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## Unlocking the Human Dimension of Energy Efficiency and Conservation: The Case of Tourist Accommodation Providers in Coron, Palawan in the Philippines

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### Abstract

In the light of mounting concerns related to climate change, energy efficiency and conservation (EEC) presents a cost-effective strategy that can propel the Philippines' energy-intensive tourist accommodations sector towards sustainability. This warrants the examination of barriers that prevent capture of EEC potentials and the identification of factors that will drive adoption at a socially-optimal rate.

Coron, Palawan's small and medium enterprise (SME) dominated hospitality sector was studied using post-only correlation design. Mann-Whitney U test was used to compare perceptions, practices, energy awareness, and willingness to participate in EEC between members of the Zero Carbon Resorts project; a voluntary program aiding tourism SMEs reduce energy consumption (Case Group), and non-members (Control Group). Pearson Chi-Squared test was employed to determine factor association with membership in the program, while Ordered Logistic Regression was used to determine participation drivers in EEC.

Research revealed vast uncaptured energy-savings potential compounded with the absence of EEC laws targeting this sector. The study found that: (1) provisions for amenities, facilities and support services for guests; (2) high dependence on the grid and the prevalent use of generators; (3) low market penetration of renewable energy (RE) and energy-efficient technology; and (4) lack of knowledgeable personnel within organizations contribute to high energy expense within this sector. Despite having very little difference in perceived energy savings, energy awareness and self-reported energy-saving practices vary widely. Policy and institutional changes are required to address: (1) perceived high cost of energy-efficient technology and knowledge gap, (2) put in place necessary regulations; and (3) incentivize EEC to increase its adoption.

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## 1. Background

According to UN HABITAT (2012) “energy is all pervasive; for everything we produce or consume require energy.” Since “80 percent of our energy supply come from fossil fuels – a finite resource that is getting scarcer, increasing in price and contribute largely to global warming” (UN HABITAT 2012) economic expansion and population growth will further drive climate change under business as usual (BAU) scenario.

Widespread and irreversible impacts of global warming is expected at the end of the 21<sup>st</sup> century if no mitigation efforts are added beyond those that are currently in place (IPCC 2014). It is also estimated that adaptation measures to climate change such as building flood defenses, transporting water for agriculture and rebuilding infrastructure affected by climate change will cost the global community more than USD 200 billion per annum in 2030 (IIED 2009 cited in UN HABITAT 2012). In order to avoid this, Pew Center on Global Climate Change (2009) suggests that integrated and deliberate mitigation efforts be taken for “global greenhouse gas (GHG) emissions to peak no later than 2015 and decline rapidly thereafter to a level between 50-85 percent below 2000 levels by year 2050”. Energy efficiency and conservation (EEC) is seen as a cost-effective intervention that will result to both economic and environmental gains.

Despite being a stack-less industry, tourism and travel sector contribute around five percent of global carbon dioxide emissions (UNWTO 2009, 3). Out of this amount, hotels and other types of accommodations account for a fifth (HES 2011, 7). After transportation, accommodation is the most energy-intensive component of the tourism industry “due to its demand for heating or cooling, lighting, cooking (in restaurants), cleaning, pools, and; in tropical or arid regions, the desalination of seawater. In a wide review of studies, energy use in hotels range between twenty five to 284 MJ/guest night” (Peeters et al. 2010 quoted by UNEP 2011, 417). Based on a forecast of an average annual growth rate of four percent in international tourist arrivals, it was predicted that under BAU scenario that emissions from the global tourism sector will increase by 161 percent in 2035 (WTO and UNEP 2008, 36). This projected growth in emissions from tourism run counter to the deep emission cuts needed to address climate change.

On the other hand, tourism is a highly climate-sensitive economic sector, as tourist destinations are affected by climate variability in many ways. As such, the cumulative effects of climate change are anticipated to have far-reaching impacts on tourist destinations and travel businesses, most especially the communities dependent upon the industry. Given the energy-intensive nature of tourist accommodations, it is necessary to change the way these facilities are built and operated in order to reduce the amount of emissions produced (mitigation) while maintaining the same quality of service and amenity in an environmentally-sustainable and economically-sound manner (adaptation).

Despite the availability of energy efficient technology and practices, large energy savings potential have yet to be captured at socially optimal rate to effectively arrest climate change. According to Mc. Kinsey and Company (2009), fundamental attributes of energy efficiency such as: (1) significant amount of upfront investment needed with savings that accrue over time, (2) fragmentation (3) less prioritization; and (4) difficulty in measuring energy that is not consumed; prevent the capture of benefits available EEC. Thus, understanding the human dimension of EEC is crucial in program and policy formulation in order to unlock participation.

As the Philippines aims to improve its position as the tourist destination of choice in Southeast Asia, world-class infrastructure to support existing natural attractions is also required. This include quality accommodations in sufficient numbers. Given the country’s vast tourism opportunities, the tourist accommodations sector exhibits large, untapped energy savings and GHG reduction potentials. However, the absence of laws and regulations that directly mandate the implementation of demand-side energy efficiency in the Philippines has resulted in sluggish adoption of energy-saving measures in the private sector. Since the tourist accommodations sector is dominated by small and medium businesses, there is a need to understand how tourism SMEs can shift towards energy-efficient practices.

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