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Minimization of Gaseous Emissions from Hotels and Resorts

By

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Introduction

- Hotels and Resorts constitute a very important part of the tourism industry
- In many respects the hotel industry resembles a traditional industry in terms of resource consumption and waste generation; the only difference being that hotels do not manufacture products but instead provides services to guests
- The key issue is to minimize resource consumption, waste generation and overall impact on the environment while maintaining the highest possible quality of service



Introduction Cont....

- Hotels increase the demand on existing sewer, portable water sources, waste disposal and power/energy facilities and can cause serious deterioration of both the physical and social environment
- Air emissions from boiler stacks can pose air pollution problems, while food waste and other organic waste may cause odor problems
- Hotels consume a substantial amount of water and discharge a corresponding amount of wastewater into the environment.



Significant Environmental Issues

The most significant environmental issues with respect to daily hotel operations include:

- Energy consumption in Kitchens including for heating, ventilation, and air conditioning
- Water consumption and waste water generation
- Solid waste management
- Indoor and outdoor air quality
- Ozone depleting substances

All these activities contribute to GHG emissions that directly or indirectly causes climate change.



How Can Hotels Minimize their Impacts on the Environment?

Through

- Water Conservation
- Solid Waste Reduction, reuse, recovery and recycling
- Energy Conservation
- Green Procurement
- Good House Keeping



Water Conservation

- Water conservation reduces cost of water consumption, wastewater treatment and energy consumption
- Carry out a water audit to identify major consumers
- Need for water metering to different sections of the hotel? Easy or Difficult?
- Installation of appropriate water flow meters in water consuming areas (kitchens, laundry etc) is a prerequisite for a valid water conservation program
- Need to install water saving measures



Water Conservation at the Guest Floor

- Showers: most shower heads use more water than they need- in fact, the water droplets are so big that they often bounce off the body without rinsing. Efficient shower heads use 10 liters per minute instead of 20, while delivering the same or superior service
- Toilets: a normal toilet uses 20 liters per flush and wastes water by sloshing it around the bowl. An efficient toilet uses only 6 liters and directs a powerful pulse of water into the bowl to wash it out effectively. Replacing toilets could save a household 83,000 liters/year. Another way to save water is to fix toilet leaks – save up to 100m³/year.



Water Conservation at the Guest Floor...

- For gardens and lawns and toilet flushing, use recycled water after treatment.
- All hose pipes in use should be fitted with hand triggers for purposes of water conservation.
- Harvest rainwater whenever appropriate for fire fighting, watering of lawns, toilet flushing and even drinking after treatment.
- Encourage reuse of towels by guests before taking them for laundry
- Report any leaking taps, running toilets and ensure that all room windows are closed



Consider this

Example from a local Club

“Let the Tap keep on
Running until there is hot
water”



What is Good Housekeeping (GHK)?

- Good housekeeping refers to a number of practical measures based on common sense that enterprises can undertake immediately and on their own to improve

- Their productivity
- obtain cost savings
- reduce the environmental impact of their operations, and
- Improve organizational procedures and work place safety.

It is a management tool for cost reduction, environmental management, and organizational change. When these areas are adequately taken into consideration, a triple win (economic, environment, organization) can be achieved.



Putting GHK into Practice means

- Rationalizing the use of raw materials, water, and energy inputs, reducing the loss of valuable material inputs and therefore reducing operational costs
- Reducing the volume and/or toxicity of waste, wastewater, and emissions related to service provision
- Reducing, reusing and recycling (3Rs) the maximum of primary inputs and packaging materials
- Improving working conditions and occupational safety
- Making organizational improvements.



What is needed to implement GHK

Implementation of GHK measures requires internal communication, motivating of employees, and setting clear responsibilities.

- Common Sense and Willingness to Take Action
 - Most measures do not require technical skills but rather the motivation and willingness to change (middle level inertia)
- Simple Actions
 - Easy-to-implement and cost-effective measures
- Problem awareness
 - Draw attention of employees to problem areas and identify opportunities for improvement actions.



Needs for GHK Implementation Cont!

- Information gathering and dissemination
 - The effectiveness of GHK actions can be enhanced by gathering information internally and by ensuring that there is good information dissemination within the hospital.
- Organizational culture
 - GHK is also related to changing behavior and creating a culture of productivity. Involve everybody in the implementation process.



Materials

- Efficient use of materials and assessment of environmental impact
 - Monitoring material consumption
 - Performing regular loss assessments in all services rendered
 - Avoiding losses due to overflows, leakages and spillages
 - Establishing preventive maintenance programs
 - Substituting toxic or hazardous materials



Waste

- Reduction, Reuse, Recycling and Treatment of Waste
 - Monitoring waste quantities and qualities
 - Segregating and collecting waste according to different categories
 - Avoiding/reducing wastes (including packaging waste)
 - Reusing waste materials and by products
 - Recycling and selling certain wastes (paper, glass, plastics, etc)
 - Properly disposing of waste that can not be reused or recycled.



