

Energy Consumption Patterns in Indian Households

Insights from three cities: Pune, Talegaon, and Ahmednagar

February, 2020



Questionnaire

Question

Possible Answer

Chapter1

(1) Project - Residential Energy Consumption Survey

(3) Respondent ID- {0}

(5) Interview date-{0}

(7) Interview start time-{0}

Chapter 2

(8) The respondent should be an adult with knowledge about the appliances and their usage patterns in the home. He/she can also consult with other members in the family during the interview.

(9) Introduction

Hello, I am _____ from Market Xcel. I am conducting a survey on behalf of Prayas (Energy Group), a Pune based not-for-profit organization working for public interest in India's energy sector. The objective of the survey is to understand how people use energy in their homes. This will help to know how much energy people may consume in future and how it can be reduced by improving efficiency and conservation. In this regard, I would like to conduct this survey which will take 30-45 minutes. Information gathered from this survey will be used only for research purposes. Personal data collected will not be shared with anyone. A representative from Prayas (Energy Group) may call you for verification purposes.

(10) Do you agree to participate in the survey?

Yes
No

(11) Basic information

Interviewer will complete Q1 to Q5 without any input from the respondent

(12) Q1.Interviewer ID

Interviewr ID format shoud be - XXDDMMYY

(13) Q2.City
Ahmednagar Talegaon-Dabhade

Pune

(14) Q3.Zones	East
West South North Center	
(15) Q4.Income category of the household	Low income household
	Middle income household
This will be identified based on pre-	High income household

determined visual criteria

(16) Q5.What is the type of home?

Apartment
Bungalow/independent house
Chawl

Slum/Shanty

Chapter 3

(17) Household Information

We will start by asking some questions about you, your home and your household

(18) Q6.What is your name?

Write the name in full as far as possible.
(Shivaji Bhosale instead of S Bhosale)

(19) Q7.What is your age?

(20) Q8.Gender?

Male
Female
Other

Record the gender

(21) Q9.What is the address of the home?

(22) Q10.What is the nearby landmark?

(23) Q11.What is your phone number?

Do not add +91 before the number. If
landline, add STD code before the number

(24) Q12.What is your email id?

Exmple:- "abc@xyz.com"

(25) Q13.What is the carpet area of the
home?

Answer should be 15 to 9999 (Sq. Ft.)

(26) Q14.What is the commercial area, if any,
inside the home?

Put in zero if no commercial area (Sq. Ft.)

(27) Q15.When was the home built?

Year in YYYY (enter 0 if not known)

(28) Q16.When did your household move in?

Year in YYYY

(29) Q17.Is this house

Owned
Rented
Other

(30) Q18.How many windows does your home
have?

Answer should be 0 to 50

(31) Q19.How many people usually stay in
this home?

Answer should be 1 to 30

(32) Q20. Please mention the number of people staying in this home according to their age-groups:

Mention 0 for an age group if no person belongs to it

Answer should be 0 to 20

- (1) 0 to 15 years
- (2) 16 to 30 years
- (3) 31 to 45 years
- (4) 46 to 60 years
- (5) More than 60 years

Chapter 4

(33) Electricity Supply and Safety

We will now move to questions regarding quality of electricity supply and safety in your home.

(34) Q21.Do you receive an electricity bill? Yes

No

(35) Q22.How do you pay for electricity? Pay to the electricity company according to the bill

Pay a fixed charge to the electricity company Pay to neighbour/landlord/others or as a part of rent

Pay according to pre-paid meter Do not pay for electricity

(36) Q23.On an average, what is your monthly expenditure on electricity?

Answer should be 1 to 999999

(37) Q24.Do you experience power-cuts in your home?	Yes
	No

(38) Q25.Which season(s) did you experience most of the power-cuts in the last year?

Summer
Monsoon
Winter
Can't say

(39) Q26.What was the nature of most of the power-cuts experienced in the last year?

Regular and predictable (e.g. every Thursday or everyday 2pm to 3pm)
Frequent and unpredictable (e.g. on any day and at any time of the day)
Occasional (e.g. due to rains or lightning)
Can't say

(40) Q27.How long were most of the power-cuts experienced in the last year?

