

IMPACT SHEET • SWITCH-ASIA PROJECT
ZERO CARBON RESORTS

Cutting carbon, saving energy, resources and money with appropriate technologies



The *Zero Carbon Resorts* project replaced fossil fuels and improved resource management in the energy-intensive hotel industry



The Challenge

The tourism industry in the Philippines is growing quickly, bringing employment opportunities to the region and strengthening the economy of the country. Tourism has, however, a high demand for energy for guest services, and is responsible for a large amount of CO₂ emissions. Due to the poor electricity supply infrastructure and inefficient appliances wasting energy, energy is one of the highest costs for small tourism businesses. Carbon-neutral energy supply systems, and appropriate local and environmental technology solutions, are required. By increasing energy efficiency, changing peoples' behaviour, implementing green technologies, and using locally available resources, the carbon footprint of tourism can be significantly reduced. This also calls for a revision of environmental policy by the government to help to formalise the changes and to stimulate their replication.

Objective

The SWITCH-Asia project *Zero Carbon Resorts* sought to enable small and medium-sized enterprises (SMEs) in the tourism sector, such as hotels and resorts in Palawan and other parts of the Philippines, to provide their energy services in an efficient, cost-effective, and environmentally sound way through training courses and direct consultations with the companies. Specific objectives included:

- To reduce carbon footprints by increasing energy and resource efficiency and switching to renewable energy resources;
- To increase the availability of energy services;
- To stimulate the local economy by producing and using renewable materials and low-carbon technologies for buildings and appliances;
- To decrease dependence on fossil fuels;
- To provide local engineers with the skills and knowledge, theoretical and practical, to improve the generation and use of energy.



Activities / Strategy

The SWITCH-Asia project *Zero Carbon Resorts (ZCR)* adopted a practical and step-wise approach. First, a baseline analysis of tourism SMEs diagnosed their problems in energy and resource management. ZCR experts suggested solutions for increasing efficiency of appliances and operations, directly in the companies. At the same time, addressing the consumption side of the equation, campaigns targeted the guests in an effort to make their actions more environmentally friendly.



Step-by-step Innovation

Engineers, building and facility managers, environmental consultants, as well as hotel and resort staff were able to increase their capacities and knowledge through a series of training courses. In parallel, local production of renewable materials and green technologies was promoted. The core strategy was showcasing what was possible and feasible, and displaying the procedures and achievements, attracting more businesses to the step-by-step approach for implementing energy and resource efficiency.



“3 R” Approach

To make a change that would both improve resource efficiency and enable a switch to more renewable energy sources, it was crucial to overcome the widespread perception that innovation and change were difficult and expensive. The first step, using low-cost measures to increase efficiency (“reduce”), gave rise to immediate benefits including substantial cost savings. The second step saw technological innovations providing higher levels of efficiency (“replace”): greener and more efficient alternative technologies replaced out-dated and fossil fuel-based solutions, paid for by the savings generated in step one. Finally, an energy autonomous flagship cottage was designed and constructed as a tangible showcase that could be replicated in upcoming developments (“redesign”).



TARGET GROUPS

- Tourism SMEs / local hotels, resorts and restaurants
- Local architects, planners, engineers, practitioners, technical consultants, and students
- Tourists and guests of the hotels and resorts
- Regional and central government

Scaling-up Strategy



Replication via Policy-makers

Palawan has a unique strategic environmental plan (SEP). In order to achieve balance in the plan between development objectives and environmental protection, it presented a clearance system for new tourism developments. Each new resort, guesthouse or hotel, needed official authorisation from the Palawan Council of Development (PCSD), a partner in the project who incorporated the project results into this clearance system. The *Zero Carbon Resorts* project had two entry points. The integration of zero carbon technologies was to become mandatory in future tourism developments. During the course of the project, zero carbon topics had already been included in the special terms and conditions issued for individual resorts that applied for approval. Additionally, the project sought to integrate indicators for energy and resource efficiency into the monitoring system of the SEP that ensured hotels, resorts or other tourism projects were implemented in appropriately designated zones and pursuing sustainable development objectives.



