GLOBAL ALLIANCE FOR CLEAN COOKSTOVES

# A RECIPE FOR DEVELOPING ADOPTION & IMPACT INDICES

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The Global Alliance for Clean Cookstoves has identified the need to develop a set of tools to measure the results of clean cookstove implementation programs, based on a users' perspective approach. This guide is intended to show how to evaluate the adoption and the impact of a clean cookstove in terms of the benefits perceived by the users of these technologies and is meant for a wide-variety of sector stakeholders, including practitioners (private sector players, non-governmental organizations (NGOs), community-based organizations (CBOs), government agencies, etc.), donors, policymakers, development agencies, investors and academic institutions.

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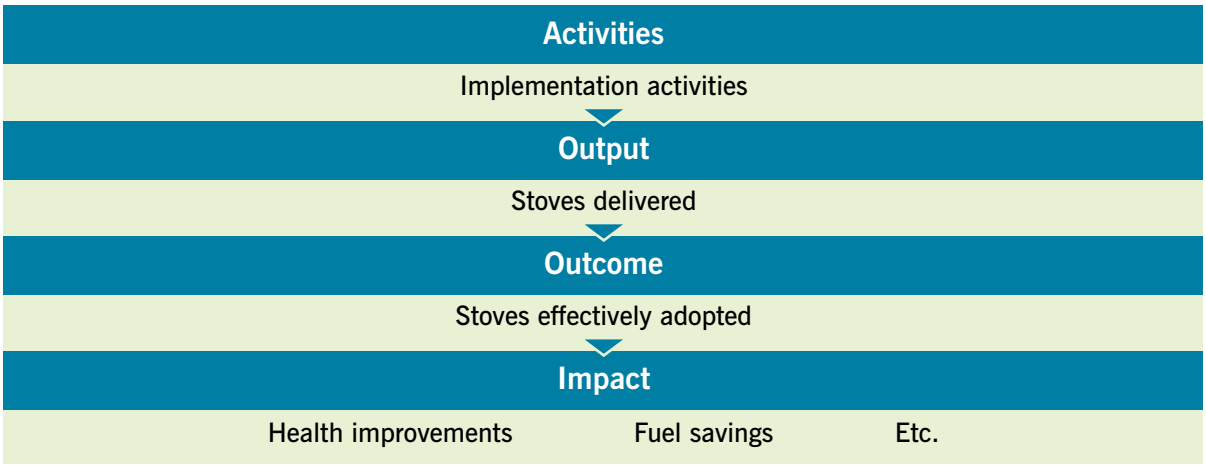
# INTRODUCTION

As is common in other technology diffusion projects, assessing the outcome and impact of a cookstove dissemination project is much more challenging than assessing its output. The output of a project is simply the number of cookstoves delivered. The outcome is the number of cookstoves actually adopted by users — and the extent of that adoption — while the impacts can be measured with different indicators such as fuel savings, greenhouse gas emissions reductions, or prevalence of respiratory diseases (see Figure 1).

**FIGURE 1. LOGICAL FRAMEWORK OF COOKSTOVE DISSEMINATION**




## Stacking of Cooking Technologies

One of the reasons that makes measuring adoption and impact difficult is that, as has been documented by many studies, by and large users do not simply switch from one fuel or technology to another, but follow a multiple use strategy, whereby new cooking technologies and fuels are used without abandoning the previous ones. This allows users to get the advantages of both traditional and modern fuels by using each technology for the cooking task it best performs, or by using multiple fuels to increase energy security. This strategy also helps households to be more resilient to an uncertain and rapidly changing economic or climate context.

Measuring exactly how many fuels and technologies are being used to cook involves considering the number of technologies in use, for how long they are being used every day, and the variations of these factors over time. For example, some people use liquefied petroleum gas (LPG) in the rainy season when firewood is wet; others use the open fire only to cook in big pots for special occasions.

Understanding how stacking works and measuring it is vital to evaluating the adoption of a clean cookstove and its impact on the user's life. First, due to stacking, the adoption of a clean cookstove is not a black and white issue, but rather a gray area issue. In other words, rather than measuring whether or not a cookstove is adopted, we need to measure to what extent it is adopted. Second, due to stacking, adoption and impact may be different, as shown in Box 1.

