Sustainable Operations in Hotel Industry

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Abstract

Sustainability and energy efficient are the key issue in all industries. In hotel industry, energy consumption represents 3-6% of hotel operating costs and is responsible for 60 % of its CO_2 emissions. This paper explores the various issues linked with sustainability and energy consumption in hotel industry.

Keywords: Sustainable operations,Sustainable hotel operations, Energy efficiency

Introduction

Sustainability is currently a key topic in the hospitality industry. International hotel companies are promoting actions to make their hotels more sustainable and reduce their impact on the environment. However, they still have limited tools to constrain their structures to respect their sustainability standards.

One idea to reinforce the value of a brand's sustainability policies would be to include sustainability clauses within the operating agreements signed between the brands and their properties, defining which measures can be included (meaning the ones that can be measured and monitored) and how they can be regulated. Energy is onesustainability issue that can be monitored and easily controlled and reduced. Moreover, even if energy costs represent a small percentage of hotel's operating costs, their reduction can provide significant increases in revenue, especially in the current economic climate where energy prices are increasing along withconsumption. In terms of environmental impacts, energy is the most important source of CO_2 emissions for hotels, which is a critical topic in today's sustainable challenges. Indeed, tourism is more than ever a key issue for the environment. Its carbon impact on earth is currently of 2 percent, but will soon increase to 3 percent due to the fast growing tourist demand, going from 25 million travelers in 1950 to 1,035 million in 2012, and forecasted to reach 1.8 billion in 2030 according to the UNWTO, urging the tourism industry to take sustainability measures.

The purpose of this paper is to evaluate the possibility to include energy reduction tools and actions within hotel operating contracts, in order to monitor, control and reduce energy consumption within properties. Therefore, we will first analyze what contributes to energy consumption in hotels and what measures can be taken to reduce it. Second, we will study hotel chains and their role and powers to develop sustainability in their hotels. We will also ask for their contribution in a third part where they will give us some feedback about their energy regulation strategies and their usage of operating agreements in that matter. Associating hotel chains current strategies combined with our personal analysis, will allow us to provide some recommendations and ideas to implement to help hotel chains control their hotel's energy consumption through operating agreements. To conclude, we will have a look at the challenges that the hospitality industry is facing in terms of achieving sustainability.

Energy Consumption in Hotels

In order to understand the possible improvements in hotels' energy consumption, we will analyze and define how energy is used within hotels.

What is Energy Consumption in Hotels?

Energy is the second largest spending category for a hotel after employment, representing 3 percent to 6 percent of hotel operating costs and accounting for around 60 percent of its CO_2 emissions*(Source: Energy Solutions)*.

Energy consumption is influenced by various technical, architectural, local and management factors, as illustrated in the following table. All of these factors can induce significant fluctuations in energy consumption as show in Table 1, which makes it difficult to define and estimate energy targets in the hospitality industry as each hotel is different.

Table 1: Factors influencing energy consumption in hotels

Factors influencing energy consumption in hotels	Effects	Impact
Building		
Size	The bigger the building, the more energy needed.	Medium
Shape	A hotel where all is condensed in the same building will be more energy efficient than a disparate property.	Medium
Age	A new building is supposed to be better insulated than an old one.	Medium
Materials	The material used is important in terms of insulation and lightening of the building.	High
Technical equipment	The choice of technical (electronic?) appliances is important, as they are to be energy efficient to reduce energy consumption.	High
Hotel features		
Category	The higher the category, the higher the energy need (from 17.30kwhPAR* for economy to 89.35kwhPAR for luxury).	High
Facilities / Services	A hotel with only a few services and facilities will consume less energy than a hotel with a lot of services and facilities.	High
Location		
Climate	Climate will impact the use of air conditioning and heating, more necessary in hot/cold areas.	High
Local policies	Local energy policies impact the prices and CO2 emissions, as it will determine the type of energy used: gas, electricity, nuclear, wind…	High
Operations		
Energy management	The hotel's energy management policy is crucial in controlling energy costs, as it will involve all the parties (staff, investors, guests) and will set up targets and best practices.	High
Occupancy	Occupancy will impact the energy consumption, as more people in the building will require more energy. However, there are still spaces where energy will be required independently of the occupancy.	Medium
Operational hours	A hotel runs 24h/7. However, operational hours may impact the price of energy in certain areas (cheaper in dedicated hours).	Low

* PAR: Per Available Room

Over the last decade, energy consumption in hotels has increased from 25 percent to 30 percent due to the growth in occupancy but also to the new ways of living and consuming. This is most evident in the more demanding standards (more facilities and services), the more intensive usage

of electronic equipment (computer, TV, music appliances) and the development of operating equipment (electric cooking, cold rooms, and elevators). This exponential curve is expected to continue over the next few years, with a 10 percent to 25 percent rise forecasted (*Source: VlastaZankiAlujević*).

