

PARTICIPIA – Participatory Integrated Assessment of Energy Systems to Promote Energy Access and Efficiency



Participatory mapping in Mokolodi village, Botswana.

PROJECT IMPLEMENTATION PERIOD

October 2013 – December 2016

CONSORTIUM

- Universitat Autònoma de Barcelona, Spain
- University of Bergen, Norway
- University of Stellenbosch, South Africa
- University of Botswana, Botswana
- Namibia University of Science and Technology, Namibia

Associated partners:

- Alianza 4 Universidades (A-4U), Spain
- Universidad Autonoma de Madrid, Spain
- Universidad Carlos III de Madrid, Spain
- Universitat Pompeu Fabra, Spain
- Food and Agriculture Organization of the United Nations
- Energy Division, New Partnership for Africa Development, NEPAD

PROJECT CONTACT

Mario Giampietro
Institute of Environmental Science and
Technology (ICTA) Universitat Autònoma
de Barcelona
UAB Campus de Bellaterra, Edifici ICTA-ICP
08193 Cerdanyola del Valles
Spain
Tel: +34 93 5868770 / 5868629
E-mail: mario.giampietro@uab.cat

PROJECT WEBSITE

<http://participia.net/>

SUMMARY OF RESULTS

The University of Botswana developed a novel Master's Programme in Participatory Integrated Analysis of Energy Systems (MPIES). The Namibia University of Science and Technology approved a new Master's programme in Sustainable Energy Systems (MSES) combining the outcome of several EDULINK projects, including three PARTICIPIA modules. Stellenbosch University (SU) accredited two of the PARTICIPIA modules for integration within existing programmes. A massive open online course (MOOC) was developed and launched to support teaching.

BACKGROUND

Energy systems in the Southern African Development Community (SADC) region are still predominantly based on conventional non-renewable energy resources. In dealing with current and future challenges, scientists and policy makers must address multiple, overlapping and global challenges in: energy access, food and water security, climate change, environmental degradation, poverty, and population growth. In particular, the nexus between energy, food and water supply is one of the most pressing sustainability challenges for research and education.

Therefore, the aim was to equip graduates with the necessary skills required by the energy sector at local, regional and national levels via the development of innovative teaching and teaching materials, whilst adhering to the national and international quality assurance standards.

Expertise that dealt with complex system theory, participatory processes of governance and decision making, integrated assessment, and alternative energy systems, was mobilised in order to develop and incorporate these new courses.

One of the main anticipated challenges was to engage traditional schools of engineering in the novel interdisciplinary approach.

METHODOLOGY

Development of curriculum

A transdisciplinary curriculum was built around an integrated set of 8 master modules relevant to socio-economic contexts in the SADC region.

Case studies

3 cross-modular case studies were carried out involving consultations with local actors: urban slum electrification (South Africa), participatory rural approaches to energy systems (Botswana), and national energy metabolism and policies (Namibia). Case studies served to (i) maintain coherence among modules; (ii) create locally-relevant teaching material; (iii) engage local staff (capacity building), and (iv) support accreditation (needs assessment) through demonstration of local policy relevance.

Training of personnel

Interactive workshops and a summer school were organised to train local lecturers and test teaching material.

Development of online teaching support

A MOOC consisting of 8 modules, each composed of 3 classes of 30 min each, was developed with the dual purpose to train local staff and to create support material for mixed classroom models.

Promotion and dissemination

A promotional video was developed and shown at local events in support of accreditation. Master programme design and case studies were disseminated at local and international conferences.

RESULTS

→ Outputs

Capacity building

- 14 local academic staff trained in teaching novel interdisciplinary master modules.
- MOOC (Coursera): Sustainability of Social-Ecological Systems: the Nexus between Water, Energy and Food (over 2,000 learners since 03 July 2017).
- 4 online video lectures on vimeo on public participation, post-normal science, and science for policy.

Publications

- Kiravu C, *et al.*, 2018. Proposing a master's programme on participatory integrated

assessment of energy systems to promote energy access and energy efficiency in Southern Africa. *Int. Journal of Sustainability in Higher Education*, 19: 622-41.

- Kovacic Z. & Giampietro M., 2017. Between theory and quantification: An integrated analysis of metabolic patterns of informal urban settlements. *Energy Policy*, 100: 377-86.
- Smit S. *et al.*, 2017. Conceptualising slum in an urban African context. *Cities*, 62: 107-19.
- Kovacic Z, *et al.*, 2016. Probing uncertainty

levels of electrification in informal urban settlements: A case from South Africa. *Habitat International*, 56: 212-21.

- Three case studies documented in Proceedings of the 2nd SASEI-IREC Conference, 25-28 October 2016, Gaborone (ISBN: 978-99968-541-7).

Visibility

- Promotional video 'PARTICIPIA Master's Programmes'.

↑ Outcomes

- Accreditation of MSES Master Programme in Namibia and 2 master modules accredited in South Africa.

- MPIES Programme in accredited process in Botswana.

- Local academic staff trained to develop and deliver innovative and interdisciplinary programmes.

🎯 Impacts

Usage

- The introduction of modules on participatory integrated assessment of energy systems and policies enhances the academic excellence of the partner institutions and stimulates student enrolment at postgraduate level.
- A transformation of attitudes has resulted in the local engineering schools with respect to interdisciplinary approaches and new research lines.

Policy implications

- The interdisciplinary method of producing scientific input for use in decision-making by the new generation of energy planners

will translate into more effective policies. These policies will facilitate access to alternative energy technologies and their efficient utilisation in different local socio-economic and geographical contexts.

Sustainability

- The sustainability of the new Master's programme and modules is guaranteed by the commitment of the University Councils and the endorsement received from peer international universities and relevant state authorities, such as the Engineering Council of Namibia.



Survey on electrification in the Enkanini slum, South Africa.

TESTIMONIAL



Naledi Monnakgosi
(Mmokolodi, Botswana),
chairperson of Mmokolodi
Village Development
Committee and member
of the Ramakutlo develop-
ment/conservation trust

"I expect that the entire country will benefit from this project. Energy planners will understand community energy needs. I also expect that eventually village institutions and Village Development Houses will have access to energy/electricity. On a personal level, I

have realised that solar energy can be used to provide power. I'm now planning to use solar energy for my borehole and the house. Some of our energy needs in the village can be met through clean alternative energy."

ACP-EU Co-Operation Programmes in the fields of Higher Education and Science, Technology and Research

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