

## Total Energy Access (TEA) - Minimum Standards for a household

	Energy service	Minimum standard	Criteria / threshold level
1	Lighting	300 lm for a minimum of 4 hours per night at household level	L1=1 <b>AND</b> L2=1
2	Cooking and water heating	1 kg woodfuel or 0.3 kg charcoal or 0.04 kg LPG or 0.2 litres of kerosene or ethanol per person per day, taking less than 30 minutes per household per day to obtain	CW1=1 <b>OR</b> CW2=1 <b>AND</b> CW4=1
		Minimum efficiency of improved solid fuel stoves to be 40% greater than a three-stone fire in terms of fuel use	CW2=1 <b>OR</b> CW1 = 1
		Annual mean concentrations of particulate matter (PM <sub>2.5</sub> ) < 10 µg/m <sup>3</sup> in households, with interim goals of 15 µg/m <sup>3</sup> , 25 µg/m <sup>3</sup> and 35 µg/m <sup>3</sup>	CW2=1 <b>AND</b> CW3=1 <b>OR</b> CW1 = 1
3	Space heating	Minimum daytime indoor air temperature of 18°C	S1=1 <b>OR</b> S2=1
4	Cooling	Households can extend life of perishable products by a minimum of 50% over that allowed by ambient storage	C1=1
		Maximum apparent indoor air temperature of 30° C	C2=1 <b>OR</b> C3=1
5	Information and communications	People can communicate electronic information from their household	IC1=1 <b>OR</b> IC3=1
		People can access electronic media relevant to their lives and livelihoods in their household	IC2=1 <b>OR</b> IC3=1

The questionnaire below is designed to assess whether a household meets the TEA Minimum Standards. It is anticipated that the TEA Minimum Standards will be used for assessing the energy access situation in a village or at a project level. This may involve a survey of all, or a sample, of households. For the PPEO report research we asked 50 households in six communities.

The TEA Minimum Standards can be assessed using 14 questions – the logic for judging whether a household has met the standard is included in the Minimum Standards table. For example, for the Lighting standard, a household is judged to have met this if they answer ‘Yes’ to question L1 and L2.

The Total Energy Wiki should have a facility to process input data to return the results on which Minimum Standards have been met, and which have not. This could be done for

percentage of households meeting the standard. A graph presenting the results could also be produced.

A set of 33 additional questions has been included as an optional extra for practitioners wishing to gather more information from the household and conduct a deeper analysis. The TEA Minimum Standards are not judged according to the additional questions.

Summary of TEA questions			
	<b>TEA questions</b>	<b>Additional questions</b>	<b>Total questions</b>
Lighting	2	4	6
Cooking and water heating	4	14	18
Heating	2	4	6
Cooling	3	5	8
ICTs	3	6	9
<b>Total</b>	<b>14</b>	<b>33</b>	<b>47</b>

The Total Energy Wiki will ideally include both the TEA questions and the additional questions. It would be good to have separate pages for uploading the TEA questions alone, and for the TEA and additional questions together.

## Lighting – TEA assessment

	QUESTION	CRITERIA	ENTER SCORE (0 or 1)
L1	Do you have a fixed or portable electric light that you use regularly in your house?	No = 0	
		Yes = 1	
L2	IF YES – Do you use this light for more than 4 hours per day?	No = 0	
		Yes = 1	

## Lighting - additional

L3	How many electric lights do you have in your house?	1 = One or two	
		2 = Three or four	
		3 = More than four	
L4	Do you feel that the lighting you have is adequate for your needs?	1 = Very adequate	
		2 = OK – but would like a bit more	
		3 = Poor	
		4 = Very bad	
L5	In what ways would you like to change your lighting?		
L6	What prevents you from changing your lighting?		

