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## **ENERGY EFFICIENCY PRACTICES: ASSESSMENT OF OHRID HOTEL INDUSTRY<sup>66</sup>**

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### **ABSTRACT**

This paper provides information on the extent how the hotel industry in Ohrid meets the energy efficiency practices in terms of the current level of involvement. By undertaking an online survey in three, four and five-star hotels, the study assesses the attitudes and willingness of hotel managers concerning applying energy efficiency and environmental protection concepts and practices. Moreover, it investigates various determinants of energy consumption, like: solid waste management, resource usage and protection, as well as the benefits and constraints in applying the energy efficient practices. The results point that Ohrid hotels lack policies on general environmental issues. The hotel management is lacking interest in the energy efficiency blaming the high operational costs and restricted financial funds for application of renewable sources. The paper suggests valuable findings for developing and exerting wide range of energy efficient practices. Hence, hotel establishments may become increasingly environmentally responsible by taking care of the energy efficiency, and may additionally benefit from the environmental pro-activeness which is important for the performance and development of Ohrid hotel industry.

*Keywords:* Energy; Environment; Renewable sources; Hotels; Ohrid.

### **ENERGY EFFICIENCY PRACTICES: ASSESSMENT OF OHRID HOTEL INDUSTRY**

Hotels use substantial amount of energy and are one of the most energy intensive facilities with correspondingly high energy costs. They are ranked among top five in terms of energy consumption in the tertiary building sector

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<sup>66</sup> Professional article

(minor only to food services and sales, health care and certain types of offices) (Hotel Energy Solutions, 2011). The energy efficient practices are extremely important to hotels since they provide savings of 20% or more due to the fact that among all operating costs, those of energy utilities are the ones of the most controllable (Natural Resources Canada, 2003). Cutting the operating costs increases the profit and allows improved competitiveness on tourism market. The introduction of the energy efficient practices allows enriched guests comfort, increased hotel aesthetic value, reduced maintenance system failures and so forth. These practices enable the environment protection by reducing carbon dioxide, methane, nitrous oxide and other harmful emissions that provoke global-warming and climate changes.

The literature contains a large body of work exploring energy efficiency and environmental protection programs in hotels (Ali et al, 2008; Arthur et al, 2011; Bohdanowicz, 2005; Butler, 2008; Chen et al, 2005; Dalton et al, 2008; Kim & Han, 2010; Kirk, 1998; Khemiri & Hassairi, 2005; Michalena et al, 2009; Ndoye & Sarr, 2003; Oikonomou et al, 2009; Önüt & Soner, 2006).

This paper adds to the current research on energy efficiency in hotel industry by elaborating the case of Ohrid hotel industry, since Ohrid is the most famous tourist place in Macedonia. This is generally done by providing information on the extent how hotels meet this issue in terms of the current level of involvement. The novelty of this paper is that represents a pioneer work for Ohrid, since the current studies have payed attention to Macedonian hotel industry in general. So far, a focus has been paid only to the five-star ranked hotels in Macedonia (Petrevska & Cingoski, 2015a), an application of the renewable sources of energy as a precondition for developing sustainable tourism in Macedonia (Petrevska & Cingoski, 2015b) or becoming an eco-friendly hotel establishment in Macedonia (Petrevska & Cingoski, 2016).

## **METHODOLOGY**

The study took qualitative and quantitative methods. The qualitative approach included literature review on main publications of the interest addressing the application of energy efficiency practices. Furthermore, a number of publications of interest were carefully followed, along with websites for updates on environmental protection initiatives.

The quantitative approach covered data obtained from an online survey. To determine the sampling frame, a list of three, four and five-star hotels located in Ohrid was provided by the Sector of Tourism and Hospitality

within the Ministry of Economy of the Government of the Republic of Macedonia (Table 1).

