

Mapping UNSW Impact Global Development

Primary SDG	7: AFFORDABLE AND CLEAN ENERGY
Broad theme	Electricity generation
Research	Repairing a hydropower grid and adding solar panels, installing solar powered lighting and phone charging facilities
Impact region	Vanuatu
Faculty	Engineering
School/Institute	School of Photovoltaic and Renewable Energy Engineering
Academic	Richard Corkish
Project partners	Vanuatu's government and community, The University of the South Pacific (USP), The Rotary Club, SMA Australia
	UNSW Institute for Global Development – seed funding of \$100,000
Related SDGs	3: Good Health and Well-being
	13: Climate Action

Elevator pitch

Richard is repairing and boosting a hydropower grid to provide locals with electricity and improve their quality of life and communication, and he is installing light and phone charging facilities in at least 14 aid posts dotted across the country, improving the ability of those aid posts to respond to the injured and pregnant.

The Challenge: Lack of electricity and health services

Only two electricity grids function in Tanna Island, Vanuatu, servicing the immediate areas. One of them, in Imaki, runs on hydropower. The rest of the island does not have access to grid electricity. Those without electricity burn wood to cook food. Some, in rare cases, have solar panels but the systems are often dated and of poor quality. In 2015, Cyclone Pam devastated the island and significantly damaged the hydropower grid in Imaki, which has not worked since.

Health service delivery is challenging in Tanna. There is only one hospital and seven dispensaries dotted around the island that are looked after by trained nurses. This network does not cover the island's population adequately. In response, the UN helped to build 34 aid posts which were given to the government, who in turn handed them over to local villages. Aid posts are basic and lack lighting and electrical services. Some are in decent condition, while others are not looked after.

UNSW's solution: Repair and boost hydropower grid, install lighting and charging facilities,

In 2009 and 2010 Richard's students set up the hydropower mini grid in Imaki. In 2018, he completed a survey of the damage on the grid from the cyclone and planned for repairs and sourcing water further up the river where water levels are more reliable. He is also planning to install 42 second-hand solar panels to the grid in

2018 to provide a more sustainable supply of energy. The panels were donated by Redlands School. Connectors for the panels need to be replaced and he needs to find the requisite funding for his trip. Richard and his students are currently training Vanuatuan students in how to replace the connectors.

Richard and his team are also installing solar-powered lighting and phone charging facilities in 14 rural health centres (aid posts). He has completed seven installations so far, and repaired posts and dispensaries with damaged lighting. Installations at the other seven aid posts will take place in 2019. He performed a similar installation for Lamlu school, to enable students who study at night to have lighting to do so, and will look to perform this service at other schools where there is demand.

To help locals correctly install solar power systems, Richard has overseen the development a solar power installation guide by one of his students. The guide is written in English and the local language and includes pictures to help those who cannot read comprehend its messages. It will help locals to avoid common installation mistakes, such as poor placement of panels and bypassing the charge controller. Launch of the guide will happen in January 2019. Next, Richard will look at installing similar lighting and charging facilities on the remote islands of Malekula and Aniwa.

The Impact: Improve quality of life, communications, and health service

Repairing and boosting the hydropower grid with solar panels will provide a more sustainable and consistent supply of energy to locals surrounding Imaki. This will improve their quality of life, enabling light at night and phones to be charged easily for communication. Power at aid posts improves the chances of the injured and those seeking medical help being assessed and treated correctly. Richard's projects are also providing a unique opportunity for UNSW students to get hands-on experience in the field.

Researcher

Dr Richard Corkish was Head of School of Photovoltaic & Renewable Energy Engineering (SPREE) from 2003 to 2013. In that decade, SPREE alumni changed the face of the industry. Richard is currently Chief Operating Officer of the Australian Centre for Advanced Photovoltaics, an Advisor to the Indian National Centre for Photovoltaics Research and Education, and an Editor for the IEEE Journal of Photovoltaics. He has published over 50 journal papers, book chapters and books and over 150 conference papers. Richard believes good engineering education should account for environmental and social benefits.

Ben Falkenmire 25.07.18