## The Challenges of Measuring Impact

The second reason that makes measuring impacts such as the reduction of harmful emissions, the reduction of fuel consumption, or the health improvements of the beneficiaries very difficult is the high cost, complexity, and duration of these measurements. There are electronic devices that measure the amount of time a cookstove is actually being used, but they need to be installed on every cookstove for a period of time, making these measurements more challenging.

## Relying on the Users' Perceptions

One way of addressing the challenges of both the stacking of cooking technologies and the high cost and complexity of impact measurement is to obtain adoption and impact indices that are based only on user perceptions regarding the changes the clean cookstove technology has brought about in their lives. This guide proposes a set of qualitative tools that can allow for assessment of the adoption and impact rates of an implementation program and yet are simple, easy to carry out, and inexpensive.

The adoption and impact indices are intended to measure the extent to which the new cooking technology has been integrated in the user's life. These tools enable us to measure the strengths and weaknesses of an implementation program from the users' perspective.

These indices are meant to be an easy-to-use tool to assess adoption and impact by means of a very simple survey. Although a large number of data was used to create the indices (including interviews, survey responses, expert observations, and clusters), the indices themselves should be a function of a limited number of variables. Therefore, care was taken when building the indices to use only direct survey responses, and to minimize the number of variables. Finally, the suitability of the indices was verified by assessing the correlation between the indices and expert observation variables for both adoption and impact.

**BOX 1. AN EXAMPLE OF STACKING OF COOKING TECHNOLOGIES**

Maria uses three different technologies to cook: an open fire, a clean cookstove and an LPG stove. She uses an open fire twice per week to cook beans and nixtamal[1]; she uses the LPG stove daily to prepare coffee, eggs and hot chocolate; and she uses the clean cookstove daily to prepare tortillas and the main dish. She is different from Ana, who cooks mainly on an open fire and only uses the clean cookstove once per week to make tortillas, or from Diana, who only has a clean cookstove and no longer uses an open fire at all. From the point of view of adoption, we can say that the three of them have adopted a clean cookstove because they all have it in good working condition, they like it, and they use it on a regular basis, but the impact of the clean cookstove on their lives is completely different.


1 Corn mixture used in Central America to prepare tortillas.

# ADOPTION AND IMPACT INDICES

## Measuring Adoption

In order to ensure the success of clean cookstove implementation projects, women[2] must like the stove and they must want to use it. For this reason, women's input is critical in the assessment of whether a clean cookstove is being adopted and used. When we observe the results of a clean cookstove implementation project it is very common to encounter a variety of situations: while some users welcome the new stove, use it from the beginning for all meals, and keep it in perfect working condition; others try to adapt it to their needs by making modifications that often prevent the stove from performing optimally; others use it but only occasionally. To evaluate the adoption of a clean cookstove we need to acknowledge these differences.

*For the purposes of this toolkit we will consider that a clean cookstove has been adopted when the user likes having the stove, knows how to use it, uses it on a regular basis, and maintains the stove in good working condition.* The adoption can be considered **very good (VG)** if the stove is in perfect condition, used every day, and the user is highly satisfied; **good (G)** when the stove is in good condition, used frequently, and the user is satisfied; **regular (R)** when the stove is in good condition but is hardly used and/or the user's satisfaction is low; **bad (B)** if the user has made modifications to the stove that alter its functionality, and finally **very bad (VB)** when the stove is in disuse or has been destroyed.

The Adoption Index (*AI*) is determined as a function of four variables: the frequency of use of the clean cookstove (*FCCS*), the condition of the clean cookstove (*CCCS*), the user's level of satisfaction with clean cookstove (*LSC*), and the interest in replacing it with a similar clean cookstove at the end of its lifetime (*IRS*). Each variable is multiplied by a coefficient that reflects the weight this variable has in determining the overall index. For the *AI*, the proposed coefficients are respectively 4, 3, 2, and 1. The formula for the adoption index is therefore as follows:

$$AI = 4(FCCS) + 3(CCCS) + 2(LSC) + 1(IRS)$$

Indicative values for each variable are proposed in Table 1. The interpretation of the total value for the *AI* is proposed in Figure 2.

