Irena Peršić-Živadinov*

UDK 640.41:504.05
Pregledni članak
Review

THE ENVIRONMENTAL AND ECONOMIC IMPACT OF SUSTAINABLE HOTELS

ABSTRACT

The paper considers sustainable development in the context of tourism and hospitality practice. The important role that buildings and hotels have in reducing the negative impact on the environment, through implementation of sustainability is highlighted. Sustainable hotels that are designed, constructed, and operated sustainably, use energy, water, materials, and land much more efficiently and effectively than hotel buildings that are simply built to code. Most major chains like Marriott and Hilton are looking for ways to integrate green into their hotels. Although there are upfront costs associated with becoming an sustainable property, the case studies described in the paper show how many changes will pay for themselves in short time. Green practices have high environmental performances but the hotels are adopting it primarily for financial reasons. Differently from international practice sustainable building practice is poorly applied during a life cycle of hotels in Croatia. Conclusions about the achieved level of sustainable building developmentand in the Republic of Croatia, with proposals for further development, are based on the results of extensive research in tourism carried out in 2008, on a representative sample, and using relevant scientific instruments.

JEL: Q5

Key words: *Sustainable building, sustainable hotel, sustainable practice, tourism, environment, greenhouse gases, global warming, energy, cost, benefit*

1. INTRODUCTION

Since the climate change and environmental problems were acknowledged at the Earth Summit in Rio de Janeiro in 1992[1], governments realized that something must be done. Climate change is a human-induced process of global warming, largely resulting from the emission of greenhouse gases. The environmental and economic risks of the magnitude of

* M.Sc., persici@yahoo.com

[1] The United Nations Conference on Environment and Development, also known as the Rio Summit, Earth Summit was a major United Nations conference, where more than 100 heads of state met in Rio de Janeiro, Brazil. It was the first international Earth Summit convened to address urgent problems of environmental protection and socio-economic development. An important achievement was an agreement on the Climate Change Convention which in turn led to the Kyoto Protocol. http://www.un.org/geninfo/bp/enviro.html

Članak primljen u uredništvo: 1.03.2009.

climate change projected for the 21st century are considerable and have featured prominently in recent international policy debates. The IPPC[2] concluded with very high confidence that climate change would impede the ability of many nations to achieve sustainable development by mid-century. The Stern Review on the economics of Climate Change found that the costs of taking action to reduce greenhouse gas emissions (GHG) now, are much smaller than the cost of economic and social disruption from unmitigated climate change[3].

Figure 1

The Greenhouse Effect

Source:commons.wikimedia.org/wiki/File: The_green_house_effect.svg

Tourism is one of the leading growth sectors of the global and Croatian economy. With its close connection to the environment and climate itself, tourism is considered to be a highly climate-sensitive sector. The regional manifestations of climate change will be highly relevant for tourism destinations and tourists. At the same time, tourism is a non-negligible contributor to climate change through greenhouse gases (GHG)[4] emission derived especially from the transport and accomodation of tourists.

The concern of the tourism community regarding the challenge of climate change has visibly increased over the last few years. In 2008 the United Nations World Tourism Organization

[2] The Intergovernmental Panel on Climate Change (IPCC) is a scientific intergovernmental body set up by the World Meteorological Organization (WMO) and by the United Nations Environment Programme (UNEP) with the scope to provide the decision-makers and others interested in climate change with an objective source of information about climate change.

[3] There is now clear scientific evidence that emissions from economic activity, particularly the burning of fossil fuels for energy, are causing changes to the Earth's climate, but „The Stern report" (The Stern Review on the Economics of Climate Change is a 700-page report released in 2006, by economist Lord Nicholas Stern, Head of the UK Government Economic Service, and a former Chief Economist of the World Bank), shows with clarity, while allowing fully for all the uncertainties, what global warming is going to mean; and what can and should be done to reduce it. It provides numbers for the economic impact, and for the necessary economic policies. Full text available: http://www.hm-treasury.gov.uk/stern_review_report.htm

[4] Greenhouse gases (GHG) are gases in the atmosphere that absorb and emit radiations. This process is the fundamental cause of the greenhouse effect. Most greenhouse gases have sources from both the ecosystem and from human anthropogenic activities. Due to elevated greenhouse gas levels, there was a discernible influence on many physical and biological systems. Projected changes in several climate factors, including atmospheric carbon dioxide (CO2), are projected to impact various issues such as freshwater resources, industry, food and health. The main sources of greenhouse gases due to human activity are burning of fossil fuels and deforestation.

