Whose Priorities? Evaluating Objectives of Participatory Development in the Context of Household Energy Projects in Africa

Abstract

Participation has been presented on many platforms over the years as a vital element in facilitating sustainable 'bottom-up' implementation of development programmes. This claim is however brought into question by disagreements within the field of development studies concerning the overall impact of participatory approaches on projects and especially host communities.

Using case studies of improved stove projects developed participatorily in Nigeria and Kenya, this paper examines both sides of the debate. Further, it attempts to explore one of the dimensions to the failure of bottom-up approaches to deliver desired results on a consistent basis, namely (in this case) why development agencies did not identify in the first instance which issues users consider to be most important. If participatory development is going to live up to its ideal of facilitating sustainable outcomes, there needs to be a reordering of institutional structures that will allow implementing agencies to be more sensitive to users' priorities.

1.0   The Context

Fuelwood is the main source of energy for cooking and space heating for over 80 percent of all households in developing countries (Openshaw 1974). The majority of these people live in rural areas where fuelwood is neither bought nor sold but gathered from forests and communal woodlots. The practice over the decades has been one in which when one source of wood dries up, users simply move further out in search of new sources. With time, this pattern of consumption began to take its toll on the environment, as wood sources began to deplete and the threat of acute deforestation became more imminent. In the 1970s, scientific experts from the international community moved onto the scene to assess the situation, and the prognosis was gloomy: continued depletion of the forests would sooner rather than later give rise to major environmental hazards, most notably erosion and flooding.

This technical framing of the issues purely in terms of risk to the environment inevitably led to the prescription of a wholly technical solution: new stoves that would not need to use as much wood as the traditional open fires commonly used by the people. An 'appropriate' solution thus identified, expert engineers went about the process of designing various stove models that were tested in external laboratories and found to be

'highly efficient'. Such stoves were then introduced straight into rural communities without adapting them to local users' contexts. Clearly, the technical experts here assumed what Gieryn (1995) refers to as 'cognitive authority' over the situation, without making room for any alternative ways of understanding and framing the issues. Questions were not asked of people in the communities affected, probably because, as Leach et al. (2005) suggest, users were assumed to be unaware of, or incapable of understanding the 'risks' posed to the environment by their energy use patterns in the technical terms set forth.

Indeed, the early development of improved stoves was characterised by "the dominant assumptions of scientific and other powerful institutions in 'Southern' development contexts" (Leach et al. 2005). International development agencies, accustomed to their technical comprehension of what constitutes risk, and confident of their ability to predict and control the outcomes, foisted the improved stove solution on unsuspecting rural communities. It did not occur to them to consider that the realities in which rural people live might cause them to have alternative ways of interpreting and responding to the same issues.

It was not until the 1980s, after the first round of stove projects had failed to achieve popularity with rural users, that development agencies started to rethink their approach to the situation. These attempts at self-reflexivity within institutions led to the evolution of participatory approaches that sought to adopt more bottom-up approaches to the development and dissemination of improved stoves in rural communities. However, as this paper will discuss, the disparity between participatory input of users in stove projects and sustainable outcomes raises questions and justifies a re-examination of implementers' aims and expectations of the participatory process in such projects.

2.0   Participation in Development

Discussion of people's participation in community development has been a recurrent theme in the literature since the beginning of the 20th century (Pandey 1998). The need for popular participation of local community in rural development has, however, been emphasized mostly since the 1970s (Ibid.). Through the development decades (the 1950s onwards), participation has had many streams, with flows separating and merging, and new springs coming in (Chambers 2005). By the 1990s, participation had entered almost every field of development activity and had become a preoccupation on a global scale, preached about and promoted by lenders, donors, INGOs and governments alike (Chambers 2005). Today, participation has become one of the central influences in mainstream development thinking (Parfitt 2004).

Participatory development is conventionally represented as emerging out of the recognition of the shortcomings of top-down development approaches. Top-down approaches to project implementation typically focus mainly on tangible technical objectives, whereas participatory bottom-up approaches would accord due importance to social benefits while not compromising on technical objectives. The latter approach is credited with having the potential to give rise to more socially and technologically appropriate solutions with greater probability of widespread adoption and improved likelihood of long-term sustainability. To sum, the broad aim of participatory development is to increase the involvement of socially and economically marginalised peoples in decision-making over their own lives (Guijt et al. 1998).

