Energy Access, Security and Efficiency through the L^{3}EAP Project

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Funded by the European Union

Implemented by the ACP Secretariat

EDULINK

ACP-EU Cooperation Programme in Higher Education (EDULINK).
A programme of the ACP Group of States, with the financial assistance of the European Union

Overview of Presentation

- Introduction
- What are SIDS?
- Energy Situation in SIDS?
- What is L^{3}EAP?
- Main outputs of the L^{3}EAP Project

Introduction

Population growth

2006
6.5 billion

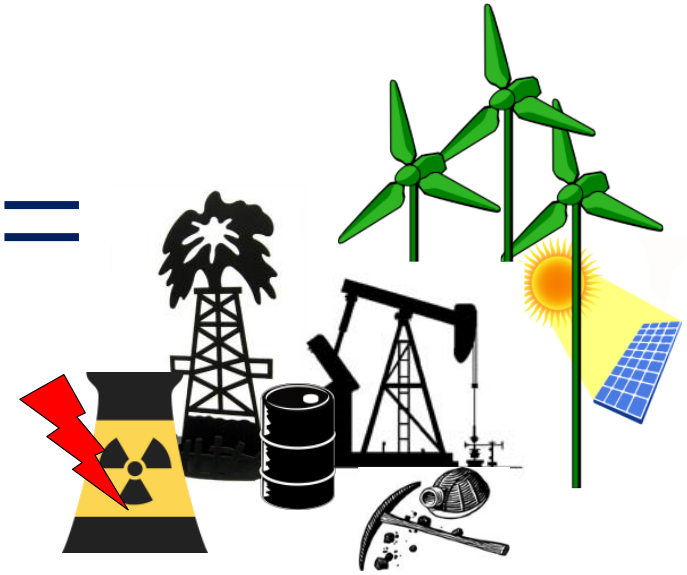
+

GDP rise

Estimated to rise by 3.3 % from 2006 –2030

=

Increased in energy requirement

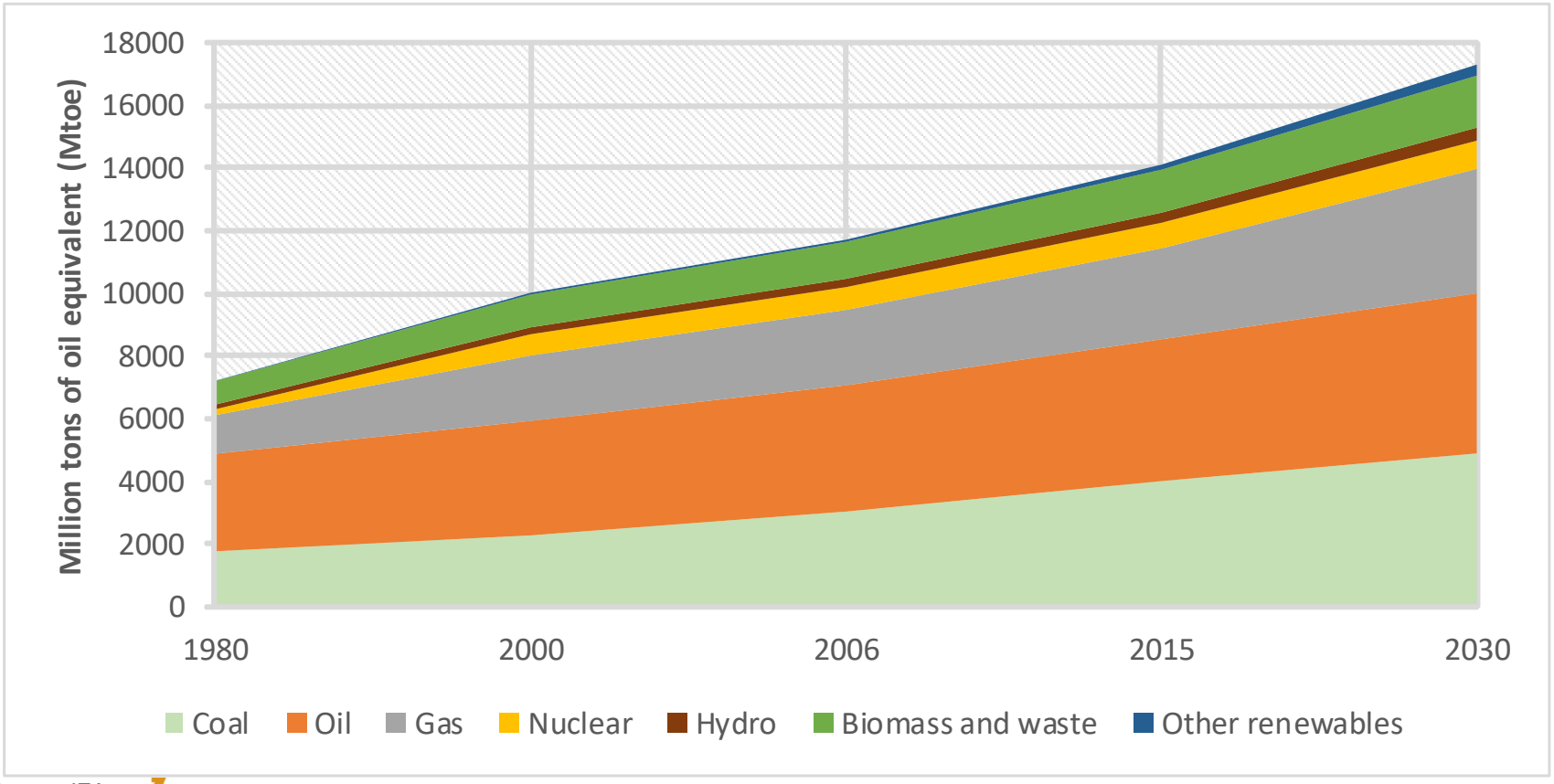


Increase by averagely 1 % per year

2030
8.2 billion

Source: IEA (2008)

World Energy Demand for 2007–2030



Source: IEA (2009)

Small Island Developing States

What are Small Island Developing States (SIDS)?

- Geographically, culturally different
- Similar environmental and economic vulnerabilities and challenges to sustainable development
- Identified in ACP regions

