

Chapter 3

Scalable Capacity– Building for Geographically Dispersed Learners: Designing the MOOC “Sustainable Energy in Small Island Developing States (SIDS)”

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ABSTRACT

Energy-related training is much needed for SIDS to achieve sustainable development goals and reduce energy poverty. Online learning enables innovative formats of practice-centered trainings that address local needs and help overcome geographic constraints by efficiently reaching learners on remote islands. To justify high course production costs, content must be re-usable and the instructional design must match participants' motivation, skills, capacity, and constraints. An interdisciplinary university research cooperation used SIDS survey data to develop a learner-driven, collaborative online course for energy practitioners. Problem-based learning and peer-review mechanisms were used to localize knowledge and to practice real-world skills; sustainable institutional structures assure future iterations. The pilot reached a heterogeneous audience of 1,000 learners, geographically dispersed across the main SIDS regions. Principles of learning design outlined by the authors may also be valuable for capacity-building with geographically dispersed, heterogeneous learners beyond SIDS.

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1. SUSTAINABLE ENERGY FOR SMALL ISLAND DEVELOPING STATES

Energy drives development in Small Island Developing States (SIDS) as much as in other parts of the world. Like many countries worldwide, SIDS are beginning to transform their energy sectors as part of the macro-trend '*Energiewende*' (energy transition) by integrating increasing portions of renewables into the overall energy mix, in order to meet global GHG emission reduction targets. Corresponding to sustainable development goal #7, ensuring access to affordable, reliable, sustainable and modern energy is of high relevance to developing countries (SDG 2016). Many SIDS, however, continue to rely largely on non-renewable energy supplies (i.e. oil and gas) that have to be imported at a high cost, whereas the uptake of renewables in SIDS remains low. Paradoxically, SIDS generally possess an abundance of renewable resources, the appropriate and efficient technologies are available, and effective solutions have been developed in some SIDS regions as 'good practices'. These examples could enable scalable solutions for sustainable energy production under similar conditions elsewhere. Yet, substantial barriers to achieving Energy Access, Energy Security and Energy Efficiency (EASE) in SIDS remain. These can be broadly clustered:

- Problems of energy access prevail mainly in Pacific SIDS due to its wide-spread and remote islands, islands and atolls (see Figure 1);
- African and Caribbean SIDS rather face critical energy security issues due to unreliable supply and insufficient grid integration for renewables;
- Energy efficiency is a major issue in the overall African, Caribbean and Pacific SIDS regions due to legacy energy systems in need of optimization or replacement.

In addition to development-related challenges, geographic features of small island states make them especially vulnerable to short-term climate variability. Moreover, any development measures will have to compensate for, and adapt to, anticipated detrimental impacts of long-term climate change. Socio-economic weaknesses inherent to SIDS by definition can create substantial challenges to development: A lack of investment funds, limited access to technologies, a dearth of legal frameworks and/or non-enforcement of existing policies, as well as insufficient local human resources with the appropriate skills are obstacles to the uptake of renewable and energy efficiency technologies in SIDS and create structural barriers to more sustainable development paths (UNEP 2014). For the energy sector in particular, human capacity-building in particular has been identified as a key emerging socio-economic driver.

The large-scale EU-funded project PACTVET (2014 to 2018) is addressing this situation by developing study paths for (formal) technical education and vocational training in sustainable energy and climate change adaptation for 15 Pacific SIDS within the 'Adapting to Climate Change and Sustainable Energy (ACSE)' programme. By contrast, the EU programme EDULINK fosters co-operation in the field of Higher Education between countries of the ACP States and the EU. EDULINK funds the 3-year project 'L3EAP - LifeLong Learning for Energy Security, Access and Efficiency in African and Pacific SIDS' (2014 to 2016), which similarly aims to strengthen human capacity in EASE, with the particular goal of increasing the capacity of local Higher Education Institutions (HEIs) for delivering lifelong-learning EASE courses (cf. www.project-l3eap.eu). A survey conducted during this project with energy practitioners and academics, in both Fiji and Mauritius, revealed a lack of degree programs and non-formal training focusing on EASE topics in African and Pacific SIDS regions (L3EAP 2016). In addition, the

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