



**EARTH
GUEST**
RESEARCH

December 2011



The Accor group's **ENVIRONMENTAL FOOTPRINT**

*First multi-criteria life-cycle analysis
for an international hospitality group*



ACCOR

Open New Frontiers in Hospitality



Accor, the world's leading hotel operator and market leader in Europe, is present in **90 countries** with **4.200 hotels** and more than **500.000 rooms**. Accor's broad portfolio of hotel brands - **Sofitel, Pullman, MGallery, Novotel, Suite Novotel, Mercure, Adagio, ibis, all seasons/ibis Styles, Etap Hotel/Formule 1/ibis budget, hotelF1 and Motel 6** - provide an extensive offer from luxury to budget. With **145.000 employees** worldwide, the Group offers to its clients and partners nearly 45 years of know-how and expertise.

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EDITORIAL

“A shared world should replace a split world”,

Claude Lelouche in Itinéraire d'un Enfant Gâté



SHARING RESOURCES

Our 4,200 hotels in 90 countries, the more than 145,000 people who work there, the 56 million breakfasts we serve and the more than 544 million litres of water we consume every year make Accor something of a modern-day megalopolis. We keep busy, have a very real impact on the environment and have to continue curbing it in order to build even more sustainable hotels and protect our future business.

SHARING OUR EXPERIENCE

Accor teams around the world have been working to promote sustainable development every day for more than 15 years now. This Group is working for people and for the environment, to create value for everyone – its customers, employees and partners – in its hotels spanning the budget to luxury spectrum in 90 different countries.

SHARING OUR BREAKTHROUGHS

Today, Accor is releasing the first ever comprehensive environmental footprint study on and by an international hotel group. We have learned from its findings. Some of those findings were surprising but every one of them was fascinating. They have put us in a position to map out new down-to-earth action plans and to enhance the Group's sustainable development strategy for years to come.

As the leaders in our field, we have a duty to drive the hospitality industry. We are freely sharing the expertise we have gathered on our **Earth Guest Research** shared knowledge platform to do our part to spur new, planet-friendlier practices.

SHARING OUR VISION

This initiative also blends beautifully into the Accor Group's new aim, which it has encapsulated in its new **Open New Frontiers in Hospitality** claim. We are innovating, inventing new approaches to break down barriers and imagining hospitality tomorrow. We are driving towards 360° hospitality, combining comfort, wellness and environment-friendliness. That is inherent to the Group's strategy to build ever more inviting – and smart – hotels.

Denis Hennequin,
Chairman and Chief Executive Officer of Accor

INTRODUCTION

ACCOR, A CITY OF THE WORLD

Accor's 145,000 employees in 4,200 hotels across 90 countries rank it as the world's leading hotel company. But those are just figures. They conceal countless stories about people coming and going every day: tired travellers yearning for their hard-earned rest, business men and women determined to shake off their jetlag and get to their meetings, families enjoying a weekend break, sports teams vying for victory far from home, and so many more.

Those figures also conceal the bustling backstage: the countless trains, trucks, aeroplanes and cargo ships that bring in the raw materials that we use to prepare our guests' meals, the endless rows of machines cleaning sheets, bathrobes, towels, tablecloths, and so much more. Estimates suggest Group hotels serve 56 million breakfasts and wash over 290 million towels a year. From that perspective, Accor ranks on a par with a city – and never sleeps.

Last but not least, those figures conceal quantifiable environmental impacts. What we do in our hotels shows on our electricity and water meters, in the tonnes of carbon dioxide we release into the atmosphere and in the tonnes of compounds we flush away in wastewater.

OUR LONGSTANDING COMMITMENT TO PROTECTING THE ENVIRONMENT

We have been aware of that and working on sustainable development for over 15 years now. We opened our Environment office in 1994 and promptly kicked off a programme to set hotels' sights high with bold objectives. This programme is called Earth Guest and its goals hover around two centres:

- **People: local development, fight against epidemics, child protection and balanced food.**
- **The environment: energy, water, waste and biodiversity.**

The Group's policies have allowed Accor hotels to come a long way. For example, water consumption per rented room dropped 12% from 2006 to 2010, and energy consumption per available room dropped 5.5% over that period. Today, 85% of hotels have water flow regulators and 82% have compact fluorescent lamps. In 2009, Accor also embraced Plant for the Planet, a bold reforestation project – and Group-wide efforts to optimise laundry costs have allowed it to finance 1.7 million trees since then.

ASSESSING AND ADVANCING

Accor decided to assess its full environmental impact 15 years after it took a stand and started taking concrete measures to embrace sustainable development. It had already identified and was monitoring its impacts on certain fronts but not in other areas where the metrics are not as clear-cut. It started working on gauging its environmental footprint, to gather a comprehensive corpus of reliable and documented facts in order to step up its strategy, at the end of 2010.

This study set out to assess the Group's impacts on the environment – and aims high. It looks at the full picture, not just CO₂ emissions: it encompasses the Group's annual impacts in terms of energy, water consumption and contamination, and waste. And it looks way beyond Accor hotels, at the indirect impacts that they generate for example in the farms that raise the poultry they serve in their restaurants and from the trucks that transport it between the two.

THE FIRST EVER ENVIRONMENTAL FOOTPRINT STUDY IN THE HOSPITALITY INDUSTRY

This study is a hospitality industry first worldwide: no other international hotel Group had ever run such an in-depth assessment spanning such an extensive scope, before.

Accor has decided to use the life-cycle analysis method, which companies generally use to assess a product's full environmental impact, i.e. from the point where it extracts the raw materials it needs to make it until it disposes of it at the end of its life, including the impacts during the product's use if and as appropriate.

This study involved nearly a year of groundwork with PwC, a consulting and auditing firm (and a sustainable development specialist and pioneer). The many environmental analyses that PwC had run over the past more than 20 years had provided it with a priceless wealth of expertise to gather, process and analyse the information using the most uncompromising methodological standards.

FINDINGS TO SUPPORT DECISIONS

The findings cast light on several impacts that people rarely associate with hotel operations. It for example provided documented outlines of particularly complex metrics such as the Group's "water footprint" or "waste footprint". And the findings are priceless: they provide accurate information about the real environmental issues and dispel a few of the conjectures that circulate in this area. Analysing each stage in an operation's life cycle is the only way to analyse its impacts objectively.

Accor has been using these findings to take its longstanding commitment to sustainable development further, and to hone its environmental strategy even more discerningly, since mid- 2011. It is preparing a new action plan with its sights on 2015 and will be disclosing it in Q2 2012.

A RESPONSIBLE HOSPITALITY COMPANY SHARES ITS INSIGHTS

This study ties in with one of Accor's top priorities: understand the environmental issues behind what it does and thereby build the best possible strategy to curb its impacts. But that is not its only goal: Accor has built a wealth of expertise as a leading hotel operator with a long environmental track record and wants to share what it has learned with its peers.

Accor has decided to share its research findings because it knows that working together is the only way to go to to achieve sustainable development. This study is public and every hotel company is welcome to peruse it on the **Earth Guest Research** platform.

Accor also hopes that sharing this information will spur new and more sustainable practices in the hospitality industry.

Sidestepping conjectures and why that is the only way to go

One of the many interesting findings: if you live in the UK and enjoy mutton chops, your carbon footprint will be smaller if the lamb you eat comes from New Zealand 18,000 km away than from a local farm. The life cycle analysis explains this counter-intuitive fact:

- Farms in New Zealand run less intensive operations
- Most of the power in New Zealand comes from hydroelectric plants, which release less CO₂
- They use cargo ships, which also release less CO₂, to transport it.