## Cooking and Water heating – TEA assessment

	QUESTION	CRITERIA	ENTER SCORE (0 or 1)
CW1	Do you mostly use liquid or gas fuel or electricity for cooking?	No or Don't know = 0	
		Yes = 1	
CW2	IF NO OR DON'T KNOW – Do you have an "improved" solid fuel cookstove which uses less fuel than an open fire?	No or Don't know = 0	
		Yes = 1	
CW3	Do you have a chimney or smoke hood over your cookstove or fire?	No = 0	
		Yes = 1	
CW4	Does your household spend less than 30 minutes a day collecting firewood?	No = 0	
		Yes = 1	

## Cooking and water heating - additional

CW5	What fuel do you use most of the time?	1 = Wood	
		2 = Charcoal	
		3 = Dung/residues	
		4 = Biogas	
		5 = Kerosene	
		6 = LPG	
		7 = Electricity	
		8 = Ethanol	
		9 = Coal	
		10 = Other	
CW6	How many months per year do you mainly use this fuel?	Give number	
CW7	How many times per day do you use this fuel?	Give number	
CW8	How many times per day do you cook using another fuel?	Give number	
CW9	What is the other fuel you use for cooking?	1 = Wood	
		2 = Charcoal	
		3 = Dung/residues	
		4 = Biogas	
		5 = Kerosene	
		6 = LPG	
		7 = Electricity	
		8 = Ethanol	
		9 = Coal	
		10 = Other	
CW10	Using the list below, describe the type of stove you use for most of your cooking.		
	1	Traditional (3-stone) fire	8 Ethanol stove
	2	Traditional tripod stove	9 Kerosene wick stove
	3	Traditional metal charcoal stove	10 LPG stove
	4	Improved biomass chimney stove	11 Electric stove
	5	Improved biomass stove without chimney	12 Kerosene pressure stove
	6	Improved charcoal stove with ceramic liner	13 None
	7	Biomass stove with smoke hood	14 Other (please describe)
CW11	If you use more than one stove for cooking, using the list above describe the second kind of stove you use for your cooking (if only one stove is used put '0')		
CW12	How do you obtain your main fuel?	1 = Gather	
		2 = Purchase	
		3 = Gather & purchase	
		4 = Produce at home	
CW13	How long does it take you to obtain your fuel each month, at this time of year?		__ hrs __ mins
CW14	Do you spend more than 10% of your income on cooking fuel?	No = 0	
		Yes = 1	

CW15	Do you feel that the stoves in your household burn cleanly or are polluting?	1 = Very clean	
		2 = OK – but would like to improve	
		3 = Rather polluting	
		4 = Very polluting	
		5 = Don't know	
CW16	How do you feel about the safety of cooking facilities in your household?	1 = Very safe	
		2 = OK – but would like to improve	
		3 = Rather dangerous	
		4 = Very dangerous	
		5 = Don't know	
CW17	Please describe any ways in which you would like to change your cooking habits?		
CW18	What prevents you from changing your cooking?		

### Space Heating – TEA Assessment

	QUESTION	CRITERIA	ENTER SCORE (0 or 1)
S1	Is your house warm enough all year round without heating?	No = 0	
		Yes = 1	
S2	IF NO – do you have a purpose-built heating device or heating stove?	No = 0	
		Yes = 1	

### Space Heating - additional

S3	What do you use to heat the rooms in your house?	0 = None used	
		1 = Open fire	
		2 = Normal cooking stove	
		3 = Purpose-built heater	
		4 = Multi-purpose cooker and heater	
		5 = Other	
S4	If 'other' please describe		

S5	What fuel do you use for heating?	0 = None	
		1 = Wood	
		2 = Charcoal	
		3 = Dung/residues	
		4 = Biogas	
		5 = Kerosene	
		6 = LPG	
		7 = Electricity	
		8 = Ethanol	
		9 = Coal	
10 = Other			
S6	How many months per year do you heat your house?	___ months	

### Cooling – TEA assessment

	QUESTION	CRITERIA	ENTER SCORE (0 or 1)
C1	Do you use an appliance to keep food cool in your house most of the time? (e.g. refrigerator, coolbox)	No = 0	
		Yes = 1	
C2	Is your house cool enough all year round without cooling?	No = 0	
		Yes = 1	
C3	IF NO – Do you use an air cooling device? (eg an electric fan or air conditioning)	No = 0	
		Yes = 1	

