

### Instructions to Abstract Authors

#### 2018 Key Dates

Submission of Abstracts due: **Monday, 16 July 2018**  
 Notification of abstract selection to authors: **Monday, 13 August 2018**  
 Papers due for peer review: **Monday, 15 October 2018**  
 Feedback from reviewers to authors: **Monday, 12 November 2018**  
 Final paper submission due from authors: **Monday, 26 November 2018**

**Your contribution will not be formally accepted and scheduled, until you have registered your attendance at the conference.**

Please indicate by ticking which stream/s best fits your abstract

<b>STREAMS</b>	
<i>Topics listed are a guideline only. Submissions in related areas are welcome</i>	
<input type="checkbox"/>	<b>Photovoltaic Devices</b> <i>Silicon solar cells            Inorganic, organic, dye sensitized and perovskites            Tandem and other solar cells            Characterisation and quality control            Modules and manufacturing</i>
<input type="checkbox"/>	<b>Deployment &amp; Integration</b> <i>Renewables integration, policy and regulation            Forecasting and Resource assessment            Minigrids and Community owned Renewables            Field experience, performance, yield and reliability            Distributed Energy Resources, EVs and Low emissions transport</i>
<input type="checkbox"/>	<b>Solar Heating and Cooling, Low Carbon Living</b> <i>Energy Efficiency and Demand Management            Housing and appliances            Solar heating and cooling including heat pumps            Cities and Communities            Competing with gas in the domestic &amp; commercial market</i>
<input type="checkbox"/>	<b>Concentrating Solar Thermal</b> <i>Fundamentals and components            Storage, systems and power cycles            CSP integration, design and modelling            CSP and high temperature processing</i>
<input type="checkbox"/>	<b>Solar Fuels &amp; Chemistry</b> <i>Storage            Hybrids, complementary solutions and discrete applications            Fuels and chemicals from electricity and heat            Energy for heavy industry</i>
<input checked="" type="checkbox"/>	<b>Solar energy solutions for emerging economies</b> <i>Islands and remote regions            Supergrid and interconnections between countries            Field Experience, Performance and deployment</i>

Please tick which best describes you:

I am a student: Yes  No  Gender: Female  Male

I would like to be considered for an: Oral  and/or Poster  presentation

I intend to submit a paper for peer review: Yes  No

Save your abstract using this format: **STREAM\_Surname\_First Name\_Initial\_2018**

Submit the abstract by clicking this [LINK](#) then simply upload abstract to the DROP BOX folder

## **UNSW Énergie Renouvelable Vanuatu**

**NB:** Your title is to be no more than 95 characters (including spaces), as it will be used in the official printed program

Richard Corkish<sup>1</sup>

<sup>1</sup>*School of Photovoltaic and Renewable Energy Engineering, Sydney, Australia*  
*E-mail: [r.corkish@unsw.edu.au](mailto:r.corkish@unsw.edu.au)*

Students and staff of the UNSW School of Photovoltaic and Renewable Energy Engineering, through *UNSW Énergie Renouvelable Vanuatu* (UNSWERV), have been undertaking renewable energy education/development projects in Tanna Island, Vanuatu (pop. 29,000) since 2007. The projects have ranged from tiny stand-alone photovoltaic (PV) DC lighting and phone charging through lighting in schools to a hydro-powered village AC minigrid. Tanna is an island with a small public grid, operated on behalf of the Government by a multinational company, in the provincial capital of Lenakel/Isangel only. There is only a single hospital for the island in the same town and the outlying villages are served by about seven dispensaries, with a trained nurse and operated by the Department of Health, and about twenty aid posts, owned and operated by the host village community. When we started our work, almost none of the dispensaries or aid posts had even basic lighting. This and next year, the dispensaries are being lighted by the Department's contractor (PV, charge controller, battery, inverter and 240V AC LED lamps).

The UNSW projects, previously in schools and dispensaries and, recently, primarily in aid posts and schools, have installed, exclusively, 12V DC systems, to take advantage of the inherent safety of extra low voltage and to avoid the unreliability of complex electronic inverters in harsh environments. Over the last decade the project has provided lighting and USB phone charging to most of the dispensaries and seven aid posts. Limited lighting has also been provided in four schools, although Cyclone Pam in 2015 crippled two of the school projects and the Imaki minigrid.

In January and July 2018 two different groups of students installed basic lighting in seven aid posts around the island and a few rooms of a secondary school and carried out many repairs and minor upgrades to public facilities, while also planning several PV water pumping and lighting projects, surveying and planning the repair of the Imaki hydro minigrid and its enhancement through the addition of 42 second hand PV modules donated in Sydney and shipped to Tanna in early 2018. In July the UNSW students trained a team of College de Imaki science students and other community members to make reliable MC4-style connections for the delivered modules in preparation for the intended installation in the minigrid. The team also intends to revive the failed hydro turbine, despite the original model being withdrawn from the market, by repairing the penstock, torn apart by the cyclone, and forming a reliable and stable weir at the intake point. Ambitions are limited only by funds, not by motivation or human energy.

In a recent expansion of UNSWERV scope, the team is working with the dynamic community based around the continually active volcano, Mt. Yasur, a major tourist attraction, to exploit some of the abundant geothermal energy available there. They need off-grid refrigeration for provision of local, organic, natural drinks to tourists and thermal and electrical energy for production of other local products for the same market. UNSWERV is in discussion with a UNSW geothermal energy expert to support their aims.

The project is primarily about education – giving outstanding hands-on and immensely satisfying experience to the students, while incidentally improving the experiences of, most importantly, the village women giving birth with very basic services, and sick or injured people. The need is great, just on Tanna, and Vanuatu has about 65 inhabited islands and the UNSWERV team looks forward to a persistent program of promoting the UN Development Goals while educating the next generation of renewable energy engineers.



Fig. 1. The roof of the aid post at Uruwaren is shaded in the mornings so a pole mount was installed 25m away.



Fig. 2. Etupei aid post now has basic lighting and phone charging.