



ANALYSIS

Expanding renewable energy access with pro-poor public private partnerships in the developing world

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ABSTRACT

The provision of energy services through renewable energy is capital intensive and requires significant upfront costs compared to conventional energy technology. In most of cases, government investments and public budgets have proved insufficient to expand access to electricity and modern energy in rural areas in a sustainable manner. There is a great need for mobilizing financial resources to expand local energy services delivery in the developing world. Pro-poor public–private partnerships are one of the best mechanisms to supplement and overcome government budgetary constraints for widening access to energy services, especially to the poor, as they can allocate project-risks between the public and private sector. This article explores eight case studies throughout the world of where pro-poor public private partnerships for renewable energy have expanded access to energy services for those most in need of them.

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1. Introduction

The specific phrase “public–private partnership” (PPP) denotes a broad assortment of different relationships among public and private organizations in the context of infrastructure generally, and energy technology specifically. Other terms loosely used to describe PPPs are “private sector participation,” “liberalization,” and “privatization.” [1] The basic idea is to have national governments and other public sector entities (such as state governments, city councils, municipalities, and independent legal bodies) partner with actors outside the public sphere to implement projects together.

The most common division of responsibility in a PPP is to have the public partner set service standards (including determining who receives that service, and at what level or price) and monitor performance, whereas the private partner raises capital and assumes responsibility for building and operating the project [2].

However, a new type of PPP has emerged in recent years involving governments as well as private companies, microfinance institutions, multilateral development banks, and nonprofit organizations (including NGOs) in expanding access to energy services [1]. A pro-poor public–private partnership model, usually indicated by the abbreviation “5P,” has evolved to explicitly target the provision of

services to poor communities, which are often ignored by traditional PPPs since supplying the poor can involve substantial business risk. The 5P model views the poor not only as consumers that receive benefits, but also as partners in business ventures. It expands beyond the private sector to include partners from development banks, equipment manufacturers, rural energy service companies, philanthropic organizations, CBOs, cooperatives, and households themselves. Each of these groups plays a different role in the 5P: private sector participants can meet their corporate social responsibility obligations, utilities and energy companies can fulfill their obligation to deliver basic services, communities and members of civil society can expand access to basic services. Or, as the UNDP defines it, a 5P is one that “increases access of the poor to basic services by promoting inclusive partnerships between local government, business, community groups, NGOs, Faith Based Organizations and others.” [3] Profit motivations are blended with social concerns and empowering targeted communities [4].

This study provides eight examples of where 5P projects have successfully expanded access to renewable energy throughout the world. It begins by offering a brief history of PPPs in the energy sector before summarizing different variants of how such partnerships are structured. It then details eight case studies — China, Bangladesh, Indonesia, Nepal, Zambia, Laos, India, and Sri Lanka — before offering conclusions for energy policymakers and development practitioners more broadly.

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2. PPPs in the energy sector

Because of their potential benefits, PPPs have been promoted widely in the electricity and energy sectors around the world. Pressure to alter the accepted model of public procurement for energy infrastructure arose with growing levels of public debt, which expanded significantly after the economic recessions of the late 1970s and early 1980s. Since then, electric utilities in countries across the globe have experimented with new ownership models and abandoned the convention that infrastructure services should be the exclusive domain of the state.

Until the 1980s, most electric utilities remained state-owned, vertically-integrated monopolies, with the exception of the US which operated as a “mixed-ownership system” with primarily private control [5]. Until then, it was widely believed that utilities lent themselves to natural monopoly because of several common characteristics favoring public provision: large sunk costs, capital intensity, economies of density and or scale, economies of scope (through the provision of related functions), and the production of goods and services essential to social welfare [6–8].

However, support for the insuperability of state-managed utilities eroded with the rise of neoliberal orthodoxy and the growing dissatisfaction with public ownership’s shortcomings. World leaders, most notably Prime Minister Margaret Thatcher in the United Kingdom and President Ronald Reagan in the United States, were strongly influenced by economics thinking from university departments at Chicago and Virginia which instilled anti-regulation sensibilities [9]. Others began to question the “natural monopoly” status of the electricity supply industry (ESI), instead seeing a coordination of “multiproduct production” that could be subjected to competitive forces. Public utilities were perceived to be overstaffed, opaque, and denying ratepayers the ability to choose service providers [10]. The drive to improve system-wide efficiency, lower rates, and provide ratepayers with a degree of choice not possible through public monopoly were all benefits that a shift to private sector involvement and competitive forces were anticipated to bring [11].