Replication via Peer Clusters

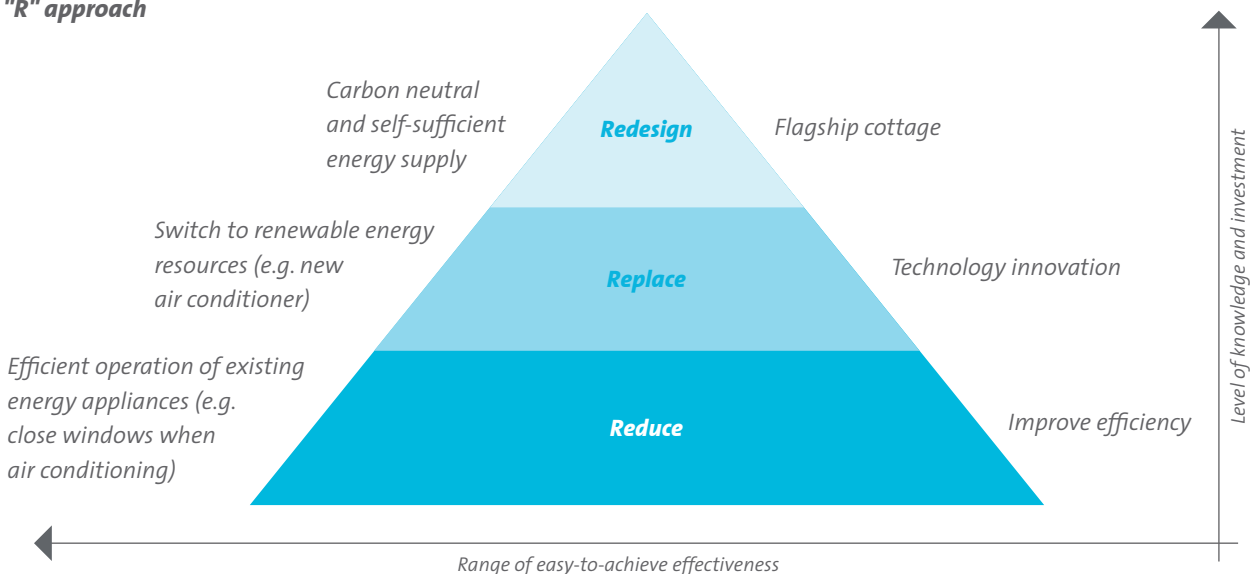
The project grouped the front-runner Palawan tourism establishments into a Frontier Group (FG). These 30 hotels and resorts served as demonstration SMEs. All FG members undertook energy audits, and received instructions for improvement as a result. Their success stories were disseminated in other regions through handbooks and instructional videos. With peer-to-peer communication, hotel and resort owners informed each other of their achievements and improvements. These SMEs also functioned as the main intermediaries between the green technology providers and energy service users (tourists and staff).



Replication via Outreach

The ZCR project constituted strategic alliances with key communities to in order to build synergies with them. It set up the *Zero Carbon Resorts* virtual platform with two components: one for the public and one for members only. The public site served as a platform for information and dissemination. The member site was built on the *Zero Carbon Resorts* database where the participating SMEs could register and enter data on their own consumption of resources. The users could discuss topics through the forum. Hotels, resorts, and restaurants, who wanted to improve the quality of their energy services and to reduce operation costs, could register on the website to obtain useful information or put questions to the experts.

3 "R" approach



Results



Environmental Performance Improved

Energy consumption among hotels and resorts decreased as a result of the project activities. In some cases, the quality of energy services improved when appropriate measures were taken, such as changing the roof colour, proper sealing of air-conditioned rooms, or using renewable energy generation. Such measures led to remarkable savings. The savings were redirected to investment in renewable energy facilities, or for appliances with higher energy efficiency. Appropriate technology solutions like solar water heaters, biogas digesters, waste heat recovery, and improved cooking stoves were developed to be produced locally, at an affordable cost.



Consumption Considered

In parallel to improvements on the demand side, the project targeted hotel guests with awareness-raising campaigns to encourage changes in energy patterns and behaviour of users in an interactive manner.



