



# What is the HES toolkit?

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## Context: Hotels are very energy-intensive

- Marginal use of renewable energy resources
- Majority rely on older, less efficient technologies
- Total CO2 emissions from the hotels sector are 284 Mton pa. (more than combined total CO2 emissions of Belgium, Greece & Sweden!)

### Utilisation of outdated technology makes SME hotels less competitive

- Energy-saving potential in hotels has been estimated at 10–25 per cent

### There is a gap between available EE/RE technologies and their actual use in hotels





## Context: Drivers for hotel energy improvement

- **Climate change** – and national / municipal climate action programmes
- **EU programmes** to increase use of energy efficiency and renewable energy technologies
- The EU **“Environmental Performance of Buildings Directive”** (EPBD) which requires commercial properties to display a standardised energy rating
- **Demand from those purchasing accommodation** – individuals, tour operators and corporate travel sector
- Energy is a growing proportion of hotel costs – **getting energy costs under control maintains competitiveness**





# The Key EU Energy Drivers

3 x 20% by 2020

20% by 2020  
EFFICIENCY

By 2020 20% EU GHG

By 2020 20% RENEWABLES

BIO-FUELS  
10%  
2020  
binding

E-ELECTRICITY

HEATING & COOLING

NATIONAL TARGETS and ACTION PLANS



ADEME



Agence de l'Environnement  
et de la Maîtrise de l'Énergie



Source: EREC



## About the HES toolkit

The toolkit is designed to:

- **assist hotels to plan for and invest in EE & RET**
- provide **information on all relevant EE / RE technologies** together in one place
- present this information in practical, easy-to-use ways for hotels
- **make it simple for hotels** to find EE / RE technologies that are most practical to implement



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## The HES toolkit shows hotels:

- **How much energy they're using**
- Their '**energy intensity**' and how it rates (from excellent to very poor)
- What they can do to improve their 'energy intensity' rating and **reduce energy costs (and carbon emissions)**
- Information about **accessing and implementing better energy technologies and operating practices**
- Information about **new developments and consumers' preferences**





# The HES toolkit development process

## Toolkit Development:

- **UN WTO** (Review of energy use in hotels; Initial draft of toolkit questionnaire; Hotel case studies with ADEME & EREC)
- **UNEP** (Development of toolkit structure, Carbon and ROI calculators – **with URENIO**)
- **ADEME** (Energy Efficiency; EE Case Studies)
- **EREC** (Renewable Energy; RE Case Studies with UN WTO)
- **IH&RA** (Review of toolkit usability)
- Inputs from the **HES End User Advisory Group** (including technology providers, hotels and destinations)

**Toolkit testing in 4 destinations** is also part of the development process





# The HES toolkit development process

We examined the main ways hotels can make **practical savings in energy use** through **readily available technologies**, reducing their environmental footprint and increasing their competitiveness at the same time

## Key questions

**How much energy do hotels actually use?**

Answer: ... almost 2x that of an average home!