Less than 15 minutes
More than 15 minutes up to 6 hours
More than 6 hours
Can't say

(41) Q28.What time of the day most of the power-cuts were experienced in the last year?

- (42) Q29.What kind of power back-up does your home have?
- No specific pattern
None
Inverter/UPS
Self-owned diesel generator
Society owned diesel generator
Solar panel + Battery (Ask the respondent if they avail net-metering facility. Do not check this option if they do)
- (43) Q30.Which appliances can be run on power back-up?
- Lights
Fans
Mobile Charging
Television
Refrigerator Other appliances
- (44) Q31.Do you experience voltage fluctuations in your home?
- Yes
No
Don't know
- (45) Q32.In your home, a voltage stabilizer has been installed on ?
- None
Refrigerator
Air-conditioner
Other appliance
Entire home
- (46) Q33.Were any of your appliances damaged due to poor electricity supply in last year?
- Yes
No
- (47) Q34.Are you satisfied with the quality of electricity supplied to your home last year?
- Yes
No
Can't say
- (48) Q35.Which of the following electrical safety features does your home have?
- MCB
Fuse
None
Don't know
- (49) Q36.Did anyone experience an electric shock in your home last year?
- Yes
No

Chapter 5

(50) Lighting

We will now ask some questions regarding lighting in your home

- (51) Q37.How many bulbs and tube-lights are used in your home?

All types of lights in the house

Answer should be 0 to 99

- (52) Q38.How many of each type are used in your home?

Write 0s if no lights of a type are present

Answer should be 0 to 99

- (1) *Incandescent bulbs*
(2) *CFL*

(3) LED bulbs

(4) Fluorescent tube-lights

(5) LED tube-lights

(53) Q39. How many bulbs and tube-lights are used for at least 3 hours a day?

Answer should be 0 to 99

(54) Q40. Which of these lights that are used for at least 3 hours a day are ?

Incandescent bulbs
CFL
LED bulbs
Fluorescent tube-lights
LED tube-lights

Used throughout the day (24 hours)

(55) Q41. How long does a typical incandescent bulb last in your household?

Less than 6 months
6 months to 1 year
More than 1 year
Don't know

(56) Q42. How long does a typical CFL last in your household?

Less than 2 years
2 to 4 years
More than 4 years
Don't know

(57) Q43. How long does a typical LED bulb last in your household?

Less than 2 years
2 to 4 years
More than 4 years
Don't know

(58) Q44. How long does a typical fluorescent tube-light last in your household?

Less than 2 years
2 to 4 years
More than 4 years
Don't know

(59) Q45. How long does a typical LED tube-light last in your household?

Less than 2 years
2 to 4 years
More than 4 years
Don't know

(60) Q46. Are you satisfied with the LED lighting in your home ?

Yes
No
Can't say

(61) Q47. Why are you not satisfied with the LED lighting in your home?

Causes strain to eyes
Light is insufficient
Stopped working sooner than expected
Other

(62) Q48. Did you buy any LED bulbs/tube-lights under the government's UJALA programme?

Yes
No
Don't know

If they don't recollect UJALA programme, tell them they were required to submit aadhar card and electricity bills to get LED bulbs

(63) Q49. What can you say about most of the LED bulbs/tube-lights bought under the UJALA programme?

Working and satisfied with their quality
Working but not satisfied with their quality
Stopped working
Never used
Don't know

(64) Q50. To your knowledge, do LED bulbs and tube-lights come with star labels?

Yes
No
Don't know

- | | |
|--|---|
| (65) Q51. Will you buy an LED bulb or an LED tube-light in future? | LED bulb
LED tube-light
Don't know |
| (66) Q52. Do you use any other type of lighting? | Solar lamps
Kerosene/oil lamps
None |

Chapter 6

(67) Space Conditioning

We will now ask you about appliances used to seek relief from heat in summer namely ceiling fans, air-coolers and air-conditioners.

(68) Fans

(69) Q53. How many ceiling fans are used in your home?