CO₂ emissions per pound of mutton using the life cycle analysis method

(in tonnes of CO₂ equivalent)

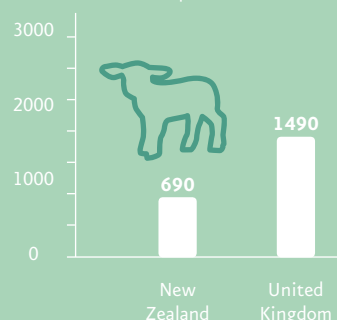


Figure 1

Source: Lincoln University

EARTH GUEST RESEARCH : Accor's free platform to share knowledge about sustainable development in the hospitality industry

The Group's environmental footprint study findings are available free of charge on accor.com (in the sustainable development tab). The methodology is also available on request (as is the case for all Earth Guest Research publications) on one condition: the companies that use it have to publish all their new findings freely on accor.com.

METHODOLOGY

A TRAILBLAZING STUDY IN A CLASS OF ITS OWN

There is nothing quite like this study: no survey before it has concurrently covered greenhouse gas emissions, water and energy consumptions, water pollution and waste production spanning an international hotel Group.

Accor and PwC started working on this pioneering project by reviewing tried and tested methodologies, selecting the ones that would reflect hotel operations most accurately, and tweaking them if and as appropriate. There are several analysis approaches:

- Assessments focusing on one criterion. The carbon footprint method, which exclusively tracks greenhouse gas emissions, is the most popular example. It is used extensively in retail and consumers are now familiar with the labels they can check before deciding which car, heater or household appliance to buy. The Bilan Carbone® method devised by France's Environment and Energy Management Agency (ADEME) is perhaps the best known example here.
- Assessments tracking a product's environmental impacts throughout its life cycle (from the cradle to the grave, so to speak). These assessments are called **life cycle analyses** (LCAs) and typically encompass several criteria, namely carbon emissions, resource consumption (water and energy, for instance), ecosystem toxicity, and so on. This angle is much more elaborate and comprehensive than carbon balances and is mainly used on consumer goods (manufacturers and environmental associations regularly run LCAs to benchmark several products' impacts).

TRANSFERRING LIFE CYCLE ANALYSIS TO A HOTEL GIANT

Accor's study is based on the LCA method. In other words, it measures environmental impacts all the way up and down the chain, i.e. producing the resources that hotels need (buildings, goods, energy, etc), using those resources and disposing of them at the end of their life.

Life-cycle analysis applied to an international hospitality group

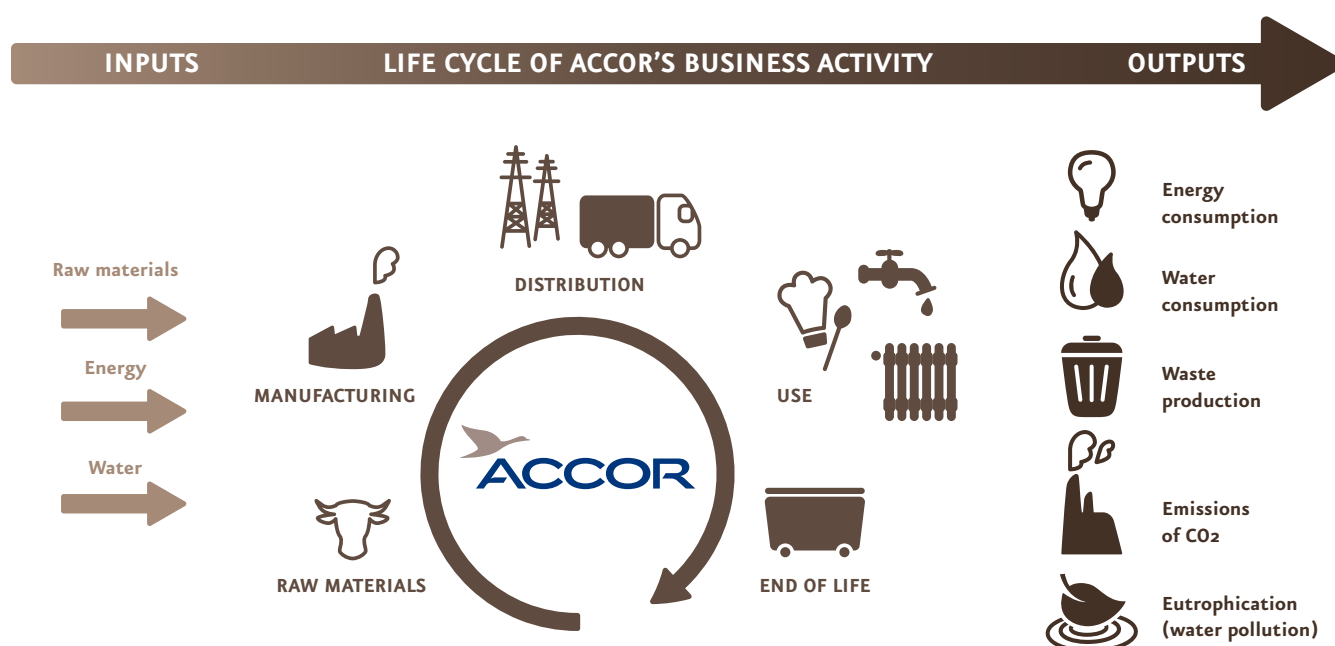


Figure 2

THE MANY QUESTIONS WE HAD TO ANSWER TO ADAPT THE METHOD SMARTLY

This study first of all entailed adapting the original LCA method because it was not centred on a single product. The goal, to the contrary, was to use the same yardstick to analyse every operation in a worldwide group. So the scale, to put it mildly, was different.

The right scope

The scope was one of the variables we had to adapt. We looked at every issue when we defined the method: what room furniture we should include, to what extent we should include laundries working for the group, exactly where the Group's CO₂ emissions stopped, and even whether employees travelling to work counted are only four examples.

Accor and PwC decided to analyse every operation and by-product that contributes significantly to the Group's impact, and to adjust the approach exclusively when they had to (methodological feasibility). Their answer to the question about room furniture, for example, was to factor the main items in a standard room (beds, desks, chairs, tables, televisions and shower units), not the paintings, pedestal tables and countless other ornamental amenities in upscale hotels. They included employee travel and food supply chains. They did not include customer travel outside hotels simply because there are too many variables to yield any reliable data (how and how far guests travel when they come and go outside hotels depend on where they come from and where they go), and because it was complex to derive a model from assumptions. They also left out poorly-documented operations such as organic and chemical compound processing in wastewater and meals for employees.

What results mean – really

Scope was the first issue, complexity was the second. The questions here hovered around measuring the Group's environmental footprint in countries where energy production and recycling operations (inter alia) vary so markedly, and how to tally up information from such a wide range of operations (food services, cleaning, air conditioning and purchasing furniture, to list only four).

They started by compiling all the available information from the various Accor departments (technical and purchasing departments, for example). Then, PwC cross-referenced that information with the closest scientific research to translate Accor's various operations into "energy-equivalents", "water-equivalents" or "CO₂-equivalents".

Then they compared those figures to an average European's footprint to derive an "inhabitant-equivalent", rank Accor's impacts and understand what the findings mean in real-life, down-to-earth terms.

ACCOR'S ENVIRONMENTAL IMPACT, 11 FRONTS, 5 BIG IMPACTS

Analysing the Group's environmental footprint involved breaking down operations into 11 areas to analyse them.

PwC combined data from Accor on these 11 areas – for example the full energy consumption figures from all its hotels – with external figures from databases used extensively around the world – the greenhouse gas emissions from generating and supplying electricity in the 90 countries where Accor has hotels, for instance – to boost result accuracy.