The term 'participation' is all-encompassing to the extent that it is difficult to give it or privilege any one definition. Its use is so widespread and its scope so broad that it is impossible to encapsulate it within one definitive term (Oakley 1991). In its most basic form, however, community participation in a project will involve some combination of the following elements: a focus on making provision for the needs of local people; taking advantage of local people's experience and know-how; and allowing local people to donate labour, financial and material resources towards the project.

In the specific case of rural development, Brown (1979) defines participation as the involvement of local people in planning, assessment of local needs, and implementation of programmes in order to develop the necessary self-reliance and self-confidence needed. Cohen and Uphoff (1980) extended the definition to include involvement of local people in program design, benefits sharing, and program evaluation.

Whatever the definition, participation has types and degrees, reflected in the diverse levels, or 'ladders' of participation that have been identified (Chambers 2005; Agarwal 1986). Ladders of participation are basically gradations or calibrations of the depth of user involvement in development projects, on a scale ranging from utter compliance with top-down initiatives (zero participation) to local users taking initiative for their own development (total autonomy). The metaphor of the ladder resonates with Drijver's (1991) concept of "functional reach", which stipulates that it is not sufficient that many different sections of the community - individuals, cooperatives, community organisations, non-government organisations, whole departments within local governments - are involved in participation. What is more important is the level of importance of the tasks these different groups are involved in. The claim is that the deeper the degree of influence, the more beneficial participation becomes for the community.

Oakley (1991) observes that participation can either be employed as a means or an end. Participation as a means is usually short term and expires with the completion of a particular community project. The emphasis is on completion of the project at hand, rather than development of the capabilities of rural people, as is the case when participation is seen as an end in itself. Participation as an end recognises the importance of rural empowerment, both in the form of increased local technological capacity and greater relevance of users in policy and decision-making processes. However, as we shall see in the next section, the debate within the field of participatory development around what has been termed the means/end ambiguity of participation confronts the very basis upon which the concept is established.

3.0   Challenging Participation

Participation has been criticised at two levels, in relation to both its theoretical coherence and its practice (Parfitt 2004). Indeed, the point is made that the lack of its rationality in theoretical terms is what accounts for the failures of the approach in practice. Critics take the stance that it is unrealistic to expect improvements in the practice of participation without tackling the fundamental issues from a theoretical, politicised standpoint.

Cooke et al. (2001) report on observed 'differences between private and public accounts of participatory development', detailing how actual experiences of intended beneficiaries of participatory projects contradict claims made publicly by development agencies as to the merits of the approach. Against this backdrop, participation is viewed as a two-faced approach which boasts one set of outcomes and goes on to accomplish others. This view is supported by Chambers' (2005) observation that participation in development work has become little more than rhetoric which has important political and bureaucratic functions and relies on the loose use of words with ideological overtones.

Parfitt (2004) attributes a lot of the contradiction in participation to the means/end ambiguity mentioned above. Development 'practitioners' who employ participation as a means pay major attention to process efficiency and project outcomes, often inevitably at the expense of people empowerment. Those who see participation primarily as an end in itself would much rather sacrifice tangible outcomes for people development. In practice however, most projects straddle both ends of the means/end divide. Regardless of how end-oriented a participatory project is, it still wants to achieve some form of measurable outcome. Neither can a project record any degree of success without at least some form of cooperation from the communities involved.

It is at this point that critics move in to cut down the argument for participation. The very notion of empowerment is challenged: as long as bureaucratic, power-conscious, performance-driven, goal-oriented institutions are involved in these processes, how can development projects ever really be about 'ceding' power to the people? As Leach et al. (2005) have observed, participatory projects take place in institutional, often globalised contexts where unequal, top-down power relations shape the terms of engagement. These power relations are pervasive and affect the quality of process and experience (Chambers 2005).

Participatory methods are therefore seen by critics as simply another means of pursuing traditional top-down development agendas, while giving the impression of implementing a more inclusive project of empowering the poor and the excluded (Parfitt 2004). Consequently many participatory projects, rather than serving as avenues to encourage self-expression, provide a platform for further oppression of the very people they're supposed to empower. This is what Cooke et al. (2001) have referred to as the 'tyranny of participation'. Leach et al.'s (2005) observation that participation in developing-country settings has only late in its history come to reflect in any depth on the politics of participation, and on participation beyond the community and project level, only serves to strengthen this viewpoint.

