

Universalizing and accelerating electricity access over the next decade through Public Service Delegation (PSD)

Policy Brief

- ▶ According to estimates by the International Energy Agency (IEA), 775 million people were still living without electricity as of 2022. Electrification is improving in Southeast Asia, but registering slow progress in sub-Saharan Africa.
- ▶ Electricity access in developing countries (DCs) is best conceived as distribution of a commercial public service and as a capital intensive public good.
- ▶ The deployment of pay-as-you-go technologies in the 2010s and the fall in photovoltaic (PV) prices have revived private sector interest in electricity access. However, private initiatives have been carried independently from public authorities and suffer from unstable institutional environments.
- ▶ Widely used in the water sector, which is also unprofitable in contexts similar to those prevailing in regions not yet electrified, the Public Service Delegation (PSD) offers a solid regulatory and financial framework that balances Government needs on one side, and greater visibility for private sector operators on the other. It can be applied to all three electrification modes: grid extension, mini-grids, stand-alone PV systems, and is designed to be financially viable.

Since the 1980s, several reforms have been carried out to create enabling environments for electrification. The most significant of these have been the unbundling of national monopolies and the creation of dedicated rural electrification agencies. The objectives of these reforms were to diversify funding sources, to use new forms of distribution, and to mobilize the private sector for rural electrification. However, for several reasons, the results have not been as expected.

First, the unbundling of national companies and the creation of dedicated agencies have led to the segmentation of electrification into two markets: first, a urban market, which is *a priori* profitable; and a second, rural market, which is unprofitable and remains under-funded. Furthermore, public operators rarely have the human and financial resources needed to fulfill their electrification mandate.

More recently, expectations have turned to the private sector. With the technological advances and lower PV and battery costs, authorities expected that economies of scale would be sufficient to attract private investment. However,

constrains inherent to rural areas, such as high distribution costs and low ability to pay, have prevented the private sector from intervening on financially sustainable terms.

Unconnected populations remain the most difficult to reach because of their low ability to pay and remote location. It is therefore necessary to bring the public sector to reinvest in the field of electrification while relying on the ability of the private sector to deploy decentralized solutions adapted to off-grid areas. If the latest innovations have been technical, the next ones will be institutional and financial.

PSD: an alternative organizational mode for electrifying all off-grid and on-grid areas

There are two main types of PSD: *affermage* and concessions. In the case of *affermage*, the delegating authority finances and provides the facilities and infrastructure necessary to carry out the mission of the operator, who implements and operates them, and eventually earns a return on his activity. In the case of a concession, the concessionaire finances and makes the investments required to carry out the mission delegated to it by the public authority. Hybrid solutions are also possible: “concessional *affermage*” (including financing part of CAPEX by the operator) and “subsidized concession” (benefiting from concessional public loans retroceded to the operator).

In areas where the financial profitability of electrification is difficult to achieve, PSD allows mobilizing public and private parties, by committing them over time to ensure the sustainability of the electricity service, while providing a regulatory framework that financially and legally mitigate the risks for private investors.

PSD contracts must ensure long-term viability and visibility...

The long-term ability of PSD electrification projects requires a system of subsidization and pricing adapted to the nature of the service and the customers. Both must be set over a long period to mobilize the various stakeholders and maintain affordable tariffs, considering the State’s financing capacity. PSD electrification contracts require long-term concessional public loans (more than 20 years) because of the depreciation period for the equipment. Financial viability is essential to allow for the renewal of assets: a PSD contract lasts between 15 and 20 years, whereas a battery only lasts 5 to 12 years.

The PSD is accompanied by a contract that specifies the mutual rights and responsibilities of the private and public stakeholders. The terms of the contract must anticipate payments and cash flows while taking into account the evolution of operating and maintenance costs.

Thus, electrification PSD projects require a dedicated public concessioning authority. However, rural electrification agencies are not structured to assume this role. This is a weakness of the reforms mentioned: they have not sufficiently integrated these PSD solutions, nor put in place the institutional and financial frameworks to deploy them.

...and be part of a national program led by the public sector

The public sector must address the challenge of rural electrification and investments by setting up a national program involving all parties. Its aim will be to coordinate the deployment of all three electrification modes and mobilize the private sector with a binding deployment schedule. This schedule needs to be regularly updated and, in case of deviation from the established plan, the PSD contracts must include adjustment clauses.

In addition to financial viability, maximizing the impact of electrification schemes is a key factor

The challenges to involving the private sector in electrification are well known: the end consumers’ low ability to pay and a limited demand that does not allow developers to recover their fixed and operating costs. One way to improve viability is to rely on “anchor customers” with high loads – a critical factor in the financial viability of electrification PSDs. According to AMDA (Africa Minigrid Developers Association), in 2020, 30% of consumers of electricity generated by mini-grids in Africa accounted for 70% of consumption.


PSDs can also include electrification objectives for essential facilities such as schools and public buildings. However, while it is now accepted that electricity is a necessary condition for socio-economic development, it is not sufficient. The role of operators must therefore be redesigned. Distribution companies would benefit from enhancing demand by acting as service providers (equipment distribution, local entrepreneurship development initiatives for instance). This is the case with the MAX electrification project in Côte d’Ivoire, which includes support for the acquisition of production equipment. To that end, distribution companies could leverage the experiences of NGOs.

Eventually, the DSP appears to be an organizational mode that overcomes certain constraints inherent in rural electrification.

Geography: Sub-Saharan Africa
Keywords: Electrification, Electricity Access, Public Service Delegation
Theme: Energy

Agence française de développement (AFD) 5, rue Roland Barthes, 75012 Paris.
Publishing Director Rémy Rioux
Editor-in-Chief Thomas Mélonio
Graphic creation MeMo, Juliegilles, D. Cazeils
Design and production Coquelicot
Legal deposit 3rd quarter 2023 | **ISSN** 2742-5320

Credits and authorisations

 Creative Commons Licence
Attribution – NonCommercial – NoDerivatives
<https://creativecommons.org/licenses/by-nc-nd/4.0/>

Printed by AFD’s reprography service
To browse our other publications in the Policy Brief series:
<https://www.afd.fr/en/collection/policy-brief>