(UNWTO) reported that estimated emissions from the tourism sector, as we see from the following graph, represent 5% of total world emissions[5].

Table 1

Emissions from tourism sector

Tourism Sub-sector	CO2 in Mt	Share in %
Air transport	151	40
Car	420	32
Other transport	45	3
Accomodation	274	21
Other activities	48	4
Total tourism	1.302	100
Total world according to IPCC 2007	26.400	
Share of emissions from tourism in total world 5%		

Source: UNWTO-UNEP (2008)

The building sector, including hotels, accounts for more than 40% of the final energy demand worldwide, consuming huge amounts of resources and generating tons of waste. 40% of global greenhouse gas emissions are coming from the construction, operation, maintenance and demolition of buildings. In order to meet the needs of present generations, conventional methods of construction have brought into question the needs of future generations[6] so in recent years, the sustainable building movement[7] began to gain attention and momentum, starting with institutional and commercial development and, more recently, with hospitality development[8].

Graph 1

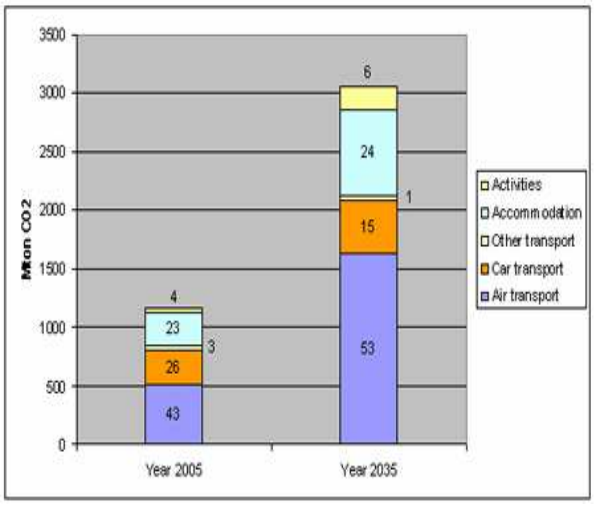
[5] Prepared using data from Climate Change and Tourism: Responding to Global Challenges, UNWTO 2008 available at: http://www.hospitalitynet.org/file/152003423.pdf

[6] The source of this definition comes from the quite well known Brundtland report and often cited «Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs».

[7] The green building movement has its roots in the energy crisis of the 1970s and the creative approaches to saving energy that came with it. Today, Sustainable or Green buildings are designed to: Efficiently use energy, water, and other resources; Protect occupant health and improve employee productivity; Reduce waste, pollution and environmental degradation.

[8] Over the last decade, the movement towards ecologically sound tourism has swept across the globe and the practices being implemented are diverse. Hotel companies are being prompted by rising energy costs, government pressure, consumer expectations and the competitive landscape to increasingly make sustainability a top priority.

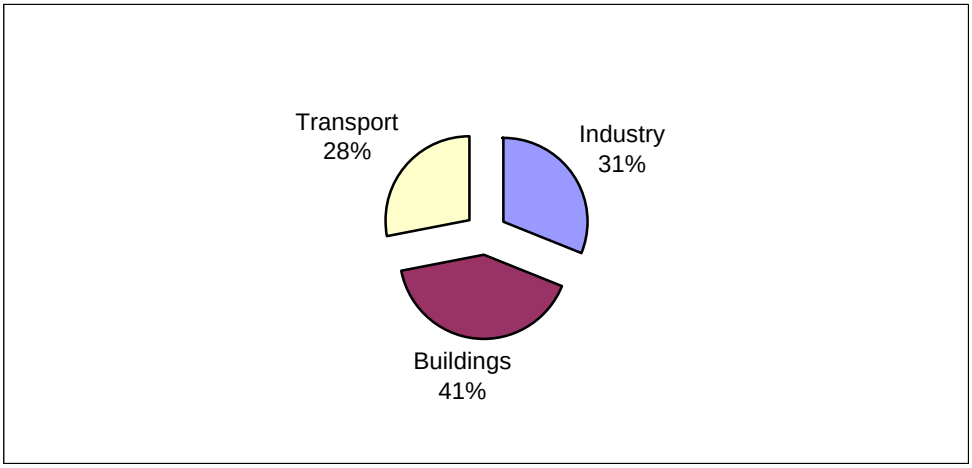
Current and projected emissions from tourism



