

From darkness to light: rural electricity in Morocco



Islamic Development Bank

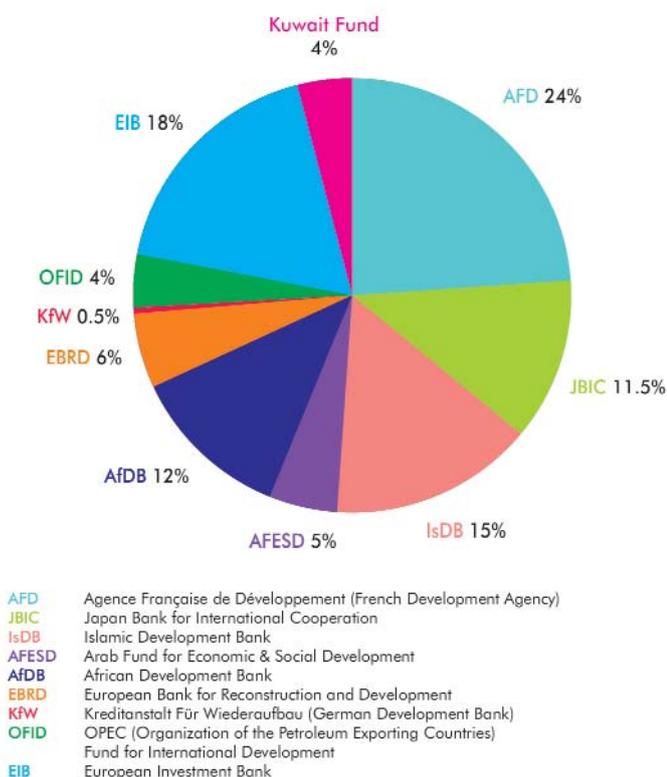
Together we build a better future



Electricity is by no means a newcomer to Morocco; as early as 1891, a public lighting system was installed in the town of Tangier. However, electrification rates outside the cities persistently remained very low. In 1995, over 80% of Moroccan villagers still lived in the dark. Once the sun had set, children found it difficult to study and shops closed their doors. Small businesses were unable to use modern tools and machinery, farmers struggled to irrigate their fields, and rural residents remained isolated from happenings in the wider world.

Noting the slow pace of progress, the Government of Morocco declared universal rural access to electricity a political priority and in 1996 began supporting the implementation of the Rural Electrification Global Programme (PERG). Impressed by the Government's ambition, strong political will and effective design of the programme, the Islamic Development Bank (IsDB) over the following years responded positively to a request for financial support, providing funds that enabled PERG to connect to an electricity supply nearly 1.3 million people in over 4,000 villages across the country.

Major contributors to PERG financing



Total financing from international financial institutions: MAD 10.92 billion (US\$988 million)

Source: Morocco's National Office of Electricity (ONE)

A new programme for change

So far, IsDB's contribution to the electrification programme amounts to approximately US\$150 million for launching five projects all of which were fully aligned with PERG's comprehensive national master plan. IsDB's financing usually comprised a combination of a concessionary loan and an Istisna'a financing, enabling it to offer significant amounts while remaining competitive vis-à-vis other donors in the context of a programme with high social significance. The IsDB intervention has been marked by its responsiveness and focus, enabling IsDB to play a major role in the country's electrification. Two of IsDB's projects are discussed below.

Morocco's government-owned National Office of Electricity (ONE), the national utility that was responsible for implementing PERG, also assumed the role of the project implementing agency. The organisational setup was a critical success factor. Under ONE's competent leadership, PERG had a clear vision – global electrification of rural households – fully aligned with the Government's own developmental priorities. In addition, PERG was designed to pool all financial resources likely to be deployed for rural electrification,

including resources from a number of international financial institutions.

One implementer, many partners

While PERG followed a comprehensive national master plan, it was flexible enough to integrate a broad range of technical approaches, enabling it to implement whichever solution was most appropriate to local demographics and geographical conditions. While most villages were connected to the central grid, PERG also installed decentralised electrification systems, including photovoltaic panels, wind plants and micro power stations, choosing the approach best suited to meet local demand at the minimum possible cost per household. Over the life of the programme, tens of thousands of families were provided with off-grid photovoltaic panels alone.

On the ground, PERG adopted a partnership approach. Typically, the utility ONE would cover 55% of the cost of a connection, the local commune 20%, and the household itself 25%. Local councils and authorities in the targeted provinces played an important role in the programme by co-financing projects, providing all permits and facilities required for implementation, mitigating and managing local conflicts, and sensitising villagers to electricity use and the related safety measures. Families were given the option of paying off the charge for their initial connection over a period of seven years through monthly instalments of less than five dollars, and the use of a pre-paid card system backed up by a network of recharging points helped users to monitor and pay for their consumption once connected.

Actual installation was performed by 230 different subcontractors competing for tenders, an approach that succeeded in reducing the average cost of a connection by over 30% compared to the pre-programme benchmark. ONE performed an optimal engineering design based on a detailed survey using GIS. In addition, the standardisation of equipment specifications and the harmonisation of safety and technical performance parameters prevented unpredictable price variations.

In order to qualify as a bidder, every single subcontractor had previously provided information on the company's legal, administrative and financial status, and on its experience, complete with references. This information was reviewed and cross-checked by ONE staff before being passed on to a separate commission responsible for deciding on the company's eligibility. This approach was highly successful because less qualified companies were screened out from the outset; only those companies demonstrably capable of ensuring a high-quality work programme and adhering

to appropriate safety standards in rural electrification work got to the bidding and implementation stages.