Add 0 if ceiling fans are not present

Answer should be 0 to 99

(70) Q54_Q57. how many ceiling fans are used between ?

Used throughout the day (24 hours)

Answer should be 0 to 99

(1) 54. In summer, how many ceiling fans are used between 16 to 24 hours a day?

(2) 55. In summer, how many ceiling fans are used between 8 to 16 hours a day?

(3) 56. In summer, how many ceiling fans are used between 0 to 8 hours a day?

(4) 57. In winter, how many ceiling fans are used for more than 4 hours a day?

(71) Q58. To your knowledge, do ceiling fans come with star labels?	Yes No Don't know
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(72) Q59. What is the star rating of your most used ceiling fan?	Not rated 1 star 2 stars 3 stars 4 stars 5 stars Don't know
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(73) Q60. How old is your most used ceiling fan?

Round off to the nearest integer. Less than 1 year should be put as 1

Answer should be 1 to 99

(74) Q61. What is the make of your most used ceiling fan?	Reputed brand Local company
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Don't know

(75) Q62.How many table/pedestal/wall mounted fans are used in your home?

Answer should be 0 to 99

Chapter 7

(76) Coolers

(77) Q63.How many desert/evaporative air-coolers are used in your home?

Add 0s if desert/evaporative air-coolers is not available

Answer should be 0 to 99

(78) Q64.Do you use ceiling fan with the air-cooler in a room?

Yes

No

(79) Q65.What is the make of your most used cooler?

Reputed brand

Local company

Don't know

(80) Q66.How old is your most used air-cooler?

Round off to the nearest integer. Less than 1 year should be put as 1

Answer should be 0 to 99

(81) Q67.How many months in a year is the most used air-cooler used?

Round off to the nearest integer. Less than 1 month should be put as 1" .

Answer should be 0 to 12

(82) Q68.When do you use your most used air-cooler on a typical summer day?

Morning

Afternoon

Evening

Night

(83) Q69.How many hours is the most used air-cooler used on a typical summer day?

Round off to the nearest integer. Less than 1 hour should be put as 1

Answer should be 0 to 24

(84) Q70.How many hours is the most used air-cooler used on a typical winter non summer day?

Round off to the nearest integer. Less than 1 hour should be put as 1

Answer should be 0 to 24

Chapter 8

(85) Air-conditioners

(86) Q71.How many air-conditioners are used in your home

Add 0s if air-conditioners is not available

Answer should be 0 to 99

(87) Q72.How many split-type air-conditioners are used in your home?

Answer should be 0 to 99

(88) Q73.How many of these split-type air-conditioners use inverter technology? Don't know

Answer should be 0 to 99

(89) Q74.How many window-type air-conditioners are used in your home?

Answer should be 0 to 99

(90) Q75.Do you use ceiling fan with the air-conditioner in a room? Yes
No

(91) Q76.How frequently do you service your air-conditioners? Once in a year Once in two years Once in three years
Have not serviced air-conditioners in last 3 years
Don't know

(92) Q77.What is the type of your most used air-conditioner? Split (non-inverter)
Split (inverter)
Window

If the difference between inverter and non-inverter is not known, put it as non-inverter

(93) Q78.What is the capacity of your most used air-conditioner? Less than 1 ton
1 to 2 tons
More than 2 tons
Don't know

(94) Q79.What is the star-rating of your most used air-conditioner? Not rated
1 star
2 stars
3 stars
4 stars
5 stars
Don't know

(95) Q80.How many months in a year is the most used air-conditioner used ?

Round off to the nearest integer. Less than 1 month should be put as 1" instead of the current one. The cross-check has already been put

Months should be 0 to 12

(96) Q81.When do you use your most used air-conditioner on a typical summer day? Morning
Afternoon

Evening
Night

(97) Q82.How many hours is the most used air-conditioner used on a typical summer day?

Round off to the nearest integer. Less than 1 hour should be put as 1

Hours should be 0 to 24

(98) Q83.How many hours is the most used air-conditioner used on a typical non-summer day?