**What EE & RE technologies are most suitable for hotels?**

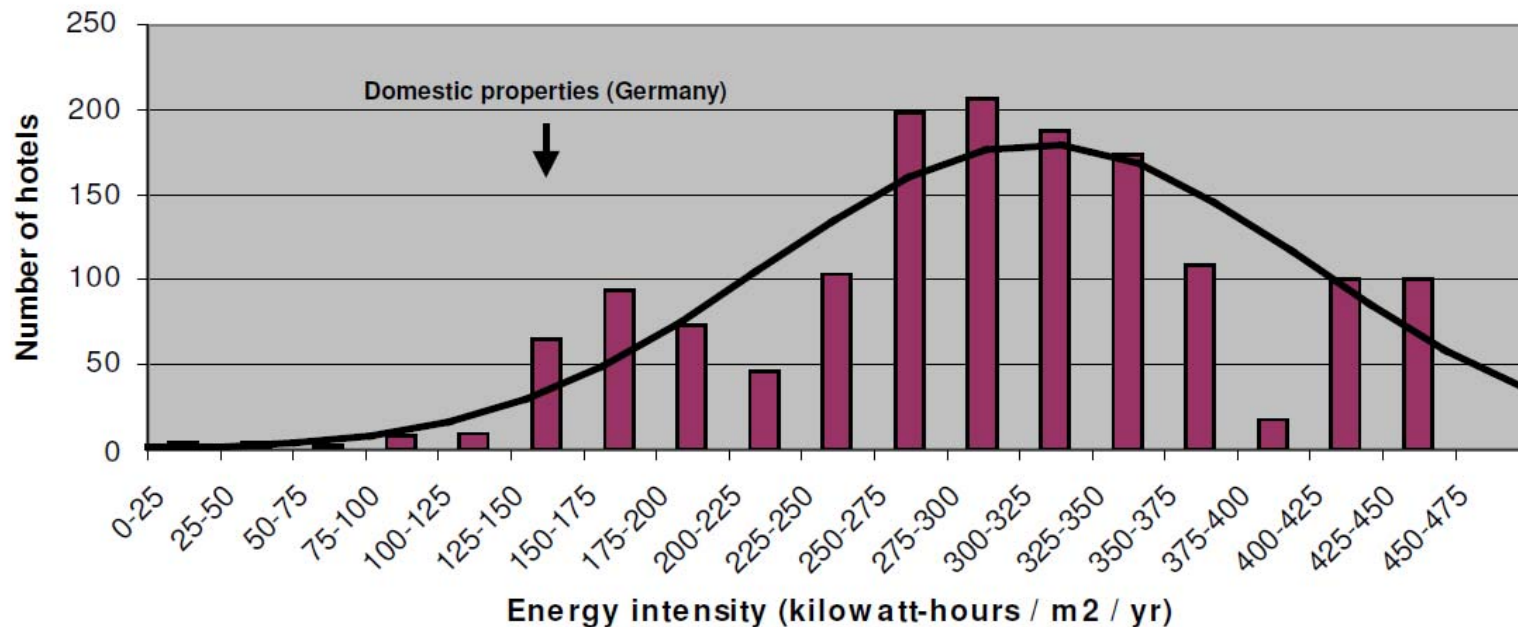
**How to bridge the 'information gap'** so that hotels understand the opportunities and benefits of energy improvements?



## Energy in hotels – what's the evidence?

The project team collated **data from studies covering over 1500 hotels** across Europe

The data include large and small hotels offering all types of accommodation from basic to 5-star



