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Explaining the non-implementation of health-improving policies related to solid fuels use in South Africa

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HIGHLIGHTS

- Policy non-implementation in developing countries focuses on lack of resources.
- We add policy inheritance and policy symbolism to assess non-implementation.
- South Africa's racial politics affect how policies are perceived and implemented.
- Politically, firewood and electricity symbolise repression and emancipation.
- Electricity and firewood's symbolic meanings affect policy makers' focus on these.

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ABSTRACT

In 1998, the South African government developed an energy policy that focused on a pro-poor agenda. Its objectives included addressing the health impacts of solid fuel use in households. Fourteen years later, and with household electrification at over 80%, millions still use solid fuels and yet ambitious policy objectives to address this situation are not being met. Using three theoretical frameworks; institutional capacity, policy inheritance and the symbolic use of policy, this paper analyses the reasons why household energy policy objectives related to solid fuels and health, as stated in the 1998 South African energy policy, have not been implemented. The results of the analysis show that the symbolic use of policy, including meanings of objects used for meeting policy objectives is the most critical explanation. The paper illustrates that political and historical contexts are critical to understanding policy outcomes in developing and transition countries which often experience tensions between implementing what may seem as objective policies, and that matches their political and historical experiences and aspirations. We recommend that policy analysts in the energy sector complement currently common methods to include political contexts of policy development and implementation in order to better understand why policy makers chose to implement certain policies over others.

1. Introduction

Energy policy serves a number of policy objectives related to economic growth, and specific social objectives such as improving health and education. However, not all policy objectives stated in policy documents are given the same attention or even implemented. Over the last few years, with few exceptions, the lack of financial and human capacity has been blamed for this unequal attention and non-implementation of beneficial policies (Karekezi, 2002; Zerriffi, 2012; Difiglio, 2012). The political and historical context in which policy choices and their implementation are made is often ignored, with few exceptions (Williams and Dubash, 2004; Buscher, 2009). In this paper, we explore the reasons why in South Africa, energy policy objectives aimed at reducing health impacts of solid fuel use in households have not received the same attention as other objectives in the same Energy Policy. We look beyond resource constraints and show that even when resources are available for implementation, other factors related to the way in which energy is perceived in its historical and political context can act as barriers to implementation.

2. The importance of energy policy that addresses solid fuels and health

Epidemiological studies have shown that the use of traditional solid fuels such as biomass, dung and coal, for cooking and heating

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in households causes and exacerbates respiratory infections. Indoor air pollution (IAP) from solid fuels is estimated to be globally responsible for 1.9 million deaths per annum (WHO, 2009; Dherani et al., 2008). These respiratory infections largely affect women – who are chiefly responsible for cooking – and children under the age of five who are exposed because they are often around their mothers during cooking.

Apart from IAP, exposure to smoke from firewood and coal leads to eye irritation which has been linked to the onset of cataracts (Visser and Khan, 1996; Díaz et al., 2007) and to headaches (Díaz et al., 2007). Those that carry firewood on their heads, a common practice in sub-Saharan Africa including South Africa, and in parts of Asia, experience musculoskeletal injuries and chronic pain (Joosab et al., 1994; Echarri and Forriol, 2002, 2005; Matinga, 2010) and can possibly suffer miscarriages (Haile, 1989, 1991). In other contexts, more difficult to catalogue, are the incidents of sexual harassment (HRW, 2005; MSF, 2005; Kasirye et al., 2009) and other forms of physical violence while out collecting firewood.

A part of the solution to the above-mentioned health impacts of solid fuel use is through the use of cleaner cooking energy such as electricity, LPG, or efficient cook stoves. For low income households that may not afford electricity and LPG, efficient cook stoves represent an important option because they can be locally made and are low cost. There is a body of research showing that stoves which have improved firewood combustion and efficiency, and LPG can reduce indoor air pollution and improve health (Albalak et al., 2001; Bruce et al., 2006). Efficient stoves and LPG may also reduce the amounts of firewood needed, and hence the weights head-loaded and frequency of head-loading. Although paraffin (kerosene) is sometimes considered as a viable transition fuel from solid fuels and is extensively used in South Africa in low income households, it is controversial because of negative impacts that include fire hazards (Butchart, 2000), accidental poisoning among children (De Wet et al., 1994; Malangu et al., 2005; Lang et al., 2008), and because its fumes have been linked to respiratory infections including increased susceptibility to tuberculosis (Venn et al., 2001; Dagoye et al., 2004; Pokhrel et al., 2010). South Africa itself experiences a heavy injury and mortality burden as a result of domestic paraffin use (Butchart, 2000; Rode et al., 2011).