**TABLE 1. VALUES OF THE ADOPTION INDEX VARIABLES**

| Variable | Value | | | | |
|---|---|---|---|---|---|
| | 0 | 0.25 | 0.5 | 0.75 | 1 |
| **Frequency of use of the clean cookstove (*FCCS*)** | Never | Once per week or less | 2 to 3 days per week | 4 to 6 days per week | Every day |
| **Condition of the clean cookstove (*CCCS*)** | Destroyed or in disuse | With modifications that impair its performance | With modifications that do not impair its performance | Working with low maintenance | Perfect with good maintenance |
| **Level of satisfaction with the clean cookstove (*LSC*)** | Unsatisfied | Low satisfaction | Regularly satisfied | Satisfied | Very satisfied |
| **Interest in replacing with a similar clean cookstove (*IRS*)** | No | | Maybe | | Yes |



2 Even though we usually refer to cookstove "users" in general, we need to acknowledge that women are the ones that are in charge of cooking in most countries in the world.

For example, Juana has a clean cookstove. She uses it 3 days per week to prepare some meals (*FCCS*=0.5), she keeps it in perfect condition and well maintained (*CCCS*=1), she is satisfied with her stove (*LSC*=1) and she would buy it again (*IRS*=1). Using the adoption index formula we obtain an *AI* for Juana of:

$$AI = 4(0.5) + 3(1) + 2(1) + 1(1)$$

$$AI = 8$$

Using Figure 2 we see that Juana's *AI*=8, which means that she has a Good (G) adoption of her clean cookstove.

**FIGURE 2. ADOPTION VALUES**

| | |
|---|---|
| 10 | Very Good Adoption (VG) |
| 9 | Good Adoption (G) |
| 8 | |
| 7 | Regular Adoption (R) |
| 6 | Bad Adoption (B) |
| 5 | |
| 4 | Very Bad Adoption (VB) |
| 3 | |
| 2 | |
| 1 | |

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## Measuring Impact

Besides considering the adoption rates of a clean cookstove, it is important to know if the use of the stove has made significant changes in the user's life and the extent of these changes. *The impact will consider the importance of the clean cookstove relative to other cooking technologies, the changes — if any — that the new stove has brought in the use and location of the traditional stove, the perceived improvements in the health of the user or her family, and the perceived fuel savings.* The impact can be considered as **very high (VH)** when the user no longer uses the traditional stove, uses the clean cookstove daily, does not use other fuels such as LPG[3], and perceives many positive changes in her health and in fuel savings; **high (H)** if the user does not like the traditional stove, uses it occasionally but has taken it out of the kitchen to an outdoor location, uses the clean cookstove frequently and perceives positive changes in her health and fuel savings; medium (M) when the user no longer uses the traditional stove or uses it rarely, uses the clean cookstove occasionally, uses LPG, kerosene or electricity on a regular basis, and perceives few changes in her life; **low (L)** if the user continues using the traditional stove on a regular basis, uses the clean cookstove occasionally and perceives few changes in her life, and **very low (VL)** if there are no changes in the cooking practices and in the user's life.

It is important to note the difference between adoption and impact. While adoption measures whether the clean cookstove has been accepted by the user and has been incorporated into her life, the impact measures the changes that the clean cookstove has brought to the user's life in terms of the use of the clean cookstove, the importance and location of the traditional stove, the use of other cooking technologies, and the improvements that the user perceives in her health and in her fuel savings.

The Impact Index (*II*) is determined as a function of eight variables: the frequency of use of the clean cookstove (*FCCS*); the frequency of use of the traditional stove (*FTS*); the frequency of use of other fuels (*FOF*)[4]; the user's level of satisfaction with the traditional stove (*LSTS*); the changes in the location of the traditional stove (*CLTS*); the perceived health improvements (*PHI*); perceived fuel savings (*PFS*) and the number of technologies used or technology stacking (*TS*). The formula for the impact index is as follows:

$$II = 2(FCCS) + 2(FTS) + 1(FOF) + 1(LSTS) + 1(CLTS) + 1(PHI) + 1(PFS) + 1(TS)$$

Indicative values for each variable are proposed in Table 2. The interpretation of the total value for the *II* is proposed in Figure 3.