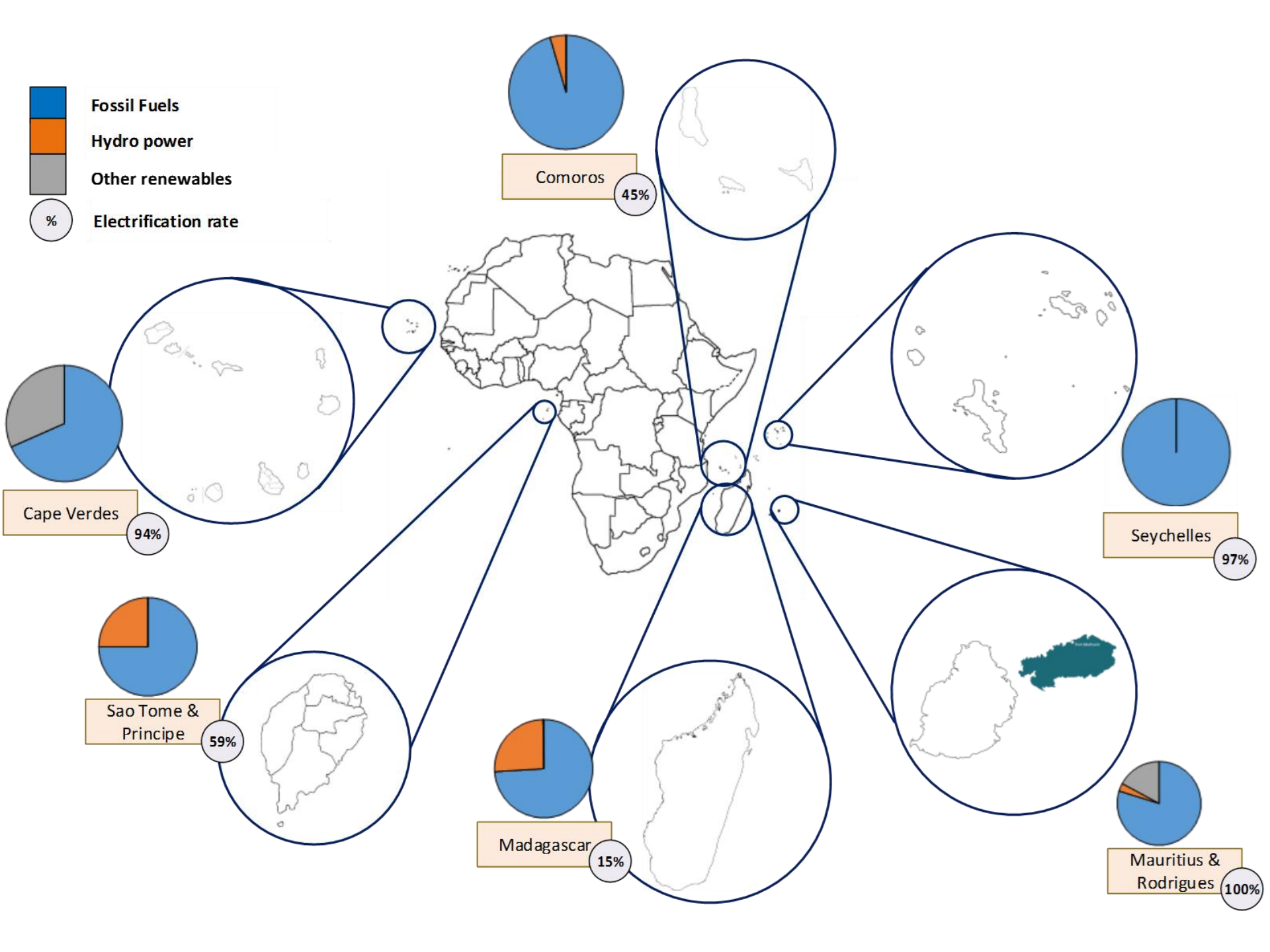
Small Island Developing States

Energy situation in SIDS

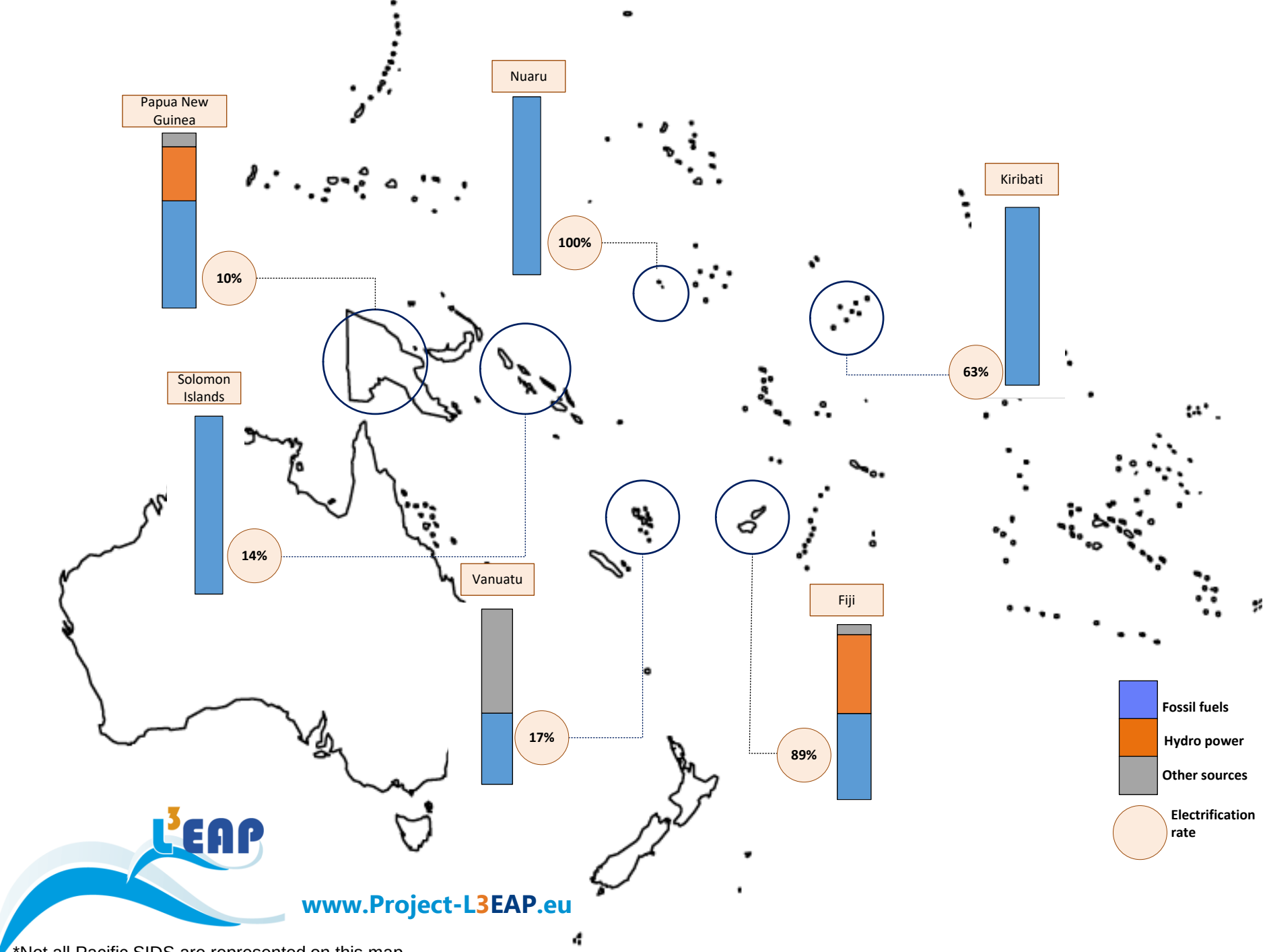
- Even though income level is higher than SSA, electrification rate in some SIDS is low
- Highly petroleum intensive (diesel, fuel oil and some coal)
- Little energy efficiency and conservation measures
- Paradoxically, these SIDS have significant indigenous energy potential in the form of renewable energy

Overview of Energy Situation in SIDS

Energy Mix in African SIDS


Fossil Fuels
Hydro power
Other renewables
%
Electrification rate
Comoros
45%
Cape Verdes
94%
Seychelles
97%
Sao Tome & Principe
59%
Madagascar
15%
Mauritius & Rodrigues
100%