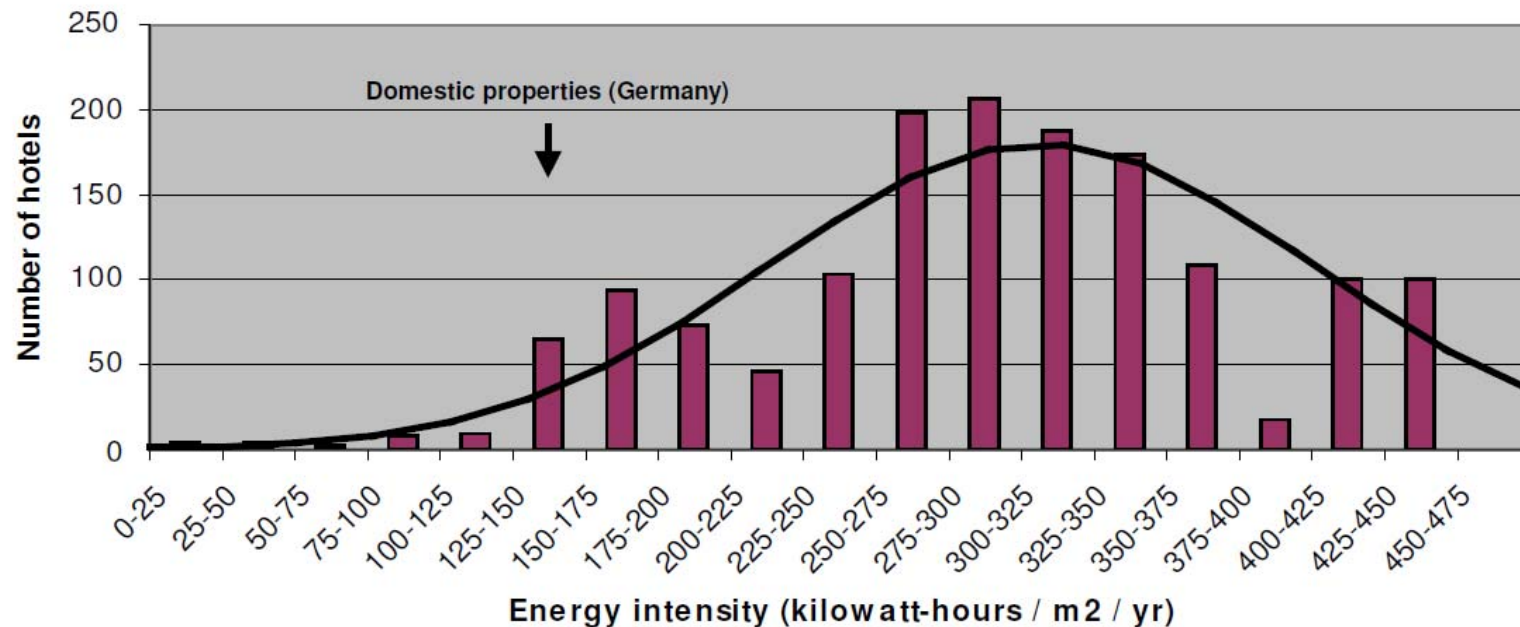


## Energy in hotels – what's the evidence?

There is **wide variation in energy intensity between hotels** –  
and **no significant differences between hotel types**

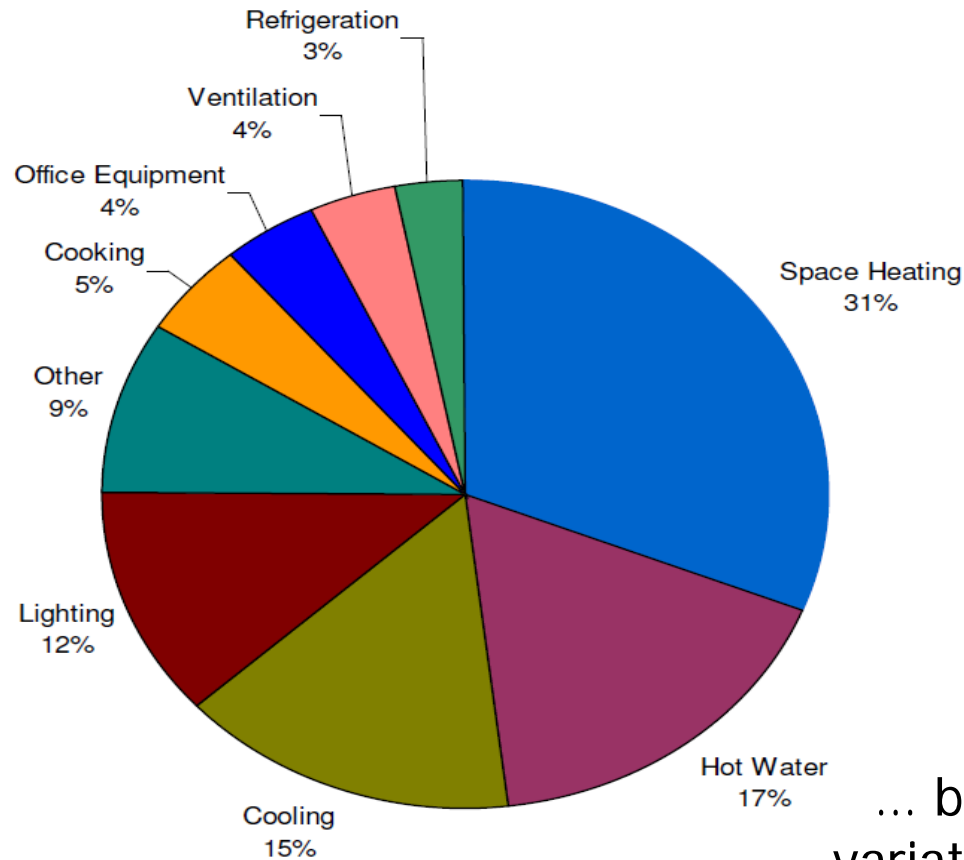
**Average hotel energy intensity is 305 – 330 kWh/m<sup>2</sup>/yr**