Source: UNWTO-UNEP (2008)

Graph 2

Energy demand by sectors in Croatia



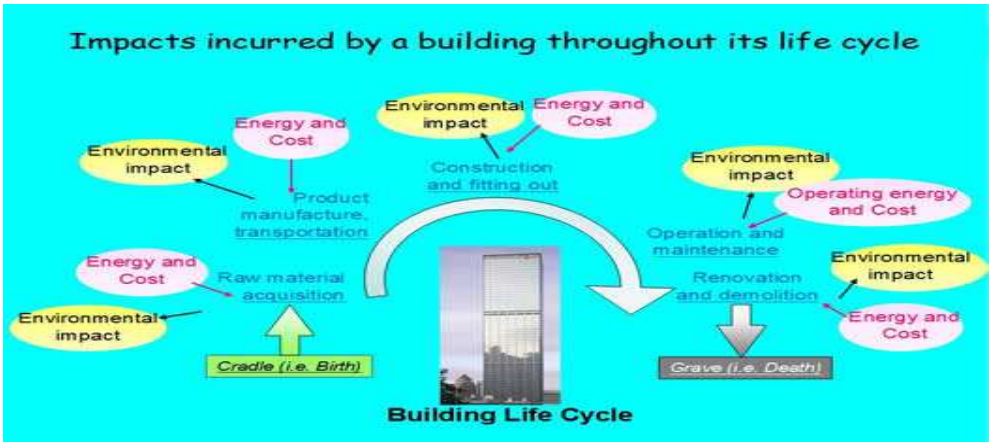
Source: EIHP

Sustainable hotels are hotels that are designed, constructed, and operated sustainably. To obtain the benefits of green building it is necessary that the hotel is sustainable during its entire life cycle[9].

[9] Life Cycle of Building or Whole Life Cycle of Building is considering the course of its entire life from «cradle to grave» (design, installation, commissioning, operation and demolition).

Figure 1

Building Life Cycle



Source: EMSD Hong Kong

Through the life cycle sustainable aproach, sustainable hotels capitalize on the opportunity to enhance efficiency in the hotel market, a market that traditionally has not been concerned with its environmental impact.

In December 2008, EU leaders reached agreement over an «energy and climate package» to deliver the ambitious objective of reducing greenhouse-gas emissions by 20%, increase energy efficiency by 20% and 20% of renewable energy in overall EU energy consumption by 2020[10]. Croatia is looking forward to join the EU and the Croatian building sector must start, as soon as possible, to prepare for an integrated EU energy and climate change policy. Tourism, as one of the leading Croatian economic branches, can greatly reduce the negative impact that it has on the environment, through implementation of sustainability in their every segment, especially in the construction and operation of hotel facilities.

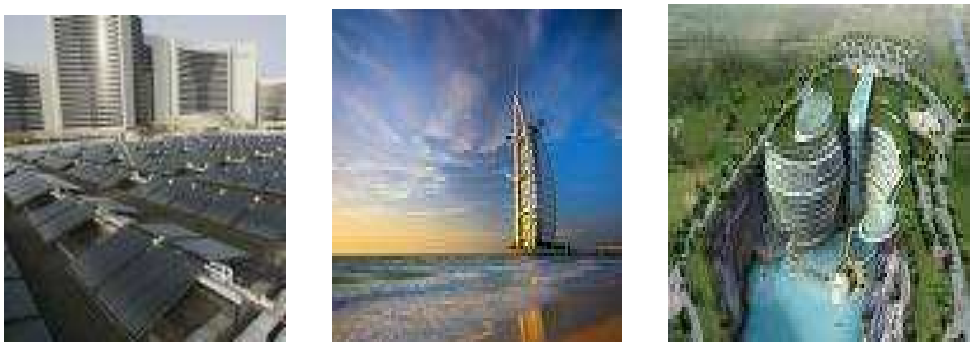
2. SUSTAINABLE HOTELS

A decade ago, the term «eco-friendly accommodation» usually meant a chilly mountain lodge, eating vegetables from the owner's garden and recycling trash before hitting the nearby nature trails. Now the term is increasingly becoming compatible with both «luxury» and «cities», as more chain and boutique hotels, with views of skyscrapers not trees, incorporate sustainable green practices into their policies.

