Revealing the environmental hotspots of hotels

Hotel whitepaper

Ecochain

Revealing the environmental hotspots of hotels

Executive summary

For the first time, a full environmental impact assessment including benchmarks for various hotels was performed. To perform the analysis we developed a tool -based on the Life Cycle Assessment (LCA) methodology- that hotels can use to measure, manage and market their environmental impact. The tool was tested with 10 hotels located in the municipality of Amsterdam for which we calculated, compared and benchmarked the full environmental impact across various environmental indicators. The analysis clearly showed the importance of the value chain impact of hotels related to food, electricity, waste, and furniture. The analysis also revealed the significance of the environmental impacts of hotels in general. The results can be used by hotels to improve and disclose their environmental hotspots as well as to identify potential cost savings.

The environmental impact of the hotel sector

Hotels are the second-largest polluters within the tourism industry. In Amsterdam alone, they are responsible for the emission of about 0.7 megatons of CO2 per year, which results in a cost to society of €75 million. Similar estimates of the impact of the hotel sector in the European Union equal €8 – 15 billion annually. As a hotel guest, you do not pay for these societal costs directly. These costs relate to estimated environmental externality costs that are borne by societies, civilians, and others. In today's society such costs are usually paid for indirect, for example through (health) insurances or taxes.

It is believed that most hotels have many opportunities for improvement which go far beyond the well-known but largely ineffective 'towel policy'. Like any other consumer, hotel guests are increasingly involved in the environmental impact of their products and services. The hotel industry is associated with a significant and constantly growing environmental impact and guests are becoming more aware of this, leading to a growing willingness to choose and pay for sustainable hotels. Especially in cities such as Amsterdam, which boost business and tourism sectors, this growing interest provides new sustainable business opportunities for hoteliers. By incorporating sustainability in the hospitality experience, it becomes a unique selling point which attracts guests.

"The results where helpful to provide more insight for future investments"
Mercure Amsterdam Centre Canal District

The reality is that most hotel owners do not know where to start. They lack a comprehensive and complete view of their environmental impact and as a consequence, they do not know where to start. As such, there is a growing demand for

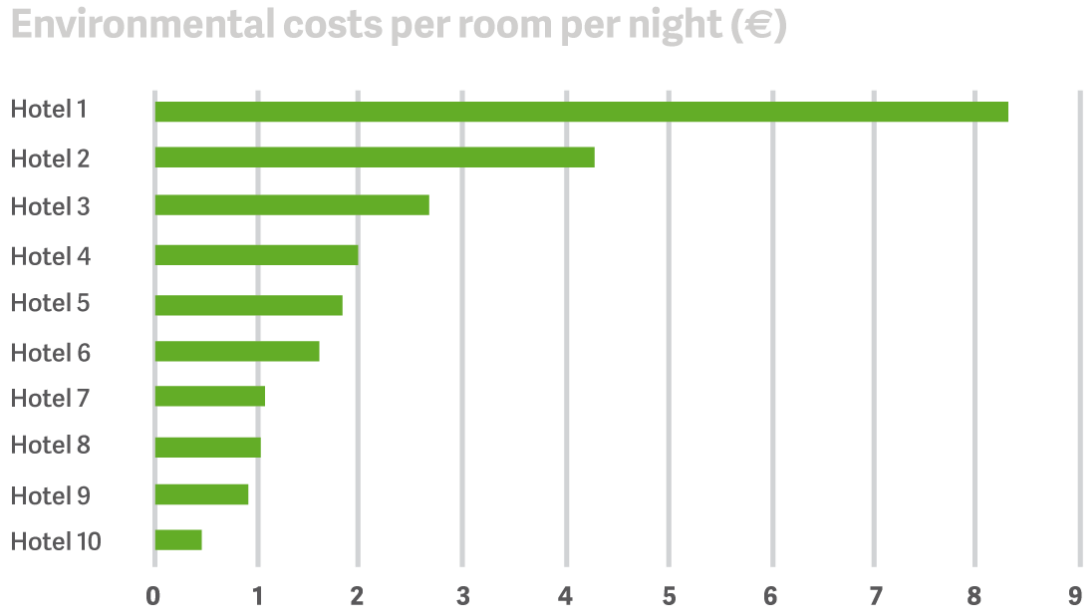


Figure 1

a pragmatic instrument to measure, manage and market the environmental impact of hotels. This project was initiated to develop such an instrument and to pilot test it with a set of 10 hotels in Amsterdam, the results of which are presented in this paper.