### Cooling - additional

C4	What appliance do you use to keep food cool in your home?	0 = None used	
		1 = Electric refrigerator	
		2 = Gas refrigerator	
		3 = Coolbox	
		4 = Cool storage cupboard or room	
		5 = Clay pot	
6 = Other			
C5	If 'other' please describe		
C6	What method do you use to cool air in your house?	0 = None	
		1 = Air conditioner	
		2 = Electric fan	
		3 = Leave windows and doors open	
		4 = Keep light from coming	

		through windows	
		5 = Other	
C7	If 'other' please describe		
C8	How many months per year do you cool your house?	___ months	

## Information and communications – TEA Assessment

	QUESTION	CRITERIA	ENTER SCORE (0 or 1)
IC1	Do you have a fixed or mobile phone in your house?	No = 0	
		Yes = 1	
IC2	Do you use a radio or TV in your house?	No = 0	
		Yes = 1	
IC3	Do you have internet access in your house?	No = 0	
		Yes = 1	

## Information and communications – additional

IC4	Do you have regular access to a fixed or mobile phone outside of your household?	0 = Do not have access	
		1 = In a neighbour's or friend's house	
		2 = At a local shop/cafe/kiosk/community centre	
		3 = At your place of work	
		4 = Other	
IC5	If 'other', please describe...		
IC6	Do you have regular access to a radio or TV outside of your household?	0 = Do not have access	
		1 = In a neighbour's or friend's house	
		2 = At a local shop/cafe/kiosk/community centre	
		3 = At your place of work	
		4 = Other	
IC7	If 'other', please describe...		
IC8	Do you have regular access to the internet outside of your household?	0 = Do not have access	
		1 = In a neighbour's or friend's house	
		2 = At a local shop/cafe/kiosk/community centre	
		3 = At your place of work	
		4 = Other	
IC9	If 'other', please describe...		



## Energy Supply Index (ESI)

This index is to be completed for each household alongside the TEA Minimum Standards. Discuss the options with a household member and select the most applicable level for the household.

Energy supply	Level	Quality of supply	HH level
<b>Household fuels</b>	0	Using non-standard solid fuels such as plastics	
	1	Using solid fuel in an open/three-stone fire	
	2	Using solid fuel in an improved stove	
	3	Using solid fuel in an improved stove with smoke extraction/chimney	
	4	Mainly using a liquid or gas fuel or electricity, and associated stove	
	5	Using only a liquid or gas fuel or electricity, and associated stove	
<b>Electricity</b>	0	No access to electricity at all	
	1	Access to third party battery charging only	
	2	Access to stand-alone electrical appliance (eg solar lantern, solar phone charger)	
	3	Own limited power access for multiple home applications (eg Solar home systems or power-limited off-grid)	
	4	Poor quality and/or intermittent AC connection (remove 240V as non-standard)	
	5	Reliable AC connection available for all uses (remove 240V as non-standard)	
<b>Mechanical Power</b> <b>(e.g. Milling, pumping, grinding, pressing, de-husking, drilling)</b>	0	No household access to tools or mechanical advantages	
	1	Hand tools available for household tasks	
	2	Mechanical advantage devices available to magnify human/animal effort for most household tasks	
	3	Powered mechanical devices available for some household tasks	
	4	Powered mechanical devices available for most household tasks	
	5	Mainly purchasing mechanically processed goods and services.	

## Additional information

In order to ensure a degree of credibility and traceability, we will request that people uploading information enter information about themselves and their organisation.

Please provide the details of the interviewer conducting the household survey:

Name	
Organisation	
Job title	
Email address	

For each household assessed with the questionnaire, the following information should be included:

Name	
Age	
Sex	
Number of people in household	
GIS coordinates (if available - for house or village)	