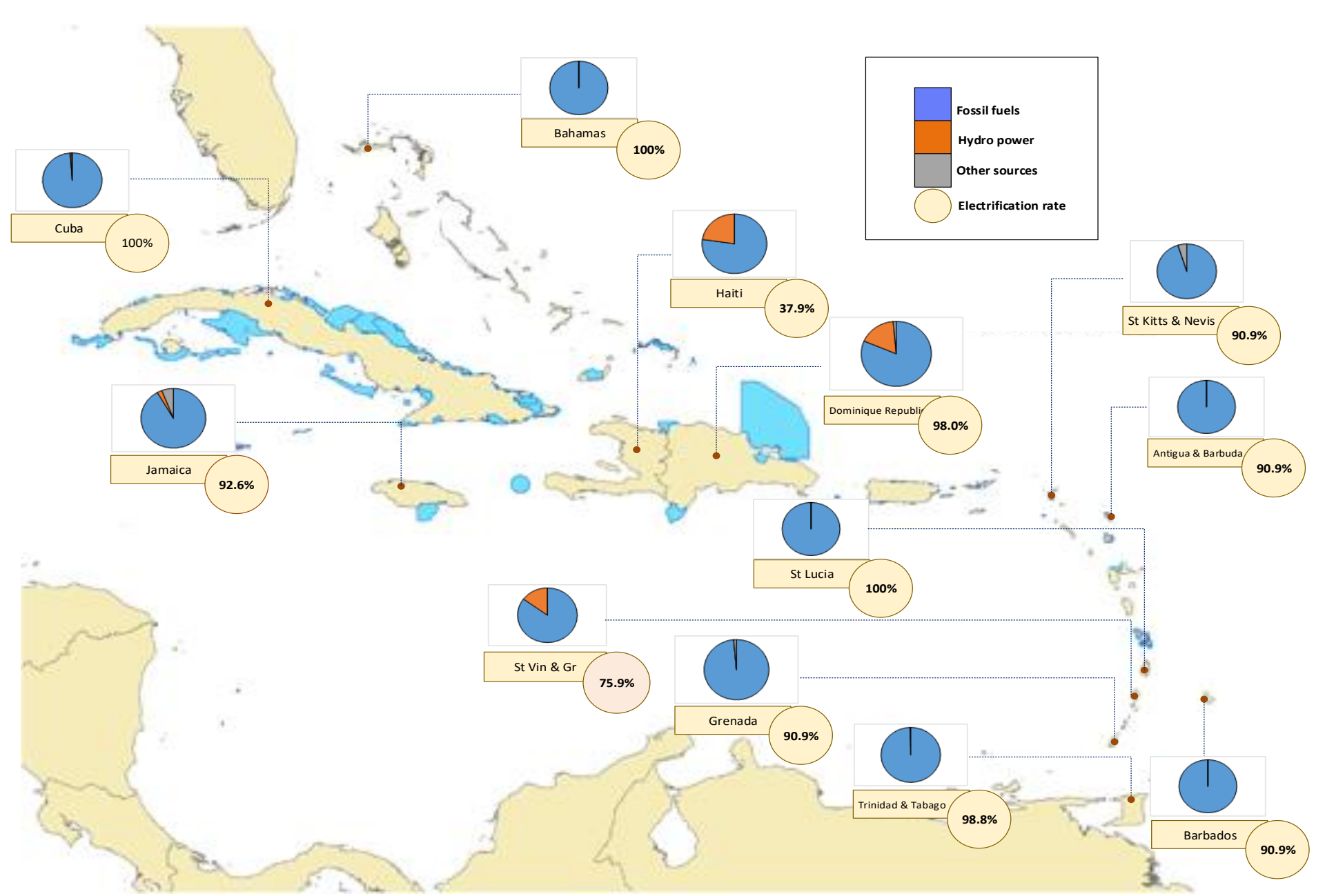
Energy Mix in Pacific SIDS



www.Project-L3EAP.eu

*Not all Pacific SIDS are represented on this map

Energy Mix in Caribbean SIDS

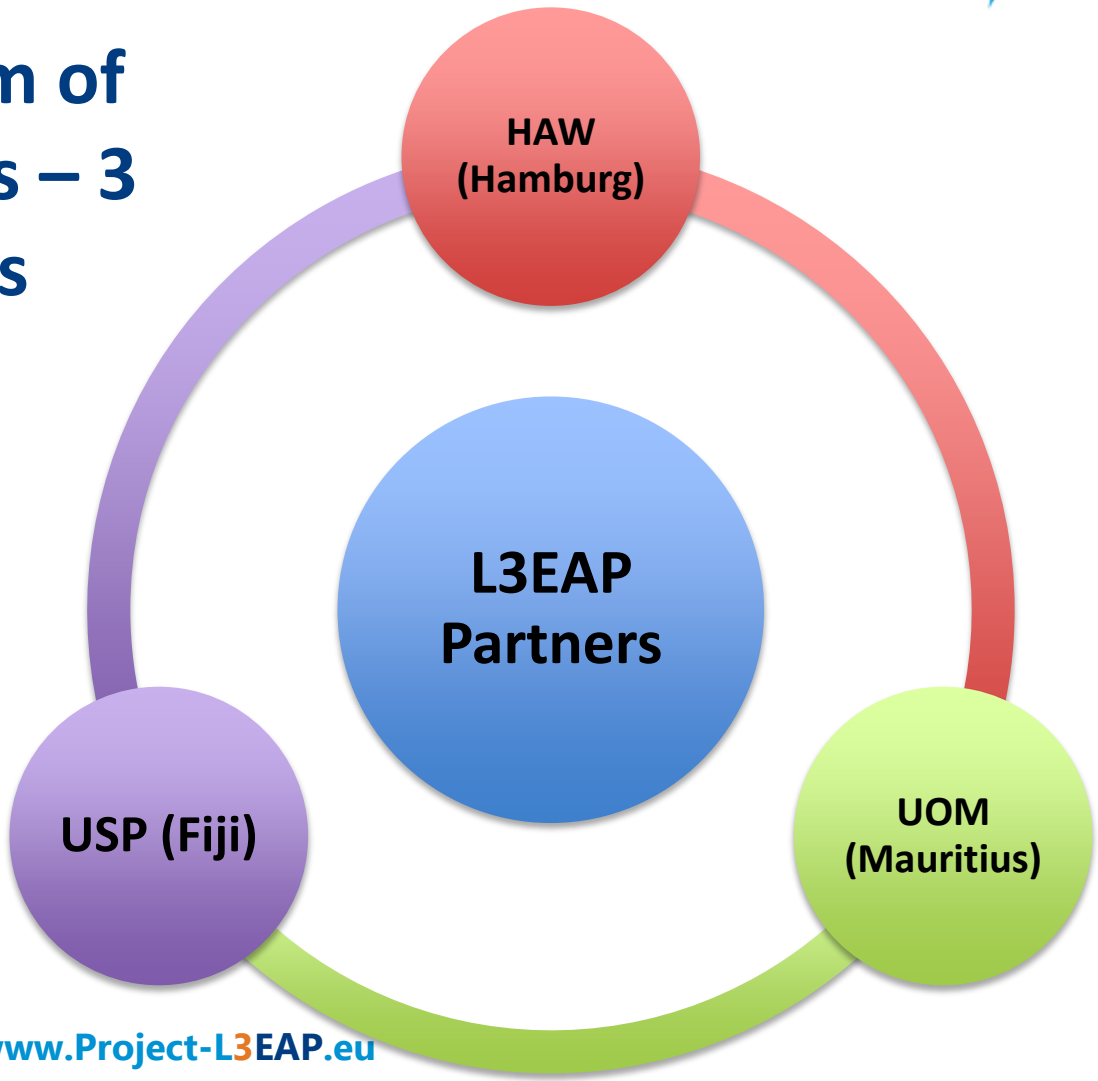

Fossil fuels
Hydro power
Other sources
Electrification rate
Bahamas
100%
Cuba
100%
Haiti
37.9%
Dominique Republi
98.0%
St Kitts & Nevis
90.9%
Jamaica
92.6%
Antigua & Barbuda
90.9%
St Lucia
100%
St Vin & Gr
75.9%
Grenada
90.9%
Trinidad & Tabago
98.8%
Barbados
90.9%

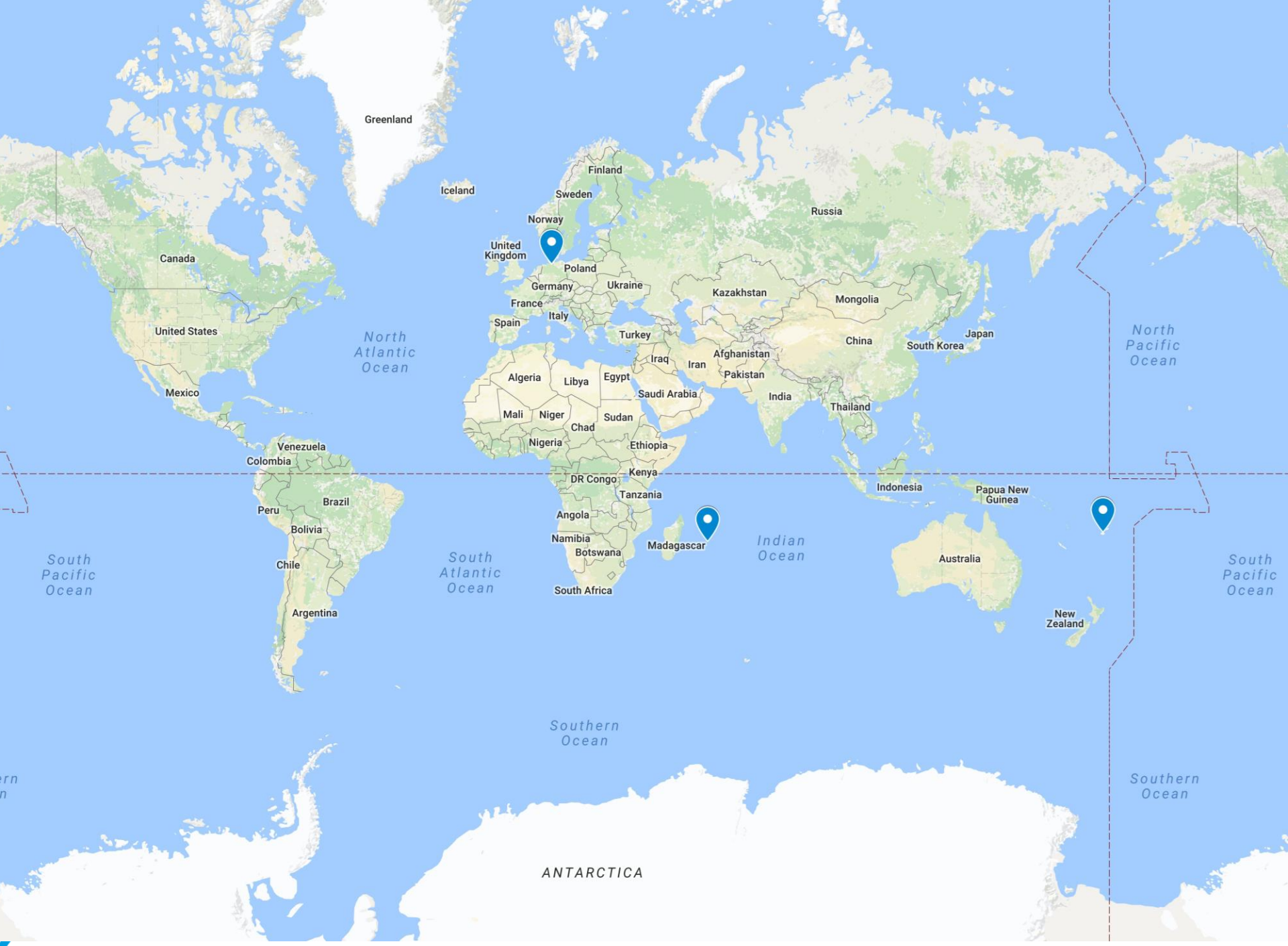
L³EAP – Lifelong Learning for Energy Access, Security and Efficiency in African and Pacific Small Island Developing States

- Funded under ACP-EU Cooperation Programme on Higher Education (EDULINK)

- A programme of the ACP Group of States, with financial assistance of the European Union (2013–2017)