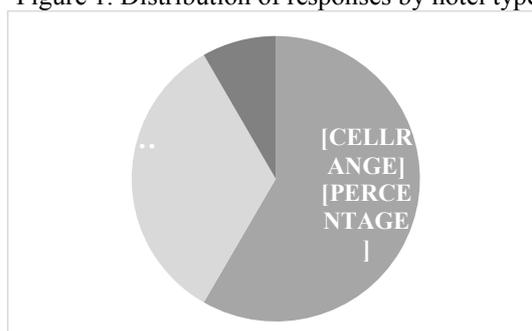
Table 1. Hotels' frame

Hotels class (stratum)	Number of hotels	%
Three star hotels	20	71.4
Four star hotels	7	25.0
Five star hotels	1	3.6
Total	28	100.00

*Source:* Ministry of Economy of the Government of the Republic of Macedonia, Sector of Tourism and Hospitality, *Note:* Data by May 2015.

A pilot test was launched in order to check the validity of the questionnaire. The survey was conducted during May-June 2015 with a follow-up reminder to each non-respondent approximately each week. The target group was 28 hotel managers and department supervisors. The overall response rate was 42.9% (12 hotels) which was relatively high for an online survey, which is usually much lower due to the lack of personal contact and less binding (Bohdanowicz, 2005; Jeong et al, 2003; Medina-Munoz & García-Falcón, 2000). This included 7 out of 20 three-star hotels (35%), 4 out of 7 four-star hotels (57%) and 1 out of 1 five-star hotels (100%). The distribution of responses is presented in Figure 1.

Figure 1. Distribution of responses by hotel type



The questionnaire was structured in five sections whereas some included two-choice questions, while in others a five-point Likert scale was applied (1 = very low; 5 = very strong). The general hotel data were addressed in Section I, while the other four sections consisted of 32 indicators, which were selected among the indicators already applied and discussed by Erdoğan (2012), Montoro-Sánchez et al., (2008) and YCELP (2012). Section

II comprised of 12 questions defining the environmental policy. Section III incorporated 9 questions for measuring indicators for solid waste management. Section IV included 11 questions for assessing the usage and savings of resources. Section V covered 10 questions for measuring the managerial perception on benefits and constraints for applying the energy efficiency concept in Ohrid hotels. When interpreting the mean range of results in the line of quantifying the item impact, the following scheme was applied: 1.00-1.80 (very low); 1.81-2.60 (low); 2.61-3.40 (medium); 3.41-4.20 (strong); and 4.21-5.00 (very strong).

## FINDINGS AND DISCUSSION

Based on questions from Section I (general data), it was found that Ohrid hotels differ in many aspects. So, in terms of working history, the surveyed hotels vary from relatively young hotels existing up to 5 years on tourism market (8%), to well positioned hotels with over 15 years of working experience (67%). Almost identical half have between 21-50 rooms, and over 50 rooms. It was even more difficult to determine the precise number of employees in the surveyed hotels, since some of them have up to 10 employees (33%), but some have even more than 100 employees (25%).

Section II scans the current level of application of environmental policy and practices in Ohrid hotel industry. Table 2 presents the summarized findings on general environmental issues.

Table 2. Summarized findings on general environmental issues (%)

Item	Yes	No
Certificate for energy efficiency	16.7	83.3
Plan for environmental protection	33.3	66.7
Reports on environmental protection	25.0	75.0
Eco label	8.3	91.7
Eco certificate	8.3	91.7
Employee responsible for environmental protection	25.0	75.0
Award for environmental protection	/	100.0
Availability of info for guests	66.7	33.3

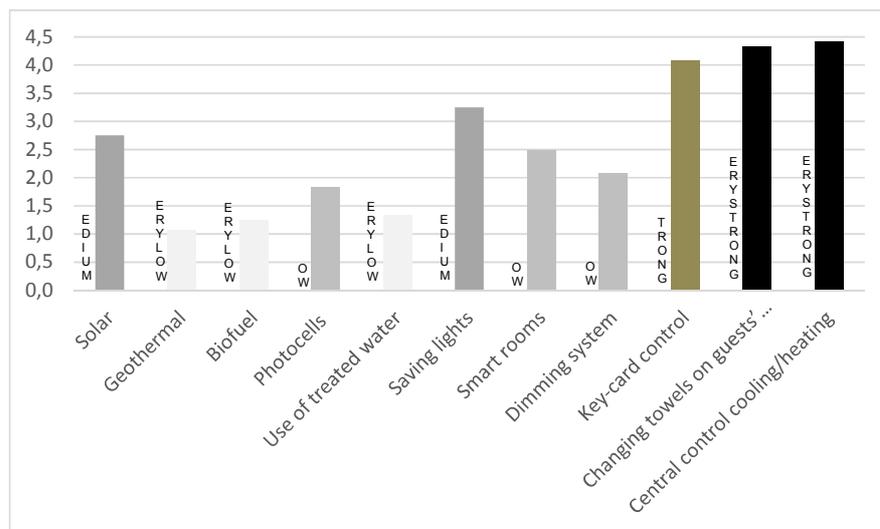
Generally, it is noticeable that surveyed hotels have extremely negative environmental concerns. Majority (83%) do not hold a Certificate for energy efficiency, do not prepare written plans for environmental protection (67%) and do not prepare reports on environmental protection (75%). This is not in favor of supporting the European environmental impact assessment regulation. This legislation started to develop in the 1970s and since then,