How is Hotel Energy Consumption Split?

Energy consumption in hotels is mainly due to temperature regulation inside the property, which represents in average 69 percent of energy consumption (63 percent for heating and hot water and 6 percent for air conditioning) (*Source: REST 2005*). These figures can be even more important in extreme climate conditions, where temperature regulation within properties needs a lot of energy to be balanced.

It is therefore criticalto reduce energy consumption by firstdefining average temperature levels inside properties to avoid hotels where it is too hot or, at the extreme, too cold (a common issue especially in hot countries where the temperature inside the hotels and rooms is sometimes freezing), finding a balance between acceptable temperatures for guests and appropriate energy spending – 19°C (66°F) is an acceptable averageaccording to various worldwide health authorities.

To a lesser extent, other important energy end-users are kitchen and other unidentified (11 percent each). Surprisingly, lighting/TV/radio ranks 5 in this classification (4 percent), followed by laundry (4 percent).

The following graph in figure 1 shows the repartition of hotels' energy end-users.
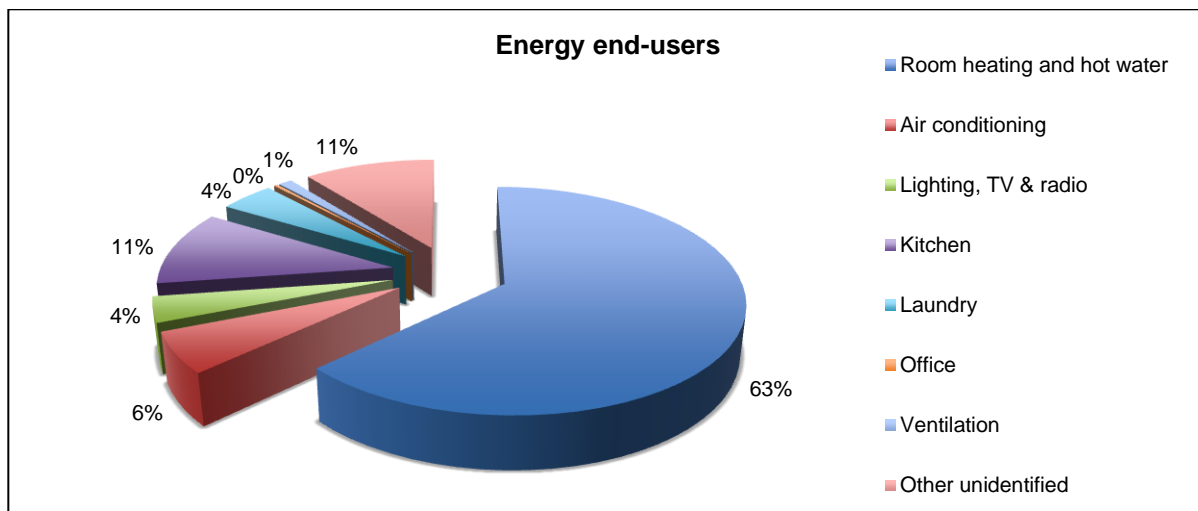
Figure 1: Energy end-users

How to Reduce Energy Consumption in Hotels?

In order to reduce their energy consumption, hotels have at their disposal a range of tools and practices that can be easily implemented, depending on the state of the hotel. Hotel owners are frequently reluctant to install sustainability measures in general,especially in the more economic segments that are more cost sensitive and perceive eco-friendly measures as expensive. However, even if the cost of the following actions may varythe impacts on the environment and the cost reduction will be significant, justifying the investments needed. Moreover, some of the suggested actions listed in the table2 below have no financial costs: they only need human investment and care.

It is important to point out that the difficulty in implementation and costs mentioned are informative and based on an industry average. They may vary depending if the hotel is already opened or planned and if the building is existing or not. Indeed, it is easier to include environment friendly technical requirements when planning a new-build rather than modifying the technical characteristics (shape, insulation, specific construction materials, equipment) of an already constructed building.

Table 2: Actions towards energy consumption reduction implementation

Actions towards energy consumption reduction	Implementation difficulty	Cost
Room heating and hot water		
Efficient building shape	Medium	Medium
Efficient isolation	Medium	Medium
In-room thermostat	High	High
Lower heating temperature	Low	Low
Air conditioning		
Lower cooling temperature	Low	Low
Better isolation	Medium	Medium
In-room thermostat	High	High
Lower cooling when no guests	Low	Low
Lightening, TV & Radio		
Windows allowing natural light to stream in	High	High
Motion sensors	High	High

Low-consumption light bulbs	Medium	Medium
Energy savings mini bar, TV	High	High
Kitchen		
Conversion of kitchen grease into bio-dynamic fuel	Low	Medium
Energy efficient appliances	High	High
Laundry		
Towel reuse	Low	Low
Linen reuse	Low	Low
Energy efficient laundry equipment	High	High
Office		
Motion sensors	High	High
Switch off computers	Low	Low
Limited usage of electronic appliances	Low	Low
Ventilation		
Energy saving ventilation system	High	High
Use natural ventilation	Low	Low
Other		
Staff consciousness	Low	Low
Guests consciousness	Low	Low
Energy monitoring	Low	Low
Solar panels installation	Medium	High
Use of renewable energies (wind, biofuel)	Medium	High

Hotel Chains Role and Tools to Develop Sustainability

Now that we have examined how energy is consumed in hotels and its potential to be reduced, we will study how hotel chains can help develop and implement sustainability measures within hotels.