Development practitioners have been accused of 'reductionist simplification' of the entire concept of participation, and of ignoring decisive power differentials within the rural communities they work in (Parfitt 2004). Cooke et al. (2001) aver that proponents of participatory development have generally been naïve about the complexities of power and power relations. And according to Kapoor (2002), participation practitioners operate an under-theorised account of power that leaves out of account the Foucauldian insight that power is inevitably imbricated with the formation of knowledge. In light of these arguments, participation critics state, the way forward is not to constantly revise participatory methods and approaches, as practitioners are prone to do. They stipulate that the more fundamental issue of power must be addressed if participation is going to have any lasting legacy in development work. Those at the very end of the scale, such as Cooke et al. (2001), suggest that the concept of participatory development is so fundamentally flawed that a thorough objective analysis might mean it will eventually have to be done away with.

In fact, preliminary findings from empirical research testing the various claims outlined above show that there are observable merits, or at least desirable features, to the

adoption of participatory approaches in development work, as illustrated by the two rural household energy projects (one in Nigeria and the other in Kenya) described below.

4.0   Case Study 1: The Egaga Stove Project

This improved stove project was preceded by an eighteen-month baseline study carried out from 1997 to mid-1998, during which community surveys were done to ascertain household energy use patterns in Oghara and Benin, two communities in the South-South region of Nigeria. During the study, the traditional Egaga was identified as the predominant stove used for cooking in the region. Essentially a locally manufactured metal stand used to support a cooking pot over an open fire, the Egaga stove has been in use in the region for over a hundred years. The bare-bone structure of the Egaga however means that much of the fuelwood stacked within its confines is exposed to open air during cooking. Consequently, when the fuel burns, only about 10 percent of the heat energy is directed to the pot above (Kammen 1995).

Working with Resource Efficient Agricultural Production (REAP) of Canada and two local women's groups, the Centre for Household Energy and the Environment (CEHEEN) in Nigeria set about the task of developing a more efficient stove for use in both communities. It started by teaming up with the women's groups to identify the preferences of local stove users, most of whom are women. Based on the data collected, three different stove models were developed. One of the designs featured improvements to the Egaga stove, resulting in an upgraded version of the stove that was capable of saving up to 40 percent of the fuelwood used in the traditional model (Obueh, J; personal interview).

Testing of the three stove models in both communities revealed that the improved Egaga was the most widely preferred by the people. The major reason given for its wide acceptance was the familiarity of the technology leading to ease of adaptation. The ensuing pilot activity saw the improved Egaga being disseminated in both communities to 5,222 households, selected on the basis of people's willingness to be involved and the degree of their susceptibility to the harmful effects of indoor air pollution.

It must be said here that although this project fared reasonably well at the pilot stage with the participatory methods adopted, it did not go on to become widely implemented in the communities. The reasons for this are part of the subject of my current research.

5.0   Case Study 2: The Kenyan Biomass Smoke Project

Practical Action[1] worked on a participative project with fifty households in two Kenyan communities between 1998 and 2001 to develop and implement solutions to pollution problems caused by inefficient use of biomass in their kitchens. Even though the two communities (Kajiado and West Kenya) are both Kenyan villages, they have different socio-cultural practices and preferences. Consequently, and appropriately, Practical Action worked with them separately to identify the requirements of each community and devise solutions accordingly. Three main interventions were developed: improved combustion through improved stoves; smoke extraction through smoke hoods and ventilation through windows and eaves spaces.

Right at the start of the project, participation as an end was stated as a core commitment. Indigenous knowledge was highly valued throughout the project, and the communities' views and opinions were listened to at all stages of the work (Bates et al. 2002). Both men and women participated in technology development and appraisal, deciding on the options that suited them best (Ibid.). For instance, Practical Action had initially considered tackling the issue of smoke extraction by installing chimney stoves. However, consultation with local groups revealed that there was a strong aversion in the community towards chimney stoves due to the colossal failure of a government-implemented chimney stove project years earlier. The idea of smoke hoods, on the other hand, was welcome because a similar project had been successfully implemented in the region previously.

Some noteworthy elements of participation that were crucial to the viability of this project are outlined below:

- Prior to commencement, Practical Action staff met with women's groups in both communities to inform them of the project's aims and objectives, thereby earning the trust of the people.
- Focus group meetings were held to provide a platform for the communities' opinions and needs to be expressed. In this way, Practical Action was able to harness local knowledge.
- Education was a very important part of the programme. Practical Action informed the community about the risks of traditional biomass smoke, and the benefits they stood to gain from the interventions they were trying to develop.