many documents, action plans and standards have been established by the European Union (EU). Besides industry, energy, transportation and agricultural sections, tourism is also introduced as a segment which must conform to the Fifth Environmental Action Program. Due to the fact that Macedonia is a candidate country for EU membership, Ohrid hotels must make an effort to meet the internationally set standards.

Furthermore, the vast majority of the surveyed hotels (92%) do not have an Eco label and do not hold an Eco certificate (Table A2). Only 25% replied that have personnel responsible for environmental protection. There is a certain risk in the interpretation and understanding the question related to the term 'personnel for environmental protection' which might be understood as a 'personnel in charge for cleaning the environment', which in most cases is a job of the housekeeping staff. The fact that none of the surveyed hotels have ever received an award related to the environmental protection, although they have been working for over 15 years, strongly supports the general conclusion that still plenty needs to be done. However, the positive impulse is detected in providing info to guests related to environmental protection (67%).

Section III of the questionnaire presents the indicators for solid waste management, with the following mean values representing the factor of influence for particular investigated item: Food = Medium (2.75); Plastic = Low (2.17); Paper = Low (2.42); Metal = Very low (1.08); Glass = Very low (1.67); and Dangerous waste = Very low (1.08). Only half of the surveyed hotels make a waste selection, while the others replied that they would do it if the local government provides subsidies. Even though, the hotel managers perceive a low impact of waste selection process on the working costs.

Figure 2. Managerial perception on the resource usage and protection in Ohrid hotels (mean values)

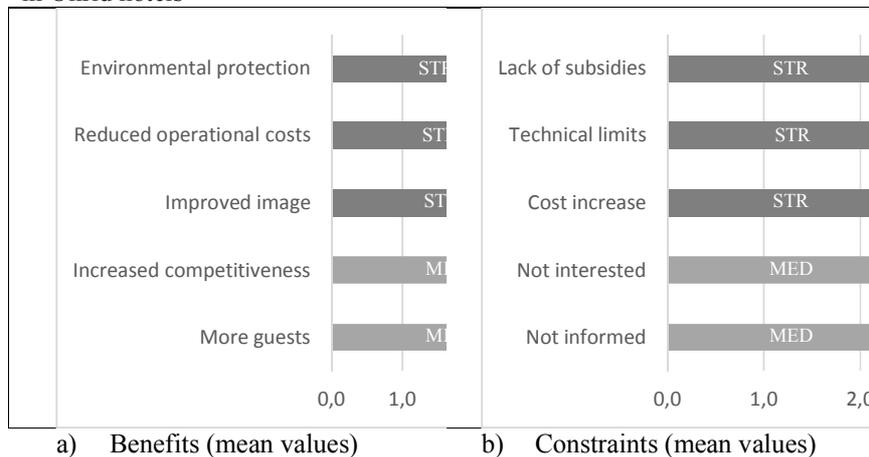


Section IV of the questionnaire enables to evaluate the managerial perception on the resource usage and protection (Figure 2). Having in mind that the use of energy is a cost factor, it was expected that Ohrid hotels take serious measures in reducing conventional energy sources, particularly in the line of replacement with renewable sources. However, the findings are alarming since they point to extremely limited use of alternative sources of energy and new innovative approaches in saving energy consumption. The mean values for the extremely important renewable sources of energy, like geothermal energy, biofuel, photocell lighting and the use of treated water, 'smart rooms' and the dimming system are by far the lowest. So having them below the critical values means having the lowest power when quantifying the item's impact and makes them meaningless determinants for the hotels' energy efficiency concept. The dimming system, which in general increases the lifespan of incandescent and LED light sources, is smart, silent, reliable and efficient system for saving energy in hotels. Yet, this item is perceived as only a low impact determinant used extremely limited by Ohrid hotels.