For example, Juana has a clean cookstove. She uses it three times per week to prepare some meals (*FCCS*=0.5). She uses the open fire once per week to cook beans (*FTS*=0.75); she uses LPG every day to prepare breakfast and to reheat her food (*FOF*=0); she does not like the open fire (*LSTS*=1) and uses it outside the kitchen, but she used to having it in the kitchen (*CLTS*=0.75); she perceived two changes in her health: she no longer has itchy, watery eyes and she does not cough as often (*PHI*=0.75); she perceived that her stove saves firewood but does not seem to be very impressed by these savings (*PFS*=0.5); she uses a clean cookstove, an open fire and LPG (*TS*=0.5).

Using the Impact Index formula we obtain an *II* for Juana of:

$$II = 2(0.5) + 2(0.75) + 1(0) + 1(1) + 1(0.75) + 1(0.75) + 1(0.5) + 1(0.5)$$

$$II = 6.0$$

3 Considering that the use of LPG, kerosene or electricity reduces the impact of clean cookstove does not imply any negative judgment against these technologies – which are undoubtedly cleaner than traditional biomass fuels. It just means that if a woman uses any of these technologies on a regular basis, the impact of the clean cookstove will be lower because she already uses a clean cookstove and therefore the changes in her life brought by the clean cookstove are less significant.

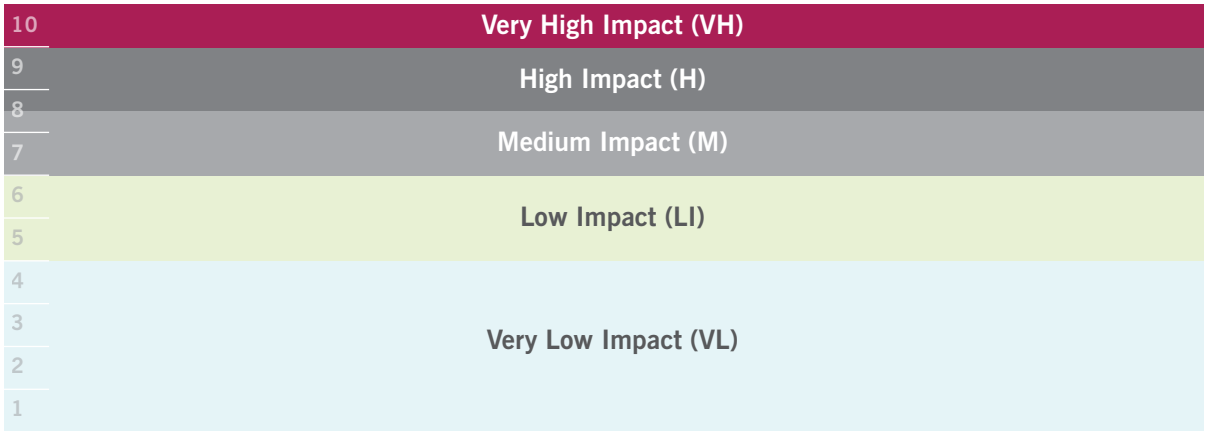
4 For instance LPG, kerosene, or electricity.

Using Figure 3 we see that Juana's *II*=6.0 means that she has a Medium (M) impact from the use of her clean cookstove. We can see that even though Juana has a Good adoption of her clean cookstove, the impact is only Medium and almost Low. This shows that although she has made some important changes, such as moving the open fire outside the kitchen, she does not use her clean cookstove very much, because she uses LPG. The impact of the clean cookstove is not as high as it would be if she relied only on the open fire and her clean cookstove for all her cooking needs.