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[1] Practical Action is an international non-governmental organisation that aims to demonstrate and advocate the sustainable use of technology to reduce poverty in developing countries. Its programs follow closely the model for technology development and adoption established by the late British economist E.F. Schumacher in his 1973 book *Small is Beautiful* (Kammen 1995).

- The range of stakeholder involvement was quite wide - women's groups, local government ministries, technical training institutes and the informal manufacturing sector. This greatly increased the chances for sustainability of the innovations long after Practical Action officially concluded the project.
- After installation, ongoing community participation allowed the communities to share their experiences and suggest how best the various technologies could be made appropriate for their households (Bates et al. 2002).
- Exchange visits proved to be an important practice for dissemination. Members of the communities who had installed stoves and smoke hoods allowed others who hadn't to visit their kitchens. Seeing the installations work, erstwhile sceptical members of the community became willing to try them in their own kitchens.

6.0   Two Projects, One Approach

Several characteristics are common to both the Egaga and Kenyan Biomass Smoke projects:

1. Implementing agencies took advantage of existing local structures and knowledge base;
2. End users were involved in both decision making and technology development processes;
3. Open flow of information between the implementers and host communities increased trust and enhanced the commitment of local people to the projects;
4. Educating users on the reasons why they needed to switch made them more receptive to change;
5. Participatory methods combined with technical monitoring facilitated the development of solutions that were appropriate to local requirements and that suited users' preferences.

The foregoing case studies demonstrate that participatory approaches have considerable potential to improve the outcomes of energy development projects. However, as illustrated by the account given below of improved stove development in urban and rural Kenya respectively, this is not always the case. Divergent experiences with the same technology and similar methods of implementation in both regions show that the adoption of participatory approaches does not deliver desired results in every instance.

7.0   One Country, Two Stoves

Development of improved cookstoves in Kenya started as a response to the urban
energy crisis. Unable to afford more modern cooking fuels, most urban dwellers use
charcoal stoves, or *jikos*[2], for cooking. The traditional jiko consumes a lot of charcoal,
delivering only 10-20 percent of the heat generated to the pot (Kammen 1995). As a
result urban dwellers frequently spent a significant fraction of their income on the
purchase of cooking fuel (Ibid.). Research and development efforts between 1977 and
1980 produced several improved charcoal stove models such as the *Umeme* and the
Haraka (Hyman 1987). However, these early models only had very minor improvements
over the traditional stoves, and the implementing agencies did not encourage women's
participation in development and dissemination. Not surprisingly, these early designs
were not popular amongst consumers (Ibid.).

The breakthrough in urban improved stove development came in the early 1980's when
the Kenya Renewable Energy Development Project (KREDP) was initiated by the Kenya
Ministry of Energy and Regional Development. The project was facilitated by Kenya
Energy and Environment Organisation (KENGO), a local non-governmental organisation,
and funded by the United States Agency for International Development (USAID). The
project team set about developing an improved stove based on the model of a 'bucket'
stove which had produced encouraging results in Thailand. For a start, a group of stove
developers was sent to Thailand to learn firsthand the principles of designing the bucket
stove. It was a trip that proved to be worthwhile.

In 1981, the KREDP team successfully adapted the ceramic liner component of the Thai
bucket stove and incorporated it into the Kenya traditional metal stove to produce the
first version of the Kenya Ceramic Jiko (KCJ). Though more efficient than its
predecessors, this first prototype still had a lot of deficiencies, the most critical of which
was cracking of the ceramic liner due to overheating (Kammen 1995). The project team
continued to work with local craftsmen, or *jua kali*, in search of a satisfactory solution.

Over the next three years, an arduous process of continuous testing and redevelopment
took place using feedback from women user groups. Finally, in 1984, the women
suggested recasting the problematic metal bucket design into the current hourglass
shape of the jiko (Kammen 1995). That modification at last produced a charcoal stove
functional and efficient enough to engender user confidence in the improved stove

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[2] *Jiko* is Swahili for stove.

technology. The new stove had a combustion efficiency of up to 40 percent, enabling users to make substantial savings on fuel expense.