Round off to the nearest integer. Less than 1 hour should be put as 1

Hours should be 0 to 24

(99) Q84.What is the average temperature setting for the most used air-conditioner on a typical summer day?

Answer should be 0 to 35

(100) Q85.What is the type of your second most used air-conditioner ?

Split (non-inverter)
Split (inverter)
Window

If the difference between inverter and non-inverter is not known, put it as non-inverter

(101) Q86.What is the capacity of your second most used air-conditioner?

Less than 1 ton
1 to 2 tons
More than 2 tons
Don't know

(102) Q87.What is the star-rating of your second most used air-conditioner?

Not rated
1 star
2 stars
3 stars
4 stars
5 stars
Don't know

(103) Q88.How many months in a year is the second most used air-conditioner used?

Round off to the nearest integer. Less than 1 month should be put as 1

Months should be 0 to 12

(104) Q89.When do you use your second most used air-conditioner on a typical summer day?

Morning
Afternoon
Evening
Night

(105) Q90.How many hours is the second most used air-conditioner used on a typical summer day?

Round off to the nearest integer. Less than 1 hour should be put as 1

Hours should be 0 to 24

(106) Q91.What is the average temperature setting for the second most used air-conditioner on a typical summer day?

Answer should be 0 to 35

Chapter 9

(107) General questions regarding space-conditioning

We will now ask a few general questions related to the household's thermal comfort.

(108) Q92.Does any of the household member work in an air-conditioned space?

Yes
No

(109) Q93.Do the household members experience discomfort in home from heat in summer? in spite of using the space conditioning measures mentioned earlier?

Some days in summer
Significant number of days but less than half of summer
Most of the days in summer
No discomfort

(110) Q94.Do you wish to buy an air-conditioner in next two years?

Yes
No
Can't say

(111) Q95.What else do you do to get relief from heat in summer?

Note down whatever the respondent says in short meaningful sentences

Chapter 10

(112) Water Heating

We will now ask a few questions on energy used in your home to heat water for bathing.

(113) Q96.Which of the following is used for heating water in your home?

Firewood/crop residue/dung cake stove
Kerosene stove
Immersion rod
Electric water heater – instant <If respondent is unable to respond ask whether water heats instantly or not>
Electric water heater – storage
LPG gas based water-heater or stove
Solar water heater
None

(114) Q97.How many months in a year is the most used immersion rod used in your home?

Round off to the nearest integer. Less than 1 month should be put as 1. A cross check so that this number is only between 1 to 12 both 1 and 12 included

Months should be 0 to 12

(115) Q98.When do you use the most used immersion rod on a typical winter day?

Morning
Afternoon
Evening

Night

(116) Q99.How many hours of a day is the most used immersion rod used on a typical winter day?

Hours should be 0 to 24

(117) Q100.Did any of the household members experience an electric shock due to the use of immersion rod in last two years ?

Yes
No

(118) Q101.How many months in a year is the most used instant electric water heater used in your home?

Round off to the nearest integer. Less than 1 month should be put as 1" instead of the current one. The

Months should be 0 to 24

(119) Q102.When do you use the most used instant electric water heater on a typical winter day?

Morning
Afternoon
Evening
Night

(120) Q103.How many hours of a day is the most used most used instant electric water heater used on a typical winter day?

Hours should be 0 to 24

(121) Q104.How many months in a year is the most used storage electric water heater used in your home?

Round off to the nearest integer. Less than 1 month should be put as 1. A cross check so that this number is only between 1 to 12 both 1 and 12 included

Months should be 0 to 12

(122) Q105.When do you use the most used storage electric water heater on a typical winter day?

Morning
Afternoon
Evening
Night

(123) Q106.How many hours of a day is the most used storage electric water heater used on a typical winter day?

Hours should be 0 to 24

(124) Q107.To your knowledge, do storage electric water heaters come with star labels?

Yes
No
Don't know

(125) Q108.What is the star-rating of your most used storage electric water heater?

Not rated
1 star
2 stars
3 stars
4 stars
5 stars

Don't know

Chapter 11

(126) Cooking

We now move to questions related to energy used for cooking in your home.