[10] Energy and Climate Change package is an agreement adopted on 17 December 2008, by the European Parliament, on the ambitious objectives to reach by 2020. Full text adopted available at: http://www.europarl.europa.eu/sides/getDoc.do?type=TA&reference=20081217&secondRef=TOC&language=EN

Figure 3

Sustainable hotels



Source: www.dubaihotel.ws/; www.atkinsdesign.com/html/projects_hotels_songhotel.htm

Sustainable hotels[11] are designed, constructed, and operated sustainably. They use energy, water, materials, and land much more efficiently and effectively than hotel buildings that are simply built to code. Sustainable hotel developers and managers create healthier working and resting environments with more natural light and cleaner air. These buildings improve occupant health, comfort, and productivity[12]. When developers build in an environmentally sustainable manner, they increase profit margins and create a differentiated product that is increasing in demand.

3. THE COST AND BENEFITS OF SUSTAINABLE HOTELS

Sustainable hotels generally incur a «green premium[13]» above the costs of standard hotels. They also provide an array of financial and environmental benefits that conventional hotels do not. The world practice is showing that it is very important that principles of sustainability are applied in an early phase of a building planing. The earlier the decision is made lower will be the costs of green[14]. To obtain the benefits of green building it is necessary that the hotel is sustainable during its entire life cycle.

---

[11] Sustainable hotels follow the concept of sustainable buildinsg and are designed to reduce the overall impact of the environment.

[12] Sustainable hotels create financial benefits through lower energy, waste disposal, and water costs, lower operations and maintenance costs, and savings from increased productivity and better health. Those benefits range from being fairly predictable(energy, waste and water savings) to relatively uncertain (productivity/health benefit)

[13] The «green premium» is a difference between sustainable/green building and conventional building costs. In other words it is an extra initial upfront investment to support green design. Therefore, a meaningful assessment of the cost of building green requires a comparison of conventional and green design for the same building.

[14] It is widely proven that the costs of green will be lower if the sustainable design is planned from the beginning of the project, because leter changes are very expensive.

Many owners and developers believe that a sustainable hotel costs at least 10% more than a conventional hotel. Although they realize that energy savings alone may recoup this differential in five to ten years, they resist the additional up-front cost. The up-front costs are comparable and the energy savings, as well as other factors, is pure profit, year after year for the life of the project.

If we consider the cost of a typical new hotel, 20% of the total project cost is the expense of acquiring the land. Approximately 55% is the «hard cost» of construction, and the remaining 25% are «soft costs» [15]. Assuming that at least one half of the hard cost goes for excavation, foundations, and superstructure, only 27.5% of the total cost (one-half of 55%) goes into the building's «skin», mechanical equipment and building materials. Even if these items cost 10% more up front, 10% of 27.5% represents a premium of 2.75% over the total cost[16].

The financial analysis of sustainable buildings finds that an initial investment of 0-2% of construction costs yields to savings of over ten times the initial investment, over a 20 years life cycle[17]. As USGBC reported in 2007 the premium cost for Leadership in Energy and Environmental Design (LEED) -certified projects, decline as people gain more experience. Any premium in costs is typically recovered through rebates, incentives and long-term cost savings. LEED-certified buildings typically save: [18]

30 to 50 % in energy usage,
35 % in carbon emissions,
40 % in water consumption,
70 % in solid waste.

Energy Star[19] puts the energy savings into terms hoteliers understand. Using the USGBC's figures, with a 30 to 50 % energy savings, a limited service hotel would achieve hard economic savings which would be the equivalent of increasing average daily rate (ADR) by $1.80 to $3.00, and a full service hotel would have the equivalent benefit of increasing ADR by $4.00 to $6.75.

With predicted shortage of energy, water and sites for waste disposal, these savings will only become more dramatic, and that will be pushed along by various legislative initiatives now pending or already adopted in many states. The hotels featured in this paper were selected because their cases successfully demonstrate high performance construction and operation.