The 11 activities of the hospitality business covered in the study








Figure 3

Then it transferred the results from the 11 operations into 5 large environmental impact families:

- ❶ Energy consumption
- ❷ Water consumption
- ❸ Waste production
- ❹ Climate change due to greenhouse gas emissions
- ❺ Water pollution (eutrophication)

The 5 main impacts measured in the Group's environmental footprint

 ENERGY CONSUMPTION (primary MWh)	<p>Producing energy necessarily involves using resources (oil, gas, uranium, coal, the sun, etc). This indicator measures the total amount of resources that an operation extracts from the environment, i.e. primary energy. This indicator also factors in the energy consumed and released during production and distribution phases.</p>
 WATER CONSUMPTION (m ³)	<p>This indicator encompasses all the resources taken from the environment with one exception: water that does not travel through hotel meters (well water and rain water).</p>
 WASTE PRODUCTION (tonnes)	<p>All human activity generates waste, which can have a wide variety of effects on the environment depending on whether it is organic (biodegradable), plastic (slow to decompose), heavy metals (toxic) or other substances. This indicator measures the ultimate waste from hotel life cycles. In other words, it factors in recycled waste, incinerated waste and waste routed to landfills.</p>
 CLIMATE CHANGE (tonnes of CO ₂ equivalent)	<p>We do not yet know exactly how to measure climate change due to human activity and the large amounts of carbon that it releases into the atmosphere, which used to be stored in fossil fuels and forests. What we do know, however, are the gases that cause this phenomenon (CO₂, CH₄, N₂O, HFC, CFC, etc). They are usually bundled into a single yardstick: tonnes of CO₂ equivalent, the unit we are using here.</p>
 WATER EUTROPHICATION (tonnes of PO ₄ ³⁻ equivalent)	<p>Eutrophication involves excessive nutrient input in water environments that spur algae development and thereby drain the oxygen from the water. Nitrogen and phosphates from farms and factories account for the bulk of this phenomenon. Like climate change, the yardstick to measure eutrophication is an equivalent. In this case (and in this study), it is tonnes of tonnes of PO₄³⁻ equivalent ions.</p>

THE ACCOR-PWC STUDY AS A TEST BENCH

This study has shown that there is not enough information in certain areas (in the company and in international databases). That was why for example we did not include wastewater treatment in this study's scope (there was not enough information about wastewater treatment in the 90 countries where Accor has hotels). We decided to include other areas that required more method fine-tuning. The main example, here, was food services (we calculated impacts based on Accor purchasing data, principally from France). This study also cast light on the lack of reliable international surveys on industrial laundry operations.

As Accor was keen on learning from and sharing its findings. It asked a panel of experts to run this study and its findings through a critical review. Two French LCA specialists and an international hospitality industry expert spent two months analysing this study's findings. Their input allowed us to fine-tune and expand a few issues, and helped Accor to identify the environmental stakes in its operations even more accurately and reliably.

Alas, rigorous though it is, this study inevitably ran into methodological limitations – because it decided to stretch its scope far and wide, because there is not enough data or because data quality varies. The goal is not to achieve a scientific study's level of finesse. We have provided information about the quality of available data to help readers put results into perspective. So please bear this caveat in mind when you read about the results. This study has nevertheless **mapped out the main areas where Accor has an impact on the planet**. And that is priceless to help Accor to take it further and lead the hospitality industry on. That is what this study is all about.

THE RESULTS (AN OVERVIEW)

The figures (an overview)

	ENERGY CONSUMPTION (primary MWh)	CLIMATE CHANGE (tonnes of CO ₂ equivalent)	WATER CONSUMPTION (m ³)	WATER EUTROPHICATION (tonnes of PO ₄ ³⁻ equivalent)	WASTE PRODUCTION (tonnes)
Total	18,200,000	3,660,000	544,000,000	3,180	1,250,000
Water consumption and release			62,000,000	120	
Energy consumption on-site	13,800,000	2,420,000	6,960,000		332,000
Hotel air-conditioning		73,900			
Waste management	16,200	75,800	38,900	4	65,600
Outside laundries	1,200,000	48,000	6,750,000	68	6,340
Food services	1,120,000	495,000	467,000,000	2,990	
Construction and renovation	810,000	165,000	806,000		848,000
Room furniture	353,000	75,100	371,000	5	6,020
Housekeeping products	5,660	678	7,510		118
Office equipment and supplies	48,400	11,900	35,500	6	849
Employee travel	892,000	303,000			

VERY RELIABLE: the data gathered, conversion factors, assumptions and extrapolation/allocation rules are considered reliable.

FAIRLY RELIABLE: several aspects of the data gathering process, conversion factors, assumptions and extrapolation/allocation rules are considered reliable.

UNRELIABLE: the data gathered, conversion factors, assumptions and extrapolation/allocation rules are by and large considered unreliable.

Figure 4

Impact analysis: contribution of the main activities of the hospitality business

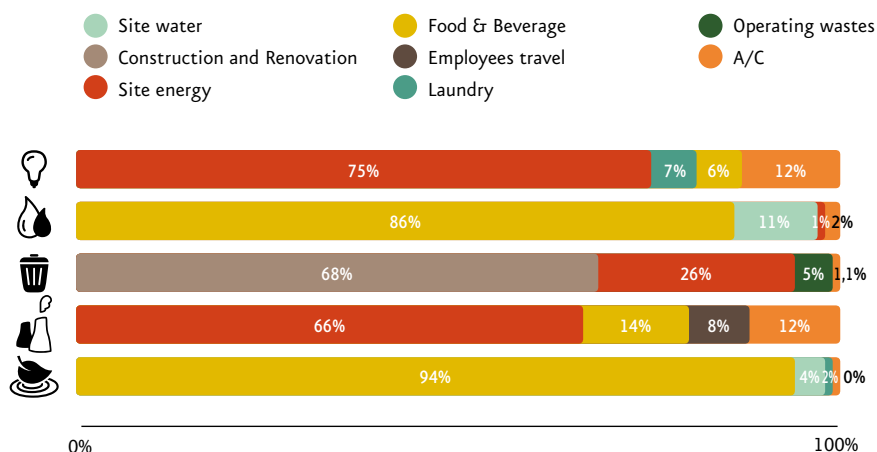


Figure 5

Impacts in terms of inhabitant-equivalents

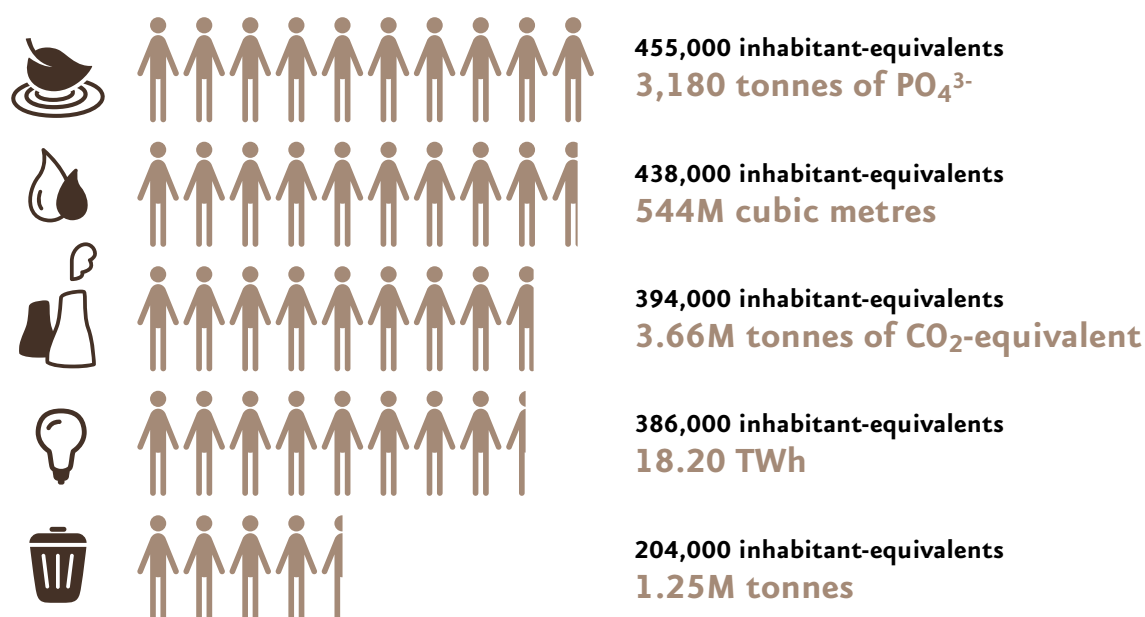


Figure 6

Eutrophication, mainly in upstream farming operations

Results show a large impact on watercourse pollution (about 3,180 tonnes of phosphates equivalents discharged per year). 94% of that comes from fertilising and crop-protection products used to meet Accor's food-services requirements. Wastewater that hotels release into deficient sewerage systems may add to this impact but this impact has not yet been measured due to the lack of solid information about wastewater treatment facilities in countries where Accor has hotels.