Consortium of universities – 3 partners




Greenland
Iceland
Finland
Sweden
Norway
Russia
United Kingdom
Canada
Poland
Germany
Ukraine
Kazakhstan
Mongolia
France
Italy
Spain
United States
North Atlantic Ocean
Turkey
China
Japan
South Korea
North Pacific Ocean
Iraq
Afghanistan
Iran
Pakistan
Algeria
Libya
Egypt
Saudi Arabia
India
Thailand
Mexico
Mali
Niger
Sudan
Chad
Nigeria
Ethiopia
Venezuela
Colombia
Kenya
DR Congo
Tanzania
Indonesia
Papua New Guinea
Brazil
Peru
Angola
Bolivia
Namibia
Madagascar
Indian Ocean
Botswana
Australia
South Pacific Ocean
Chile
South Atlantic Ocean
South Africa
South Pacific Ocean
Argentina
New Zealand
Southern Ocean
Southern Ocean
ANTARCTICA

Aims and Objectives

- To develop labour market oriented lifelong learning concepts for the education to meet the challenges of energy supply
- To increase the academic and management capacity of university staff to modernize their educational and research programmes and activities so as to build capacity to foster energy security and enhance energy efficiency
- To establish a long-term partnership and network between European and ACP universities

- **Work Packages**

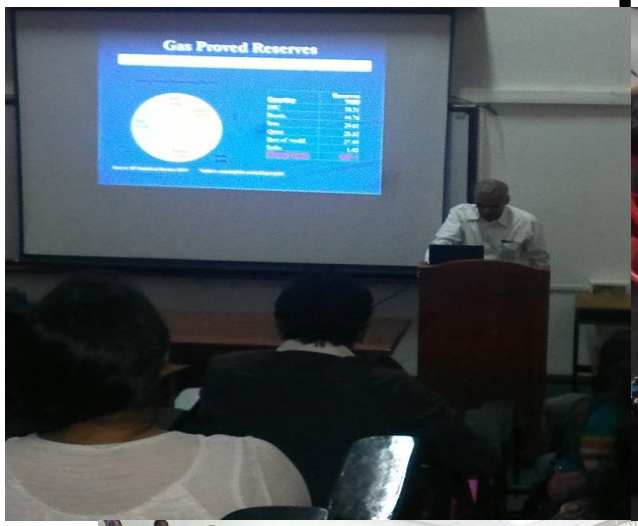
  - WP1: Management & Monitoring of the project
  - WP2: Baseline Study - Needs for Life Long Learning in the energy sector
  - WP3: Life Long Learning (LLL) Course Development
  - WP4: International Pilot Teaching Modules
  - WP5: University Staff Capacity Building
  - WP6: Dissemination, Networking and Technology Transfer

LifeLong Learning for Energy security, access and efficiency in African and Pacific Small Island Developing States