---

[15] Building Life Cycle Costs are devided in two parts: first/initial costs and operational and maintanance costs. The first/initial costs itself are devided in «soft costs» and «hard costs». The «soft costs» include design and consulting and «hard costs» the construction work.For more information see: Matthiessen, L., Morris, P., Costing Green: A Comprehensive Cost Database and Budgeting Methodology, Langdon, 2004, available at: http://www.usgbc.org/Docs/Resources/Cost_of_Green

[16] See: http://www.hotelexecutive.com/bus_rev/

[17] Although Kats report «The Costs and Financial Benefits of Green Building» was written with specific regard to California state buildings, datas are general in scope, and conclusions are broadly applicable to other types of buildings and sectors.

[18] The Leadership in Energy and Environmental Design (LEED) Green Building Rating System, developed by the U.S. Green Building Council (USGBC) provides a suite of standards for environmentally sustainable construction and encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria: http://www.usgbc.org/

[19] Energy Star is an international standard for energy efficient products. Devices carrying the Energy Star logo, save 20%-30% on average: http://www.energystar.gov/

4. SUSTAINABLE HOTEL BEST PRACTICE

Accor, Carlson, Fairmont, Four Seasons, Hilton, InterContinental, Marriott, Rezidor SAS, Starwood Hotels & Resorts Worldwide Inc., TAJ Hotels Resorts and Palace and many others actively supported the development of sustainable practice in hotels. Most major chains are looking for ways to integrate green into their hotels. Some of the biggest strides to green are occurring at the property level. Although there are upfront costs associated with becoming an ecologically friendly property, many changes will pay for themselves in short time. Those savings then add up on the asset side of the balance sheet. The hotels adopting green practices are doing it primarily for financial reasons.

Fairmont Hotels & Resorts Inc. (FHR) is one of North America's leading owner/operators of luxury hotels and resorts. FHR's portfolio consists of 81 luxury and first class properties with over 32 000 rooms. In 1990, the Fairmont Green Partnership created a template for sustainable best practices in the hospitality industry. The programme focuses on improvements in the areas of waste management, energy and water conservation.

The FHR energy bills exceed $43 million every year. Electricity makes up the biggest share of the hotel chain's huge energy bill, costing more than $29 million annually. Natural gas, water, propane, steam and kitchen fuel make up the remainder.

In order to decrease operating costs and reduce GHG emissions Fairmont has implemented a variety of measures in hotel facilities during the years. Delta Toronto Airport West (formerly known as Four Points by Sheraton Toronto Airport) is a 296 rooms property where $700.000 investment in energy upgrades were done, and resulted in annual savings of $200.000. Many of these savings stemmed from improvements in the lighting fixtures of the guest rooms, parking garages and boiler rooms.

The $600.000 energy efficiency program, in the 18 year old Delta Toronto East hotel resulted in $110.000 annual savings. The Fairmont Banff Springs investing $600.000 in green technologies saves more than $315.000 annualy. Fairmont is recognized, by various international organizations, to be the best example of sustainable tourism practices and a model of corporate social responsibility within the hospitality industry[20]. Radisson SAS Edinburgh switched to energy-efficient lights at a cost of $2,307, and first year savings were $27,889.

For over 12 years Hilton International has been a pioneer in moving towards environmental sustainability. In the year 2000 alone, Hilton saved nearly $2.5 million in energy costs. Savings of 43 million kWh of electricity per year resulted in large CO2 emission reductions and environmental benefits.

Figure 7

Hilton We Care! Environmental Program

[20] For more information see: http://www.fairmont.com/EN_FA/AboutFairmont/

Source: www.hiltonwecare.com

Hilton's sustainability initiative «We care» was launched in 2006 and focuses on encouraging hotels to compete with each other to conserve energy. The initiative has also resulted in savings of more than $9 million in two years[21].
Hilton Hotels reported in May 2008 that it has delivered energy savings of more than 10 % in 2007 across more than 80 hotels in Europe, as well as cutting water consumption by 10% over the last two years. Through the introduction of carbon-free electricity at its facilities in the U.K. and Ireland, Hilton reduced CO2 emissions in participating Hilton hotels by more than 64,000 tons, or 56 % of its carbon footprint.
Hilton Hotels sustainability targets to reach by 2014 include: [22]
Reducing energy consumption from direct operations by 20 %,
Reducing CO2 emissions by 20 %,
Reducing output of waste by 20 %,
Reducing water consumption by 10 %.