**TABLE 2. VALUES OF THE IMPACT INDEX VARIABLES**

| Variable | Value | | | | |
|---|---|---|---|---|---|
| | 0 | 0.25 | 0.5 | 0.75 | 1 |
| **Frequency of use of the clean cookstove (*FCCS*)** | Never or almost never | Once per week | 2 to 3 days per week | 4 to 6 days per week | Every day |
| **Frequency of use of the traditional stove (*FTS*)** | Every day | 4 to 6 days per week | 2 to 3 days per week | Once per week | Never or almost never |
| **Frequency of use of other fuels (*FOF*)** | Every day | 4 to 6 days per week | 2 to 3 days per week | Once per week | Never or almost never |
| **Level of satisfaction with the traditional stove (*LSTS*)** | Very Satisfied | Satisfied | Regularly satisfied | Low satisfaction | Unsatisfied |
| **Changes in the location of the traditional stove (*CLTS*)** | Open fire in the kitchen | Open fire outside the house without changes | Open fire under a roof, previously in the kitchen | Open fire outside, previously in the kitchen | Open fire no longer used |
| **Perceived health improvements (*PHI*)** | No changes perceived | | One change perceived | Two changes perceived | Many changes perceived |
| **Perceived fuel savings (*PFS*)** | No changes perceived | Little savings perceived | Savings perceived | Good saving perceived | Acknowledge big savings |
| **Technology stacking (*TS*)** | Uses only open fire | Uses open fire and LPG | Uses clean cookstove, LPG and open fire | Uses clean cookstove and LPG | Only uses clean cookstove |

**FIGURE 3. IMPACT VALUES**



## Survey

The survey included in the Annex contains the questions that need to be answered by clean cookstove users.

If the number of users is too big, it is possible to take a sample. When making the sample it is important to avoid any bias that may affect its representativeness, such as choosing communities according to their easy access. It is important to take into account that in order to make a representative sample, every person with a cookstove in the program should have the same chance to take part in the study. For more information about how to make a sample, see the references.

Asking the survey questions does not require high professional qualifications. A person with a good rapport with users, sensibility, a good understanding of the program, and who knows the questions and how to complete the survey can do the job.

When asking the questions it is very important not to suggest any answer. Once the interviewee gives her answer, the interviewer needs to select from the different possible options the one that better represents her response. If it is not there, other questions need to be asked in order to clarify which possible answer is closer to the user's response.

Once all the responses for the survey are available, you can create a spreadsheet with each user and her responses to the survey. You can substitute each response with the values proposed in Tables 1 and 2, and use the formulas to obtain an adoption and an impact index for each user. Once you have a number for each index, you can substitute it by its nominal value proposed in Figures 1 and 2. Continuing with our example, Mary has an $AI=8$ that is a Good Adoption, and an $II=6$ that is a Medium Impact. Once you have all the values for each user of your sample, you can evaluate the results of the program. An example will be given in the next section.

## Scope of the Indices in Terms of Social Groups/Regions

The adoption and impact indices were developed originally for rural communities in Mexico. The variables considered for the adoption index are relevant for any other region or social group. However, there are some considerations that have to be taken into account with the Impact Index. The Impact Index considers mainly three cooking technologies: the traditional stove or open fire (the stove commonly used and source of household air pollution); the clean cookstove (the technology that is meant to substitute the traditional stove), and the LPG, kerosene, or electric stove that is commonly found in urban and peri-urban households around the world and that is used, together with the traditional stove, to perform some cooking tasks.

It is not a problem if in a given region nobody uses the latter technology, because in that case the *II* formula will give it a value of 1 (the user never uses LPG / kerosene / electricity) and it won't affect the results. If some households use four cooking technologies (for example, the traditional stove, the clean cookstove, an LPG stove, and an electric kettle), we can include a ninth variable called "FUO" in the formula below:

$$II=2(FCCS)+1(FTS)+1(FOF)\mathbf{+1(FUO)}+1(LSTS)+1(CLTS)+1(PHI)+1(PFS)+1(TS)$$

This is already considered as a possibility in the survey (see table in the Annex).

It is possible to give a different weight to the variables in each formula. For example, we are proposing a weight of 2 for the frequency of use of the clean cookstove in the impact index and only 1 for the perceived health improvements:

$$II = \mathbf{2(FCCS)} + 2(FTS) + 1(FLPG) + 1(LSTS) + 1(CLTS) + \mathbf{1(PHI)} + 1(PFS) + 1(TS)$$

This can easily be changed if the focus of the evaluation changes, for instance, if the program wants to give a higher weight to the health benefits perceived by the user:

$$II = \mathbf{1}(FCCS) + \mathbf{1}(FTS) + 1(FLPG) + 1(LSTS) + 1(CLTS) + \mathbf{3(PHI)} + 1(PFS) + 1(TS)$$

(Do not forget to check that the sum of the numerical coefficients always equals 10.)

