What's cooking? Evaluating context-responsive approaches to stove technology development in Nigeria and Kenya

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ABSTRACT

From the mid-1980s, context-responsive, albeit increasingly market-based, approaches premised upon appropriate technology and participatory development principles have been widely promoted to address the perceived failures of previously favoured expert-led approaches to improved stove development in the global south. This paper investigates two northern-led stove projects – the CleanCook project initiated by Project Gaia in Nigeria and the smoke alleviation programme by Practical Action in Kenya – which claim to be context-responsive in their implementation. The paper evaluates the extent to which these claims to context-responsiveness were borne out in practice, analyses the impact of each approach on uptake of the stove technologies promoted, and reflects on the wider implications for technology-led development projects. The paper shows that Project Gaia's CleanCook project in Nigeria is, in reality, an expert-led intervention that fails to connect with bottom-of-the-pyramid populations in its quest to transfer a novel stove-and-fuel technology. In Kenya, Practical Action has been more responsive to contextual realities, starting as it does with the existing resources of target populations. However, success is limited by economic constraints and cultural preferences among such populations. The paper concludes that, despite the rhetorical shift by northern organisations from expert-led to context-responsive approaches, engagement with local realities is still limited, and a more substantive shift toward context-integrated technological solutions is required.

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1. Introduction

'Many of the world's poorest will never be reached, in their life time, through centralized national energy systems alone if "business as usual" approach to energy planning continues. But tried and tested off-grid decentralized energy solutions are already on the ground that can expand options to reach poor people. So too are working business models that are delivering affordable, cleaner and more efficient fuels to the poor.' [1], p. 3.

In a 2006 report by the International Energy Agency, it was estimated that 2.4 billion people worldwide depended on solid biomass fuels such as fuelwood and charcoal to meet their cooking energy needs [2]. By 2013, this estimate had risen to 2.6 billion people, most of them in developing countries where large proportions of the population (2.7 billion out of 5.3 billion people in 2005) live on incomes of less than US$ 2 a day [3,4].

For these populations, a move toward cleaner energy technologies is considered necessary, as the practices in which they burn biomass in traditional stoves and open fires have been identified by health, energy and environment experts as being socially and environmentally unsustainable. Improved stoves, designed to burn biomass fuels more cleanly and efficiently than traditional stoves, are the most prominent of the 'decentralized energy

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solutions' ([1], cited above) that have been promoted toward the end of improving cooking energy access for poor biomass-reliant households [5]. While the stove development imperative has historically been driven by a range of actors, including 'southern' developing country governments and local non-governmental organisations, the role of 'northern' developed country governments and international non-governmental organisations in the field has been particularly pronounced from the 1970s to date [6]. Notwithstanding the proliferation of northern development initiatives to promote improved stove technologies over the past four decades, however, they have not been widely taken up by target populations in the southern contexts where they have been introduced [7].

The relationship between technology and development is a historically complex one. While it is the case that technology plays a central role in development, its relationship to development is by no means deterministic. On the contrary, the successful application of technology for human development is contingent on specificities peculiar to the local contexts in which it is deployed. It is in attempting to decipher the specific meanings attached to various aspects of life by citizens in different southern contexts that participatory models have become increasingly relevant in development discourse and practice from the 1970s onward. The growing emphasis on engaging local populations in north-south development processes is aimed at facilitating the identification of contextually relevant solutions for complex local settings. Proponents of participatory development recognise — at least in principle — that development organisations which are external to local communities are invariably limited in their understanding of the specificities of such contexts, and on this basis stress the need for local populations to be involved in identifying the forms of development that are of relevance to them. Occurring in tandem with the participatory wave of the 1970s was the intermediate technology movement (q.v. [8]) which challenged the expert-led technology transfer model invariably adopted by the earliest development interventions [9] and advocated in its place a context-responsive approach to developing appropriate technologies tailored to the social, cultural and economic specifications of poor populations in the south. From its humble beginnings in classic non-profit development circles, the notion of appropriate technology has gained increasing appeal over time, with some authors (for example, [10]) observing that its attraction now extends even to profit-minded business actors looking to tap into 'bottom-of-the-pyramid' markets.

The stove development field was one of the early adopters of the principles described above, with project implementers — mostly grassroots-oriented non-governmental organisations — initiating context-responsive forms of engagement with target populations from the 1980s onward (see Ref. [11]). It is against this background that this paper evaluates the implementation of two improved stove programmes by two different northern organisations — Project Gaia and Practical Action — in Nigeria and Kenya respectively. The paper draws on relevant concepts in the field of development studies, particularly those within the participatory development and appropriate technology literature, in analysing the scenarios that have resulted from the interaction of both northern-led stove programmes under consideration with the specificities of local contexts. Specifically, the paper unpacks the implementation of each project to determine the extent to which their respective claims to context-responsiveness were borne out in practice, then goes on to reflect on the implications of each approach for project outcomes as well as for broader applications of technology in development.

Project Gaia's CleanCook project in Nigeria and Practical Action's biomass smoke alleviation programme in Kenya were selected for evaluation on the basis that both programmes, in employing technology and market platforms toward resolving the energy challenges identified among poor households in project communities, appeared to favour a context-responsive approach to implementation. In introducing the CleanCook technology to Nigeria in 2003, Project Gaia, a US-based international organisation, attempted to adapt the technology, already proven to work well in specific northern contexts, to be appropriate for everyday use in poor southern contexts — thus appearing to deviate from conventional technology transfer models. Practical Action, a UK-based international organisation which has worked since 1998 to promote the uptake of improved cooking technologies in Kenya through its smoke alleviation programme, appeared to demonstrate an even greater degree of commitment to appropriate technology principles, with its emphasis on engaging citizens in participatory processes to identify those solutions that best respond to the realities of their local contexts. Taken together, these two cases offer a platform for exploring the nuances in northern organisations' performances of context-responsive stove development in the south.

2. Methods

As previously indicated, this paper is concerned with analysing the outcomes of the interaction of two northern-led stove development programmes with the specificities of local contexts in Nigeria and Kenya. The need to understand both stove programmes simultaneously from the perspectives of northern 'outsider organisations' and southern 'local citizens' suggested the use of a qualitative research approach which adopts an interpretive frame that is grounded in contextual realities. Bryman (2004) [12] asserts that it is not possible for the qualitative researcher to understand the behaviour and choices of members of any social group other than in terms of the specific environment or context in which they operate. If this is taken to be the case, the question that follows is: what methods does the qualitative researcher employ toward understanding the complexities of social, cultural and institutional contexts of which they are not a part?

While semi-structured, in-depth interviews can yield useful insights into the realities of such contexts, the status of interview data has been widely contested within the interpretive tradition (see, for example, [13–15]), and qualitative researchers commonly view interview data as constituting a valuable but insufficient basis for the analysis of social phenomena [16]. Participant observation, which entails immersion of the researcher in the particular