Solar Energy for Rural Electrification in a dynamic West African setting

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We were all relieved to wake up to a cloudy sky. It had been a pain the night before, having to move our beds, blankets and mosquito nets inside as the rain started to pelt down heavily upon us, but cloudiness today meant that our physical work would be comparatively easy, in this sub-Saharan zone.

Villagers being trained how to maintain and replace batteries in the solar systems

The Mali-Folkecenter rural electrification project team are hard at work installing a solar-powered lighting system in a small concrete block which will soon become the village health centre. The building is a hive of activity. Eight villagers who have volunteered themselves to be trained in solar-powered systems are watching the work and helping the Mali-Folkecenter technicians, wherever they can. Outside, a number of village elders are standing and sitting chattering in excitement at the dynamism that has descended upon their village, the village of Tabakoro, in the southern cotton growing region of Mali, in West Africa.

The story of a West African village

Three generations ago, three brothers from Segou (240 km east of Bamako) travelled to this part of the country looking for land to farm. When they arrived in Kokola, they asked for land and were sent to a spot not far from where the village now stands. The three brothers who were hunters split up and each took a location that would be easy to defend - one went to the river's edge, where later there grew a small village, one went behind the long grasses, where the village of Banco sprouted and the third brother, the eldest, stayed underneath the Taba tree (Tabakoro in Bambara, the local language, means under the Taba tree).

The original Taba tree of Tabakoro no longer stands, but there are other Taba trees in the village, bearing fruit that take the form of a yellow pods, which when split open can be seen to contain five or six stones each covered with a layer of sweet bright pink highly-perfumed flesh. The entire village population descends from the eldest brother of the three and from one other family that moved to the village some time later. When the road linking Bamako to Sikasso was first surfaced with tarmac in 1962, many of the villagers moved closer to the road in order to benefit from passing trade. The old village still exists though, underneath the Taba trees and much of it is still inhabited. It is in the old village that village meetings occur, when all the men of the village come together to make decisions. Each age group has a representative who is chosen by his peers to speak on their behalf. The right to speak passes from the oldest to the youngest and back to the oldest. The women also have a representative that they chose, but she does not attend the meetings unless specially requested to do so.

Since the three brothers arrived from Segou three generations ago, many changes have taken place in the village. CMDT, the Malian cotton company built a factory in the village in 1984, which employs men from villages within a 20 km radius. The factory is working from November through until May, processing the cotton that is grown in the region during the rainy season (June to September), when men work in the fields. The factory only carries out the first stage of cotton processing,

where the cotton fibre is removed from the pod. It is then bagged for export - only 1% of cotton produced in Mali is processed in Mali - the rest is exported. A school was built in 1994 (with the help of CMDT) and a health centre has been constructed over the summer of 2001, which is being financed by the villagers themselves.

Women preparing lamps and cables for installation of the solar lighting system in Zanbala health centre.

Villages that look to the future

Another dynamic force within Tabakoro comes from villagers who grew up in Tabakoro but then moved to Bamako in order to find work. There are many former villagers who return to Tabakoro to visit family, and often in doing so return some money to the village, or spend money on village improvements. We met one former Tabakoran who serves in the army and has lived in many different parts of the country, who has now built himself a modest house in the village that he returns to for holidays. He arrived during our stay with a minibus full of young people from Bamako who have Tabakoro roots and 1000 Eucalyptus saplings for planting. Coma, a young American man with a 2 year Peace Corps placement is also doing what he can to bring about positive change, in Tabakoro, with very limited funds. He showed us a world map that he was in the process of painting on the wall of one of the classrooms.

Renewable energy - improving living conditions in rural Mali

Most recent in village developments have been the installation of solar powered lighting systems in the school, in the public square and today, in the health centre, which has been carried out by Mali-Folkecenter, an independent NGO working with the promotion of renewable energy. A solar powered water pump will be installed later in the year, as at present, all water is pumped by hand from the wells.