## Challenges to Consider

The Impact Index considers a cookstove as a biomass stove, a biogas stove, a charcoal stove or a solar stove. If a program is disseminating LPG stoves, and therefore the clean cookstove is itself an LPG stove, then the formula will need some adjustments:

$$II = 2(FCCS) + 2(FTS) + 1(LSTS) + 2(CLTS) + 1(PHI) + 1(PFS) + 1(TS)$$

The changes in the weights of some variables reflect the importance not only of the use of the new technology, but also of the changes expected in the cooking practices.

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# CASE STUDY

In order to observe the applicability of the indicators, the adoption and impact indices described above were applied to two implementation programs in Mexico: one that distributed built-in-place (*in-situ*) firewood clean cookstoves and another that distributed industrial firewood clean cookstoves. The results are shown in Table 3.

**TABLE 3. VALUES OF THE ADOPTION AND IMPACT INDICES FOR TWO IMPLEMENTATION PROGRAMS**

| | PROGRAM 1 (*in-situ* cookstoves) (based on 122 surveys) | | PROGRAM 2 (industrial cookstoves) (based on 229 surveys) | |
|---|---|---|---|---|
| | Adoption Index | Impact Index | Adoption Index | Impact Index |
| Very good / Very high | 32% | 14% | 66% | 23% |
| Good / High | 18% | 9% | 15% | 17% |
| Regular / Medium | 11% | 19% | 7% | 16% |
| Bad / Low | 14% | 25% | 1% | 22% |
| Very bad / Very low | 25% | 33% | 11% | 23% |

Figures 4 and 5 show the relationship between adoption and impact for each program. It is possible to see that in both programs *good adoption* does not necessarily mean a *high impact*, with almost half of the users with a good adoption level showing a medium, low or very low impact. Whereas a good adoption level means that the clean cookstove is in use, in good condition, and that the user is satisfied with the stove, a high impact means that the user actually uses the clean cookstove and no longer uses other technologies, and that she acknowledges that the new stove has brought positive changes to her life.

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**FIGURE 4. ADOPTION AND IMPACT INDICES FOR THE *IN-SITU* COOKSTOVE PROGRAM**

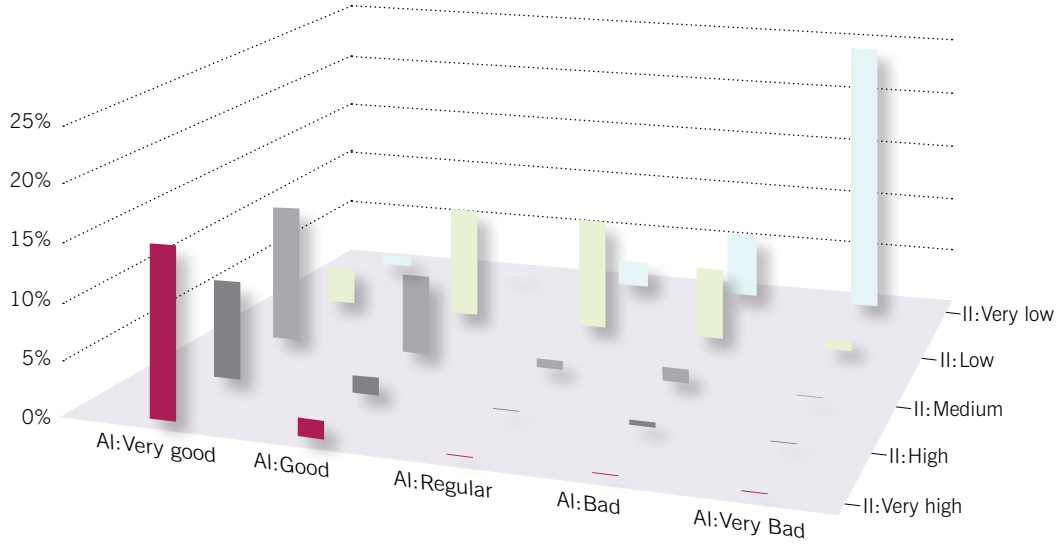
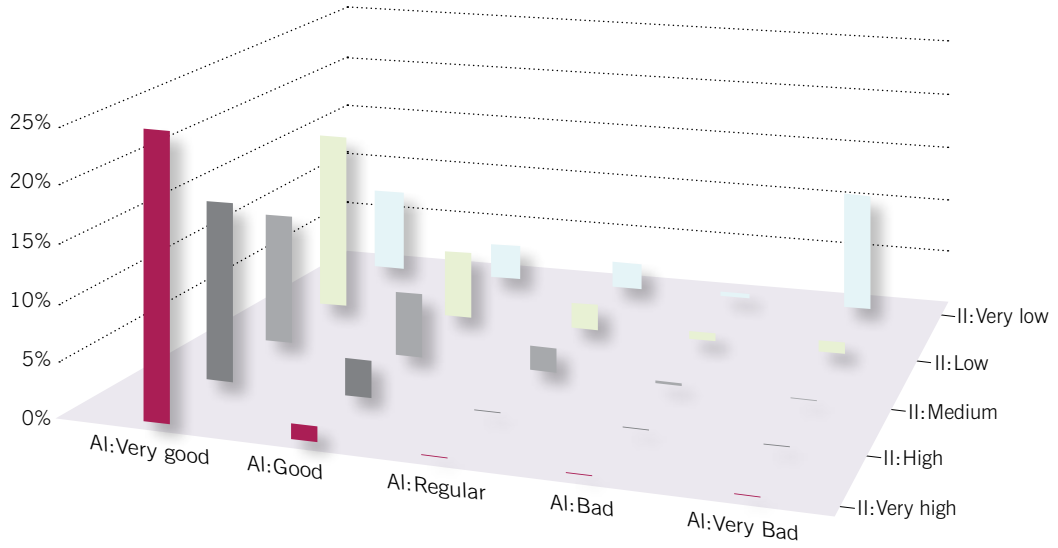