SAVE OUR PLANET

Dear guest,
To save water, please hang your towel on the towel rack for re-use. If you would like it replaced, put it on the floor.

Thank you for helping us conserve the Earth's vital resources.

Many hotels already have a towel program in place, where guests are asked to re-use their towel rather than having it laundered after one use. Even though this saves a significant amount of resources overall, laundry activities are only responsible for a small fraction of the entire environmental impact of a hotel. The impact of laundry additionally is not only caused by towels, but to a large extend by bedlinen as well. Re-using towels is therefore not the most effective way to reduce environmental impacts.

Revealing the impacts

We investigated these hotels according to the approach summarized in the appendix. Firstly, the analysis reveals that, on average, hotel rooms in the city of Amsterdam are associated with an emission of 30 kg of CO2 per room per night, which translated into environmental costs of €4. Most strikingly, there is a huge spread between the participating hotels in our pilot group in terms of overall impact. This is simply explained by the fact that every hotel is different and the exact origin of environmental impacts can differ substantially between them. A five-star hotel with pool and wellness, for example, likely consumes large amounts of energy, while a simple hotel without stars might try to reduce their energy consumption as much as possible. At the same time, though, the five-star hotel might have a highly efficient organic breakfast in place which reduces food and waste impacts, while the simple hotel could be throwing away hundreds of kilograms of food every month. Likewise, a museum-hotel in a poorly insulated historic building will probably consume more energy than a design-hotel situated in a brand-new BREEAM-certified building. This same museum-hotel might also contain antique furniture which has lasted decades, however, while the new design-hotel might change its interior every 5 years to stay up-to-date with trends, significantly increasing its environmental impact.

Secondly, we found that the environmental impacts mostly occur in the value chain of hotels rather than being the result of direct emissions related to energy consumption: they are related to furniture, food, electricity, and waste. Hence the impact of hotels extends to electricity plants,

