Yes

7.22 Generally, do household members usually use light for social visits?

Code:

[0] = No

[1] = Yes

7.23a How many light bulbs does your household have? _____ bulbs

7.23b What is the average capacity of all your lights? _____ watts

7.23c What is the total number of hours of all light used per evening? _____ hours per evening

7.24 Do you use electricity generated from your PV system for productive purposes?

Code:

[0] = No

[1] = Yes

Attitudes toward Solar PV Systems

7.25 Electricity generated from your PV system is:

Code:

[1] = Not enough for household need

[2] = Just enough for household need

[3] = More than enough for household need

7.26 Reason my household decided to obtain PV system home is:

Code:

[0] = No reason

[1] = Primary reason

[2] = Secondary reason

7.26a For children education.

7.26b For better lighting.

7.26c To watch television.

7.26d PV system is cheaper than kerosene and other fuels.

7.27 What is the greatest benefit of the PV system to my household? *(Use the following coding for answer)*

Code:

[0] = No reason

[1] = Main reason

[2] = Secondary reason

7.27a Accessing to news and information from television and radio.

7.27b Providing lighting for my family.

7.27c Giving entertainment from television, radio, and tape cassette.

7.27d Enabling family members to read, write, and study in the evening longer than before.

7.27e Enabling us to do more work.

7.28 How do you rate the degree of satisfaction with the performance of your PV system?

Code:

[1] = High

[2] = Rather high

[3] = Fair

[4] = Rather low

[5] = Low

7.29 Would you recommend a PV system to your relatives or friends?

Code:

[0] = No

[1] = Yes

Lifestyle

7.30 Since installing the PV system, does your family stay up later than before?

Code:

[0] = No

[1] = Go to bed at the same time as before

[2] = Stay up later