



4. Choosing evaluation methods

This chapter is designed to help organizations choose methods appropriate to their evaluation objectives, type of intervention promoted, available resources and levels of knowledge and expertise.

The choice of evaluation methods depends on a number of factors, including:

- *Which evaluation areas (A-G) are most important in the light of the objectives for evaluation? What kind of information is required?*
 - For example, what is the objective of the intervention project or programme? What is the aim of the evaluation, and who is the target audience for results (e.g. donors, beneficiaries, implementing organization)? Are the data intended to produce statistically significant results?
- *What type of intervention project/programme is to be evaluated, and at what stage?*
 - For example, what type of intervention is the evaluation concerned with (e.g. fuel change, improved stove, behavioural change)? Is it a large-, medium- or small-scale project/programme? Has the project/programme already commenced (i.e. requiring retrospective evaluation) or is it possible to conduct a baseline and one or more follow-up assessments?
- *What capacity and resources are available to plan and undertake evaluation and analyse, interpret and record findings?*
 - For example, are staff members with evaluation experience available, and do they have enough spare capacity? Is equipment for IAP monitoring available, and is there access to laboratory facilities? Is there sufficient funding to conduct evaluation?

Factors such as evaluation objective and type of intervention are not further discussed in this catalogue. Other issues such as study design are discussed in more detail in Chapter 5. This chapter focuses on choosing methods according to the capacity and resources of a given organization.

Resource considerations

Evaluation is often time-consuming, expensive and requires skill in planning, data collection, analysis and reporting. Many organizations may find it necessary to develop their human resources further through training, to partner with organizations with more evaluation experience or to involve specialists, such as health-care workers or university researchers.

It is paramount in evaluation planning to ensure that:

- the right amount of data is collected, avoiding wasting resources by collecting neither too much nor too little data (see Chapter 5); and
- the right type of data is collected, avoiding omitting essential data or linkages, and avoiding gathering irrelevant data.

Key questions to consider include:

- What specialist evaluation skills do staff have? Who will plan the evaluation, collect data, and analyse and interpret results?
- How much time can staff devote to evaluation? Is this sufficient for the planned scale of evaluation (i.e. sample size)?
- What capacity building, training or further resources can be secured?
- Do the necessary Information Technology resources, equipment and laboratory facilities exist, or can access to these facilities be ensured?
- Are there sufficient financial resources for the planned evaluation, including data gathering, data analysis and reporting costs?

If the necessary skills and resources of funds required to undertake evaluation are not yet available, there are several avenues for mobilizing evaluation funds and resources (see also Box 9). These include:

- securing evaluation funding through the project/programme donor and ensuring that evaluation is included in any new proposals;
- forging partnerships with local or national governmental organizations that may be interested in the results (e.g. Ministry of Health);
- collaborating with universities to gain access to research funding, equipment (e.g. IAP monitoring equipment, laboratories) and to explore the possibility of recruiting students to undertake evaluation work as part of their studies (e.g. postgraduates working on Master of Science projects);
- convincing local manufacturers and industry to invest in evaluation (e.g. market research); and
- generating an independent evaluation budget (e.g. by putting aside a small percentage of sales from stoves).

BOX 9 Support for evaluation

At present no internationally accessible service exists that is able to provide assistance and advice on evaluation. However, regional expertise and resources are being developed, such as through regional evaluation training workshops (www.who.int/indoorair/interventions/training). Several organizations facilitate cooperation on evaluation, such as the World Health Organization (www.who.int/indoorair), the Center for Entrepreneurship in International Health and Development (<http://ceihd.berkeley.edu>), the University of Liverpool (www.liv.ac.uk/heevaluation) and the Partnership for Clean Indoor Air (www.pciaonline.org/).

Further considerations

Qualitative versus quantitative methods

Most evaluation methods produce either quantitative or qualitative data. Quantitative methods track changes in 'quantifiables', while qualitative methods reveal perspectives, perceptions or behaviours.