Why Hotel Chains are in Favorable Position to Develop Sustainability?

Implementing sustainability measures in the hospitality industry is not an easy task. As opposed to the airline industry, where airline companies are grouped together under international alliances, there are limited synergies between hotel chains, wherethere are multiple stakeholders. The abundance of stakeholders involved with divergent interests and targets, creates a difficult combination betweenthe owner's profit goal and hotel chains' standard requirements. It is therefore challenging to develop coordinated and global sustainability actions involving all the stakeholders. For example, a hotel owner may be reluctant to implement a new energy efficient air conditioning system required by the brand because it will see this as expensive and non-necessary, especially if his current system is still working and regardless of the fact that the

impact on the environment with the new system will be reduced as well as the energy bills. This is especially true in the lower hotel categories, which are most cost sensitive as they have a lower financial power. Cost being a crucial parameter to take under consideration while setting up a sustainable policy.Moreover, each hotel is different and characterized by various factors, from category to location, size to facilities, making it difficult to find a proper benchmark and "models" to apply to each property.

Internationally, hotel chains represent only a small portion of properties, with 65 percent of branded rooms in the United States, but only 20 percent to 25 percent in the other parts of the world (*Source: Mintel 2004*). Regardless, hotel chains have a strong influence in the tourism industrydue to their size and the concentration of hotels they own, operate, lease or franchise in different parts of the world, their financial strength and their relationship with the international community. Each year, they accommodate a high number of guests from allover the world and the major companies are internationally renowned. Thanks to this recognition, they are influential and impose standards to the industry. As an example, we can mention the fact of having a gym in a four-star hotel, which is not a legal requirement, but became an industry standard because some hotels started to have one, then clients began associating four-star hotels and gym (even if, most of the time, they do not use it), making a requirement to have a fitness center in four-star properties: the hospitality industry follows market trends and a new property will base itself on its competitors to compose its product.

Thefact that hotel chains are influential in the hospitality market gives them an important role and duty in generalizing the implementation of sustainability measures, first within their properties, and then in every hotel. This duty is made easier by the fact that sustainability is now a real concern and a fashion trend for guests. They are increasingly aware of the environment issues and care more about this subject in their everyday life. The evolution of technologies also popularizes environment friendly products, making them more accessible and less expensive.

However, their upcoming work towards making the hospitality industry more sustainable is considerable and critical, as demand is continuously rising, increasing consumption and creating a crucial need to take environment measure and, in our case, regulate energy use, as the degradation of our environment is not reversible.

Hotel Chains Tools to Develop Sustainability?

In order to achieve their mission as sustainability ambassadors, hotel chains dispose of a range of operating, marketing/communication, training, monitoring, certifying and rewarding tools that they can use in their properties. The tools at hotel chains disposal are listed in the following table 3 and qualified according to the impact they have on the success of a sustainable policy. As we can see, operational and communication actions are the most effective chains can take to promote sustainability.

Table 3: Hotel chains tools to encourage sustainability practices

Hotel chains tools to encourage sustainability practices	Impact
Operations	
Include sustainability measures in operating agreements	High
Sanctions for not respecting the sustainability measures	High
Include sustainability measures in brand standards	High
Communication	
Communicate sustainability best practices and hotels/chains measures taken towards employees	High
Communicate sustainability best practices and hotels/chains measures taken towards the industry	High
Communicate sustainability best practices and hotels/chains measures taken towards owners/investors	High
Communicate sustainability best practices and hotels/chains measures taken towards guests	High
Training	
Staff training	High
Raise guests awareness	Medium
Monitoring	
Use of a monitoring system	High
Publication of sustainability reports	Medium
Set up of sustainability targets	High
Certification	
Apply for international certification	Medium
Encourage hotels to apply for national certifications	Medium
Awards	
In-house awards to congratulate the greener hotels	Medium
Encourage hotels to apply for external awards	Medium

Conclusion

In regards to the results of this study, we can say that, despite the fact that it is still a long way to go before seeing sustainability policies implemented in every hotel, the industry is waking-up and stakeholders are starting to get involved. Among hotel chains' tools to control environment management within their hotels, operating contracts is a strong one. Indeed, operating contracts are setting up the rules and requirements a hotel needs to fulfill in order to enter a chain.

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