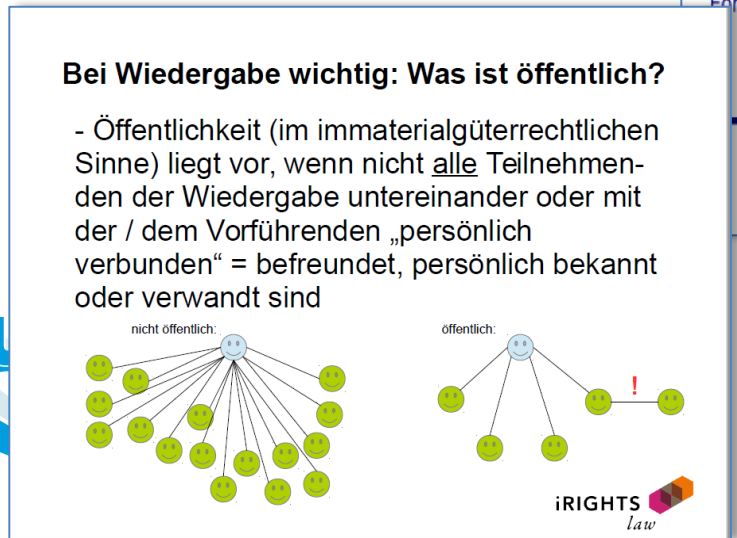
Main outputs of the L³EAP Project

10 locals workshops in all – 3 in Fiji

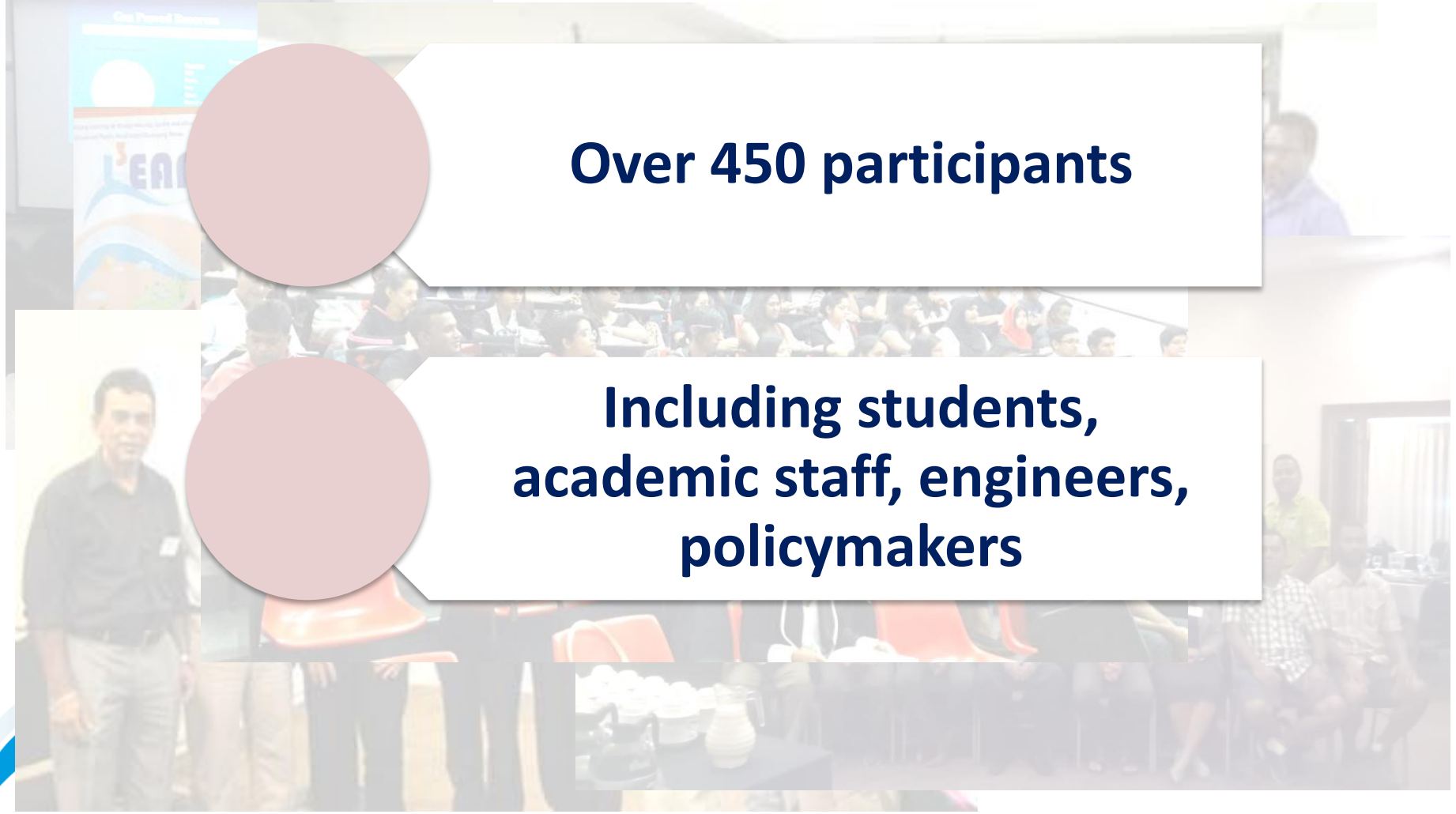
10 locals workshops – 4 in Mauritius



10 locals workshops in all – 3 in Germany



10 locals workshops in all



Over 450 participants

Including students, academic staff, engineers, policymakers

4 International Conferences and Workshops

– Mauritius – July 2015

- **4 International Conferences and Workshops**
  - Hamburg – Dec 2015

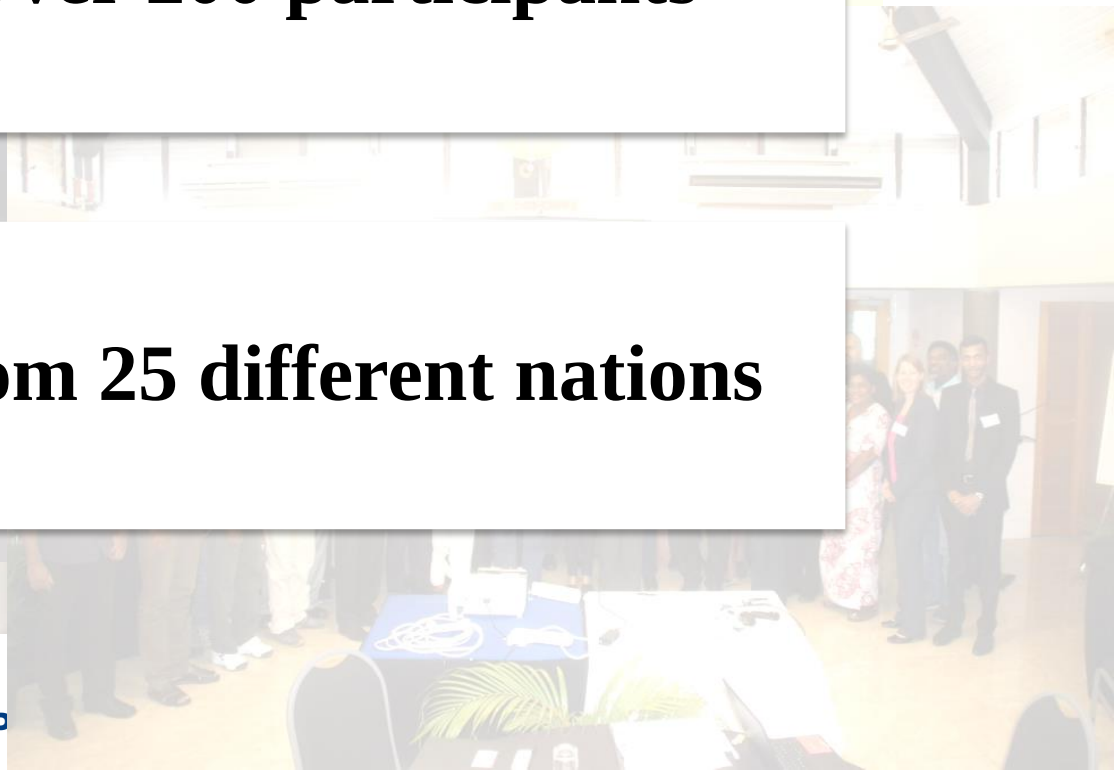
- **4 International Conferences and Workshops**
  - Lausanne, Switzerland – May 2016

- **4 International Conferences and Workshops**
  - Lautoka, Fiji – July 2016

- **4 International Conferences and Workshops**

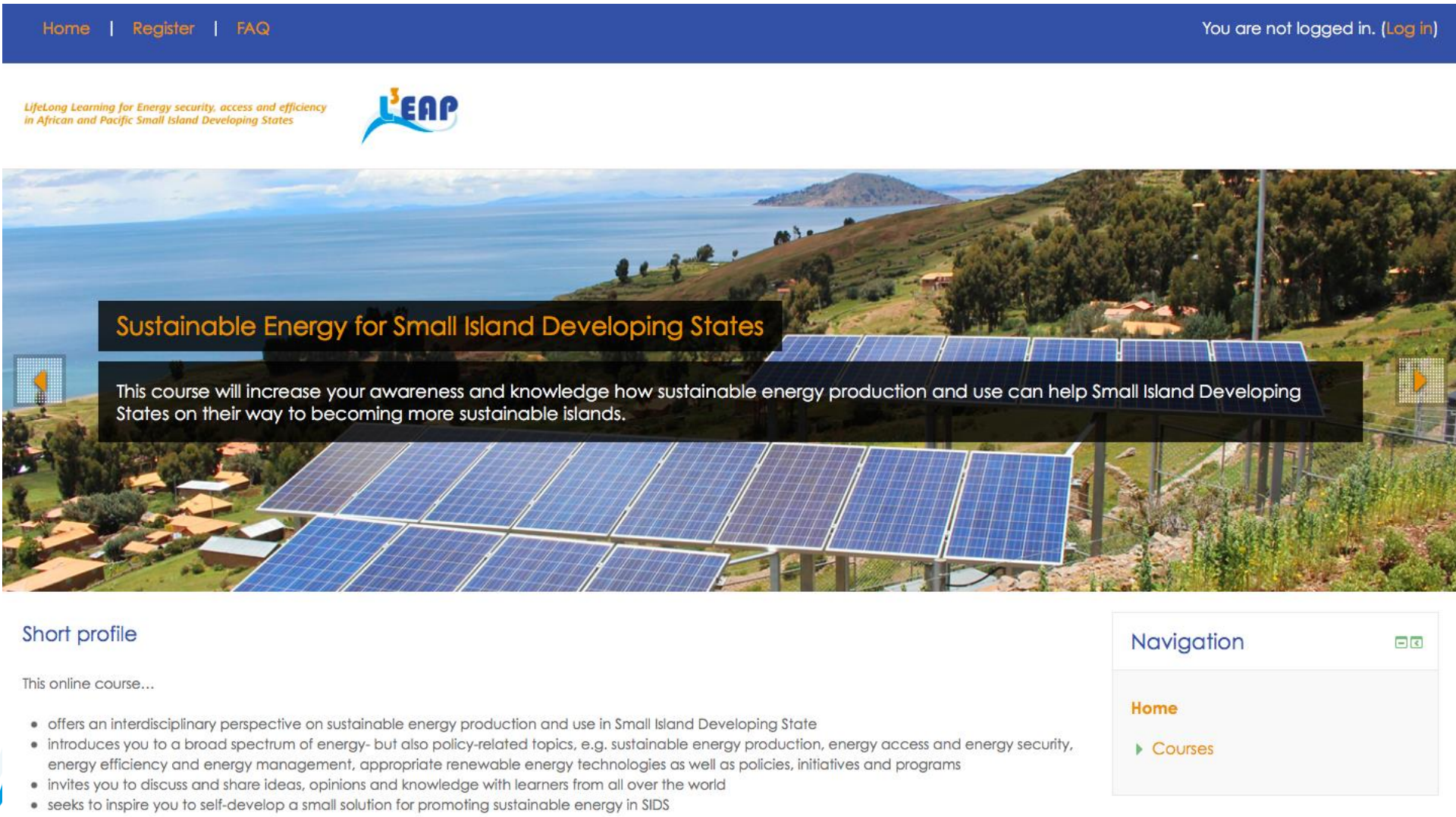
Over 200 participants

From 25 different nations



LifeLong Learning for Energy security, access and efficiency in African and Pacific Small Island Developing States

- **Online LLL course – Sustainable Energy for SIDS**



COURSE IS BROKEN OF 6 CHAPTERS

Introductory Week 1: Energy

Forum: 1 Pages: 6 Book: 1 Quiz: 1 Choice: 1

Progress: 0 / 2

Week 2: Sustainable Energy Production

Feedback: 2 Forum: 1 Pages: 8 Books: 2 Quizzes: 2 Workshop: 1 Survey: 1

Progress: 0 / 4

Week 3: Energy Access and Security

Forum: 1 Pages: 4 Books: 2 Quizzes: 2

Progress: 0 / 2

Week 4: Energy Efficiency and Management

Forum: 1 Pages: 6 Books: 2 Quizzes: 2

Progress: 0 / 2

Week 5: Renewable Energy

Forum: 1 Pages: 7 Books: 2 Quizzes: 2

Progress: 0 / 2

Week 6: Policies, Initiatives and Programs

Forum: 1 Pages: 4 Books: 2 Quizzes: 2

Progress: 0 / 2

EACH CHAPTER IS COMPOSED OF LEARNING MATERIALS AND OTHER PEDAGOLOGICAL TOOLS

Week 5: Renewable Energy

Your progress

Dear Learner,

Welcome to this fifth week of our online course. In this module "Renewable energy technologies" you will:

- be introduced to the concept of appropriate, sustainable technologies
- learn how to identify appropriate renewable technologies in a given (SIDS) context
- explore different types of renewable systems and their application in SIDS
- understand that technical solutions alone do not guarantee success unless they are designed for markets

Enjoy this fifth learning week - and let's share with us in this week's discussion forum what kinds of appropriate technologies and/or proofs of concepts you might have identified for your SIDS.

1. DISCUSSIONS AND VIEWS OF PARTICIPANTS ON DIFFERENT SUBJECTS

2. VIDEOS FROM EXPERTS FROM SMALL ISLAND DEVELOPING STATES

Video #5.1.b: Renewable Energy

Prof Bernd Delakowitz, University of Zittau/Görlitz, Germany, presents inspiring examples of appropriate renewable energy projects from SIDS, highlighting how distinctive opportunities were seized. By contrasting SIDS-specific constraints with examples from other regions, it is suggested that only micro-scale solutions can tackle micro-scale problems.

Video #5.2.a: Renewable Energy

The design of a renewable energy solutions depends heavily on the local context. Prof Delakowitz argues for decentralized systems to address energy access needs and highlights the benefits and opportunities of combined small-scale systems for energy security and stable grids.

Video #5.2.b: Renewable Energy

Prof Delakowitz explains the relevance of business plans and collaboration for the implementation of renewable energy technologies or renewable energy programmes. A point is made to pay attention to sustainability aspects which – if not considered from the beginning on - can lead to undesirable outcomes.

3. TRAINING BOOKLETS

Renewable Energy - training booklet Part 1

Part 1 of this week's booklet reviews the main perspectives that matter when we seek to identify appropriate sustainable technologies.