This is nearly twice the intensity for domestic properties





## How's this energy used in hotels?



... but there's a lot of variation between hotels



## Assessing hotel energy performance

Using energy intensity data, the HES has set **five energy performance bands for hotels**:

Excellent	< 195 kWh/m <sup>2</sup> /year
Good	195 - 280 kWh/m <sup>2</sup> /year
Average	280 - 355 kWh/m <sup>2</sup> /year
Poor	355 - 450 kWh/m <sup>2</sup> /year
Very poor	> 450 kWh/m <sup>2</sup> /year

Hotels input information on their energy use from their energy bills, and on their floor area – the HES toolkit then calculates energy intensity



## Energy efficiency technologies for hotels

The project team identified EE / RE technologies that are most suitable for hotels:

- **Better controls and management** of heating and cooling
- **Key card systems** for guest rooms
- **Insulation** of hot water tanks and pipes, walls and windows
- **Sun-shading devices**
- Installation of **more efficient boilers**
- Installation of **more efficient HVAC**
- Use of **energy efficient lighting & appliances**



Photos: Richard Tapper





## Renewable energy technologies for hotels

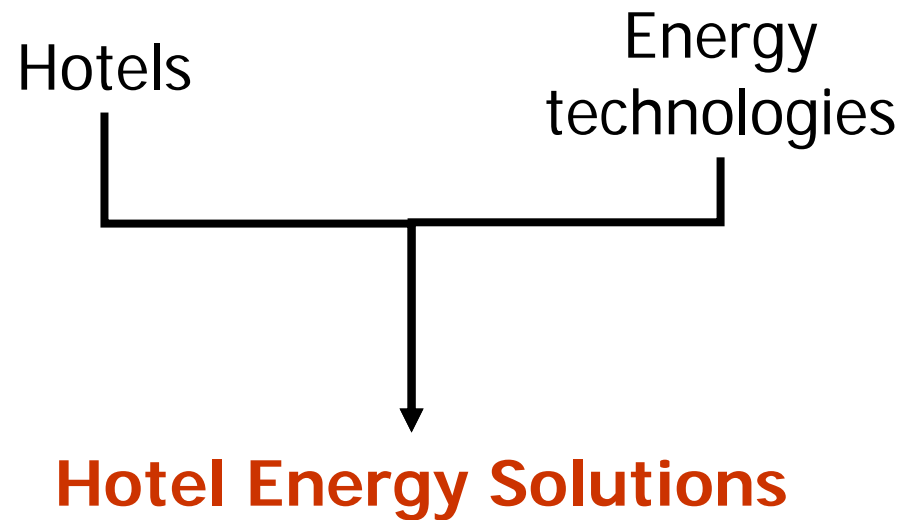
The project team identified EE / RE technologies that are most suitable for hotels:

- **Solar thermal systems** for hot water, heating and cooling
- **Combined heat and power systems**
- **Biomass boilers**
- Ground- and air-source **heat pumps**
- **Solar photovoltaic systems**
- **Wind power**
- **Micro hydropower**