Water consumption is another significant impact

Accor consumes 544 million cubic metres of water – i.e. as much as 438,000 Europeans – every year. A full 86% of that water comes from irrigation systems feeding crops and livestock (especially beef).

Even though it only accounts for 11% of the total, direct water consumption in hotels adds up to a very sizeable 15,000 m³ per year on average (i.e. the equivalent of 685 showers a day in each one!). That water goes to customers, housekeeping, food services, laundries, swimming pools, garden sprinklers, etc.

CO₂ emissions are pegged to energy consumption

Annual CO₂ emissions add up to nearly 3.7 million tonnes of equivalents. About two-thirds of that comes from energy consumption (electricity mainly). The big surprise is that food services ranks second with 14% of total emissions. Lastly, employee travel (to work, for work etc) accounts for 8% of the Group's emissions.

Energy consumption is mostly concentrated in hotels

The roughly 18 bn kWh that Accor consumes a year is as much as 386,000 Europeans use. Most of that energy (75% of the total) goes to hotels. Laundries working for the Group account for 7% of our energy consumption.

These figures reflect primary energy, i.e. the energy that had to be produced to keep hotels running (the energy that hotels consume, the energy used to fuel the power plants and the energy used to transport the energy).

Huge building-site waste

Every year, Accor produces as much waste as about 219,000 Europeans: 1.25 million tonnes. A closer look has shown the Group several things: over two-thirds of that waste comes from hotel building and refurbishing work (concrete, wood, furniture, common industrial waste, etc). And about one-quarter of that impact comes from energy-related waste (extracting and preparing fuel).

The last surprise was that hotel operations generate comparatively little waste in relation to other aspects of Accor operations: 'only' 5% – even though the Group will needless to say continue to pay attention to that area.

KEY LEARNING #1

CARBON AND ENERGY ARE THE FIRST POINTERS FOR PROGRESS FOR THE GROUP

75% of the energy that Accor consumes goes to its hotels. We have already made significant progress to curb this impact but we have more to do on this front to stay ahead of regulations, new taxes and cost hikes in the pipeline that will tighten constraints on hotel operations.

ON-SITE CONSUMPTION ACCOUNTS FOR THE BULK OF THE TOTAL

The study shows that Accor consumed more than **18.2 TWh**, i.e. 18.2 bn kWh of primary energy in 2010. That's how much 386,000 Europeans consume in a year. That's enough to heat a French city such as Toulouse for a year.

Contribution of the various areas of the hospitality business to the «Energy» impact

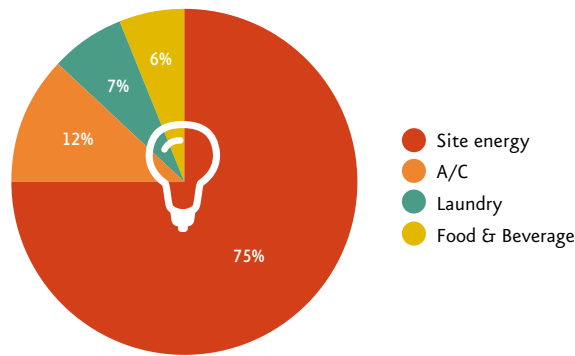


Figure 7

These figures reflect primary energy, not final energy (final energy is measured as the kWh taken from power outlets, primary energy encompasses all the energy used to produce those kWh, i.e. to generate it at the power plant, the energy that is dispelled while it travels through the distribution network, etc). In the interest of relevance, this study measured the Group's footprint at the end of the line (final energy) and the requirements at the start (primary energy). It used authoritative International Energy Agency (IAE) literature to do so.

Generating electricity can have a greater or smaller impact on the environmental depending on the country where it is generated. The amount of primary energy required to supply 1 GWh is roughly the same in every country, the other impacts vary a lot depending on production methods. A country using more coal such as China releases significantly more carbon and waste than a country that relies mostly on nuclear power plants such as France. On the other hand, cooling a nuclear power plant takes much more water than cooling a thermal power plant.

The impacts associated with consuming 1 GWh of electricity and how they vary due to production methods in different countries

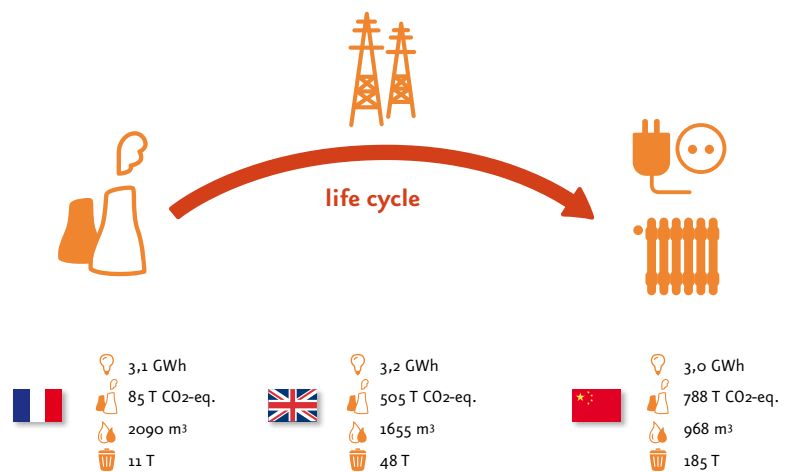


Figure 8

Sources: IAE, Zurich University

Hotels account for three-quarters of Accor's energy footprint. So the Group can focus on its building refurbishing projects, equipment purchases, maintenance investments and installation operation to effectively curb its impacts due to energy consumption.

The other sources inter alia include electricity consumption in the laundries that work for Group hotels, necessary consumption in farming operations to produce food and Group employee fuel consumption to travel.

HOW THAT AFFECTS THE GROUP'S CARBON BALANCE

Energy consumption has a direct impact on the Group's carbon footprint: hotel boilers, electrical alliances and employee travel release greenhouse gases into the environment and contribute to climate change. The results show that about 66% of the GHG (greenhouse gases) that Accor releases come from energy consumption in hotels.

This study also shows that nearly 15% of Accor's GHG emissions come from farming operations up the line. Where exactly? These emissions mainly come from the transport and distribution circuits, and from meat and dairy cow rumination.

Interestingly, meat and dairy products alone account for almost half of the GHG emissions in our food services department (27% and 20% respectively), but only add up to 15% of the food we buy (in volume). So they are big contributors (mainly due to the methane releases) in relation to the main food-purchase categories (beverages, cereal, fruit and vegetables).

Employee travel accounts for 8% of Accor's GHG emissions. Estimates suggest that employees fly about 120 million kilometres in total every year.

We also included liquid-refrigerant leaks in this study, as leaks in hotel air-conditioning circuits contribute heavily to global warming. Accor has a strict policy on monitoring its installations, and detailed processes and instructions to check they are watertight on a regular basis. Measurements show that leaks are rare and, at the end of the day, only account for a minor roughly 2% of the Group's carbon footprint.

