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Learning from experience in the water sector to improve access to energy services

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ABSTRACT

Providing access to safe water in developing countries has stirred global attention for decades. This focus has not been paralleled in the energy sector, with access only recently receiving explicit mention in the Sustainable Development Goals. A framework applied to identify and compare trends occurring within these sectors suggests that there are areas for cross-sectoral learning, specifically around the emergence of market-based approaches to access and community engagement practices. Leveraging the lessons learned from years of development practice in the water sector could help avoid mistakes and improve energy poverty alleviation.

1. Introduction

Only recently has the international development community explicitly acknowledged the significance of energy access as central to sustainable development and poverty alleviation. The decade 2015–2025 was named as the first United Nations (UN) Decade for Action focussed on energy (United Nations, 2012) and the birth of the UN Sustainable Energy for all (UN SE4ALL) initiative, as well as the first explicit global goal for energy, within the Sustainable Development Goals (SDGs). Goal 7 aims for "affordable, reliable, sustainable and modern energy for all" (United Nations, 2015), and its achievement is regarded as central and beneficial to the realisation of a number of the other development goals (see: McCollum et al., 2017; Fuso Nerini et al., 2017). The sector has seen a groundswell of activity, including the emergence of new organisations aiming to tackle these energy challenges. However, some of the actors face steep learning curves, and where experience is lacking, there is a danger of unintentionally repeating the past mistakes from other development sectors. In this regard, the literature on energy poverty alleviation is still emergent, and the theory and practice may not be sufficiently mature to support new actors entering the sector.

By contrast, the water and sanitation sectors have long received a great deal of attention within the development community, as demonstrated by the extensive history of UN-supported initiatives (Black, 1998). Over the last 40 years, the United Nations has declared two sets of Decades for Action with an emphasis on water; 2005–2015 was the decade of "Water for life" (United Nations, 2003), and 1980–1990 was the "International Drinking Water Supply and Sanitation Decade" (United Nations, 1980). The Millennium Development Goals (MDGs), which came prior to the new SDGs, contained specific indicators for improving access to safe water and sanitation (UN Department of Economic and Social Affairs, 2013). One of the 17 SDGs adopted in 2015 aims to "Ensure availability and sustainable management of water and sanitation for all" (Osborn et al., 2015) (United Nations, 2015). Progress has been made within the water sector in achieving improved access to drinking water for 2.6 billion people between 1990 and 2015, with 147 countries meeting the water target set within the MDGs (UN Department of Economic and Social Affairs, 2013). However, although significant progress has been made, the water and sanitation agenda has moved through many modalities and suffered various setbacks in its implementation (see for example (Black, 1998; World Commission on Dams, 2000)). Even after 40 years of dedicated development practice in the WASH sector, many still lack access to safe, potable water in the poorest parts of the world, and WASH practice is still evolving and adapting. This long history may hold value for future development activities, as reflection on both successful and unsuccessful experiences may prevent the repetition of past mistakes. By examining the trends and history of improving access to water and sanitation policymakers and practitioners in the energy sector can inform their efforts.

This paper outlines and applies a conceptual framework to evaluate several key shared themes and trends identified in the literature on the water and energy sectors specific to development contexts. As water and sanitation are often represented together in global development discussions, highly co-dependent, and frequently delivered together, we

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use “the water sector” to refer collectively to water and sanitation. We use “the energy sector” to refer to facilities for cooking and the supply of reliable and sufficient electricity. The scope of the analysis is limited to developing or low-income countries, with an emphasis on high rates of poverty. The decision to focus on a comparison of the water and energy sectors reflects the historical importance placed on access to these services. While water and sanitation, along with shelter, have long been recognised as basic human rights, access to basic services, such as energy, are increasingly recognised as critical to poverty alleviation for the most vulnerable citizens.

The purpose of this analysis is to explore opportunities where the energy sector could improve its development practice by drawing on the projects and progress documented in the water sector. There is very limited literature demonstrating how such cross-sectoral learnings might be assessed or applied in practice. This analysis seeks to address that gap by highlighting commonalities and differences that may reveal shared learning and opportunities, such as pathways for knowledge transfer, collaboration, partnerships and ultimately, greater positive impact. In assessing development practice, performance, and learning of each sector against the broad domains of the framework, this paper also identifies additional areas that warrant further research and exploration.

The contribution of this work is twofold. First, we identify the broad domains that provide the foundation for assessing the core commonalities and differences between and across the water and energy sectors. This framework provides a way of organising and assessing where cross-sectoral learning may or may not be relevant. Second, it suggests some areas where further research could specifically highlight how access policy and investment might be improved. Examples of successful service provision and improved understanding of opportunities for cross-sectoral learning might also help ensure investment of resources for meaningful impact.