Marriott International, with more than 2,600 lodging properties developed an extensive Energy Conservation Program, to monitor Marriott's carbon footprint of 3 million metric tons of CO2 emissions annually, and to ensure that accurate measurement would lead to realistic goal-setting. This approach contributed to Marriott savings of $4.5 million annually. The Inn & Conference Center by Marriott, at the University of Meryland, Washington D.C., has been designated the first sustainable hotel and conference center in the U.S. by acquiring the LEED Certificate[23].

Figure 8

Marriott sustainable hotels

Source: www.marriott.com

[21] For more information see the Hilton environmental program We Care at: http://www.hiltonwecare.com/
[22] http://www.hiltonwecare.com/
[23] For more information see: http://www.marriott.com/marriott.mi?page=green_LEED, http://www.marriott.com/marriott.mi?page=green_stories
http://www.hotel-online.com/News/PR2008_3rd/Jul08_MARMeetings.html

Proximity Hotel in North Carolina, is the first US hotel to achieve LEED Platinum[24]. The Proximity proves that green building and luxury are not mutually exclusive. 46% of the materials in the building were sourced regionally. The well insulated Proximity hotel, with operable windows reduce heating and cooling needs. Regenerative-drive elevators generate electricity as they descend, providing much of the energy needed for the ascent. Overall, the hotel uses 39% less energy than similar hotels constructed to code.

Figure 9

Solar Panels that heat 60% of Proximity Hotel hot water

Source: www.proximityhotel.com/green.htm

The hotel also uses 34% less water than a comparable building. Solar thermal panels on the roof provide 60% of the hotel's water heating needs. The «green premium» added to the budget was between $1.5 and $2.0 million, but reduced first costs through smaller chillers and efficient use of materials. Including tax credits, operating savings, and increased revenues due to customer demand, the overall payback for the additional first costs is under four years.

5. SUSTAINABLE PRACTICE IN CROATIAN HOTELS

A survey carried out in 2008, among 10% of hotels throughout Croatia[25], with the intent to identify the level of sustainable practice used during the entire life cycle of Croatian hotels showed that Croatian hotel managers lack of knowledge about basic sustainable building methods and costs/benefits[26]. There is a perception among managers that «green» does not have an economically attractive payback. Actually 74% think that sustainable practice can't influence the life cycle costs of hotels.

---

[24] For more information see: http://www.proximityhotel.com/green.htm

[25] For more information see: Peršić-Živadinov, I., The Economic benefits of sustainable building in tourism, Masters Thesis, FTHM, Opatija, 2008 (The research was divided in six parts which together represent an integrated sustainable approach: Construction, reconstruction and renovation of hotels; Reduction, reuse and recycling of waste; Energy efficiency and maintenance; Hotel environment and water efficiency; Dangerous and poison substances; Purchasing policies.)

[26] The managers in high category hotels (4/5 stars), in contrast to lower category hotels (2/3 stars) are more familiar with the subject, but not enough

The conducted research indicates that the principles of sustainability are poorly applied, reuse or recycling of waste is practiced only when there are state incentives[27], energy efficiency is practiced but not enough and renewable sources of energy are not used[28]. Similar results are found for water efficiency[29], use of hazardous and toxic substances[30] and purchasing policies.
In order to be ready for joining the EU an for an integrated EU energy and climate change policy[31], Croatia will have, in a very short time, to properly approach the changes in Croatian hotel industry and construction practice in general.
The level of tourism offer is becoming higher, and the hotel system more complicated and demanding. With higher standards of hotels the higher are the needs for energy, natural resources and the amount of waste generated. Because of a lack in finances in the Croatian hotel sector, major changes toward sustainable hotel practice can't be done overnight, but it is important to encourage sustainable buildings through state incentives and education about the real costs and benefits of green building.