Contribution of the various areas of the hospitality business to the «CO₂» impact

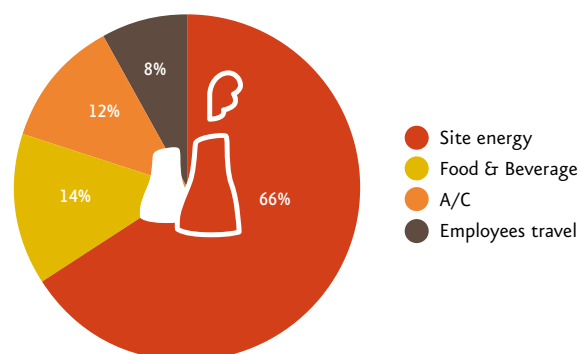


Figure 9

It is important to point out that methodological issues during the data collection phase led experts to leave out customer travel from this study's scope. There is no reliable information about this issue today and expecting every Accor guest to fill in a detailed questionnaire for a full year was simply unfeasible! Behaviour patterns also vary too much to distil assumptions and thereby hone estimates: some people fly into an airport and take a shuttle into a capital-city centre, others drive to hotels to spend a week working in the area, families that drive to an Accor hotel restaurant for Sunday lunch, and so on. So the differences are huge. Even though this impact may be significant, it was impossible to calculate it accurately enough to include it in this study's scope.

ENERGY IS A BIG ISSUE FOR ACCOR

Energy consumption, it follows, is a top priority to cut Accor's global carbon and energy footprint. That figure is near 600 kWh/sqm/year (primary energy) today, which is much higher than standard consumption figures in residential buildings, i.e. 280 kWh/sqm/year according to ANAH, France's national housing agency. The facts that hotels have larger areas to heat, mechanical ventilation systems, in-room air-conditioning systems, more bathrooms than residential buildings, and other amenities (restaurants, laundries, etc) explain this difference and why hotels are inherently energy-greedier than apartment buildings.

Hotel on-site energy consumption in 2010

Average per available room and per day (kWh)

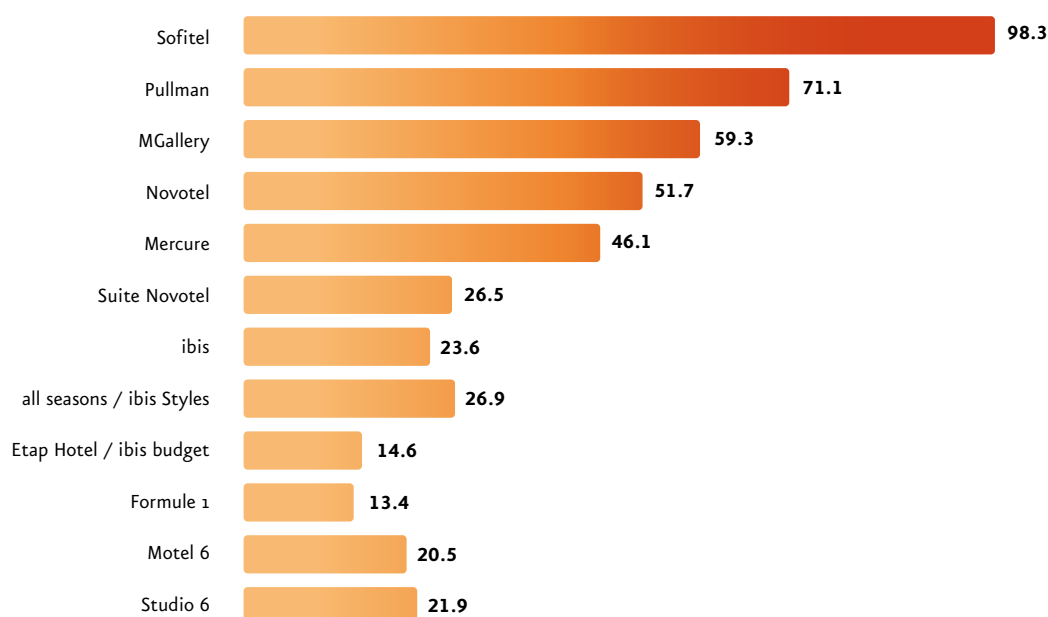


Figure 10

Source: Accor 2010 sustainable development reporting

Accor is therefore working to optimise its hotels' energy-efficiency – both to cut its bills and to shrink its footprint on the environment. It took that drive to the next level in 2005 when it set up OPEN, its tool to monitor and manage sustainable development across the Group. This system inter-alia measures and analyses consumption in each hotel. About 2,000 hotels are using it today, and we are fine-tuning it on a regular basis to accommodate the specific variables in our business (fluctuating building occupancy rates and fluctuating weather patterns, which dictate heating and air-conditioning requirements). We are also running a continuous-improvement drive to use more energy-efficient systems (low-consumption light bulbs, for instance, are being used in 85% of Group hotel lobbies and 76% of rooms).

KEY LEARNING #2

FOOD PURCHASES ACCOUNT FOR MOST OF THE WATER WE CONSUME AND CONTAMINATE

One of the big surprises in this survey is that the meals we serve in our hotels account for the bulk of our impact on water! Accor indeed has to continue to reduce its direct consumption – in bathrooms and kitchens, sprinklers and leaks – but all those outlets combined only add up to slightly over 10% of its impact on water, whereas the water used all the way up and down the food production chain accounts for about 86%.



FARMS UP THE LINE ACCOUNT FOR THE BULK OF ACCOR'S WATER FOOTPRINT

Direct water consumption in hotels (showers, kitchens, laundries, swimming pools) adds up to some 60 million cubic metres of water a year. But, from a big-picture perspective, i.e. including indirect consumption, Accor consumes no less than **544 million cubic metres of water** a year, i.e. as much as 438,000 Europeans.

Contribution of the various areas of the hospitality business to the «Water consumption» impact

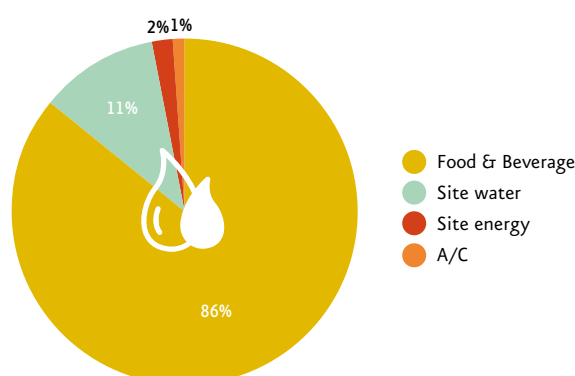


Figure 11

Water feeding farms accounts for the bulk of that total. That alone accounts for roughly 86% of the Group's water footprint. But that is understandable: farming and breeding are two of the human activities that consume the most water (estimates suggest that almost three-quarters of the water drawn on the planet goes to one or the other).

A closer look at those figures, however, reveals a number of differences: farm produce "water-equivalents" vary a lot according to how long they take to grow and how much water they need to do so. Fruit and vegetables by and large need less water than livestock. It takes about 700 litres of water to produce 1 kilo of apples. Raising poultry takes much more, and producing beef even more. Beef is by far the biggest consumer: watering, feeding and bathing a cow for seven to nine years takes no fewer than 15,500 litres of water per kilo! That figure alone says a lot about the environmental advantages of changing a few of our eating habits.