(127) Q109.How frequently is a meal cooked in your home?

Every day
Few times a week
Once in a week
Never

(128) Q110.How many hours in a day are typically spent in cooking?

Include hours spent by a hired cook if any

Hours should be 0 to 24

(129) Q111.How many times does your household eat out or order food from outside in a month ?

Answer should be 0 to 9999

(130) Q112.Which of the following appliances are used at least once in a week while cooking in your home?

Microwave oven
Convection oven/Oven-Toaster-Griller (OTG)
Toaster/Griller
Electric rice cooker
Mixer/blender Food processor
Air fryer
Atta Chakki
Washing Machine
None

(131) Q113.Which fuel do you use for cooking?

Solid fuel (Firewood/agricultural residue/cow-dung cake/Coal/lignite/charcoal)
Kerosene
LPG <include homes where LPG gas is provided through pipes from a cylinder bank in common area of society>
Piped Natural Gas (PNG)
Electricity (induction stove/electric cooking coil)
Bio-gas

(132) Q114.Is solid fuel your primary fuel for cooking?

Yes
No
Can't say
Don't know

(133) Q115.What is the amount of solid fuel typically used every month for cooking?

Answer should be 0 to 999

(134) Q116.How much do you typically spend on firewood per month?

Enter 0 if firewood is not purchased, but collected by family members

Answer should be 0 to 9999

(135) Q117.How far do you have to typically travel to collect the fuel?

Answer should be 0 to 99

(136) Q118.Is kerosene your primary fuel for cooking? Yes
No
Can't say

(137) Q119.How much kerosene is used every month for cooking? Don't know

Answer should be 0 to 9999

(138) Q120.How much do you spend on kerosene for cooking per month?

(139) Q121.How far do you have to travel to collect kerosene?

Answer should be 0 to 999

(140) Q122.Is LPG your primary fuel for cooking? Yes
No
Can't say

(141) Q123.Do you use a cylinder in your home? Yes
No

The alternative arrangement is LPG gas being provided through pipes from a cylinder bank in common area of society

(142) Q124.How long does one cylinder typically last?

Convert months to days

Answer should be 0 to 999

(143) Q125.How long do you have to travel to get the cylinder?

Put 0 if delivered to home

Answer should be 0 to 999

(144) Q126.How much do you spend every month on LPG gas?

Answer should be 0 to 9999

(145) Q127.Is piped natural gas your primary fuel for cooking? Yes
No
Can't say

(146) Q128.How much do you spend on piped natural gas every month?

Answer should be 1 to 99999

(147) Q129.Is electricity your primary fuel for cooking ? Yes
No
Can't say

(148) Q130.Which of the following appliances Induction cook-stove

do you use for cooking?
Other

Electric cooking coil

(149) Q131.Is bio-gas your primary fuel for cooking?

Yes
No
Can't say

(150) Q132.What kind of bio-gas plant is used?

Household level
Community level

(151) Q133.What is the feed for your bio-gas plant?

Vegetable waste
Cow dung/agricultural waste
Food waste
Toilet/sewage
Don't know

Chapter 12

(152) Refrigeration

We will now ask some questions related to your refrigerator.

(153) Q134.How many refrigerators do you use in your home?

Add 0s if refrigerators is not available

Answer should be 0 to 99

(154) Q135.How old is your most used refrigerator?

Years should be 0 to 99

(155) Q136.What best describes your most used refrigerator?

One door
Two doors (Freezer on top)
Two doors (Freezer at bottom)
Two doors (Side by Side)
Three doors or more

(156) Q137.What is the size of your most used refrigerator?

Small (less than 200 litres)
Medium (200 to 400 litres)
Large (More than 400 litres)
Don't know

(157) Q138.What is the star rating of your most used refrigerator?

Not rated
1 star
2 stars
3 stars
4 stars
5 stars
Don't know

(158) Q139. Is there a sticker of star-rating on your refrigerator?

Yes
No

(159) Q140.What is the estimated annual consumption?

This value is available on the sticker"

kWh should be 70 to 1500

(160) Q141.What is the gross volume of the

refrigerator?