Broadly, quantitative approaches are more suited to medium- or large-scale evaluations, where information can be standardized and where respondents are likely to give accurate answers to questionnaires. They are particularly suited to

more technology-focused interventions and include performance testing, IAP monitoring and questionnaires based on closed questions. Qualitative approaches include in-depth open-ended interviews with groups or individuals, observations and the use of participatory methods, such as focus group discussions. These are useful for understanding what kind of issues to consider in any evaluation. Qualitative approaches can be used alone, as well as play an important role in developing quantitative approaches, and in providing contextual data to explain the results of quantitative analysis.

It should be noted that quantitative data analysis and qualitative data analysis are very different and require distinct skills. For example, an expert in analysing emissions or exposure data may not be skilled to analyse interview transcripts on women's welfare or empowerment.

Combining evaluation areas and methods

In order to fully understand the impact of an intervention, an evaluation will consider each of the seven evaluation areas A-G (see Chapter 3). In reality, organizations have their own evaluation objectives and resource constraints. Therefore, evaluating each area in depth is usually not possible or appropriate. It is, however, important to choose and combine evaluation areas and methods carefully to deepen the knowledge of impact and to answer some of the key outstanding questions in relation to household energy and health interventions (see Box 10). For example:

- Data on IAP levels in different rooms combined with information on where different family members spend their time indicates who is exposed to different pollution levels at different times of day and for how long.
- Data on adoption rates coupled with socio-economic impacts provides insights as to why people are or are not adopting an intervention.
- Data on stove performance analysed alongside information about fuel expenditure can reveal unexpected outcomes, such as the use of traditional stoves alongside improved stoves.

BOX 10 A range of methods applied across a range of areas

In Kenya, Practical Action undertook IAP monitoring combined with surveys of health, socio-economic status and time use. The qualitative information gathered provided a useful context to the data on IAP levels. For example, informal discussions revealed that a number of households brewed beer inside their homes, resulting in particularly high IAP levels during prolonged periods of time. Data for these homes were analysed separately, making the results for all homes more accurate.

Effects, such as the brewing of beer in homes, which distort or mask a true change or association between two variables are known as confounders. Other confounding factors might be related to socio-economic status (e.g. income, wealth, education), housing type or nutritional status. Qualitative methods are invaluable in identifying and understanding these factors.

Considering how different areas relate to one other and how methods feasible to a given organization's resources and experience could complement one other, should inform the choice of evaluation methods.

Example evaluation plans

To simplify the process of choosing evaluation methods, several example evaluation plans have been prepared to account for different organizational requirements and objectives, types of intervention, budgets and so on. These evaluation plans combine different evaluation areas and identify a range of appropriate methods leaving the reader to select specific methods. They are designed to be a useful starting point for developing an evaluation strategy.

Organizations wishing to use these example evaluation plans should choose one which reasonably fits their overall objectives. The example evaluation plans will then need to be customized according to organizational requirements, evaluation objectives, type of intervention and setting by selecting, adding and adapting appropriate methods.

The following example evaluation plans are general evaluations that assess a wide range of impacts:

- Example evaluation plan 1 *Basic overview of intervention impacts* and
- Example evaluation plan 5 *Advanced assessment of intervention impacts*.

The following example evaluation plans have a thematic focus:

- Example evaluation plan 2 *Market development, time and socio-economic impacts*,

- Example evaluation plan 3 *Technology performance and indoor air pollution monitoring and*
- Example evaluation plan 4 *Indoor air pollution and personal exposure monitoring and health impacts*.

Table 10 Example evaluation plan 1

Basic overview of intervention impacts

An evaluation strategy suitable for organizations with limited evaluation experience and small-scale projects or programmes. This menu covers all evaluation areas using simple methods.

Organizational requirements

- Limited evaluation experience, time and resources.
- Basic skills in surveys, qualitative field research and data analysis.

Resource requirements

- Access to very simple technologies (e.g. scales for weighing wood).
- Some IT resources and analytical skills needed for data analysis and reporting.

Intervention requirements

Appropriate for smaller-scale projects and programmes and interventions of all types. If the intervention is focused around behaviour change or housing design, certain tools may need to be adapted.

Contribution to international evidence base

Depending on sample sizes and overall study design, some data could contribute to the international knowledge base. However, these evaluation tools will produce mainly anecdotal evidence, most useful for project planning and feedback to donors and beneficiaries.