**FIGURE 5. ADOPTION AND IMPACT INDICES FOR THE INDUSTRIAL COOKSTOVE PROGRAM**




In the first example (the *in-situ* implementation program), it is possible to observe a higher variety of adopters than in the industrial program. One possible explanation is that, unlike industrial stoves, *in-situ* stoves can be different from each other, and can be modified more easily by the user. As the *in-situ* stoves have more problems with quality control, depending completely on the mason's skills, it is possible that some of the modifications are an attempt by the users to fix a problem they encounter. Another possibility is that the user was present when the stove was built, and so the idea of changing it is at hand.

It is important to note that the adoption rates have a lot to say about the cooking technology, but they also have a lot to say about the implementation process and about the user herself.

# CONCLUDING OBSERVATIONS

Besides the usefulness that measuring the adoption and the impact of a cooking technology has for the different stakeholders involved in clean cookstove implementation, acknowledging people's perceptions gives the opportunity to get to know other aspects that can be very important: for instance understanding the reasons that explain why users may prefer the traditional stove, even though the clean cookstove is potentially more convenient. For a clean cookstove to be adopted, it has to be perceived as an improvement in the user's life. A user who has adopted a clean cookstove but only uses it once per week or has made some modifications may be considered a failure of the program, but the adoption is a process and chances are that once this woman has experience with a smokeless kitchen, there is a better chance she will try another model later on. Additionally, her daughter is more likely to abandon the traditional stove altogether.

The relevance of this approach is twofold: first, it enables determining the impact of clean cookstove program at a fraction of the cost of health impact assessments or quantitative firewood consumption measurements. Second, it enables assessing some qualitative benefits of clean cookstoves that may be even more relevant to the users themselves in terms of their perceived quality of life. Last but not least, it provides vital feedback to the programs in terms of the design of technologies for cooking that are locally appropriate, the messages that diffusion activities need to convey, and ways to overcome the barriers to adoption. Much of the discussion has been centered on whether a clean cookstove lowers the incidence of chronic respiratory diseases or saves enough fuel, but let's not forget that improving the lives of the users can also be measured by asking them if they like the stove, if they use it, and if they would buy another.