These new facilities will have a variety of advantages for the village of Tabakoro. Education facilities should improve with the possibility of using the school in the evenings for women's literacy lessons and the standard of healthcare that can be administered in the village should also improve, as now minor operations can be carried out after dark and lighting should make birthing a little easier (reducing maternal and infant mortality rates). Lighting in the public square should allow public meetings to be carried out after dark and help provide a social gathering point for the villagers and electrical water pumping will reduce the heavy burden of very physical work which is carried out by the women of the village on a daily basis.

Planting young trees in Tabakoro

Combating rural exodus

In addition to these practical benefits, Mali-Folkecenter hopes that by providing electricity to villagers they will contribute to combating the mass rural exodus that is occurring in many developing countries as rural populations swell and rural income generation becomes tougher with more people relying on the same amount of land. Every year, many people go to look for work in Bamako during the dry season, when there is no work to be done in the fields, and each year, a few more people decide to stay on in Bamako, and do not return to their village. This causes problems in both city and countryside as urban populations swell and villages become depleted of young people. Bamako, Mali's capital has doubled in size in the last 15 years. With such a rate of growth, it is inevitable that there will not be enough work to go around. People are driven to petty crime and prostitution. Each year some women sex workers get pregnant and are too ashamed to return to their families. In rural areas, villages become depleted of their workforce, as it is the young who are most active in the fields and who carry out the heavier domestic chores. And whilst it is the village elders who make the final decisions, one could argue that that it is the young who are innovative and dynamic and important in bringing about positive change in rural areas. By providing villages with better facilities, Mali-Folkecenter hopes that rural areas will be more appealing to the young and that less will decide to up and leave to Bamako.

Peoples' participation

The Mali-Folkecenter rural electrification project (funded by Danida) involves 3 core villages in this region, Tabakoro, Niamala and Zambala (which will receive facilities and training described above) as well as 20 peripheral villages which will benefit from the installation of lighting systems in their schools, and training to allow maintenance. In addition, the project involves training 8 volunteers from each of the core villages in solar powered installation and maintenance, by creation of a Solar Training School, to give the theoretical education and through participation in installing the 20 lighting systems in nearby schools, to give practical hands-on experience. This will create a decentralised human resource base for the future. Maintenance costs will be covered by a small charge which will be placed on electrically pumped water. The work will be done by the newly trained villagers and managed by a village association. In this way, the project aims not only to provide solar powered lighting systems, but also to create a skills base in the villages that can be used for further electrification and for maintenance of the Mali-Folkecenter systems to ensure the durability of those systems. The villages should therefore be in a position to autonomously maintain the systems after the Mali-Folkecenter 3 year project has come to an end.

Systems are highly valued and well cared for

Mother with her new-born baby, born under the light of the Zanbala health centre solar system.

The next day, once the installation in Tabakoro health centre was complete, I went with the Mali-Folkecenter team to look at the work that had already been completed in the other two core villages. Each installation has a log book which is kept by a trusted individual in the village. In that book, a record is kept of how often the

system is checked, so that the Mali-Folkecenter team knows how well the system is being cared for. In the village of Niamala, one light tube in one of the classrooms had been broken , probably by kids playing (it has now been replaced, paid for by the village), but in Zambala, the street light had been checked very recently. Overall the installations were being well used and well cared for. We had the good fortune to meet two women who had given birth the previous night in the health centre in Zambala. The births had been lit by solar powered lighting, whereas before, the matron would have had to use a kerosene lamp or flashlight.

According to the log book , there had been 15 births since the lighting system had been installed two months previously, of which 11 had occurred during the night and had therefore benefited from the work of the project.

Another baby that benefited from solar-powered lighting

A combined effort for a truly sustainable development

This part of rural West Africa, whilst being very traditional in its belief systems and forms of Government, is far from static. Development is occurring slowly but surely with help from many quarters including former villagers and NGOs. It is hoped that with such a combined effort of well thought out, small-scale change, rural depopulation will be reversed hand a truly autonomous, truly sustainable form of rural development can be achieved.