The one-step prequalification of contractors (with a validity of four years unless performance was unsatisfactory) streamlined the selection of contractors and avoided repetitive and time-consuming prequalification processes for each small individual package. ONE acted as the supervisor for all construction works.

Connecting more than 10 million people in 15 years

The IsDB's 2002 project targeted rural electrification in El Jedida and Settat, two predominantly agricultural provinces located in the mid-western region of the country. The project originally set out to provide electricity to 461 villages and directly improve the health, education and standard of living of 42,000 newly connected households. This would have required the installation of over 3,000 kilometres of transmission lines – including supplies lines, ancillaries and associated civil works, often in very difficult terrain – and of hundreds of transformers.

During the project implementation, thanks to cost saving derived from fostering strong competition between contractors, IsDB gave the green light to an ambitious plan by ONE to include an additional 253 villages in the project. As a result, the project connected a total of 714 villages, installing nearly 4,500 kilometres of transmission lines to hook up 54,371 households. In the end, IsDB's project managed to bring electricity to 30% more people than had originally been targeted. Despite its increased output, the overall project came in 14% cheaper than originally projected, thanks to the good pricing obtained by ONE through its successful packaging and contracting system.

Inspired by the resounding successes in El Jedida and Settat, ONE approached IsDB for support for a second project in 2004: to hook up around 1,300 villages across eight provinces. In the end, a total of over 60,000 households were connected, 20% more than originally targeted, while the budget remained firmly on track. The two projects combined connected over 100,000 rural households – around half a million people – at a cost of just over US\$100 million.

IsDB accompanied ONE during the subsequent phases and extended adequate financing for various sets of ready packages for implementation. In total, IsDB supported PERG with five projects worth a total of US\$150 million. These directly resulted in the connection of 1,270,000 people living in 4,194 villages, many of whom were located in very remote areas.

"IsDB remains a true partner for ONE. In the future, we count on the valuable support of IsDB in realising the innovative and strategic projects that are part of the economic and social development of our country."

Abdelmajid Chouhib, ONE

Healthier, wealthier and wiser

IsDB's projects had a tremendous positive impact in the targeted provinces in Morocco, substantially and sustainably improving the quality of life of hundreds of thousands of individuals. In the villages connected to the transmission lines, almost all households have chosen to hook up to the grid. On average, they pay between US\$12 and US\$15 per month including the instalments for the initial connection charge, a cost that is evidently perceived as affordable by most.

Families are saving around 20% on lighting costs compared to before connection and enjoy a cleaner, safer and more powerful source of light. With the use of candles and gas in decline, indoor air quality has improved and fire risks have been greatly reduced. In addition, over half of the connected households have installed refrigerators, improving the conservation of meat, milk, fruit and vegetables. Another benefit is that around 15% of families have installed pumps to supply running water to their houses, improving hygiene and health. This easily accessible clean water, together with the growing use of washing machines, is reducing rural women's heavy workload.

Electrification has made day-to-day life not only easier, but also richer. Nearly all connected households have installed a television set and satellite dish so that for the first time in rural Morocco's history, most people now have immediate access to images, news, views and opinions from around the globe. This enriches their understanding of national and international politics, values and cultures, and strengthens their sense of citizenship. At the same time, electrification has acted as a stimulus to the further expansion of cell phone coverage in rural areas, partly because users can now easily recharge their mobile phone batteries at home.

The improvements in the quality of life in the rural areas have been so significant that evaluators have noted a reverse migration trend, in which some people have opted to return to their newly electrified villages after years in crowded urban centres. The value of land has risen measurably, partly because access to affordable electric power has enabled new and better irrigation techniques – one in ten households



developed an irrigation system centred on an electric pump after getting hooked up – but mainly because of the strong effects of electrification on local economies throughout rural Morocco.

IsDB's first project alone established 4,900 connections for agricultural use and over 1,500 for small industries. Electrification directly and substantially contributed to the strengthening of local agricultural value chains by enabling the creation of milk collection centres with cooling facilities, the construction and operation of a variety of mills, and the establishment of new livestock-rearing operations, abattoirs, sawmills, carpentry workshops and small-scale crafts manufactures. Long-established local businesses also benefited, partly by harnessing electrical power to improve their productivity, range of products or service quality. IsDB's projects have therefore directly contributed to an overall rise in rural employment and economic activity throughout the project regions.

A sustainable success

The sustainability of IsDB's projects seems assured. Service uptake is extremely high, and rural power users

are continuing to pay their bills. PERG continued building on the projects' successes in both provinces after completion, rolling out the grid even further. By the end of 2011, PERG was serving over ten million people across the country. Meanwhile, ONE put qualified personnel in place to handle the operation and maintenance of the expanded network. A 2012 post-evaluation by IsDB's Group Operations Evaluation Department noted that all facilities continue to be well maintained and are in good condition. Today, over 97.6% of rural Moroccans live in the light – and they will continue to do so tomorrow.

Success factors

Strong political will coupled with a clear vision

PERG was government-initiated and enjoyed consistent government support throughout implementation. It had a clear vision – the global electrification of rural Morocco – and a competent lead agency guided by a detailed road map that included a funding scheme.

Multi-stakeholder business model

The financing was split between the three main stakeholders, ONE (55%), municipalities and communes (20%) and households (25%), with the last given the option of paying the one-off connection fee in instalments. There was a clear demand for the service, which project beneficiaries were both able and willing to pay for.

Effective institutional setup

The programme managed and coordinated all resources for rural electrification, including those provided by IsDB, under a single umbrella. A standard list of equipment, streamlined pre-qualification of contractors, and competitive tendering and bidding processes ensured high-quality implementation while keeping costs at a record low.

Acknowledgements

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