Water needed for food production for 1kg of product

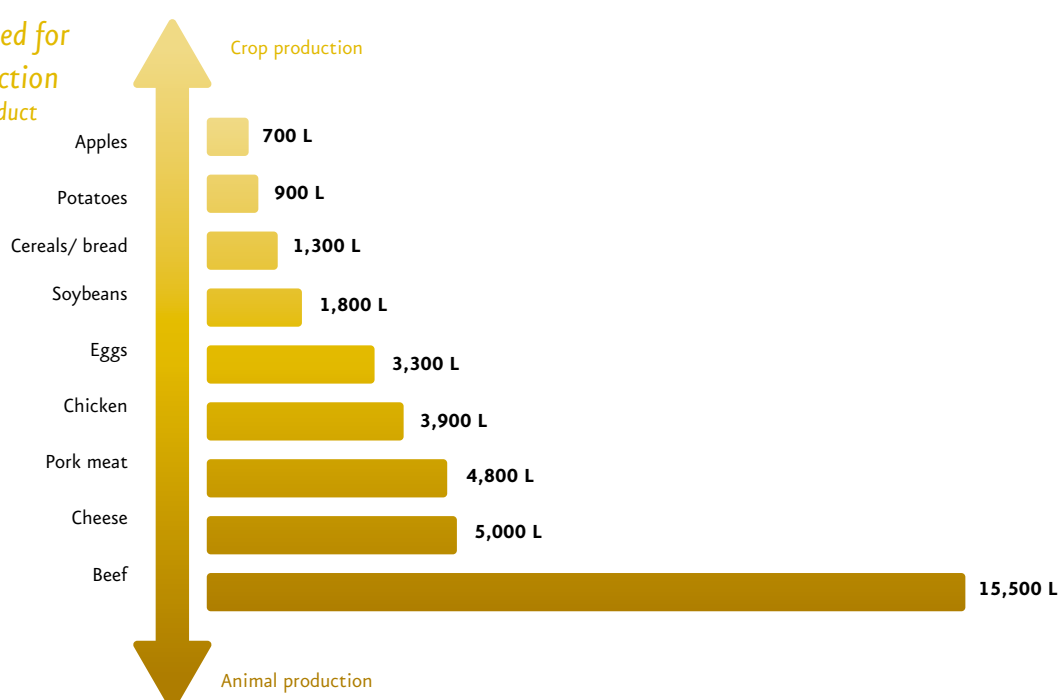


Figure 12

Source: Water Footprint

CONSUMPTION IN HOTELS AND AREAS UNDER WATER STRESS

Meter-measured water consumption in hotels accounts for 11% of the Group's water footprint. We have already taken measures to reduce consumption here: carefully monitoring leaks and fitting flow regulators on taps and showers allowed Accor to shave almost 12% off its consumption per rented from 2006 to 2010.

Hotel on-site water consumption in 2010

Average per rented room (l)

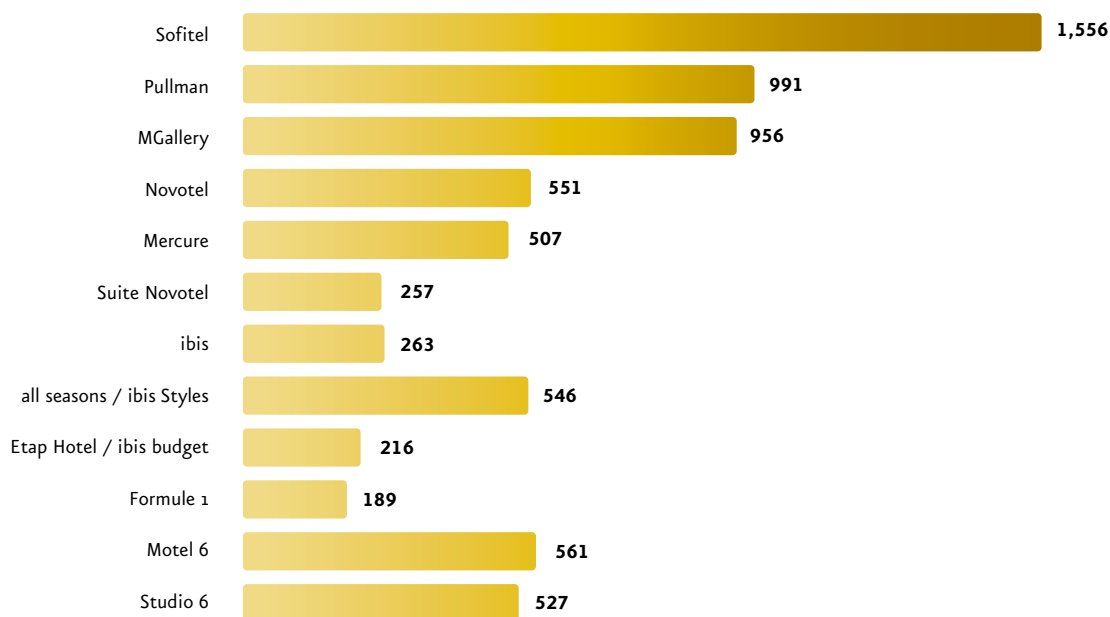


Figure 13

Source: Accor 2010 sustainable development reporting

Accor will continue to work on curbing water consumption, especially in areas under water stress, i.e. where water quantity and quality are inadequate to meet the people's and the environment's needs.

We have started working on several fronts. We have wastewater recycling systems in several hotels in Egypt and Spain, and 232 Group hotels worldwide have rainwater recovery systems. And we will have to take it further in the most exposed parts of the world (in particular the Mediterranean rim and Australia).

WATERCOURSE POLLUTION

Water consumption is only one of the issues. This study also looked at how Accor hotels could impact water resources. They can mainly do that in one of two ways: with the fertilising and crop-protection products used in farms to supply food to Accor and with the organic, chemical and other substances that hotels release in their wastewater (not measured in this study).

This study tracked the substances released into watercourses (fertilisers, organic compounds, chemicals, etc) to measure the Group's impact in terms of eutrophication, i.e. damaging water environments by saturating them with nutrients such as phosphorus or nitrogen.

Only part of the information we needed to measure this impact was available. The information about the number of hotels connected to wastewater sewerage networks and about the quality of those networks was not accurate enough to provide satisfactory, reliable metrics. Accor has nevertheless started sharpening its tools to provide a more documented viewpoint on this important issue in the near future.

Based on the available data, estimates suggests that the eutrophication generated by Accor around the world stands at approximately **3,180 tonnes of PO_4^{3-}** (the formula for phosphate, the yardstick used to measure eutrophication in the same way as carbon is used to measure greenhouse gases). That is the eutrophication that 455,000 Europeans cause per year, or 1.6 billion dishwasher cycles.

Contribution of the various areas of the hospitality business to the «Eutrophication» impact

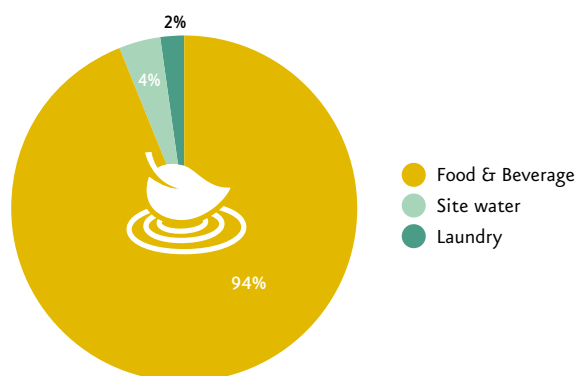


Figure 14

FOOD SERVICES AND WHY IT IS IMPORTANT TO MONITOR IT CLOSELY

Food services are where Accor consumes most water. It also accounts for the bulk of the pollution it releases into watercourses: no less than 94% of the eutrophication generated by the Group comes from the fertilising and crop-protection products used in farms.

The goal is to find pointers for progress in food-processing companies that have opportunities to break new ground with less polluting options. Accor can also leverage its supply chain by working with the most advanced companies on that front. Lastly, the Group's goal for the next few years is to gravitate towards promoting more balanced and smarter menus in its restaurants, for its guests and for the planet.

