

Solar panels installed on the roof of the Sisters of the Precious Blood's provincialate are pictured in this photo. The Missionary Sisters of the Precious Blood have turned to solar energy to run a thriving horticulture project. (Marko Phiri)



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Green energy has become the buzzword of sustainable agriculture amid climate uncertainty, and Catholic sisters in Zimbabwe's second largest city have responded by setting up off-grid infrastructure to power their operations.

The southern African country has not been spared disruption of hydro-based power generation triggered by climate-induced low rainfall, forcing the authorities to import electricity from neighboring power utilities.

In recent years, the Kariba Dam, which lies on the Zambezi River along the well-known Victoria Falls, has seen water levels drop, crippling power production in the process.

It is against this background that millions of people in Zimbabwe find themselves struggling with electricity, from businesses to households, industry and agriculture.

From their sprawling provincialate in one of Bulawayo's quiet eastern neighborhoods, the Missionary Sisters of the Precious Blood have turned to solar energy to run a thriving horticulture project.

The Zimbabwe government has emphasized the importance of locally grown food, but this has been stalled by lack of adequate infrastructure, resulting in failed crops and importation of basic commodities.

These efforts by Catholic sisters toward the sustainable use of natural resources come at a critical time for many African countries who are facing increasing costs of fossil-based power generation amid environmental concerns.



Precious Blood Sr. Caroline Busvumani stands next to tomatoes that the Missionary Sisters of the Precious Blood have grown in Bulawayo, Zimbabwe. (Marko Phiri)

Renewable energy

Renewable energy is helping the Precious Blood sisters navigate Zimbabwe's expensive electricity tariffs at a time when hours-long power cuts are interrupting the functioning of all sectors of the country's economy.

The authorities have touted renewable energy as the future of sustainable agriculture, and the horticulture project being run by the Precious Blood sisters has become an illuminating benchmark of the country's energy transition efforts.

"We have five solar-powered boreholes supporting horticulture and also our residence," said Sr. Caroline Busvumani, during a recent tour of the Precious Blood sisters' project.

"Solar works best for our day-to-day operations that include fundraising efforts as electricity from the power provider is erratic," Busvumani told Global Sisters Report.

The country's struggling energy utility has been under pressure to improve power generation, with sectors such as agriculture appealing for exemption from load shedding.

By investing heavily in renewable energy, the Catholic sisters have managed to create their own horticulture marvel, which could serve as a model for other religious congregations seeking to support themselves while at the same time being environmentally friendly.



Precious Blood Sr. Caroline Busvumani stands in front of two water reservoirs called JoJo tanks. (Marko Phiri)

Giant reservoirs called "JoJo tanks" help store water for the horticulture project, whose produce is sold to members of the public and also provides the sisters with

healthy, home-grown organic food for their own consumption.

The provincialate boasts several such tanks, some with a holding capacity of 10,000 liters of water, highlighting the dire water situation in the city and the efforts the sisters have put in to support themselves.

"Overseas support has dried up in recent years and we are constantly brainstorming on how best we can support ourselves. The greenhouse horticulture initiative is part of those efforts," Busvumani said.

The solar infrastructure installed by the sisters is also providing electricity to their residence at a time when millions of residents face rolling power outages.

The Precious Blood provincialate was built decades before Zimbabwe's independence in 1980, long before climate change and electricity outages entered public discourse.

The city of Bulawayo, where various congregations of Catholic sisters can be found, once had its own coal-powered electricity generating plant that supported a vast network of industries including agriculture.

But the plant has been derelict, and with the current global energy transition agenda, there appears to be no plans to resuscitate the coal power station.

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Going off-grid

Across the pristine Precious Blood Sisters premises, countless photovoltaic panels can be seen, some immaculately lining up side-by-side on numerous points on the roof, others mounted on the ground, showcasing a vast commitment to renewable energy.

It also reflects the Vatican's drive toward energy independence, where the Holy See is championing the combination of agriculture and solar energy.

"There is a need to make a transition to a sustainable development model that reduces greenhouse gas emissions into the atmosphere, setting the goal of climate neutrality," Pope Francis wrote in his apostolic letter, *Fratello Sole*.

"Mankind has the technological means to deal with this environmental transformation and its pernicious ethical, social, economic and political consequences, and, among these, solar energy plays a key role," the pope said.

Food production remains one of the church's major points of focus amid global hunger, and the Precious Blood sisters say their solar and horticulture project is a move toward sustainable agriculture practices.



Precious Blood Sr. Caroline Busvumani stands next to tomatoes that the Missionary Sisters of the Precious Blood have grown in Bulawayo, Zimbabwe. (Marko Phiri)

Besides horticulture, the sisters run a piggery project where a biogas digester was also installed.

With a global push to transition to clean energy, the Precious Blood sisters are making their own small contribution, albeit amid high maintenance costs of operating.

"We had installed a generator as a standby in the event of electricity outages but realized it was too expensive because of the price of fuel. So we invested in solar instead," Busvumani told GSR.

Zimbabwe has one of the highest prices of fuel in the region and businesses have complained of unsustainable operating costs that come with constant power cuts.

For the Catholic sisters however, this model of going off-grid follows efforts in developed countries where some dioceses have committed to total reliance on renewable energy for parishes, schools, offices and even cemeteries.

"This whole place used to be all green but because of water problems, even the lawn has dried up. We can't rely on municipality water," Busvumani said, adding that low rainfall has affected the groundwater table, resulting in reservoirs taking too long to fill up.

"At the moment the water situation is really bad as we have to share water use from the reservoirs between two greenhouses and also between the infirmary and the sisters' residence. In the past this never happened during the time of good rains," she said.

Like many other public goods and services, the Bulawayo municipality has imposed harsh water rationing measures, with some suburbs' water cuts exceeding a week. Residents have been banned from using hosepipes for watering their gardens.

Investment in solar panels, as has been done by the Precious Blood sisters, is an expensive proposition for many in a country with record unemployment.

It could be years before there is wide adoption and installment of renewable energy infrastructure in the country, but for now, the nuns have managed to establish a robust model against difficult odds.