Renewable Energy - training booklet Part 2

Part 2 of this week's booklet illustrates the core questions that need to be answered to identify the appropriate technology in a given context. Moreover, a set of large-scale renewable energy projects are showcased, illustrating the interplay of assessing local needs, assessing the local context and the prevailing potential for renewable energy to determine and implement the most appropriate technology.

made to pay attention to sustainability aspects which – if not considered from the beginning on - can lead to undesirable outcomes.

4. QUIZES TO TEST PARTICIPANTS' UNDERSTANDING

Quiz 5.1

Here, you can find a set of quiz questions that allow you to test what you learned so far in this module.

Quiz 5.2

Here, you can find a set of quiz questions that allow you to test what you learned so far in this module.

5. WEEKLY ASSIGNMENTS ON A PARTICULAR TOPIC

Deliverable Week 5

Choose suitable sources of renewable energy and corresponding technologies appropriate in your SIDS context (use the SIDS you chose in Module 1).

„Sustainable Energy in SIDS“, from 26 July to 11 September 2016

- 2 coordinators, 4 teachers, 9 tutors
- 1.008 course participants
- 20 videos
- training booklets
- case studies
- quizzes + assignments
- interaction
- collaboration
- discussions
- peer review

Completion of online course - learners‘ voices

PACIFIC / PNG: “(….) The course was very helpful. I just started a mini hydropower scheme proposal for my village! Hope I secure funding. .”

AFRICA / Madagascar: “The course helped me a lot both on energy but also on the method of teaching. Thank you to all the team who organized this course and I would like to thank those who have corrected me.”

PACIFIC / Sri Lanka: “Thank you very much to the course coordinating team for their great support throughout this period. I could get a sound idea about SIDS with their energy issues and renewable developments. Also it improved my knowledge in RE technologies. The e-learning platform is well organized and convenient for learning.”

AFRICA / Mauritius: “I have been able to apply the knowledge obtained during these weeks in my day to day activities. (…) The endeavor to make our island a sustainable one has always been here but with the help of you and your team, we have already started the journey.

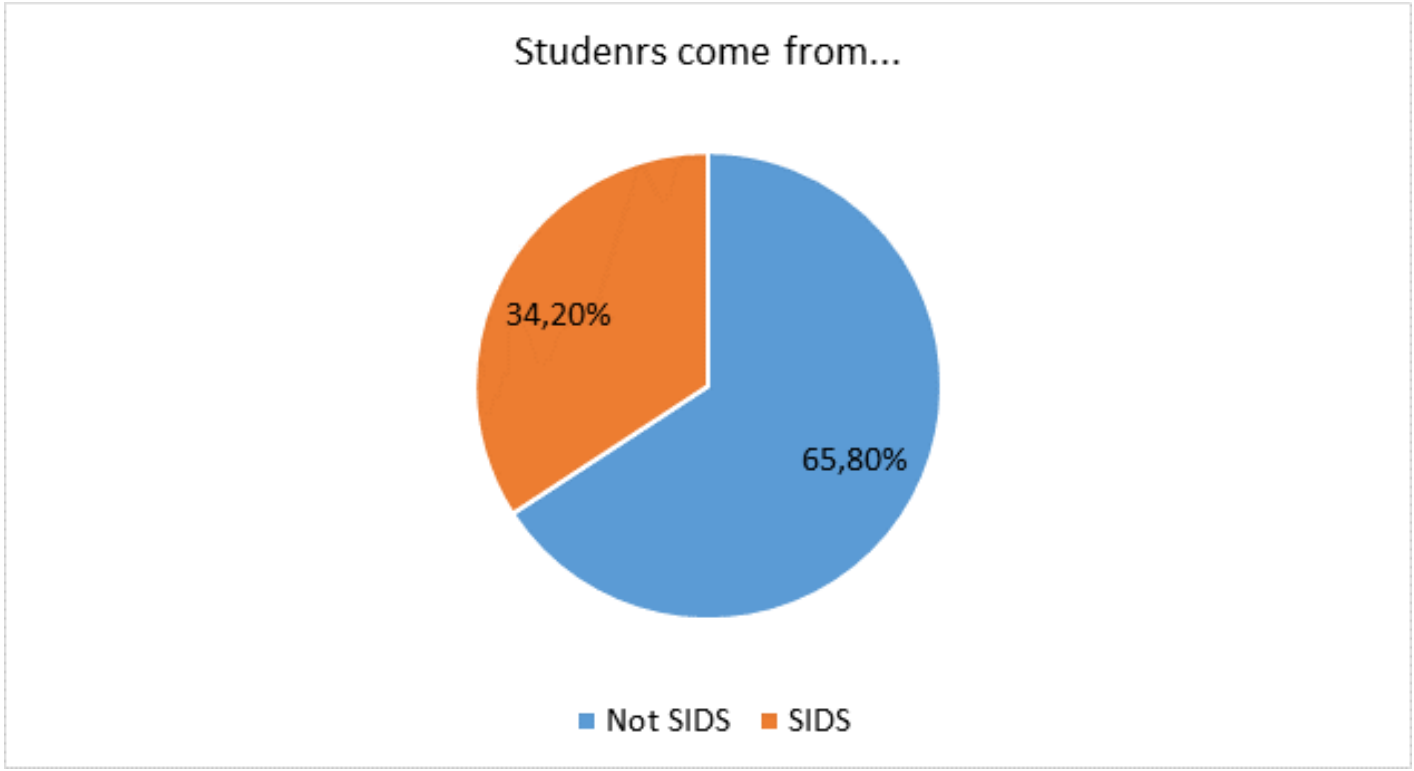
AFRICA/ Mauritius: “My knowledge on energy and SIDS have for sure been increased. I really liked the way the course was modeled (videos, training booklets, DISCUSSION *the real deal; where better understanding and more information were found*, assignments). I've learnt a lot..”

AFRICA / Tansania: I learnt a lot beyond the course objective, and one of the best knowledge which i received and put into use is the energy auditing which i applied it in my house by identifying all the electronic appliances including electric bulbs, tv set, refrigerator, electric cookers and kettles etc. Then i tried to apply the concept of energy efficiency and energy conservation (…).

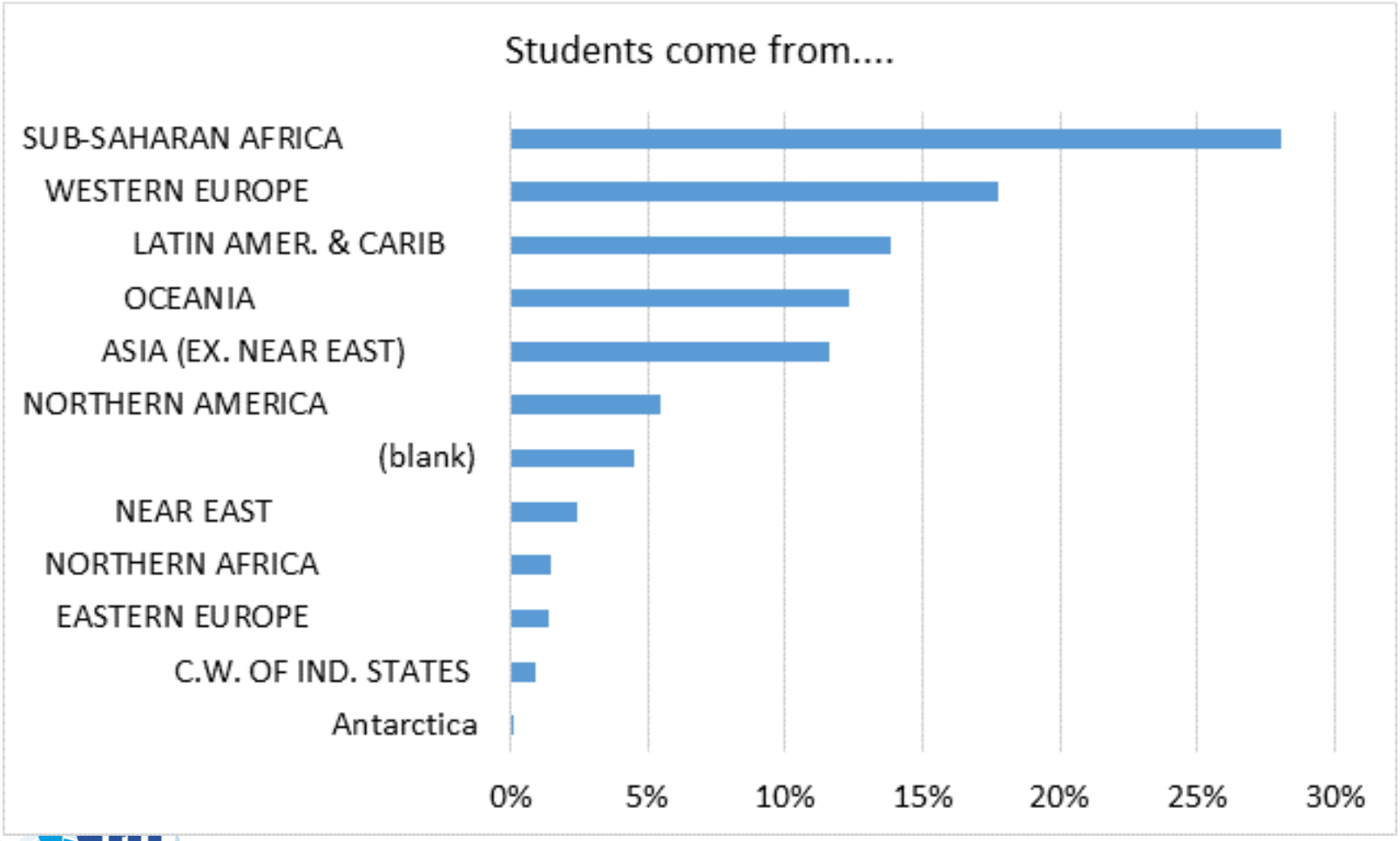
EUROPE / Germany: “Before I attended to this course I never thought about the energy situations of SIDS. Now I am more aware of what is connected to a affordable and stable energy supply for Islands and what are their risks and chances in developing RE. “

CARIBBEAN / Belize: “I will definitely use the knowledge gleaned from the course to assist in moving the energy sector in Belize and the region forward.”

