Reconciliation re-invigorates solar development

Reconciliation and renewable energy technology have joined forces in a project that aims to build a better future for the Yolngu people of Dhuruputjpi in Arnhem Land. It is also encouraging new thinking on the challenges of renewable energy in remote areas.

The Yolngu made headlines this year in the ABC documentary *Dhakiyarr versus the King*, which chronicles the events surrounding the suspicious disappearance of an Aboriginal elder, Dhakiyarr Wirrpanda, 70 years ago. Dhakiyarr was tried and convicted in the Northern Territory Supreme Court for the murder of Constable Albert McColl. He was sentenced to death, but public protests over the case and the treatment of Aboriginal people lead to his release. Under suspect circumstances Dhakiyarr never made it home.

Last year, Dhakiyarr's descendants held a ceremony to bring his spirit home, and apologise to the relatives of Albert McColl. Now, as their part of the reconciliation process, the McColl family has enlisted the help of renewable energy experts to improve the community's quality of life and secure a better future.

'Reliable power would improve their day-to-day living, and allow them to have computers to further their education, continue their work as artists, and possibly even find other career options,' says Mrs Joan McColl.

'At the moment they use diesel generators which are noisy, unreliable and expensive. They have to cook every meal over an open fire, and in the wet season it's hard to keep the eating areas clean. When they're using power tools for their art, the generator often conks out. And there's no refrigeration or lights.

Enter Mr Malcolm Green, an electrical engineer and enthusiastic proponent of solar power and solar dish technology. Green was responsible for the first grid-connected renewable energy project in Victoria, in 1992, which combined a 10 kW wind turbine with 50 solar panels. He has been a driving force behind the push to see Whyalla, on South Australia's Spencer Gulf, become a solar-powered city, using an array of 200 parabolic solar dishes – designed by Professor Stephen Kaneff of the Australian National University (ANU). Green recently wrote a book, *Cosmic Accounting*, which details his concept for a solar energy-based economy rather than a monetary one.

Green was contacted by Joan McColl after she read a magazine article he wrote about solar dishes in the Global Energy Network Institute (GENI) newsletter – an organisation that promotes the interconnection of the world's electricity grids and the supply of renewable energy to them.

Green rekindled his links with Professor Kaneff and the Spencer TAFE in Whyalla. A proposal for one parabolic solar dish, based on Kaneff's 'Big Dish' design – a 22.6 m diameter dish displayed at the Australian National University in Canberra – but half the diameter, was put forward.

'The idea was that students at Spencer TAFE would build a smaller dish, to cut down on materials and cost, which would then be located at Dhuruputjpi,' Green says.

However, there a number of practicalities needing to be addressed before the solar dish at Dhuruputjpi can run.

The 'Big Dish' solar collector developed at the ANU. An area of high sunshine, about a quarter of the size of South Australia, covered with solar dish collectors would be sufficient to supply all the current energy demands of the whole world. ANU

The first is the intended use of the dish. Kaneff's highly developed dish technology is designed to solve the energy problems of cities, rather than remote communities. In a 200-dish array, boilers at the focal point of each dish would create high-temperature steam, which would be fed into a conventional steam turbine plant to produce some 22.2 MW of electricity. A gas-fired backup boiler would maintain this output at night and in overcast weather.

'It is technically and economically more efficient to use this technology in large arrays,' Green says.

For a single dish, the most efficient way of generating electricity is through an 'engine' at the focal point of the dish, rather than a steam turbine. The technology to do this is still cutting edge, but CSIRO Energy Technology is testing a new engine from England that can convert heat into electricity. If successful, a commercial product could be available next year.

Family-to-family reconciliation: members of the McColl and Wirrpanda families at Dhuruputjpi Homeland community.
Courtesy of the McColl Wirrpanda Foundation Inc.

Supporters of solar technology are keen to see it given the credit it is due. Unlike wind turbines, whose development costs have been absorbed by Denmark and Germany, and which are now mass-manufactured, solar dishes are still to be installed on a large scale. Until private investors and the community are prepared to take a punt on the technology, it will remain an 'unknown quantity'.

While the solar dish proposal for Dhuruputjpi has not been abandoned, Green is considering other renewable energy solutions. He says a more suitable system could involve a system of photovoltaic cells, and supercapacitors for energy storage, connected to an underground mini-grid.

At the time *Ecos* went to press, the original project had become two: identifying the best renewable energy solution for Dhuruputjpi, and a student project to build a solar dish in Whyalla.

Malcom Green is positively charged about his ongoing involvement and the challenges ahead. 'The initial interest in solar dishes in Arnhem Land has reinvigorated the quest to build a solar dish in Whyalla, and that is a step forward for this technology in Australia.'

● **Wendy Pyper**

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The McColl family is raising funds for the Dhuruputjpi renewable energy cause through the McColl Wirrpanda Foundation Inc. See the 'We support' page on www.pangari.com.