

S01-03 “EDF’s Approach for Decentralized Rural Electrification ”

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Abstract

There are few villages remote from the grid in industrialized countries because of the high level of development of the electrical systems. The situation is very different in the rest of the world where almost half of humanity is awaiting electricity supply especially in the rural areas. To achieve this rural electrification it is necessary to choose between grid extension and decentralized electrification using autonomous systems. Total grid coverage is often only to be expected in the long run due to the huge investments needed; autonomous decentralized systems offer an alternative solution that could help achieve the goal within a few decades only and offer rural populations an access to electricity. Renewable energies often play an important role in these decentralized solutions, adding the environmental advantage.

EDF has developed a global approach aiming at defining the electrification policy of a large area or even of a whole country. This approach encompasses the institutional, organizational, sociological, technical, tariffs and financial aspects. Ultimately the aim is to provide multiple services (electricity, water, telephone, etc.) to rural areas. This method is especially adapted to developing countries in which the electrical system is still restricted to urban areas.

At the heart of this approach is the wish to activate sustainable electrification; in other words to ensure that the electrification systems will be used in the long term and in economically viable conditions. This must include the economic, environmental and social dimensions. To achieve this EDF proposes to set up Decentralized Services Companies (DSC), subsidiary companies of EDF and other partners (international and local). The DSCs will operate on a commercial basis, selling an electricity service adapted to its customers. A particular emphasis has therefore been put on tariff structures compatible with the low revenues of rural populations. Revenues from the sale of electricity services must ensure operation, maintenance and renewal of the systems indefinitely. This does not exclude the use of subsidies or soft loans for the initial investment, however the DSCs must be autonomous once launched. In addition the DSC will base its activity on multiple sources of energy and multiple services adapted to each zone.

The definition of a range of systems and components both for micro-grids and autonomous

systems is considered necessary in order to undertake large scale projects. Low cost distribution grid technology has been designed for highly populated areas and a range of standardized autonomous electricity production systems for villages remote from grids or scattered dwellings. The range is based on the use of photovoltaic, wind, diesel or hydro micro-plants connected to a local micro-grid, or of stand-alone systems.

Electrification programmes under way or being set up in Mali, Madagascar, Morocco, Brazil, South Africa and China, where EDF is investor and operator, should contribute to the validation of this approach in the coming years.