ID	Method	Organization	Section of method	Rating
Evaluation area-specific methods				
A1	Demographic and Health Surveys	USAID/ORCMacro	Questions on fuel type, stove type and cooking location	
A2	World Health Survey	WHO	Questions on fuel type, stove type and cooking location, and heating practices	
C1	Comparative cooking test	—	—	
F1	Energy policies and multitopic household surveys	World Bank	Questions on fuel consumption, collection and purchase for different uses	
Generic methods				
Y1	Indoor air pollution survey	World Bank Bangladesh	All	
Y2	Biomass energy conservation questionnaire	GTZ/ProBEC	All	
Y3	General impact questionnaire	Trees, Water and People	All	
Y4	Measuring successes and setbacks	GTZ/HERA	All	
Additional methods and resources				
Y6	Example informed consent forms	WHO	All	

Table 11 Example evaluation plan 2

Market development, time and socio-economic impacts

A more complex evaluation strategy suitable for organizations with some evaluation experience and projects or programmes of all sizes.

Organizational requirements

- Some evaluation experience, and medium time and resources.
- Resources and capacity for in-depth surveys, qualitative field research and data analysis.

Intervention requirements

Appropriate for projects or programmes of all sizes and all types of interventions. If the intervention is focused around behaviour change or housing design, certain tools may need to be adapted.

Resource requirements

- Access to very simple technologies (e.g. scales for weighing wood).
- Some IT resources and analytical skills needed for data analysis and reporting.

Contribution to international evidence base

Depending on sample sizes and overall study design, some data could contribute to the international knowledge base. However, these evaluation tools will produce a large amount of qualitative data which could be difficult to interpret conclusively.

ID	Method	Organization	Section of method	Rating
Evaluation area-specific methods				
A1	Demographic and Health Surveys	USAID/ORCMacro	Questions on fuel type, stove type and cooking location	
A2	World Health Survey	WHO	Questions on fuel type, stove type and cooking location, and heating practices	
B1	Breathing Space commercialization toolkit	Shell Foundation	All	
C1	Comparative cooking test	—	—	
D1, D2, D3	IAP post-monitoring questions	IAP team, UCB	All	
D4	Indoor air quality post-monitoring questionnaire	TERI/HEED	All	
D5	House, household and monitoring	Practical Action/ University of Liverpool	Post-monitoring questionnaire (Section C)	
D7	Household energy practices, indoor air pollution and health perceptions survey	Winrock International	Questions on cooking practices (Section B), technology (Section C), and fuel use (Section D) and enumerator observation form (Section F)	
D7	Focus group discussion guide	Winrock International	All	
D7	Household energy practices, indoor air pollution and health perceptions survey	Winrock International	Post-monitoring questions (Section H)	
F1	Energy policies and multitopic household surveys	World Bank	Questions on fuel consumption, collection and purchase for different uses	
Generic methods				
Y1	Indoor air pollution survey	World Bank Bangladesh	All	
Y2	Biomass energy conservation questionnaire	GTZ/ProBEC	All	
Y3	General impact questionnaire	Trees, Water and People	All	
Y4	Measuring successes and setbacks	GTZ/HERA	All	

Table 11 Continued

ID	Method	Organization	Section of method	Rating
Additional methods and resources				
E2	Guidelines for evaluating the impacts of household energy programmes	University of Liverpool	All	
Y5	Methodology for participatory assessment	ARECOP	All	
Y6	Example informed consent forms	WHO	All	

Table 12 Example evaluation plan 3

Technology performance and indoor air pollution monitoring

A challenging evaluation strategy suitable for organizations with considerable skills and evaluation resources and medium- to large-scale projects or programmes.

Organizational requirements

- Considerable resources, skills, capacity and time for evaluation, in particular:
 - Capacity and skills to develop an evaluation strategy and study design.
 - Skilled personnel for undertaking the evaluation, including specialists in IAP monitoring and technology performance testing.

Intervention requirements

Not appropriate for small-scale projects or programmes due to the need for sufficiently large sample sizes and substantial financial and technical resources.

Resource requirements

- Access to technology performance testing devices, including digital thermometers, scales and stopwatches.
- IT resources and skills for analysing significant volumes of data.
- Pump and filter-type devices for measuring particulate concentrations, and access to laboratories for processing filter papers.
- CO colour change diffusion tubes.