6. CONCLUSION

Integrating sustainable building practice into the construction and operation of hotels is a solid financial and environmental investment. Minimal increase in upfront costs of 0-2% to support green design will result in life cycle savings of 20% of total construction costs.
Sustainable building practice and environmental programs are important for the environment and are saving hotels money. By running an environmentally responsible operation with cost-effective procedures and facility improvements, hotels can demonstrate leadership in ecological sustainability and enhance competitiveness. The benefits of a green hotel program include lower operating costs, increased customer and employee satisfaction, reduced environmental impact and increased marketability as an environmentally friendly business.
The needs of contemporary tourism are becoming more demanding and in order to meet the higher standards of hotels it is necesarry to use huge amounts of natural non renewable resources and crate tons of waste. The idea of starting a green program may be intimidating but the time to start is now, before there's regulation. The hospitality sector leaders case studies successfully demonstrate high performance construction and operation.
Tourism, as one of the leading Croatian economic branches, can greatly reduce the negative impact that it has on the environment, through implementation of sustainability in their every

[27] The reuse of non consumed goods like soaps and toiletries, non served food and old linens is not practiced and these goods are not donated to local shelters or charity institutions. Hotels have recycling programs in back of house but not in rooms and common areas.
[28] The energy audit has shown that 92% of hotels have combined systems for DHW and heating. None of the analyzed hotels use renewable energy sources. Only 4/5 stars hotels use efficient HVAC and lighting system that consider part load conditions and utility interface requirements. Energy efficient lamps are not used enough. Monitoring of air temperature and quality is not practiced in 95% of cases. Energy efficiency SPP doesn't exist.
[29] Water efficiency is not incorporated in construction specifications in Croatia so capture of gray water and its use for irrigation or for flush down toilets is not practiced. On-site storm water capture is also not practiced. Efficiency of potable water use, through better technology such as low/flow fixtures, is not common in lower category hotels, while in 4/5 stars hotels it is practiced in 15% of cases.
[30] Dangerous and toxic substances are not sustainable and shall be replaced with less hazardous alternatives. Unfortunately, Croatian hotels don't pay enough attention to that. The drains are not plumbed and regular checking for chemical leak is not performed. This situation represents a threat for water pollution.
[31] See EU Energy and Climate Change package, avail. at: http://www.europarl.europa.eu/sides/getDoc.do?type=TA&reference=20081217&secondRef=TOC&language=EN

segment, especially in the construction and operation of hotel facilities, otherwise future costs of pollution will exceed earnings from tourism.

REFERENCES

Agenda 21 for the Travel & Tourism Industry, http://www.world-tourism.org/sustainable/publications.htm

Baldinger, P., Energy and Sustainable Tourism, USAID, 2006.

Bohdanowicz, P., Martinac, I., et. al., Renewable energy for Sustainable Tourism, KTH, Stockholm, 2001

Bosnjakovic, B., Innovation and Sustainable Development, Energy and the Environment 2008, Solar Energy Association, ISBN 978-953-6886-12-8 (Vol.1)

Castelli, L., Architettura sostenibile, UTET Giuridica, Milano, 2008.

Diener, M., et al., High Performance Hospitality, Sustainable Hotel Case Studies, Educational Institute of AH&LA, 2008

EcoLodgical - Green Hotel Design Guide

EIHP, Energetska efikasnost u zgradarstvu, 2004

EMSD, Consultancy Study on Life Cycle Energy Assesment of Building Construction, ARUP, Hong Kong, 2007

Energy Star for Hospitality, http://www.energystar.gov/index.cfm?c=hospitality.bus_hospitality

Energy Star Performance Ratings, http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager

Fairmont Hotels & Resorts:Hospitality, tradition, environmental stewardship and energy savings go hand in hand, Energy Innovators Initiative, Canada, 2003

Flex your Power - Hotel Best Practice Guide, www.fypower.org

Fuller, S., Life Cycle Cost Analysis, Whole Building Design Guide, National Institute of Standards and Technology, 2007

Gauzin-Muller, D., Architettura sostenibile, Ediyioni Ambiente, Milano, 2007.

Green Seal Environmental Standards for Lodging Properties, http://www.greenseal.org/certification/standards/lodgingproperties.cfm

Hilton Environmental Program, http://hiltonworldwide1.hilton.com/en_US/ww/fob/landing/Sustain/index.do

Houdre, H., Sustainable Hospitality: Sustainable Development in the Hotel Industry, Cornell Hospitality Report, Volume 8, No.10, June 2008, Cornell University

Intergovornmental Panel on Climat Change, World Meteorological Association and United Nations Environmental Program, IPCC Third Assessment Report – Climate Change 2001, http://www.ipcc.c

International tourism partnership - Going Green, Minimum standards toward a ssustainable hotel, www.tourismpartnership.org

Kats, G., The Costs and Financial Benefits of Green Building, A Report to California's Sustainable Building Task Force, Capital E, 2003

Marriott Environmental Program, http://www.marriott.com/marriott.mi?page=green_stories

Martinac, I., Responsible Facility Management and Resource Utilization in Hotels, EBS, KTH, Stockholm, Sweden, 2006.

