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Accelerating access to energy services: Way forward

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Abstract

As nearly a fifth of the world's population still lives without access to electricity and double that number with no access to modern cooking technologies, both public and private sector players have invested resources in developing infrastructure to address this energy gap. While there have been exceptional cases like China, Vietnam and Brazil, where the public sector led grid expansion achieved incredible gains in expanding access as to electricity, the general trend over the years in most developing countries has demonstrated that both public and private led approaches have been unsuccessful in independently yielding the desired acceleration and continuity to deliver universal energy access. Despite the inherent benefits of both public and private sector led initiatives, typical systemic inefficiencies and inadequate capacities in both approaches prevent them from fully addressing the principal objective of facilitating energy access for the poor in the long term. Also, even if required investments were adequately capitalized, with the current population growth rate continually outpacing the rate of interventions, the number of people who remained energy poor 15 years hence, would still be the same. Thus, not only is there is a need for providing energy access to the existing population mass, but an equal need to do it fast enough to truly reduce the number of energy poor across the globe. An alternative approach therefore needs to be explored that juxtaposes the social welfare objectives of public sector led initiatives with the enterprise development and growth objectives of the private sector, to support the creation of an enabling ecosystem and a viable value chain that successfully and effectively delivers energy solutions to the last mile. Such a pro-poor hybrid model will essentially address the inefficiencies and inadequacies of both public and private approaches and capitalize on their strengths through a complementary mix of social and commercial goals. The model facilitates collaborations at the corporate, institutional and individual levels to drive individual parts of a unified energy provisioning system, making it adaptable, dynamic, flexible and manoeuvrable within structures, relationships and entities. Policy level support and accompanying regulatory frameworks are critical for clear role definitions, proper planning and execution.

Keywords: Energy access; Public sector driven; Private sector driven; Energy economy; Hybrid model; Public private partnership

1. Introduction

The implications of energy poverty are profound, as the lack of reliable energy access leads to decreased life expectancy, increased rates of infant mortality and environmental problems – directly linking with key global challenges of poverty alleviation, climate change, and global, environmental and food security (UNIDO, 2008; Barter, 2014). As current energy systems fail to meet the needs of the world's poor, they enormously constrain human and economic development. Despite the global upturn in the efforts towards reducing the energy access gap, nearly 20% of the world's population (1.3 billion) still lives without access to electricity, depending on kerosene as their primary source of lighting; and 40% (2.6 billion) lives without access to modern cooking technologies, relying on traditional biomass alternatives like wood, charcoal, agricultural waste and animal dung (IEA, 2013).

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The primary drivers for pushing energy access in most developing countries have been public sector driven grid expansions and making available subsidised fuels, technologies and electricity to deprived communities. Huge public sector capital investment and high level of consumer subsidies have been the bedrock of energy provisioning efforts. The fossil fuel subsidy rate in South Asia, most of Latin America and large parts of northern Africa are in the range of 50%–93% (IEA, 2013). Consequently, national programmes focussing on infrastructure establishment and target oriented subsidy based dissemination of fuels and technologies have been the key vehicles for expanding access to energy.

In recent years however, there have been concerns related to the efficacy of subsidy based efforts and the need to move to commercial or market driven energy delivery systems. The need for increasing levels of investments and the imperative of pushing universal energy access through multi-stakeholder partnerships have also demanded an increase in private sector participation.

Both, the public and private sector approaches have been strongly advocated and have contributed to taking forward the energy agenda. In recent years the emphasis has tended to shift towards private sector driven energy provisioning although the bulk of basic energy provisioning for rural communities is still being driven by the public sector. We discuss here the imperatives of both the public and private sector approaches to meet universal energy access targets.

2. Shortcomings of current approaches

2.1. Subsidy-driven paradigm

Despite provisioning of subsidized energy being the dominant paradigm in public sector aided energy access programs, there is a wealth of literature that point to its failings in achieving its goals. Subsidies tend to get misdirected or misappropriated in the absence of strict monitoring. For instance, a study in rural Zimbabwe observed that subsidies were inefficient, failing to make energy affordable for the poor (Dube, 2003). On the other hand, in some cases, the benefits of subsidies are significantly higher for the non-poor households than the poor households (Kebede, 2006). Gangopadhyay et al. (2005) noted that removing subsidies will affect affluent households the most, and poor households the least. In essence the subsidies may worsen the deprivation of poor for whom they are intended, particularly if they are misdirected, misused and misappropriated as is the case in subsidisation of kerosene and LPG in India. It has been observed that subsidies economically devalue products for both the sellers and the buyers, sending wrong price signals to the market (Rotenberg, 2006). Energy subsidies can lead to market distortions resulting from infrastructural and institutional deficiencies (Bazilian and Onyeji, 2012), and may have negative impacts on markets when reduced or removed. If subsidies benefit only a selected group of suppliers, the market tends to be monopolistic, disfavouring suppliers who cannot avail of the subsidy (Corden, 1967). Consequently, some private players are inhibited from entering the market due to lack of willingness to pay for the actual cost of the service (Vine, 2005). Attending to recurring maintenance requirements and having the managerial and technical skills to operate energy delivery systems is essential for their long-term sustainability. However, development assistance to the energy sector has been mainly directed towards fixed capital assets, with comparatively small amounts earmarked for maintenance and capacity building (Kozloff and Shobowale, 1994).

Once started, the volume of subsidies grows year after year, unless unchecked by robust governance mechanisms. Problems like electricity leakage due to unmetered supply, theft of power and rise in consumer size contribute to a progressive increase in subsidies year after year (Bhattacharyya, 2012). Top-down subsidies to grid-connected electricity has also imposed severe restrictions on popularization of rural off-grid electrification, which are mainly operated at the level of the village community by local institutions (Palit and Chaurey, 2011).

2.2. Market-led paradigm

The intended benefits of bringing in efficiencies and promoting sustainability through private participation for energy access often gets defeated due to efforts to increase profit margins through tariff enhancement and focusing on areas that provide quick and high returns. Consequently, governments have had to suppress arbitrary increases by strict regulation to keep electricity affordable on the principle that supply of electricity was an essential social service (Haanyika, 2006), limiting further investments by private entities. As commercial or privatized utilities focus on profits, they tend to be less interested in supply of electricity to non-profitable rural areas (Kessides, 2004). Provision of electricity in rural areas would be most beneficial when there is adequate physical and social infrastructure to make best use of the available power (WEC, 1999). However, in most cases, private players are compelled by governments to engage in rural electrification on political or equity considerations without focusing on basic infrastructure for power generation and distribution, rendering the projects unsustainable in the long run (Haanyika, 2006). Some of the other barriers to rural electrification in developing countries by private companies include limited financing, high cost of distribution, poor demand and over-dependence on public funds for meeting the cost of capital (Ramasedi and Ranganathan, 1992). Decentralized and renewable energy projects have long gestation periods with low returns on investments, making investments in such technology viable only for large corporations (Bhattacharya and Kojima, 2012). Large initial investments in infrastructure, manpower and technology limit the role of small and medium private enterprises, unless there is provision of low-risk finance or financial support.

Private entrepreneurship in rural areas has also emerged as a bottom-up approach to commercialization of energy service provisioning. However, the track record of such enterprises to manage business viably and provide efficient after-sales service has been dismal due to a variety of resource and capacity limitations. Examples from Zimbabwe (Mulugetta et al.,