Chile was the first country, developed or developing, to embark on electricity sector reform. In 1978, the military government under General Pinochet established the National Energy Commission and four years later passed an Electricity Act which eventually unbundled vertically-integrated companies, opened a spot market, and regulated distribution charges [12]. While Chile’s reforms began more than a decade before other countries’, its story is often overshadowed by the United Kingdom whose model subsequently formed the blueprint for future reforms. ESI reforms in England and Wales commenced in the early 1980s. Ideological opposition to state ownership was a dominant feature of leadership under Thatcher and led to the dismantling of public monopolies across several sectors, including electricity.

The basic principles of privatization in the Chilean and British cases included that the customer’s needs should drive electricity supply; that competition would reduce tariffs inline with ratepayers’ interests; that natural monopolies should be accompanied by regulation; and that customers would have new “rights” and industry employees would be free to manage their commercial affairs without government involvement [13].

Convinced that measures adopted by first wave reformers were transferable, multilateral banks and consultants began working with government officials from developing countries to embark on a new wave of ESI reforms in the 1990s. In contrast with the first wave of electricity reforms that focused on efficiency gains and stronger competition, the second wave largely focused on subsidy removal and improving the performance of developing country ESIs. With corruption and collusion as distinguishing characteristics of many developing country electricity sectors, economists studying deregulation concluded that the separation of powers would reduce such

opportunities and minimize regulatory capture [14]. The process of global reform was prompted in part by multilateral institutions such as the World Bank Group advocating “market-oriented reforms.”

Though PPPs and private sector participation (PSP) in the electricity and energy sectors are global trends, their implementation has been concentrated in Asia. About \$64 billion of infrastructure projects with PSP have occurred each year within the East Asian and Pacific region accounting for twice as much investment and development as other areas, with China alone accounting for more than \$45 billion of investment for some years [1]. Four infrastructural areas — telecommunications, electricity and natural gas, transport, and water — accounted for half of all PPP proceeds in developing sectors. During the 1990s, more than 60 developing countries engaged in restructuring and privatization that involved some type of public private partnership, with 534 projects and a total investment of about \$131 billion [15].

3. Specific models of PPPs for renewable energy access

New ways of encouraging renewable energy investment, however, have expanded in the past few years. Looking primarily at solar home systems in African countries, for example, one study found four separate PPP types: a donation delivery model, a cash model, a customer credit model, and a fee for service model [16]. Another study investigating renewable energy development more broadly identified cash delivery, credit from companies and dealers, leases, and fee for services as primary mechanisms for distributing equipment through PPPs [17].

According to these studies, the “cash model” refers to when customers purchase the product paying the full cost. It is most commonly applied to SHS and small hydro schemes, and the owners of such technologies are usually moderately wealthy private individuals and in some cases communities or public organizations. This type of partnership is characterized by low installation costs, quick delivery, and varied quality of products; the model tends to exclude rural or poor inhabitants that lack access to cash or financing on their own.

The “credit model” refers to when local dealers sell their products to rural clients on credit against collateral or personal guarantees. It is commonly applied to SHS, biogas units, and improved cookstoves. Payment is done in installments, and this type of partnership has high installation expenses due to the transaction costs associated with acquiring credit and high to medium quality products. This model also excludes poor families without the ability to provide collateral.

The “mixed finance model” is when governments provide a fixed subsidy and the balance is born by villagers or private firms. It is most commonly applied to mini- and micro-hydroelectric schemes and SHS, with ownership residing either with individuals or the community. The model requires high-quality products from prequalified companies, and it has relatively high installation costs due to lengthy quality assurance procedures.

The “donation model” is one where the technology is transferred to the community as a gift, usually from a private entity (part of their corporate social responsibility program) or a development donor. It has been utilized for all types of renewable energy with varying degrees of quality and installation cost.

The “fee-for-service” model is one where renewable energy technology is owned, operated, and maintained by a supplying company, but the customer pays regular fees for using it. It, too, has been utilized for all types of renewable energy with varying degrees of quality and installation cost.

4. Case studies

Given that these studies were done almost a decade ago, the typology of renewable energy PPPs has slightly changed. As this section documents, eight separate types exist:

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