Storage and Handling of Materials

- Appropriate storage, handling and transport of materials
 - Monitoring the quality of purchased raw materials
 - Ensuring proper handling and storage of purchased raw materials
 - Applying the first-in-first-out principle
 - Establishing adequate, secure, and controlled storage of hazardous materials
 - Handling dangerous substances with care
 - Properly cleaning and disposing off packaging materials.



Water and Waste Water

- Reduction of water consumption, wastewater and pollution
 - Monitoring water consumption and quality
 - Reducing water consumption for selected uses
 - Avoiding spillage and leakage
 - Reusing and/or recycling suitable water sources
 - Reducing waste water pollution
 - Treating wastewater in an environmentally sound way
 - Harvesting roof top rainwater



Energy

- Reduction of energy consumption and use of waste heat and environmentally sound sources of energy
 - Monitoring energy consumption
 - Reducing energy consumption and costs (infrared sensors for security lighting)
 - Avoiding energy losses and optimizing electrical installations
 - Operating electrical equipment in an energy efficient manner
 - Purchasing energy efficient equipment



Work Place Safety and Health Protection

- Protection against accidents, hazardous substances, odours, noise and injury
 - Minimizing the risk of accident and fire
 - Providing sufficient provisions in case of accident and fire
 - Creating a safe work environment for employees
 - Supplying and properly maintaining personal protective equipment
 - Using harmful substances with care
 - Controlling air emissions
 - Minimizing odours
 - Lowering noise levels.



Solid Waste Reduction and Reuse

The hierarchy of waste management

Avoid

Reduce

Reuse

Recycle

Recover

Treatment

Disposal



Reducing waste

- Use both sides of paper when printing and photocopying
- Substitute disposable items for reusable ones
- Equip guest rooms with a bulk dispensing system to replace individual solid soaps
- Use two-way containers and cartons (can be refilled and returned)
- Reuse manila envelopes
- Have toner cartridges refilled
- Use worn out towels as cleaning rags
- Recover useful materials from waste for recycling through waste segregation at source using color coded bins



Improvement of Boiler Efficiency

- Adopt optimum air/fuel ratio
- The temp difference between the flue gas and steam temperature should be as small as possible, the smaller the temp difference, the better is the heat transfer
- Operate at recommended percentage load of over 30%
- Install steam meters and have them regularly calibrated
- Install an economizer
- Adhere strictly to the boiler use instructions



Energy Saving on Lighting

- Adopt energy efficient bulbs
- Design the hotels to make use of natural sunlight
- Adopt key-tag room control to switch off power and guest room lighting
- Switch to infrared sensor lighting to save energy
- Adopt flexible switching off arrangement



Green Procurement

- Means products purchased by, and used in, the hotel are either eco-labeled or certified as environment friendly
- It is in line with the emerging green consumerism culture across the world
- To ensure success, the change over from green purchasing should come as a top management policy, to be followed by staff training



The EU Flower



Green Procurement



VS





WHAT IS "GREEN" PROCUREMENT?

- Buying products that have/are:
 - Recycled content
 - Energy efficient
 - More durable
 - Less packaging
 - Upgradeable
- Buying Products that do not have/are not:
 - Mercury
 - Carcinogens
 - Ozone Depleting Chemicals
 - Toxic

**Choosing NOT to
BUY!**



Guiding Principles in Green Procurement Implementation

- Creating a culture that supports waste reduction and green procurement
- Taking waste reduction as the primary objective
- Striking a balance among environment, cost and performance
- Acquiring and comparing environmental performance information
- Adopting green product criteria
- Influencing market availability
- Developing green product specifications



Government's Green Procurement Policy

- Our procurement policy needs to be revised to take into account environmental considerations when procuring goods and service – Procurement and asset disposal act
- We need to avoid single use disposable items and purchase products:
 - With improved recyclability, higher recycled content, reduced packaging, greater durability, and greater energy efficiency
 - That utilize clean technology and/or clean fuels
 - That result in reduced water consumption
 - That emit fewer irritating or toxic substances during installation or use
 - That result in reduced production of toxic substances upon disposal



The “6 RE Philosophy”

