



# Solar energy trial in Folovhodwe South Africa: Lessons for policy and decision-makers

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## Abstract

In Mutale Local Authority of South Africa, a photovoltaic pilot project was commissioned to provide off-grid electricity to 582 households residing in Folovhodwe village. The aim was to try a renewable source of energy supply in a rural settlement area. The Beneficiaries Assessment method was used to assess the problems of the implementation and operation of the solar energy project in Folovhodwe. The project initiators did not realize that there would be the problem of the sustainable implementation of the project. The problem of sustainability was related to the inadequate definition of the role of each stakeholder. For example the end users were not taught how to properly operate and repair faulty equipment because it was not built into the planning and implementation stages of the project. Skill acquisition through capacity building for the end users can promote the sustainability of the project on a long-term basis. In Folovhodwe, improper planning and implementation of the project was responsible for the failure of the project. The project initiators did not foresee the problem of theft of materials, problems related to the procurement of spare parts and who would bear the cost of maintenance of the facilities. The failure of the project was also related to the inability of the policy makers to tackle the question of the role that each stakeholder should play to ensure the success of the project in a rural setting. The suggestion to policy and decision-makers is that pilot projects with relatively new technology input in a rural area should reconsider the importance of culture, capacity development and the level of income of the end users at the initial planning stage and implementation.

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## 1. Introduction

Since 1994 several energy supply projects were set up in South Africa to provide remote rural communities with electricity supply through the PV systems [1]. The reason for starting the PV energy pilot projects in the rural communities of South Africa was to put the rural areas on the power supply line [2]. However, the problem has been the management and sustainability of the projects. The problems associated with the failure of projects similar to the one in Folovhodwe are related to the mode of implementation of the projects, inadequate knowledge of solar energy technology, poor maintenance culture and the undefined role of the project beneficiaries.

Acker et al. [3,4] indicated that poor project planning could propagate the failure of a project. For example, in Swaziland the Ministry of National Resources and Energy initiated a solar electrification project but it did not succeed because ownership of the project and maintenance responsibilities were not addressed early enough [4]. A sense of ownership and proactive participation in a pilot project is important for the sustainability of development projects [5,6]. The ownership status of a project should however, be established earlier in the planning stages of the project [6,7]. Project beneficiaries can play a crucial role in the maintenance of a project because it concerns them [8,9]. The active participation of the end users can also play a crucial role in the success of development projects like the PV project in Mutale.

In apportioning blame on the failure of projects, care must however, be taken to encourage projects that are successful [10,11]. For example, in Maphepheteni (South Africa) a photovoltaic project was introduced and it is still running because there was active participation by the end users. The problems of capacity building, maintenance and cost implications were tackled at the planning stages of the project. Beneficiaries were taught and trained on how to operate the system. They were made to understand that the cost of maintenance of the project was their responsibility [1]. It was also made clear to them that they would be responsible for making sure that the project remains sustainable.

In Zambia, for example, an ESCO initiated PV project was initiated in 1998 and it is still running successfully. Although, the beneficiaries do not own the project in Zambia, the responsibility that goes with ownership was addressed at the planning stages of the project. Problems associated with implementation, basic knowledge of operating the facilities by the residents and maintenance of the facilities were addressed at the beginning of the project. The beneficiaries played a crucial role by willingly paying the project maintenance fee, which were modest and they were able to operate the facility with ease [12].

In 1994, Folovhodwe a rural area in Mutale district was chosen for a PV pilot project to provide electricity to the residents. This was in line with one of the cardinal development credo of the ANC government in South Africa to eradicate poverty among the rural poor by enhancing development through energy supply [1]. The rural electricity programme drawn up by the ANC government in 1996 was supposed to promote energy supply in remote rural areas to enable them rely less on biomass and other sources of environmentally unfriendly energy sources of supply as well as give them the opportunity to engage in regular energy-related activities at a relatively cheap cost of supply.

The project was stated with the full participation of the Bavarian Government and the South Africa Department of Mineral and Energy (DME). Since the inception of the project in Folovhodwe in 1998, the aim was to demonstrate that solar PV(s) could provide a viable alternative source of energy for areas situated far from the on-grid electricity

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