A close-up on impacts from food services

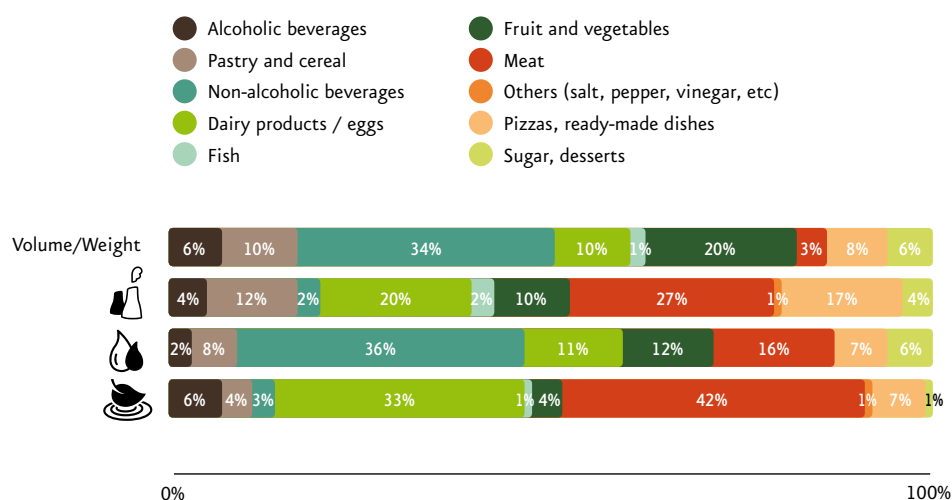


Figure 15



KEY LEARNING #3

BUILDING SITES ARE A CRITICAL LINK IN THE WASTE PRODUCTION CHAIN

Somewhat surprisingly, the bulk of the waste we generate in the Group does not come from running hotels: it comes from building and revamping them. A clearer understanding of the available options and room for manoeuvre will gradually cut costs and impacts on this front.

Contribution of the various areas of the hospitality business to the «Waste» impact

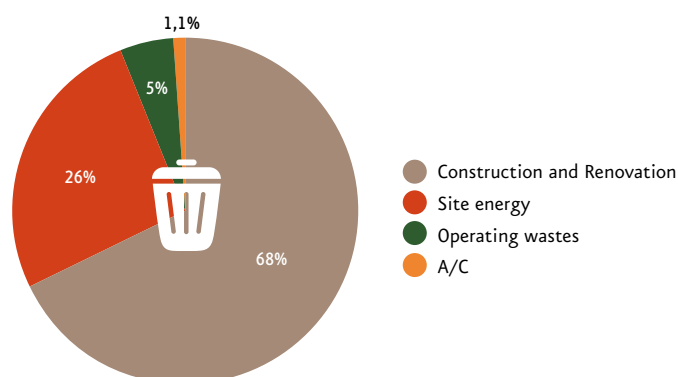


Figure 16

CONSTRUCTION WASTE AND WHY IT IS A CHALLENGE

Accor generates 1.25 million tonnes of waste a year (as much as 219,000 Europeans) and the study shows that about 70% of that waste comes from building and revamping work. Most of it is “inert” waste (concrete, rubble and the like), which appears at the end of a hotel's life cycles (100 years on average) or during refurbishing work.

The volume (and hence space they take up) makes reusing and recycling this waste worthwhile. Some of it can be sold and reused (concrete, for example, can be recast and used to level land and build roads).

the cost of processing construction waste in France

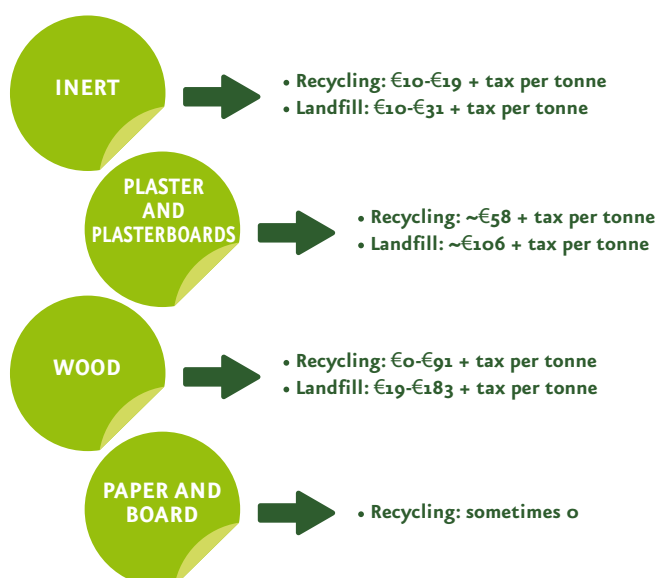


Figure 17

Source: ADEME, 2011

ENERGY PRODUCTION AND WHY IT INVARIABLY GENERATES WASTE

Energy production accounts for 26% of the waste that Accor generates. This study factors in the waste that comes from producing the energy that it needs to run its hotels in Accor's environmental footprint.

Waste volumes bulge fast in countries that use a lot of coal to generate energy (one-third of the coal that enters the process emerges as waste after combustion). The fact that Accor runs large hotel networks in three of the countries that consume the most coal worldwide – China, the United States and Australia (about 1,300 hotels in total) – accounts for explains a sizeable portion of its energy waste.

EVERYDAY WASTE, THE TIP OF THE ICEBERG

Common everyday waste adds up to a smaller fraction of the total but nevertheless warrants careful monitoring for two reasons: cost and environmental impact. Some of that waste is an environmental hazard (remote-control batteries, magnetic strip card readers, compact fluorescent lamps, and electrical and electronic waste, are a few examples).

A hotel's everyday waste falls into one of three separate families:

- Unscreened waste ("common industrial waste"): mixed and therefore buried or burned, not recycled
- Screened waste collected in separate channels: we most often screen dangerous waste (batteries, ink cartridges, etc) and waste routed for well-developed recycling streams (paper, cardboard and glass)
- Liquid waste: spent oil and fat from restaurants needs to undergo specific processes

Everything that happens in a hotel generates waste: the restaurant, rooms, seminars, bars, offices, reception desk, car park, etc. 70% of that waste comes from the rooms and food services. Hotel restaurants can generate up to 60% of the total waste.

Accor added a "Waste" module to its OPEN environmental management tool in 2011. This module serves two purposes: it raises teams awareness and provides raw material for training courses, and provides the Group with a clearer picture of the waste it produces and recycling options available in different countries.

We are looking at several leads to cut waste at source, including using less packaging for transport and using more economical packaging for toiletries, cleaning products and food. Down the line, we are also working on stepping up its recycling channels and selecting efficient service providers.

Accor, however, can only be as efficient as the facilities and regulations in the countries that host its operations. The options vary from one region to another, so it has to engineer solutions that work locally and share its best practices around the network.

AN EXAMPLE: RECYCLING ORGANIC WASTE

Accor has already set up several systems to recycle the organic waste from its hotel restaurants. In Cambodia, for instance, the Sofitel Angkor Phokeethra "methanises" its organic waste to produce gas. Bacteria decompose the organic matter in vacuum tanks to produce methane, which is then stored and processed until it becomes fit for consumption. This "biogas" is then used as conventional natural gas to cook in the hotel restaurant. This sustainable and environment-friendly solution heats 700 meals a day.

EXPERT REVIEWS FOR TRANSPARENT RESULTS

Accor decided to call in an independent panel to make sure its study was completely accurate and transparent before publishing it. Two life-cycle analysis experts and a sustainable tourism specialist uncompromisingly scrutinised all Accor's and PwC's methodological choices and conclusions. It took an extra two months but fine-tuned the approach and endorses the study. Here is what these three experts have to say.



EXPERT REVIEWS FOR TRANSPARENT RESULTS

Charlotte Hugrel and Magali Palluau,
life-cycle analysis experts, Bleu Safran

What do you think about Accor's initiative to measure its environmental footprint?

Accor decided to look at its own operations and at the operations that contribute indirectly to its footprint, and to look at several environmental issues over and above carbon emissions. That's commendable. It is what companies have to do to rise to the many environmental challenges we are facing down the road (climate change, scarcer and more expensive resources, end-of-life waste treatment, dwindling biodiversity, tighter access to high-quality water resources, etc).

It's a trailblazing initiative in the hospitality industry and indeed in the business world in general, where measures like this one are still few and far between.

As we see it, this environmental footprint study has put Accor in a position to home in on the right priorities and, especially, get a good grasp on the levers it can pull to do its part. We can only encourage other companies to follow Accor's lead – and hope many do.

Did any of the findings surprise you?