Having in mind the high costs for establishing solar energy and the saving lights, not surprisingly is the managers' perception as medium usage. However, hotels pay large attention to the use of energy saving systems that control every appliance in rooms and key-card control system that provides no power unless the room-key is inserted. This is found as a source with strong impacts. Similarly, the central cooling/heating system along with the guest demands for linen and towel changes are assessed as very strong

factors of influence on hotels business. The guests' awareness of energy efficiency is constantly rising by having the choice to use the same towels and linens for the duration of the stay, rather than to incur the environmental costs of laundering them each day. This conservative measure is practiced by Ohrid hotels and simultaneously increases the guest satisfaction and loyalty by showing their care for energy efficiency and climate change.

Figure 3. Managerial perception on applying energy efficiency practices in Ohrid hotels



Section V of the questionnaire measures the managerial perception on benefits and constraints for applying the energy efficiency practices in Ohrid hotel industry (Figure 3). The first subcomponent (Figure 3a) identifies the benefits as the most intensive factor with strong impacts on the hotels' business. More precisely, the managers perceive the items which refer to the environmental protection, improved image, reduced operational costs as strong determinants, in order to introduce and sustain the energy efficiency practices. So, the surveyed hotels assessed the above items as of better interest than the increase of number of guests and increased competitiveness. The summarized results confirm that generally hotels are driven by increasing the number of tourists regardless the environmental concerns and with little or no environmentally friendly practices. The transformation from awareness into practice is constrained by the high costs for applying the energy efficient practices.

The second sub-component (Figure 3b) refers to the perception component and identifies the main constrains by their power of limits. As expected, the lack of subsidies by the local and central government, along

with the cost increase and the technical limitations of the hotel facility, are identified as the factors with strong influence. It is logical that the hotels will apply the energy saving methods and solid waste management only if they minimize the related expenditures. The other surveyed indicators related to the lack of information and interest are perceived as medium influencing factors for the hotels' business.

### **CONCLUSIONS AND RECOMMENDATIONS**

The paper is focused on presenting some insights into the use of energy in three, four and five-star hotels in Ohrid. It aims at providing assessment of managerial perception of energy efficiency practices. The study determined and discussed several types of indicators for perception of: a) Activities associated with environmental protection; b) Solid waste management; c) Resource usage and protection; d) Benefits and constraints.

The summarized results confirmed that although being aware of the importance of the renewable energy and the energy efficiency practices, it is not hotels' priority. There is a substantial gap between the managerial awareness for the benefits of the renewable energy, and the daily practice of Ohrid hotels. The blame is put on the restricted budget and high operation costs for the limited application of renewable sources.

Considering the fact that the energy is a substantial cost factor, the modest and restricted application of geothermal energy, biofuels and photocell lightening is extremely alarming for achieving supportable tourism development. Instead of being driven by increased number of tourists regardless the environmental concern, Ohrid hotels should pay attention and become eco-friendly accommodation facilities. Hence, a creation of specific strategies that will have a significant impact on reducing energy consumption is a must. It may include a three-fold approach:

- (i) Technological change – Meaning to introduce and upgrade technologies that are constantly improving and becoming more efficient;
- (ii) Behavioral change – Meaning to influence the behaviors of guests and employees as well as to improve knowledge and skills; and
- (iii) Organizational change – Meaning to set up policies, procedures and practices that can assist in driving down the utility costs.

Some aspects of these strategies may include increasing the level of awareness among hoteliers through a direct and well-designed environmental protection campaigns. Consequently, Ohrid hotels may benefit from these measures not only by saving money, but also in ensuring comfort to the guests and staff.

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