Online LL course Jan 9 – Feb 26



Online LL course Jan 9 – Feb 26



- **Publications – 3 journal papers**

Wolf et al. Braz J Sci Technol (2016) 3:2
DOI 10.1186/s40552-016-0021-8

Brazilian Journal of Science and Technology
a SpringerOpen Journal

CASE STUDY Open Access

Sustainable energy generation and use in SIDS and beyond—introducing the L3EAP online learning approach

Franziska Wolf*, Deisi V. Becker, Walter Leal, Jonathan Krink, Julia Haselberger and Maria Kowald

Abstract

Keywords: Education for sustainability, Lifelong learning, Sustainability, ICT4Dev, SIDS, Capacity-building

Background

Springer

Energy Policy 98 (2016) 650–652

Contents lists available at ScienceDirect

Energy Policy

journal homepage: www.elsevier.com/locate/enpol

Editorial: Special issue on energy policy for the future of Small Island Developing States (SIDS)

1. Introduction

2. Overview of papers

2.1. Understanding the SIDS energy policy landscape

2.2. Approaches to energy policy analysis in SIDS

Energy Policy 98 (2016) 663–673

Contents lists available at ScienceDirect

Energy Policy

journal homepage: www.elsevier.com/locate/enpol

Energy access and security strategies in Small Island Developing States

Franziska Wolf, Dinesh Surroop, Anirudh Singh, Walter Leal

HIGHLIGHTS

- Core elements related to energy access/security in SIDS, barriers and strategies.
- Situational analysis of two SIDS: Fiji and Mauritius.
- Outlining the current energy situation in Fiji and Mauritius.
- Comparison of the role of their energy policies in fostering energy security/access.

ARTICLE INFO

ABSTRACT

Small Islands Developing States (SIDS) are isolated and surrounded by ocean. The generation and use of energy resources are two very important aspects for the development of SIDS. Unfortunately, most of SIDS do not use their potential in respect of energy resources, and they as a result have to depend on the import of fossil fuels in order to meet their energy needs. This increases the overall vulnerability of SIDS as they have to depend on the rising or fluctuating fossil fuels prices. Some SIDS, especially in the geographically dispersed Pacific region, do not have proper access to energy whereas other SIDS struggle more with energy security issue. At the same time, SIDS are most vulnerable to the impacts and effects of climate change, as they are among the ones to be most severely affected in case of natural calamities and sea-level rise.

Drawing on experiences from Fiji and Mauritius, this paper explains core elements related to energy access and security in SIDS, contextualizes and discusses barriers and list some of the strategies that may be used to ensure access to and a continuous supply of energy in SIDS. A situational analysis of two SIDS outlines their current energy situation and compares their energy policies to globally accepted criteria for SIDS policies as well as with each other. It is claimed that the diverging energy performances of Fiji and Mauritius cannot be explained by policies differences. The reasons for the varying energy performances may therefore lie in the administrative and institutional mechanisms used by the two countries in implementing their energy policies. Finally, to enable SIDS to reduce their overall vulnerability and become truly sustainable islands, it is recommended to undertake careful assessments of the particular local contexts under which island energy regimes operate.

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1. Introduction

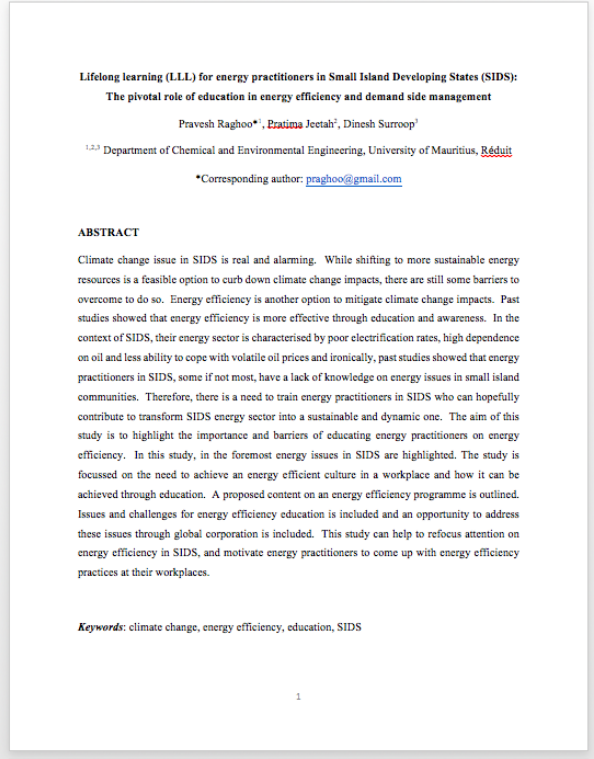
Succeeding and expanding the Millennium Development goals (MDG), a set of 17 Sustainable Development Goals (SDG) provides UN member states since September 2015 with a new set of goals, targets and indicators which will frame policy agendas and influence policies over the next decade (UNDESA, 2015). SDG 7 (SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all) relates to the issues of energy access and security, two issues which are highly relevant especially for Small Island Developing States (SIDS). SIDS, however, face some island-specific challenges that limit their ability to secure the well-being and to provide sustainable livelihoods to current and future generations (Weisser, 2004; Stuart, 2006; Kelman and West, 2009; UNDP, 2011; Feinstein, 2014; UNEP 2014b; UN-OHRLLS, 2015):

- Inherent characteristics of SIDS, e.g. smallness and remoteness, limited resources and a disproportional dependence on international trade, limit SIDS' ability to achieve economies of scale,

Publications – book chapters

LLL for energy practitioners in SIDS: The pivotal role of education in energy efficiency and demand side management

- Raghoo P, Jeetah P, Surroop D, 2017. In: Filho WL (Ed). Climate Change Adaptation in Pacific Countries. Berlin, Springer



Lifelong learning (LLL) for energy practitioners in Small Island Developing States (SIDS): The pivotal role of education in energy efficiency and demand side management

Pravesh Raghoo*[1], Pratima Jeetah[2], Dinesh Surroop[3]

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*Corresponding author: praghoo@gmail.com

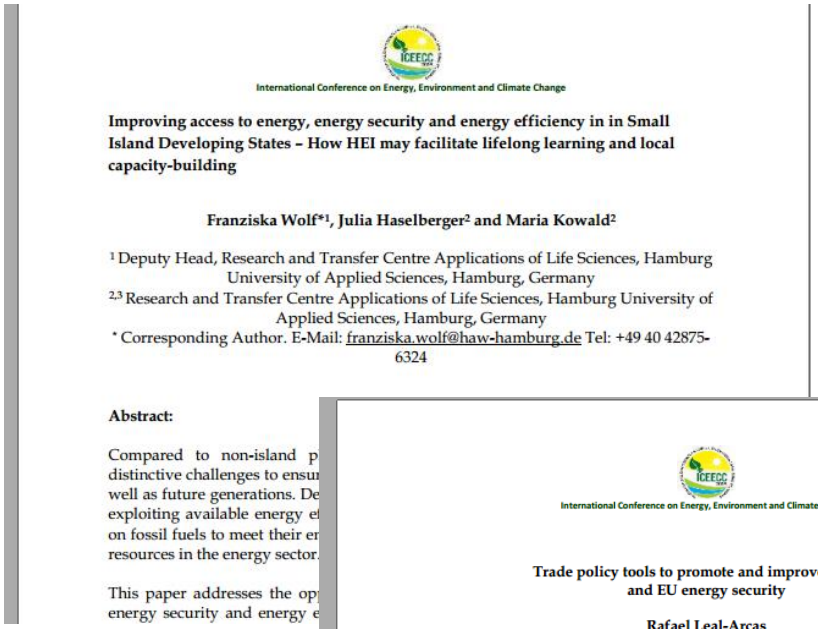
ABSTRACT

Climate change issue in SIDS is real and alarming. While shifting to more sustainable energy resources is a feasible option to curb down climate change impacts, there are still some barriers to overcome to do so. Energy efficiency is another option to mitigate climate change impacts. Past studies showed that energy efficiency is more effective through education and awareness. In the context of SIDS, their energy sector is characterised by poor electrification rates, high dependence on oil and less ability to cope with volatile oil prices and ironically, past studies showed that energy practitioners in SIDS, some if not most, have a lack of knowledge on energy issues in small island communities. Therefore, there is a need to train energy practitioners in SIDS who can hopefully contribute to transform SIDS energy sector into a sustainable and dynamic one. The aim of this study is to highlight the importance and barriers of educating energy practitioners on energy efficiency. In this study, in the foremost energy issues in SIDS are highlighted. The study is focussed on the need to achieve an energy efficient culture in a workplace and how it can be achieved through education. A proposed content on an energy efficiency programme is outlined. Issues and challenges for energy efficiency education is included and an opportunity to address these issues through global corporation is included. This study can help to refocus attention on energy efficiency in SIDS, and motivate energy practitioners to come up with energy efficiency practices at their workplaces.