2. Framework for analysis

The water and energy sectors exhibit a number of similarities, which make their comparison useful. These include a dependence on technology and infrastructure, which can span various scales; the challenges of geography and remoteness; and the fact that access to these services is essential for the realisation of human rights. Aside from their similarities, however, these sectors have also evolved differently over time, giving rise to diverse approaches, operational modes, and governance structures.

Water and energy projects aim to address multifaceted problems that are not easily defined and require multidisciplinary approaches. This means there are multiple lenses through which the sectors can be compared and evaluated. This framework aims to use a small but adequate number of these in order to broadly assess trends in these sectors. The framework was adapted from Sue et al. (2014), originally adapted from Outhred (2007). This original work used different “regimes” to assess and compare parts of a larger complex system. In Outhred (2007), these regimes are understood as representing a complex set of decision-making or institutional arrangements that may be implicit within various sectors. In the context of our work, the “regimes” have been adapted and refined, and are referred to as lenses through which decision-making or institutional arrangements and trends might be observed and identified within the water and energy sectors.

We conducted a literature review to broadly represent a mix of multidisciplinary issues relevant to the water and energy sectors, applying the following four lenses for our analysis: (i) Social and Security; (ii) Governance; (iii) Commercial; and (iv) Technical. Exploring the sectors through these distinct lenses enables a broad comparison of key differences, similarities, and opportunities. Our application of the combined ‘Social and Security' lens is a departure from the earlier frameworks and reflects a conscious decision because the issue of security in these contexts is essentially also a social concern, due to the necessity of access to these services to achieve basic standards of living. It is more meaningful to assess ‘Social and Security’ as an interconnected issue in the development context, as opposed to assessing ‘Security’ only (Outhred, 2007) or to consider these issues separately (Sue et al., 2014). The governance lens included in this framework covers the institutions and organisations that play a part in shaping the way these sectors are conceptualised and how progress within them is approached. The commercial lens explores the monetary side of the sectors, including how they are financed, and private-sector involvement. Finally, the technical lens covers physical constraints and challenges, and highlights how these sectors require and depend on infrastructure and technology.

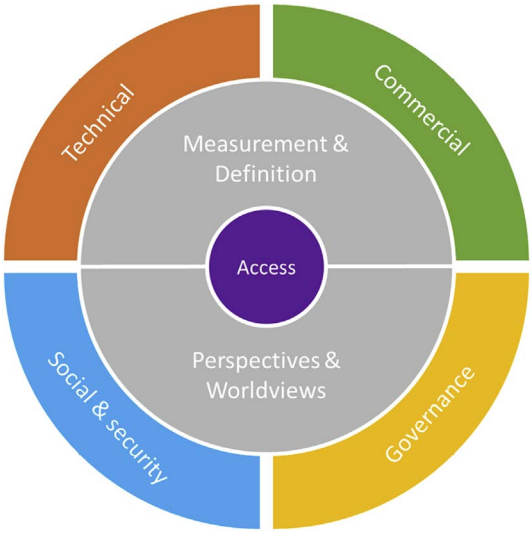

Fig. 1. The four lenses of the framework, “social and security”, “governance”, “technical” and “commercial”, can be applied to consider access to energy and water, while keeping in mind the different aspects of “measurement and definition” as well as different worldviews at play.

Prior to exploring these lenses, two underpinning areas that also emerged in the comparisons of these bodies of literature are introduced. The first explores the way we measure and define water and energy access, and the second highlights the different and diverse worldviews that underpin access projects. These two areas encompass and are core to the way access is perceived and approached, and are represented centrally in the framework diagram in Fig. 1.

Our framework considers the literature on the water and energy sectors in the development context. The focus was specifically restricted to the provision of these basic services within international development discourse, and for poverty alleviation. We acknowledge that development practice in the water and energy sectors is highly contextual, varies widely across geographies and cultures, and evolves in distinct ways. Practice also varies across spatial scales (e.g., national vs. regional vs. local) and temporal scales. It is not our aim to provide an assessment of water and energy development at every scale and in every context. Rather we seek to draw out high-level themes for further consideration and potential application to practice. To capture a high-level trend analysis of significant literature, the analysis also does not break sectors down into sub-industries, which are also highly variable across the sectors. Trends within the four lenses are highlighted in the following sections.

2.1. Measurement and definition

Tracking of progress in water, sanitation, and energy is often framed in terms of access to “improved” water and cooking facilities, and access to electricity. These indices are present in global development