Martinac, I., Sustainable Tourism Planning, Development and Management-Facilities and Destinations, KTH, Stockholm, 2006.

Matthiessen, L., The Cost of Green Revisited, Davis Langdon, Santa Monica, 2007.

Morris, P., What does Green Really Cost?, Davis Langdon, Santa Monica, 2007.

Natural Strategies LCC, Economic Benefits of Green Building Design and Construction, A primer for Government decision makers http://www.ciwmb.ca.gov/greenbuilding/design/EcoBenefits.ppt

Peršić-Živadinov, I., Sustainable building and environment: the study on life cycle sustainable practice in Croatian hotels, Energy and the Environment 2008, Solar Energy Association, ISBN 978-953-6886-13-5 (Vol.2), 2008

Peršić-Živadinov, I., The Economic benefits of sustainable building in tourism, Masters Thesis, FTHM, Opatija, 2008

Proximity Hotel project profile, USGBC, www.usgbc.org

Roditi, G., Sostenibilità e innovazione nello sviluppo turistico, Franco Angeli, Milano, 2008

Smolčić Jurdana, D., Načela održivog razvoja turizma, Održivi razvoj turizma-problemi i perspektive, Zbornik radova, Fakultet za turistički i hotelski menadžment Opatija i Zavod za održivi razvoj i prostorno planiranje PGŽ, 2003.

Stern, N., The Economics of Climate Change: The Stern Review, Cambridge University Press, UK, 2006

Tourism, Industry as a partner for sustainable development, UNEP, http://www.unep.org/publications/search/pub_details_s.asp?ID=178

U.S.Green Building Council: LEED Rating System, http://www.usgbc.org/DisplayPage.aspx?CategoryID=19

Zanki, V., Energy Use and Environmental Impact from Hotels on the Adriatic Coast in Croatia – Current Status and Future Possibilities for HVAC Systems, Doctoral Thesis, KTH, Stockholm, Sweden, 2006.

UTJECAJ ODRŽIVIH HOTELA NA OKOLIŠ I EKONOMIJU

SAŽETAK

Tema članka je održivi razvitak u turizmu i hotelijerstvu, s posebnim naglaskom na ulogu koju treba posvetiti održivoj gradnji hotela, a radi smanjenja negativnog utjecaja na okoliš. Hoteli dizajnirani i građeni prema načelima održivog razovja, su tijekom poslovanja mnogo efikasniji u korištenju zemljišta, energije, vode i materijala za održavane u odnosu na hotele građene klasičnim pristupom. To potvrđuje i većina velikih hotelskih lanaca (poput Hilton-a i Marriott-a), koji prakticiraju primjenu načela održive gradnje, što utječe i na učnkovitije poslovanje hotela. U radu se elaborira spoznaja da se u fazi izgradnje javljaju dodatni troškovi povezani s implementacijom načela održive gradnje (slučajevi elaborirani su u radu), ali se istovremeno dokazuje da je ova vrsta investicija visoko isplativa. Također se percipira i spoznaja da je povrat uloženih sredstava u održivu gradnju moguć i u relativno kratkom roku. Implementacija načela održivosti ima mnogobrojne korisne učinke u hotelskoj praksi, a s društvenog aspekta nosi velike ekološke učinke, no hotelijeri to prvenstveno primjenjuju iz financijskih razloga. Za razliku od međunarodne prakse, u Hrvatskoj se primjeni načela održivog razvoja životnog ciklusa hotela ne posvećuje dovoljna pažnja. Zakljuci o dostignutom stupnju razvoja održie gradnje u Republici Hrvatskoj sa prijedlozima razvojnih tendenicja, temelje se na rezultatima opsežnog istraživanja, koje je tijekom 2008. godine provedeno u turizmu na reprezentativnom uzorku, i uz korištenje relevantnog znanstvenog instrumentarija.

JEL: Q5

Ključne riječi: *održiva gradnja, održivi hotel, održivi principi, turizam, okoliš, staklenički plinovi, globalno zatopljenje, energija, troškovi, učinci*