SSIRC 2022-175

A SOCIOTECHNICAL SYSTEMS APPROACH TO AID SAFE HOUSEHOLD FUEL DECISIONS IN SOUTH AFRICAN TOWNSHIPS

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Abstract:
Technical solutions to address the emissions from the household use of solid fuel and thereby improve the resulting consequences for health have been studied extensively. To reduce the domestic burning of solid fuel, such as coal, in townships on the South African highveld, air quality offset projects provide unique opportunities to implement changes to the type of fuel used. The literature on pilot offset projects focuses mainly on economic challenges. Although the social challenges involved have been reported, few studies have been published that elaborate on the social factors hindering sustainable offset projects in indigent households. For example, after 25 years since the adoption of projects to reduce coal-fired emissions by using a novel 'Basa Njenge Magogo' method of top-down burning of such fuel to reduce smoke, this approach is adopted by only a minority of domestic coal users. This practice does not cost anything to society to implement but requires behavioural changes in the way a fire is packed and lit. Likewise, the removal of coal stoves in homes requires attention to not only a host of economic and fuel supply chain challenges, but also behavioural and cultural adjustments by communities to succeed in converting to less-polluting household fuels such as gas and renewable energy. The South African Air Quality Offsets Guideline (2016) – hereafter referred to as the Guideline – published by the then Department of Environmental Affairs, has been reviewed to determine to what extent communities should be considered during the implementation of fuel switch policies. The Guideline stresses the need for "concerted efforts by both government and polluting industries to clean up the air", yet the role of communities is virtually absent in this process. Empirical data from recently published pilot studies are presented here to support the recommendations we propose. Even if the Guideline becomes law, a third factor is critical to the successful implementation of clean fuel technologies, namely, the person lighting the coal stove. Community concerns have been raised about the use of alternative energy sources such as gas and renewables due to perceived risks associated with their use. Beyond the normal, one-way public consultation process with affected parties, we recommend that in future policy guidelines should also encourage a deeper understanding of communities, to effect behaviour change. A social entrenchment framework is proposed that can be achieved through mutual dialogue, the co-creating of rules and co-ownership of technology solutions, to prevent regress to coal use after the introduction of offset projects. This sociotechnical approach is essential to implement such sustainable projects for the long term, by integrating accumulated knowledge about air pollution and its health impacts as well as technology solutions, alongside community support, to achieve the adoption of clean energy.

Keywords:
Culture, behaviour, community, coal, stove