## What does the toolkit do?

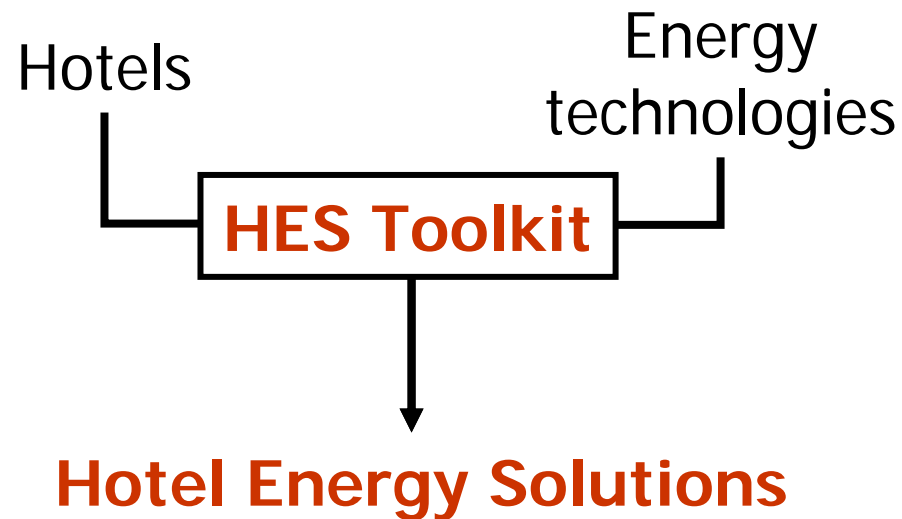
The HES toolkit **brings hotels and energy technologies together** to create Hotel Energy Solutions





## What does the toolkit do?

The HES toolkit **brings hotels and energy technologies together** to create Hotel Energy Solutions



The HES toolkit does the work to make this possible





# HES Hotel energy calculator

Hotel energy calculator

-  Questionnaire
-  Energy related report
-  **Energy solutions**
-  Return on investment calculator
-  Carbon footprint
-  Market your activities



## HES Toolkit

The toolkit builds an **“energy use profile”** of the hotel using data input by hotel managers

This data is used to identify options for energy improvement by:

- **Elimination** of energy use
- **Reduction** of energy use
- **Substitution of non renewable energy sources with renewable ones**

The toolkit generates an **“energy solutions report”** - a menu of **suitable EE/RE technology options** for the hotel





## Energy related report



Your energy performance (kWh per m<sup>2</sup> per year) is : **262** and categorize your hotel as :  
**Above average (B)**

You use:

**262** kWh per m<sup>2</sup>  
per year

59,55 kWh per guest-night

26200 kWh per guest room per year



# Energy solutions report

## Proposed energy saving solutions for your hotel

According to your answers the following are the proposed solutions to be implemented at your hotel

Reduce your energy consumption!		Use renewable energy!	
	No / small investment	High investment	
Heating / Cooling	<p>Regulation of space heating and cooling</p>  <p><a href="#">Read more .</a></p>	<p>Efficient solutions for active space cooling</p>  <p><a href="#">Read more .</a></p>	<p>Geothermal energy (ground source heat pumps)</p> <p><a href="#">Read more .</a></p>
General electricity	<p>Electric appliances with high energy efficient rating</p>  <p><a href="#">Read more .</a></p>	<p>Key card systems to switch off electricity in guestrooms</p>  <p><a href="#">Read more .</a></p>	



## 3 step planning for hotel energy improvements

### Step 1:

**Use the toolkit** to assess your hotel's performance

**Review the energy solutions report** and HES case studies – then **select energy solutions** you decide would work best for your hotel

### Step 2:

**Invite technology specialists** (eg. from local energy agencies / technology suppliers) **to:**

- **advise on how your selected solutions could best be installed**
- **quote on costs, and availability of financial incentives**

Enter the costs information into the toolkit's ROI calculator to **compare the costs and benefits of each technology for your hotel**

### Step 3:

**Decide on energy solution(s) to implement** in your hotel, and commission installation





## Using the HES toolkit

**We're now going to have presentations demonstrating how the toolkit is used, and experiences from two pilot testing destinations**





Photos: Richard Tapper