Providing Energy Services in Burkina Faso While Conducting Scientific Research

Establishing a collaborative research platform in rural areas with integrated solar photovoltaic energy services.

Arouna Darga serves as a senior lecturer in electrical and electronic engineering at the Sorbonne University in Paris, where he teaches electronics and energy conversion at the university’s engineering school, Polytec Sorbonne. As a researcher, Arouna has a strong expertise in advanced modeling and characterization of photovoltaic cells and modules, as well as the management of industrial projects. He develops experimental techniques for detecting and quantifying the electronic parameters that limit the performance of photovoltaic cells, modules, and systems. Arouna is passionate about the dissemination of knowledge and promoting scientific-driven development in lagging communities within the realm of science and technology.

Arouna Darga, a native of Ouagadougou, Burkina Faso, embarked on this academic journey by earning a master’s degree in pure physics at the Joseph Ki-Zerbo University in his hometown. Subsequently, he relocated to France to study electrical engineering, later receiving a PhD in the specialty from the Sorbonne University. Undoubtedly, the decision to specialize in this field was motivated by his origin and experience in the Sahelian region. Arouna is familiar with how difficult it is to have proper lighting and clean water in this area.
Yet, solar energy and related technologies, areas in which Arouna possesses a wealth of established expertise, are a godsend not only for the supply of electricity but also for drinking water through solar-powered pumps. Making this vision a reality has been the credo of this Burkinabe research physicist for several years now. In addition, Arouna is convinced that it is possible to conduct impactful research while concurrently providing energy solutions to rural areas and low-income communities.

For many years, he has actively participated in many initiatives, including training and exchange programs focused on renewable energy in West Africa. One of these initiatives is the “Turning Sun Into Water” project, which aims to build a collaborative research platform in rural areas to deliver photovoltaic energy services to local residents. The project was successfully launched in 2017, thanks to the support of 280 backers. Since its launch in 2017, the project has provided more than 10,000 cubic meters of clean water for domestic consumption to more than 280 inhabitants in the small village of Gogma in Burkina Faso. Over ten researchers from the UK, USA, and France have collaborated on various aspects of the project, ranging from socio-economic considerations to data analysis using artificial intelligence. This practical, community-driven project addresses local needs and has led to several scientific research papers.

More information on the project can be found at https://eaufildusoleil.blogspot.com.

You can support the project on this platform: https://www.helloasso.com/associations/eau-fil-du-soleil.

References:
[1] [1] PhD thesis of Simon Meunier,

Figure 2: Data collection: GIS data, geophysical measurements, water point account books, household surveys, pumping tests, water quality, on-field observations, Photo-Voltaic Water Pumping Systems (PVWPS) monitoring. (Photo Credits: PhD thesis of Simon Meunier [1])