From that point on, the KCJ increasingly became the stove of choice amongst urban Kenyans. Its diffusion was so widespread that the KREDP met and exceeded all its targets in record time. The goal of the project was to have at least 20 enterprises manufacturing and selling 5 000 KCJs by 1986. By mid-1986, over 15 enterprises were involved in manufacturing and 125 000 KCJs had been sold (Hyman 1987). By 1995, with a total over 780 000 KCJs disseminated (Karekezi et al. 1997), more than half of all urban households in Kenya owned the KCJ, with 20 000 new jikos being sold every month (Kammen 1995).

The KCJ has not attained a hundred percent success rate, but it is one of the most successful charcoal stove projects in the East African region and indeed in the developing world (Karekezi et al 1997; Karekezi 1993). Several other countries have attempted to replicate the KCJ model but have achieved less dramatic results. These countries include Uganda, Rwanda, Tanzania, Sudan, Ethiopia, Malawi and Burundi (Karekezi et al. 1997; Kammen 1995).

Encouraged by the success of the KCJ, several enthusiastic donor agencies were eager to replicate the same impressive results in rural Kenya. Unfortunately however, the rural experience of improved stove dissemination proved to be far less spectacular than the urban experience.

Work on improved stoves in rural communities started in 1983 in Western Kenya, with the Women and Energy Project (WEP) initiated by the Kenyan Ministry of Energy and funded by the German Agency for Technical Cooperation (GTZ) (Blum 1990). Working with the *Maendeleo ya Wanawake* (Women in Development) women's group, stove designers developed a less expensive variant of the KCJ and named it the *Maendeleo[3]* stove, after the women's group. At a cost of about US$ 1.50, the Maendeleo was the cheapest available improved stove on the Kenyan market, saving 30-50 percent of the firewood used in traditional stoves (Ibid.). The original model developed by GTZ consisted of a clay liner (similar to the one used in the KCJ) inserted into a fixed mud surround and held in place by sticky soil, stones or any other suitable material which is locally available to the user.

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[3] *Maendeleo* means 'progress' or 'development'.

The attraction of the Maendeleo lies in its simple, easily transferable and locally available technology. The main component of the stove – the clay liner – is quite easily produced by the existing pottery industry which is traditionally dominated by women in Western and Central Kenya (Overseas Development Institute 1989). This is one reason why women have always been central to Maendeleo production in rural Kenya. Women's groups, which constitute an integral part of the society, provided a ready pool of local labour for Maendeleo production. Implementing agencies were able to use these groups as points of contact for reaching the wider community. Khennas (2003) observes that working on Maendeleo projects with women's groups has proved to be a very effective way of reaching rural women.

Notwithstanding the enabling environment, the Maendeleo failed to achieve widespread dissemination in rural Kenya. In a costly instance of oversight, implementing agencies had neglected to take into account the fundamental difference between urban and rural energy use patterns. While urban dwellers have to purchase charcoal, rural dwellers mostly gather fuelwood free of charge. As such rural dwellers have little or no financial incentive to cut down on energy use. Even at rock-bottom prices, the cost of a Maendeleo stove is still significant relative to average rural incomes. A 1985 survey showed that 37 percent of Western Kenya households had no cash income; 44 percent earned 500 Kshs[4] (or US$ 7.35) per month; 12 percent 501-1000 Kshs (US$ 7.36-14.70) per month; 3 percent 1001-2000 Kshs (US$ 14.71-29.40) per month; 1 percent 2001-3000 Kshs (US$ 29.41-44.11) per month[5] (Overseas Development Institute 1989).

In an effort to improve the rate of Maendeleo dissemination, development agencies introduced various measures ranging from heavy subsidisation to widespread commercialisation. Still, adoption rates for the stove remain low. With commercialisation, the main issue was that though stove producers were able to establish thriving businesses on the model, users did not derive direct financial benefits from buying the stoves. While it is true that a plethora of non-financial benefits is potentially accessible by them - time saving in cooking and fuelwood gathering; comfort; safety; convenience; improved nutrition and reduced kitchen smoke (HEDON 1995) - the question remains whether users attach as much value to these health and social benefits as they would to financial gains. The Maendeleo has been vigorously and variously promoted for nearly twenty years now, but only 4 percent of the Kenyan population currently use the stoves (Ingwe 2007), compared to over 50 percent of the urban population that have adopted the KCJ.