Capacity of Local Engineers Established

Local engineers, technical consultants, architects, student and lecturers of Palawan State University were qualified and now act as intermediaries to the tourism industry. They were trained in the theories of energy supply and demand, renewable energy sources and technologies, and building solutions with natural ventilation and lighting, etc. A number of trainees won research funds and competitions. Schools and universities are important



We joined the Zero Carbon Resorts project in the quest for a sustainable environment, by lowering our carbon footprint without compromising the comfort and satisfaction of our guests. I am very grateful to the project for sharing its expertise and knowledge on the technical aspects of going green, and on how to make our business more profitable by simply going green. We've already saved nearly 40% of our operational cost by implementing the practical solutions learned from the technical guidance and various training sessions. I encourage other resorts to follow, not only for a better environment, but also for better business returns.

Mr. Butch TAN,
Owner of Puerto Pension and
Daluyon Resort, Member of Frontier Group



Not only small and medium-sized hotels and resorts, but also tourists, local residents, technical and design experts, professionals in the energy and the tourism sectors, as well as governmental bodies and NGOs in the Philippines were all involved in the Zero Carbon Resorts Project. Our common goal was to conserve and recover environmentally sensitive tourist destinations and at the same time to enable businesses to be sustainable. Maintaining the balance between the fundamental aspects of human life, the environment, and society is the essential role of the appropriate technology that the project was supporting.

Dr. Robert Wimmer,
Project Manager,
Zero Carbon Resorts Project



multipliers and are fast adopting the zero carbon practices, in particular Palawan State University, West Palawan University, and Sabang elementary school. Technical solutions were integrated in the curricula. Even the national science training programme (NSTP) integrated Zero Carbon Resorts topics.











Tangible Showcases

During the “redesign” phase, a carbon neutral cottage was designed and constructed, to showcase sustainable building concepts and energy systems using appropriate technology solutions. The project’s added value came in its acknowledgement of the local context and the fact that solutions were tailored accordingly.