There are inherent difficulties in addressing solid fuel substitution, especially compared to implementing electrification programs. Electrification generally involves top-down, supply-push strategies with little attention to how consumers respond, and little immediate disruption of household activities such as cooking and firewood collection which are closely linked to culture. In contrast, substituting solid fuels requires interactions with household individuals and requires that they engage in behaviour changes, contend with new flavours in their food, and invest in new technologies or fuels among other things. In addition, electrification is often under the responsibility of one ministry and hence easy to plan and coordinate once resources are available. In contrast, no one ministry has traditionally been responsible for solid fuels such as biomass since it often falls under various ministries such as forestry, rural development, and energy, making roles and responsibilities for planning, coordination and implementation unclear.

Despite problems of implementing national level solid fuels programs, countries such as China, Kenya and Ethiopia have – in as far as outreach is concerned – implemented extensive programs. The Chinese National Improved Stove Program disseminated over 129 million improved stoves, mostly biomass cookstoves within a decade and over two-thirds were still in use over a decade later (Smith et al., 1993). In Kenya, over 50% of the urban population use the Ceramic Jiko stove, which has mostly been disseminated using a commercial model (Kammen, 1995; Goldemberg and Lucon, 2010). In Ethiopia, also largely limited to urban areas, the Mirte stove is used in over 65% of households in Addis Ababa (ESD, 2000).

3. The extent of solid fuel use and its impacts in South Africa

Over 80% of households in South Africa have physical access to electricity (DoE, 2009) while about 3.4 million households have no electricity (Barnard, 2012). Households without electricity and low-income households with electricity use coal (in urban and peri-mining areas), firewood, dung and paraffin. Estimates of the number of households using coal, firewood, dung, and paraffin vary but according to Department of Energy (DoE), up to 35% of electrified households use these fuels, with 27% of these using solid fuels as the main source of energy for cooking (DoE, 2009).[1] These estimates however account for main fuels only and not all fuels used for cooking—an approach that likely underestimates the number of households using solid fuels. For example, a study by Mdluli and Vogel (2010) showed that about 80% of electrified households in townships continue to use coal for their thermal needs. In rural areas, the majority of households use firewood and to a lesser extent, paraffin several years after electrification (Matinga, 2010; Madubansi and Shackleton, 2007; Prasad and Ranninger, 2003). The reasons are economic, social and cultural, which if not addressed act as barriers to households' adoption of clean cooking energy (Davis, 1998; Madubansi and Shackleton, 2007; Matinga, 2010). Thus electrification alone is not a sufficient intervention to address the health problems related to the use of solid fuels in households with low incomes. In addition, given that electricity prices are to increase by an average of 25% per annum between 2010 and 2013 (ESKOM, 2010), and given power cuts caused by high demand especially in winter, it is reasonable to assume that solid fuel use in such households is likely to increase.

There is no agreement on the number of deaths resulting from the combustion of biomass in South Africa: estimates vary from 1000 per annum (WHO, 2007) to as many as 2500 deaths per annum (Norman et al., 2007). However, these may be an underestimate since the data in these assessments assumes that when households are electrified, they switch from solid fuels to electricity. Evidence to the contrary however shows that even after electrification households use a combination of solid fuels, paraffin and electricity (Matinga, 2010; Madubansi and Shackleton, 2007; Prasad and Ranninger, 2003; Davis, 1998). Given this state of affairs, to what extent have energy policy objectives aimed at reducing health impacts of solid fuel use been implemented? We explore this question in the next section.

4. The implementation of the solid fuels and health policy objective

The South African government's 1998 Energy Policy responded to the evidence on solid fuel use and health by committing to reducing these health impacts by promoting an energy transition from solid fuels (DME, 1998). This commitment is one of South Africa's five main energy policy objectives, signifying its relevance and potential.

[1] The 2011 South African Census estimates 73.9% of households use electricity for cooking (STATSSA, 2011). The figure is not stated as the main energy source or one of the energy sources and summing the stated proportions of cooking fuels in this manner suggests that no households use multiple fuels for cooking, a picture that is at odds with experiences of the authors as well as other research. For these reasons, we have opted not to use the Census results as the basis for energy use patterns in South African households.