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[4] Kshs = Kenyan shillings
[5] Conversions are based on the 2008 exchange rate of US$ 1 = 68 Kshs.

8.0   Beyond Participation

It is remarkable that despite the application of similar participatory approaches to implementation of the KCJ and Maendeleo stove projects, the former achieved widespread sustainable growth while the latter did not. An inquiry into the reasons for this comparative shortfall presents interesting possibilities for research. Preliminary diagnosis suggests that the difference in outcomes is partly attributable to the failure of development agencies to identify the most important considerations to rural users with regard to household energy use. In making implementation decisions, these institutions neglected to take into account the fundamental difference between urban and rural energy use patterns: while urban dwellers have to purchase charcoal, rural dwellers mostly gather fuelwood free of charge. As such rural dwellers have virtually no financial incentive to cut down on energy use.

The rural Maendeleo project was launched along similar lines to the urban KCJ project, on the assumption that energy saving would be a major concern for rural users. However users' circumstances dictated differently, and it was realised after several failed attempts that cost saving actually ranked higher on users' list of priorities. Average rural incomes are low[6], so that even at rock-bottom prices, many users find it challenging to raise the capital needed to acquire a new Maendeleo stove.

In the case of the urban KCJ, reduced charcoal expenditure provided enormous incentive for users to purchase the new energy-efficient stoves, so that even when the government's KREDP project ended, production and distribution of the stoves continued on a widespread commercial scale. This initiative on the part of users, the ability to make acquisition decisions based on perceived legitimate priorities, is important if sustainable development of energy solutions is going to be realised in rural areas of developing countries.

This takes us to the issue of priority identification in relation to the aims and objectives of development agencies vis-a-vis the participatory process. Participatory approaches were introduced in the first instance to enable external agencies to have an understanding of the internal workings of local communities and subsequently incorporate the insight thus acquired into design and implementation of appropriate interventions. That being the case, it is rather disturbing to observe the way that development agencies, employing participatory approaches, seem to have missed out on

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the crucial distinction between urban and rural energy use patterns in Kenya. Could it be, as critics are prone to argue, that the very structure and institutional culture of these agencies hinder their proclivity to be entirely objective and transparent in the participatory process?

It follows that if users are to reap the maximum obtainable rewards from their involvement in rural energy projects, implementing agencies need to redefine their expectations of the participatory process in at least one way. Beyond employing participation as a means of identifying the needs of users, attention should also be paid to using it as a means of identifying the *priorities* of users. Understanding what is most important to end users can make an enormous impact on the outcome of a project, as demonstrated by Kenya's experiences in cookstove dissemination. This might well require a re-evaluation of the kinds of questions that are being asked and the kinds of answers that are being sought.

This distinction between needs and priorities in this context is not difficult to make. Maendeleo users in rural Kenya needed a stove that incorporated elements of familiarity which would allow them to cook their staple meals exactly as they have always done over open fires. However having such a stove happens not to rank too highly on their list of priorities, especially as they incur no costs whatsoever with the traditional open fire and must dip into their shallow purses to purchase the new 'improved stove'. These are the exact kinds of complexities that participatory approaches were employed to detect. When development institutions go to seemingly great lengths to incorporate participatory approaches into community projects and still emerge missing fundamental points such as this, questions are bound to arise as to the quality of participation that obtains in practice.

9.0   Conclusion

User participation in rural energy projects is instrumental to the development of technology that is appropriate for them. However, to achieve sustainable and widespread diffusion of appropriate technology, project implementers need to work to identify the issues that are of topmost priority to users. Kenya's experiences documented here show that there sometimes exist grave conflicts between the priorities of users and those of well-meaning development agencies. It is imperative that these agencies align their priorities with those of local users, or at least endeavour to draw a line of best fit which accommodates the most important users' considerations while still meeting their own wider objectives.

As the case studies of stove projects have shown, people tend to embrace interventions on the basis of what matters to them and not what matters to the project. When implementers allow users' priorities to inform their approach to the design and delivery of solutions, the stage is set for initiative to be rapidly generated amongst users until whole communities are 'sold' on the innovation, as we saw happen with the urban KCJ. Attaining this ideal may not be quite as straightforward as it appears. A restructuring of the relationships between actors may be necessary to reorder the dynamics of power at play in the participatory process. Given the complexities of these power relations, any such attempts at restructuring will need to be informed by the results of dedicated research.

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