Keywords: climate change, energy efficiency, education, SIDS

1

Publications – 4 conference presentations



International Conference on Energy, Environment and Climate Change

Improving access to energy, energy security and energy efficiency in in Small Island Developing States – How HEI may facilitate lifelong learning and local capacity-building

Franziska Wolf*[1], Julia Haselberger[2] and Maria Kowald[2]

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* Corresponding Author. E-Mail: franziska.wolf@haw-hamburg.de Tel: +49 40 42875-6324

Abstract:

Compared to non-island p
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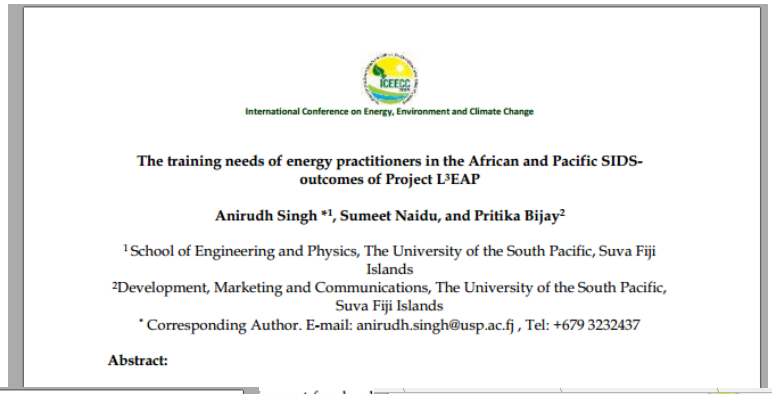
well as future generations. De
exploiting available energy e
on fossil fuels to meet their en
resources in the energy sector.

This paper addresses the op
energy security and energy e



International Conference on Energy, Environment and Climate Change

The training needs of energy practitioners in the African and Pacific SIDS- outcomes of Project L³EAP

Anirudh Singh *[1], Sumeet Naidu, and Pritika Bijay[2]

[1] School of Engineering and Physics, The University of the South Pacific, Suva Fiji Islands
[2] Development, Marketing and Communications, The University of the South Pacific, Suva Fiji Islands
* Corresponding Author. E-mail: anirudh.singh@usp.ac.fj , Tel: +679 3232437

Abstract:

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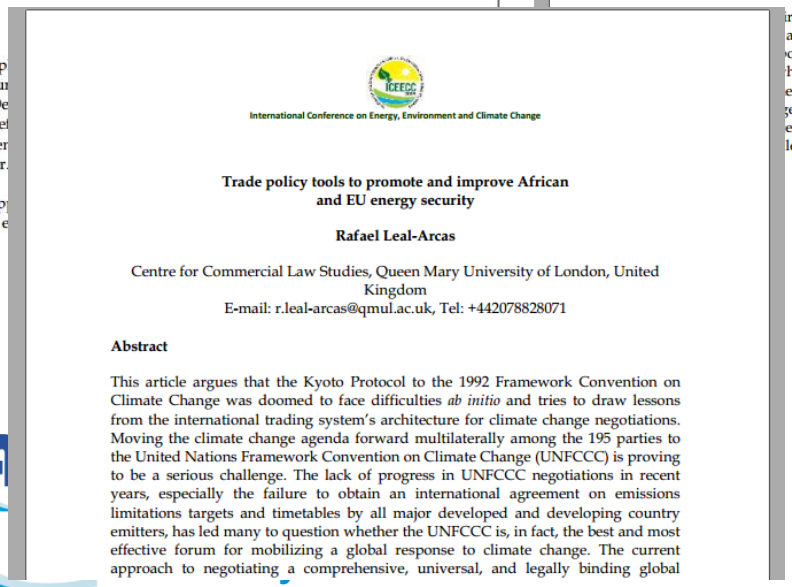

International Conference on Energy, Environment and Climate Change

Trade policy tools to promote and improve African and EU energy security

Rafael Leal-Arcas

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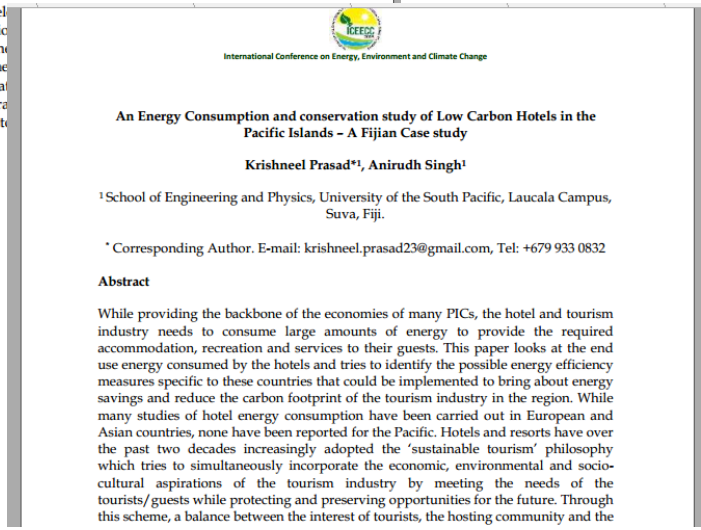
Abstract

This article argues that the Kyoto Protocol to the 1992 Framework Convention on Climate Change was doomed to face difficulties *ab initio* and tries to draw lessons from the international trading system's architecture for climate change negotiations. Moving the climate change agenda forward multilaterally among the 195 parties to the United Nations Framework Convention on Climate Change (UNFCCC) is proving to be a serious challenge. The lack of progress in UNFCCC negotiations in recent years, especially the failure to obtain an international agreement on emissions limitations targets and timetables by all major developed and developing country emitters, has led many to question whether the UNFCCC is, in fact, the best and most effective forum for mobilizing a global response to climate change. The current approach to negotiating a comprehensive, universal, and legally binding global



International Conference on Energy, Environment and Climate Change

An Energy Consumption and conservation study of Low Carbon Hotels in the Pacific Islands – A Fijian Case study

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[1] School of Engineering and Physics, University of the South Pacific, Laucala Campus, Suva, Fiji.

* Corresponding Author. E-mail: krishneel.prasad23@gmail.com, Tel: +679 933 0832

Abstract

While providing the backbone of the economies of many PICs, the hotel and tourism industry needs to consume large amounts of energy to provide the required accommodation, recreation and services to their guests. This paper looks at the end use energy consumed by the hotels and tries to identify the possible energy efficiency measures specific to these countries that could be implemented to bring about energy savings and reduce the carbon footprint of the tourism industry in the region. While many studies of hotel energy consumption have been carried out in European and Asian countries, none have been reported for the Pacific. Hotels and resorts have over the past two decades increasingly adopted the 'sustainable tourism' philosophy which tries to simultaneously incorporate the economic, environmental and socio-cultural aspirations of the tourism industry by meeting the needs of the tourists/guests while protecting and preserving opportunities for the future. Through this scheme, a balance between the interest of tourists, the hosting community and the

Sustainability

- The 1st International Conference on Energy, Environment and Climate Change (ICEECC 2015) was organized under L3EAP project

- 2nd International Conference on Energy, Environment and Climate Change (ICEECC 2017) 5-7 July 2017

CALL *for* PAPERS

2nd INTERNATIONAL CONFERENCE ON ENERGY, ENVIRONMENT AND CLIMATE CHANGE (ICEECC) 2017

Mauritius
5 – 7th
July 2017

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Instructions to Authors	Conference Programme *Coming soon*

BACKGROUND AND AIMS

The **International Conference on Energy, Environment and Climate Change (ICEECC 2017)** is a multi-disciplinary, peer-reviewed international conference on sustainable energy and environment. The conference will focus on energy production and management, green energy, environmental engineering, environmental management, climate change and sustainable development. The conference will provide a forum to:

- Exchange of latest technical information
- Disseminate of the high-quality research results
- Present of the new developments in the area
- Discuss the future global development on energy access, energy security together with the associated environmental impacts.

PROFILE OF PARTICIPANTS

Participants/delegates attending ICEECC 2017 will come from a cross-sectoral range of areas. They are:

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Acknowledgements

- Ms Franziska Wolf
- Dr Pratima Jeetah
- Mr Pravesh Raghoo

Thank you
for
your attention

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