Contribution to international evidence base

If well-planned and carefully undertaken, data generated from these evaluations will contribute to the international knowledge base.

ID	Method	Organization	Section of method	Rating
Evaluation area-specific methods				
C3	Water boiling test	Household energy and health team, UCB	All	
C4	Kitchen performance test	Household energy and health team, UCB	All	
C5	Controlled cooking test	Household energy and health team, UCB	All	
D1, D2, D3	IAP post-monitoring questions	IAP team, UCB	All	
D2	CO dosimeter tube protocol	IAP team, UCB	All	
D5	House, household and monitoring	Practical Action/ University of Liverpool	PM pump and filter area monitoring (Section B)	
D5	House, household and monitoring	Practical Action/ University of Liverpool	Post-monitoring questionnaire (Section C)	
D7	Household energy practices, indoor air pollution and health perceptions survey	Winrock International	IAP monitoring datasheet and accompanying enumerator's manual for PM pump and filter area monitoring (Section G)	

Table 12 Continued










ID	Method	Organization	Section of method	Rating
Evaluation area-specific methods				
D7	Household energy practices, indoor air pollution and health perceptions survey	Winrock International	IAP monitoring datasheet and accompanying enumerator's manual for digital CO (area) and CO (personal exposure) monitoring (Section G)	
D7	Household energy practices, indoor air pollution and health perceptions survey	Winrock International	Post-monitoring questions (Section H)	
Generic methods				
Y1	Indoor air pollution survey	World Bank Bangladesh	All	
Y4	Measuring successes and setbacks	GTZ/HERA	All	
Y5	Methodology for participatory assessment	ARECOP	All	
Additional methods and resources				
C2	VITA stove performance tests	Enterprise Works/VITA	All	
D4	Indoor air quality post-monitoring questionnaire	TERI/HEED	All	
D8	Protocols for assessing daily integrated exposure	TERI/East-West Centre	All	
E2	Guidelines for evaluating the impacts of household energy programmes	University of Liverpool	All	
	'How to' guide to household smoke monitoring	Practical Action	See CD ROM: D5	—
	Monitoring indoor air pollution	World Bank Bangladesh	See CD ROM: Y1	—
Y6	Example informed consent forms	WHO	All	—

Table 13 Example evaluation plan 4

Indoor air pollution and personal exposure monitoring and health impacts

A challenging evaluation strategy suitable for organizations with considerable skills and evaluation resources and medium- to large-scale projects or programmes.

Organizational requirements

- Considerable resources, skills, capacity and time for evaluation, in particular:
 - Capacity and skills to develop an evaluation strategy and study design.
 - Skilled personnel for planning and undertaking the evaluation, including specialists in IAP and health evaluation.
- Resources and capacity for in-depth surveys and qualitative field research.

Intervention requirements

Not appropriate for small-scale projects or programmes due to the need for sufficiently large sample sizes and substantial financial and technical resources.

Resource requirements

- IT resources and skills for analysing significant volumes of data.
- Light-scattering technology particulate monitors.
- CO colour change diffusion tubes.
- Real-time electrochemical CO monitors.
- CO breath monitors.

Contribution to international evidence base

If well-planned and carefully undertaken, data generated from these evaluations will contribute to the international knowledge base.













ID	Method	Organization	Section of method	Rating
Evaluation area-specific methods				
D1, D2, D3	IAP post-monitoring questions	IAP team, UCB	All	
D1	UCB light-scattering particle monitoring protocol	IAP team, UCB	All	
D2	CO dosimeter tube protocol	IAP team, UCB	All	
D3	HOBO CO logger and calibration check protocols	IAP team, UCB	All	
D5	House, household and monitoring	Practical Action/ University of Liverpool	Digital CO (area) and CO (exposure) monitoring (Section B)	
D5	House, household and monitoring	Practical Action/ University of Liverpool	Post-monitoring questionnaire (Section C)	
D5	House, household and monitoring	Practical Action/ University of Liverpool	Women's and children's health and well-being questionnaire (qualitative) (Section A.7)	
D6	Measuring breath CO	Practical Action/ University of Liverpool	All	
Generic methods				
Y4	Measuring successes and setbacks	GTZ/HERA	All	
Y5	Methodology for participatory assessment	ARECOP	All	
Additional methods and resources				
D7	Household energy practices, indoor air pollution and health perceptions survey	Winrock International	Questions on health impact perception (Section E)	
D7	Household energy practices, indoor air pollution and health perceptions survey	Winrock International	IAP monitoring datasheet and accompanying enumerator's manual for PM pump and filter area monitoring (Section G)	