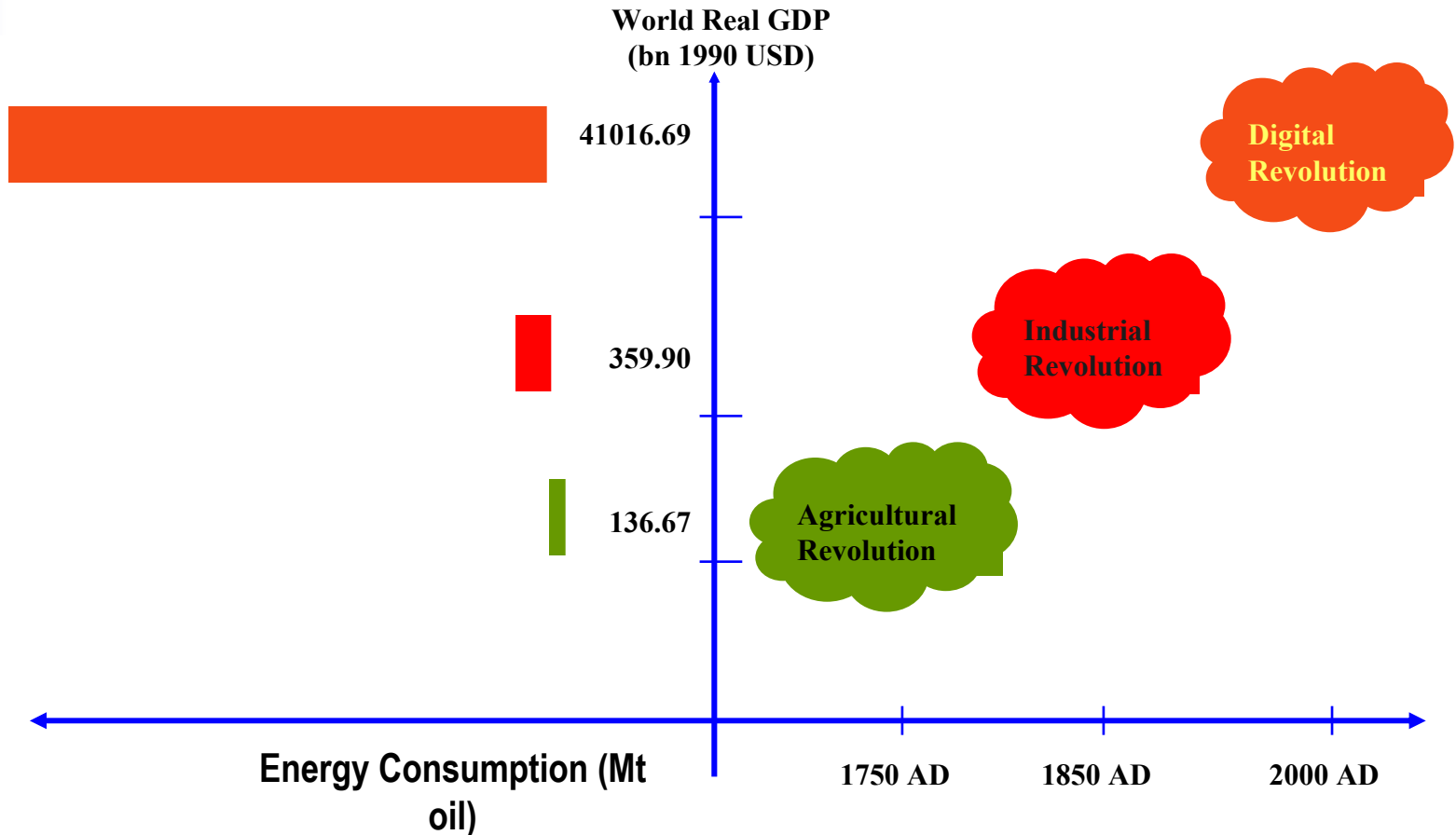
- RE-think the product and its functions. For example, the product may be used more efficiently
- RE-pair. Make the product easy to repair via modules that can easily be changed
- RE-place harmful substances with safer alternatives
- RE-use. Design the product for disassembly so parts can be reused
- RE-duce energy, material consumption and socio-economic impacts throughout a product’s life cycle
- RE-cycle. Select materials that can be recycled.



What should hotels do?

- They should be involved in Benchmarking for continual improvement e.g water and energy consumption per bed and benchmark with best practices across the world.

Mankind has moved through different phases, with different environmental effects



Sources: 1. Professor Gerhard Rempel; <http://mars.wnec.edu/~grempe/courses/wc2/lectures/industrialrev.html>

2. Professor J. Bradford DeLong, UCB; http://www.j-bradford-delong.net/TCEH/1998_Draft/World_GDP/Estimating_World_GDP.html

3. J R McNeill (2000): Something New Under the Sun. <http://www.seafriends.org.nz/issues/cons/resource.htm>