Impact in Numbers

<p>Economic Impact</p> 	<ul style="list-style-type: none"> • By implementing SCP practice, SMEs saved 241 878 143.41 PHP / year (ca. €4.1 million / year) • Through the project, 103 new green products and technologies were compiled in the Green Technology Catalogue (GTC) from 54 Green Product Suppliers in the ZCR Supplier's Network. • Additional business opportunities due to SCP practices implemented: <ul style="list-style-type: none"> • Increase in occupancy rate while maintaining operational costs • In 2012, one of the FG member won the ASEAN Green Hotel Award • In 2014, 3 out of 5 awardees of the ASEAN Green Hotel Award from the Philippines were members of the project • Increased number of green suppliers involved in the project due to increase of interest from SMEs in energy efficient and environment friendly products. • Types of new green products in the market: absorption heat pumps and chilling equipment, more robust LEDs, efficient air conditioning units and other appliances, saltwater chlorinator for pool disinfection, low wattage ceiling fans, PV panels, solar tubular lightings, rain water harvesting. 	<p><i>(Climate Benefits continued)</i></p>	<ul style="list-style-type: none"> • Types of GHG mitigation measures implemented by SMEs include installation of renewable energy such as solar thermal and PV, sustainable building construction, reuse of recyclables and use of energy-saving lighting.
<p>Environmental Impact</p> 	<ul style="list-style-type: none"> • Reduction of resource use and waste outputs through SCP measures: <ul style="list-style-type: none"> • Water: 57.9% or 476 824 036.43 Litres • Fuel: 56.4% or 1 776 733.73 Litres • 60% reduction in waste water discharge • 33.3% reduction in solid waste • Types of SCP measures implemented, e.g.: <ul style="list-style-type: none"> • Installation of renewable energy, such as solar • Installation of rain water harvesting • Peak load management to reduce fuel consumption • Installation of low flow showerheads and faucets to reduce water consumption • Use of more water-, fuel-, and energy-efficient equipment and appliances • Sustainable building construction 	<p>Green Finance</p> 	<ul style="list-style-type: none"> • Several green loan schemes for SMEs were introduced by the bank working together with the project. Technical audit recommendations were provided for SMEs to apply for green loans in the implementation of green technologies.
<p>Social Impact</p> 	<ul style="list-style-type: none"> • Health and safety risk reduction measures introduced in SMEs include more environment friendly cleaning products, improved ventilation at working places and fire hazard preventions. • The benefits to local communities include efficient cooking stoves which were introduced to small resorts to improve workers' health. The design is low-cost and ready for self-building/small scale production. Also, the increase in tourist arrivals which can positively affect the local economy. 	<p>Target group Engagement</p> 	<ul style="list-style-type: none"> • Number of stakeholders involved: 1 144 individuals from SMEs, 500 SMEs registered to ZCR, 60 individual promoters; 61 engineers and consultants, planners, architects and planners; 375 guests participated in the survey, 3 universities, 2 national government agencies that were Department of Tourism and its regional offices and the Palawan Council for Sustainable Development (PCSD); 3 NGOs, 1 bank, local government units, local hotels and resorts associations. • Types of stakeholder involvement included technical training, site audits, briefing session, conferences, exhibits, study tour in Spain, knowledge materials (1 208 printed handbooks, 120 technical videos), surveys, website and social medias, 2 251 downloads of e-copy of the ZCR knowledge materials
<p>Climate Benefits</p> 	<ul style="list-style-type: none"> • 52.2% reduction in energy use and 54.3 % reduction in GHG emissions • Use of 785 356.58 kWh renewable energy sources 	<p>Policy Development</p> 	<ul style="list-style-type: none"> • During the project's implementation, 1 National Resolution on environmental points in the Accreditation Standards of Department of Tourism, 1 Palawan Provincial Resolution, 1 City Resolution of Puerto Princesa, and 1 Strategic Environmental Plan were produced. This resulted in the reform of hotel accreditation standards including environmental point scheme by the Department of Tourism (DOT). • One policy recommendation was produced: The City and Provincial Resolution in Palawan urging tourism-related companies to adopt ZCR measures. • Another type of policy changes the project contributed was the mandatory participation in the ZCR project for new resorts, hotels or any tourism-related establishment when they apply for SEP clearance in Palawan.
		<p>Europe-Asia Cooperation</p> 	<ul style="list-style-type: none"> • Events organised with European and Asian participants: 6 local exhibitions of ZCR Project and Appropriate Technologies, 13 Participation Local Conferences/ Forum/ Workshop, and 10 International Presentation / Seminars. • Five memorandum of understanding (MoU) were signed between GrAT - DOT & TIEZA, GrAT - GIZ, GrAT - Coron/Boracay/Negros Initiatives, GrAT - Palawan State University, and GrAT - MyShelter Foundation.



Legend

- Eligible countries where SWITCH-Asia projects are implemented
- Eligible Asian countries for the SWITCH-Asia programme
- Non-eligible Asian countries for the SWITCH-Asia Programme

Project implementation area

- City
- Region
- Country

The boundaries shown on this map do not imply on the part of the European Union any judgment on the legal status of any territory or the endorsement or acceptance of such boundaries.

OBJECTIVES

The SWITCH-Asia project *Zero Carbon Resorts* sought to enable tourism SMEs, such as those managing hotels and resorts, to provide their energy services in an energy efficient, cost effective, and environmentally sound way.

DURATION



PROJECT TOTAL BUDGET

EUR 2 108 859 (EU contribution: 80%)

PROJECT CONTACT



Dr. Robert Wimmer
GrAT Center for Appropriate Technology
Wiedner Hauptstrasse 8-10
A-1040 Vienna, Austria

Telephone: +43 (0)1 58801 49523
Fax: +43 (0)1 58801 49533
Email: ZCR@grat.at

www.zerocarbonresorts.eu

PARTNERS



Center for Appropriate Technology (GrAT), Austria



Palawan Council for Sustainable Development (PCSD), Philippines



Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT) Plataforma Solar de Almería, Spain



Asia Society for Social Improvement and Sustainable Transformation (ASSIST), Philippines