Table 13 Continued

ID	Method	Organization	Section of method	Rating
D7	Household energy practices, indoor air pollution and health perceptions survey	Winrock International	IAP monitoring datasheet and accompanying enumerator's manual for digital CO (area) and CO (personal exposure) monitoring (Section G)	
D7	Household energy practices, indoor air pollution and health perceptions survey	Winrock International	Post-monitoring questions (Section H)	
E2	Guidelines for evaluating the impacts of household energy programmes	University of Liverpool	All	
Y6	Example informed consent forms	WHO	All	—
	'How to' guide to household smoke monitoring	Practical Action	See CD ROM: D5	—
	Monitoring indoor air pollution	World Bank Bangladesh	See CD ROM: Y1	—

Table 14 Example evaluation plan 5

Advanced assessment of intervention impacts

A very advanced evaluation strategy suitable for organizations with considerable skills and evaluation resources. This menu is applicable to medium- or large-scale projects or programmes with access to health specialist knowledge.

Organizational requirements

- All of the skills required for example evaluation plans 2, 3 and 4 plus:
 - Health professional to conduct spirometry and interpret results.
- Resources and capacity for in-depth surveys and qualitative field research.

Intervention requirements

Not appropriate for small-scale projects or programmes due to the need for sufficiently large sample sizes and substantial financial and technical resources.

Resource requirements

- Access to technology performance testing devices, including digital thermometers.
- IT resources and skills for downloading and analysing significant volumes of data.
- CO colour change diffusion tubes.
- Real-time electrochemical CO monitors.
- Light-scattering technology particulate monitors.
- Spirometers.
- Emission-monitoring device.
- Access to complex and expensive (approximately US\$20 000) devices required for emissions testing.













Contribution to international evidence base

If well-planned and carefully undertaken, data generated from these evaluations will contribute to the international knowledge base.

Evaluation area-specific methods

B1	Breathing Space commercialization toolkit	Shell Foundation	All	
C3	Water boiling test	Household energy and health team, UCB	All	
C4	Kitchen performance test	Household energy and health team, UCB	All	
C5	Controlled cooking test	Household energy and health team, UCB	All	
D1	UCB light-scattering particle monitoring protocol	IAP team, UCB	All	

Table 14 Continued

ID	Method	Organization	Section of method	Rating
D1, D2, D3	IAP post-monitoring questions	IAP team, UCB	All	
D2	CO dosimeter tube protocol	IAP team, UCB	All	
D3	HOBO CO logger and calibration check protocols	IAP team, UCB	All	
D5	House, household and monitoring	Practical Action/ University of Liverpool	Women's and children's health and well-being questionnaire (qualitative) (Section A.7)	
D7	Household energy practices, indoor air pollution and health perceptions survey	Winrock International	Questions on cooking practices (Section B), technology (Section C) and fuel use (Section D) and enumerator observation form (Section F)	
E1	Spirometry	Practical Action/ University of Liverpool	All	
F1	Energy policies and multitopic household surveys	World Bank	Questions on fuel consumption, collection and purchase for different uses	
G1	ARACHNE emissions monitoring (without hood)	Department of Civil and Environmental Engineering, University of Illinois	All	
Generic methods				
Y4	Measuring successes and setbacks	GTZ/HERA (Section 4.3)	Monitoring and evaluation with users	
Additional methods and resources				
D8	Protocols for assessing daily integrated exposure	TERI/East-West Centre	All	
E2	Guidelines for evaluating the impacts of household energy programmes	University of Liverpool	All	
G2	Emissions collection hood	Aprovecho Research Center	All	
Y6	Example informed consent forms	WHO	All	