This value is available on the sticker". Can put a photo of star label for refrigerator here with a circle on consumption value

Litres should be 35 to 1000

(161) Q142.Do you switch off the refrigerator? For a few hours in a day
When going on a vacation
When there are voltage fluctuations Never

Chapter 13

(162) Entertainment and other appliances

(163) Q143.How many televisions (TV) are used in your home?

Add 0s if televisions (TV) is not available

Answer should be 0 to 99

(164) Q144.What is the type of your most used TV?

CRT
LED/LCD
Plasma

(165) Q145.What is the screen size of your most used TV?

Up to 30 inches
31 to 40 inches
41 to 49 inches
50 and above
Don't know

(166) Q146.To your knowledge, do TVs come with star-rating labels?

Yes
No
Don't know

(167) Q147.What is the star rating of your most used TV ?

Not rated
1 star
2 stars
3 stars
4 stars
5 stars
Don't know

(168) Q148.How many hours in a day is your most-used TV typically used?

Hours should be 0 to 24

(169) Q149.Please select all the appliances that are used atleast once a week ?

Set-top box
Laptop
Desktop
Tablets/iPad
Internet modem/router
Printer/scanner/copier
Gaming console
Music system
None

(170) Q150.How frequently do you watch news/shows/movies on devices such as laptop, desktop, tablet or smart phone?

Every day
Few times a week
Once a week
Don't watch

(171) Q151.Which of the following appliances do you use at least once a week?

Electric Iron Hair
Dryer
Water purifier (electric)
Air purifier
Water Pump (individual house pump)
None

(172) Q152.How many hours in a day is the water pump used?

Hours should be 0 to 24

Chapter 14

(173) Transport

Our next set of questions will be regarding energy consumed for local transport.

(174) Q153.How much does your household spend on public transport/autorickshaw/taxi per month?

Don't know

Do not include expenditure on school bus/van

Answer should be 0 to 9999

(175) Q154.How many vehicles do you own from each of the following categories?

Answer should be 0 to 999

- (1) *Bicycle*
- (2) *Motorbike/Scooter*
- (3) *Car*
- (4) *Electric bike*
- (5) *Electric car*

(176) None

(177) Q155.What is the total monthly running of all the motorcycles/scooters?

Don't know

Answer should be 0 to 9999

(178) Q156.What is the total monthly running of all the cars?

Don't know

Answer should be 0 to 9999

(179) Q157.How much does your household spend on petrol/diesel per month?

Don't know

Answer should be 0 to 9999

(180) Q158.How long does the electric bike go in one charge?

Don't know

Answer should be 0 to 9999

(181) Q159.How frequently do you charge the electric bike?

Every day
Few times a week
Once a week
Occasionally

(182) Q160.What time of the day do you charge the electric bike?

Morning
Afternoon
Evening
Night
Don't know

(183) Q161.How long does the electric car go in one charge?

Answer should be 0 to 9999

(184) Q162.How frequently do you charge the electric car?

Every day
Few times a week
Once a week
Occasionally

(185) Q163.What time of the day do you charge the electric car?

Morning
Afternoon
Evening
Night

(186) Q164.Do you have a solar PV system for electricity generation installed?

Yes
No
Don't know

(187) Q165.What is the capacity of the system?

Answer should be 0 to 999

Chapter 15

(188) Electricity Bill and Income :- We are now at the end of the survey. We would like to ask you two more pieces of information which will help us in our research. Like all of the previous information, this will be used only for research purposes and not shared with anyone. Data on actual electricity use in your home can be linked with the information gathered in this survey to better estimate consumption patterns. For this, we would like to note down your consumer number and substation number on your electricity bill.

(189) Q166.Can we see a copy of your electricity bill?

Yes
No

(190) Q166.Consumer Number

(191) Q166.Substation Number

(192) Q167.Considering all the income sources, under which monthly income category does your household fall?

Upto Rs 20,000
Rs 21,000 to 60,000
Rs 61,000 to Rs. 1,50,000
Above Rs. 1,50,000
Would not like to reveal

Chapter 16

(193) GPS-Location