We were actually expecting food services for customers, and hotel construction and renovation work, to contribute more to primary energy consumption and greenhouse gas emissions. But the results show that the energy they use directly in hotels accounts for the bulk of those two impacts.

Where do you think the top priorities are now?

The results show that Accor has to pay special attention to managing consumption in hotels, and that it is on the right track and has to soldier on in the same direction. This initiative will probably prompt Accor to think carefully about the options when it builds new hotels or revamps existing ones because several studies show that energy consumption later on hinges heavily on those choices.

Also, food services (breakfasts and other meals) may appear to be secondary contributors to greenhouse gas emissions and energy consumption but they are big issues in terms of water (as regards consumption and eutrophication). As we see it, it would make sense to take a closer look at the choice of food it serves, where it comes from and how it gets to hotels, and a wasted food.

Lastly, it would be important to keep this assessment running over time to consolidate knowledge about a few of the areas where they had to use rough estimates or where robust data was unavailable. This was the case with hotel wastewater treatment and how those effluents contribute to water eutrophication.

CHARLOTTE HUGREL AND MAGALI PALLUAU,

qualified as engineers and have more than 15 years' experience running environmental assessments and specialising in life cycle analysis and product and service eco-design.

They both spent several years working for various consultancies and, in Charlotte Hugrel's case, directing research in the field of transport, before teaming up to establish Bleu Safran in February 2011. Their firm helps companies to blend the sustainable development agenda into their operations and products.

Costas Christ,
tourism sector consultant, Beyond Green Travel founder

What do you think about Accor's initiative to measure its environmental footprint?

As a large global hotel group, Accor should be commended for their efforts to support sustainable tourism best practices, including environmentally-friendly operations, support for the protection of cultural and natural heritage, and support for the social and economic well being of local people. This is being done through their innovative initiatives such as the OPEN environmental impact reporting system, and the Earth Guest program program. The decision to now further study their environmental impact specifically at a deeper level indicates Accor's commitment to advance their efforts to analyze and better understand their environmental impact across the Group.

With concern for the environment growing in importance among traveler's today, Accor is rising to the challenge to help lead the way as a large hotel company to look more carefully at their environmental impact in a broad sense and this report represents a Accor's willingness to address tough issues to promote better environmental practices while operating in diverse countries, urban and rural areas locations, and across many hotel brands.

Did any of the findings surprise you?

One of the most interesting results to me was the environmental impact of the actual physical buildings, specifically construction and renovation, as it relates to waste management. This offers opportunities for a much more significant focus on decisions about how and what will be used in designing and building new hotels, how to reduce the environmental footprint when renovations and restorations are undertaken, and to think about the entire "life" of the building, and how it relates to environmental impacts.

It was also clear from this study, that the importance of evaluating and enhancing waste management efforts, from waste water treatment, to recycling, to food and beverage service, should merit more close attention. It is to Accor's credit that they are willing to look at how to do things better. That represents true leadership when it comes to trying harder to reduce negative environmental impacts.

I was not surprised by how the food and beverage services can impact on the environment, but the magnitude of difference in some instances is particularly noteworthy (beef versus grains, for example), which also points to the opportunities to improve environmental performance by changing menus to focus on more sustainable foods, and emphasizing the importance of sourcing supplies locally, organically, and with attention paid to the life-cycle environmental impacts of those choices.

COSTAS CHRIST

is the founder and CEO of Beyond Green Travel, a leading consulting firm which provides sustainable tourism advice and solutions to businesses and governments. He is one of the world's top sustainable tourism experts, whose work and travels have taken him to more than 100 countries. He is an editor and columnist for National Geographic Traveler magazine, where he writes about sustainability and tourism issues around the world. In addition, Costas serves as Director of Sustainability for the Virtuoso travel network and is the Chairman of the World Travel and Tourism Council - Tourism for Tomorrow Awards, which recognize global leadership in sustainable best practices.

Where do you think the top priorities are now?

The study has shown that in some cases, establishing the methodology to more accurately measure impacts is an important follow-up to this report. Accor already has established impressive measurements for water use, energy use, and waste management through its OPEN system, but refining those monitoring measures, and establishing new ones to also look more effectively at impacts, such as for water eutrophication, biodiversity conservation, and waste streams, will be important as Accor continues to set a higher standard among large hotel groups for environmentally-sensitive practices.

Using this study to encourage, educate and empower Accor staff across the group to initiate new ideas that reduce Accor's environmental impacts in a way that can also be shared as best practices across all Accor brands, is one of the most significant priorities for action to come out of this study, in my opinion.

Accor's food and beverage services are a case in point: across the Group this could be improved to have a much less environmental negative impact than they do today, as this study revealed. Focusing on the provision of food and beverage to its clients will be very important to Accor as it moves forward in furthering their sustainability efforts. Along with reducing their waste during construction and renovation, food and beverage is an area for priority action where the group should focus more attention on "greening" their supply chain, looking at the possibilities for reduction in impacts by sourcing more things locally, which will also reduce their carbon footprint and promote more local economic benefits in countries where Accor operates.

Overall, Accor has demonstrated with this report that they are willing to look at their successes, and also to learn how to do things better, when it comes to improving their environmental practices and the group should be highly commended for their leadership in doing this. It sets a positive example for the rest of the travel and tourism industry.

CONCLUSION

Sophie Flak, Accor Academies and Sustainable Development Director

I had a few preconceptions about our environmental impacts as hotel managers, like many of us, when I joined the Accor Group 18 months ago. As so many hotel guests, I could see massive energy consumption and tonnes of detergent – even though they used eco-label products – as our key levers to take action. I thought the bulk of the water we used went to our thousands of bathrooms and most of our waste came from our everyday work.

I had taken a few training courses and had some experience running carbon balances and life-cycle analyses. So I knew that gut feelings weren't enough. There is nothing quite like proper analysis – tedious and dreadfully technical though it is. And proper analysis means looking at every phase in the life cycle and dissecting all the key impacts on the environment (namely energy, greenhouse gases, water consumption and pollution and, lastly, waste).

This study has taught us a lot and included a fair share of surprises. It is fair to say that it will be a watershed in Accor history.

Energy consumption is still one of the Group's main concerns and the first lever it will pull to take action, and other pointers for progress – food services and building waste, for instance – have appeared.

The impacts we gauged also have economic and financial consequences, and managing those consequences is also pivotal to our Group's sustainable development. Energy consumption, CO₂ emissions, waste production and water consumption will cost more and more, and carry more and more taxes. We have looked at every finding in this study from these three key angles to turn each one into an action plan (impact on the environment, impact on our business performance, and our employees' ability to take action and lead partners and guests to do so).

We are now in a position to build our environment policy on a solid, factual, documented foundation in line with our business performance objectives.

This study will also allow us to do boost our efforts for the environment by focusing on the key environmental and economic impacts, and on the main areas where we have to make progress.

That, of course, begs the questions about how to rally a Group that counts more than 145,000 employees working in 4,200 hotels in 90 countries every day of the week. The study itself is part of the awareness-raising drive. Presenting findings has already provided us with opportunities to train more than 300 employees – and that's just the start! The technical departments, purchasing, brand teams and operations teams have already factored the findings into their 2012 action plans. The Accor Academies – the Group's training centres – have set the ball in motion to make us all more aware of our real impacts on the environment, of the economic ripple effects, and how we can make progress on both those fronts.

This study is also a priceless tool to talk to our guests about the issues, to encourage them to do their bit and to approach them with smart new things they can do to make a real difference to our environmental impact. We obviously have to make sure we use the right approach for them to get them involved and change their habits!

Sustainable development is not an optional extra any more: it's vital! Sustainable development is also about teamwork: sustainable hotels will only happen if employees, customers, partners and rivals work together. That's why we are delighted and proud to share our findings from this study with anyone who wants to read them, to reinvent hospitality, sustainably.

This document was published the Accor Sustainable Development Department under the direction of Sophie Flak, Executive Vice President of Accor Academies and Sustainable Development.

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