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## USEFUL RESOURCES AND TECHNICAL REFERENCES

This toolkit is based on the research by Dr. Karin Troncoso. The extended research can be consulted in:

Troncoso K, Armendáriz C, Alatorre S (2013). Improved Cookstove Adoption and Impact Assessment: a proposed methodology. *Energy Policy* 62: 637-645. http://dx.doi.org/10.1016/j.enpol.2013.07.074

For a very good compilation of studies addressing the factors that influence the adoption and sustained use of clean cookstove:

Puzzolo E, Stanistreet D, Pope D, Bruce N, Rehfuess E (2013). Factors influencing the large scale uptake by households of cleaner and more efficient household energy technologies. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London. http://bit.ly/EPPI2109

A paper that gives a good perspective on the stacking of fuels and technologies:

Ruiz-Mercado I, Masera O, Zamora H, Smith K (2011). Adoption and sustained use of improved cookstoves. *Energy Policy* 39: 7557-7566. http://bit.ly/EP03028

Other papers that may be useful to understand the challenges of addressing adoption and impact assessment are:

Rema H, Duflo E, Greenstone M. (2012). Up in smoke: the influence of household behavior on the long-run impact of improved cooking stoves. Working Paper. Department of Economics, Massachusetts Institute of Technology. http://bit.ly/MIT1210

Lewis Jessica J, Pattanayak Subhrendu K (2012). Who Adopts Improved Fuels and Cookstoves? A Systematic Review. Environmental Health Perspectives 120: 637-645. http://bit.ly/EHP1205

Finally, a document with guidelines for designing samples:

CDM Executive Board (2010). General guidelines for sampling and surveys for small-scale CDM project activities. http://cdm.unfccc.int/EB/050/eb50_repan30.pdf

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# ANNEX 1. SURVEY

| | | | | |
|---|---|---|---|---|
| 1 | **Where is your traditional stove?** | She no longer uses a traditional stove | | |
| | | Outdoors | | |
| | | Outside under a roof with one or two walls | | |
| | | Inside the house (in the kitchen or separate room) | | |
| 2 | **Where did the traditional stove used to be (before the arrival of the clean cookstove)?** | Outdoors | | |
| | | Outside under a roof with one or two walls | | |
| | | Inside the house (in the kitchen or separate room) | | |
| 3 | **How much do you like the traditional stove or open fire?** | She does not like it at all | | |
| | | She does not like it but she thinks it is convenient for some tasks | | |
| | | She is indifferent (she does not like or dislike it) | | |
| | | She likes it but acknowledges some problems | | |
| | | She likes it very much | | |
| 4 | **Cooking technologies and frequency of use** | Cooking technology | Do you use it? | How many days per week? |
| | | Traditional stove/ open fire | | |
| | | Clean cookstove | | |
| | | LPG stove | | |
| | | Kerosene stove | | |
| | | Electric device | | |
| | | Other | | |
| 5 | **Do you like the clean cookstove?** | Not at all | | |
| | | Low satisfaction | | |
| | | Regular satisfaction | | |
| | | Good satisfaction | | |
| | | Very good satisfaction | | |
| 6 | **Would you get another clean cookstove if you did not have this one?** | No | | |
| | | Maybe | | |
| | | Yes | | |
| 7 | **Have you noticed changes in you or your family's health since you started using the clean cookstove?** | None | | |
| | | One | | |
| | | Two | | |
| | | Many (three or more) | | |
| 8 | **Have you noticed that the clean cookstove saves fuel?** | No | | |
| | | A Little | | |
| | | Some savings | | |
| | | Impressed with the savings | | |
| | | Very impressed with the savings | | |
| 9 | To be completed by the interviewer: **What is the condition of the clean cookstove?** | Destroyed or in disuse | | |
| | | With modifications that alter its functionality | | |
| | | With modifications that do not alter its functionality | | |
| | | Good conditions with low maintenance | | |
| | | Good conditions with good maintenance | | |

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**OUR MISSION:** The Global Alliance for Clean Cookstoves is a public-private partnership led by the United Nations Foundation to save lives, improve livelihoods, empower women, and protect the environment by creating a thriving global market for clean and efficient household cooking solutions.The Alliance's 100 by '20 goal calls for 100 million households to adopt clean and efficient cookstoves and fuels by 2020. The Alliance is working with its public, private and non-profit partners to help overcome the market barriers that currently impede the production, deployment, and use of clean cookstoves in developing countries.

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