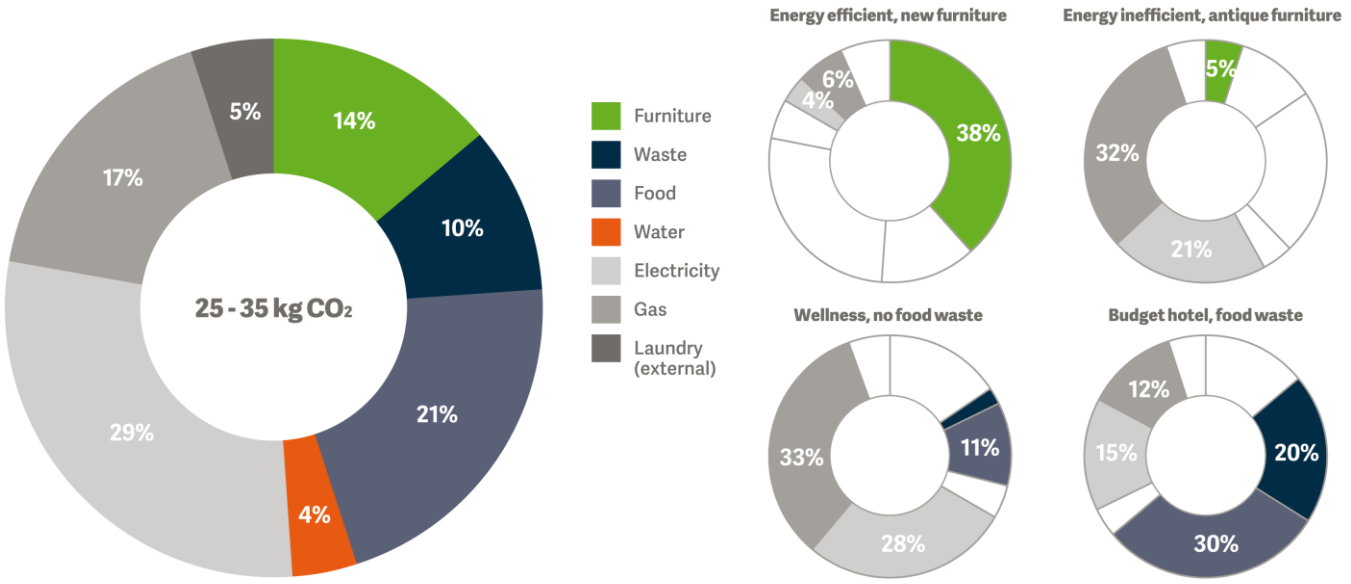


Figure 2

farmlands, food processing facilities and furniture factories. Historically, hotels have been well known for their relatively inefficient use of electricity and gas, which has been shown to be responsible for almost half their environmental impact. Reducing the consumption of these utilities could, therefore, yield far more savings than any towel program could provide, both environmentally and economically. Hotels also contain substantial amounts of furniture and their guests consume thousands of kilograms of food every year. The combined impact of furniture, food, and waste is in fact roughly equivalent to the combined impact of electricity and gas. Improving the circularity of these elements could, therefore, be highly effective as well.

"The circular scan has shown us that we are on the right track with sustainability, but also that there is more to gain. After the scan we are not only looking for the right certificates of materials, but to their origin as well"

Conscious Hotels Amsterdam

These findings show that there is much more to do than the traditional focus on the gas and electricity bill since utilities account -on average- for less than 50% of the total. The identification of environmental hotspots provides hotels with insights that enable them to reduce their environmental impact. Therefore, this work provides new levers of change for hotels that they can use to further reduce costs or to attract more customers that appreciate sustainability benefits.

Footprinting will become the new norm

Local and international initiatives to improve the circularity of hotels have emerged globally. The year 2017 was even declared the International Year of Sustainable Tourism by the UN. Awareness of the origin and extent of the impacts is often still lacking, though, while hotel guests are showing towards sustainability statements of hotels because of greenwashing practices. Both hoteliers and guests are currently flying blind, since comprehensive insight into the environmental impacts of hotels is not yet available.

It is often assumed that sustainability leads to a reduced sense of luxury among guests, while in fact, guests indicate sustainability is highly appreciated. There is even a connection between increased sustainability and increased guest satisfaction and return intentions. Transparency is paramount to achieve guest satisfaction, however, as guests want to make sure the environment rather than the hotel is benefited by their choice of hotel. Sustainable efforts must be easy to convey, attractive and honest.

Currently, a myriad of sustainability certification schemes is already present among hotels, all of which are at least partly based on qualitative measures. Most of these certifications are associated with a certain maximum score, beyond which further improvement measures are not reflected anymore, therefore the differentiation of certification is small. Moreover, It can be difficult for guests to interpret these certifications, which do not give insight

into the impact of hotels but only ensure some measure were taken to reduce them. Rather than certifications, clear and transparent quantitative indicators should be used to showcase hotel sustainability. Therefore we believe that footprinting of hotels is likely to become the new normal.

Environmental performance: both costs and revenue are at stake

Having a good view of environmental hotspots has several benefits. First of all, it directs you immediately to the impact where the 'biggest bang for the buck can be made'. This allows hoteliers to identify where investments in sustainability are most effective. Reducing the environmental impact of a hotel may also lead to direct cost-savings, for example, due to a decreases consumption of gas or food. The real business opportunity, however, lies in increased revenue, as sustainability can become a unique selling point. By incorporating transparent sustainability in the hospitality experience, both corporate and private guests with a preference for sustainable services can be attracted. These guests are willing to choose a more sustainable hotel over a less sustainable alternative, and will likely pay a higher price per room in the future as soon as transparency is created. At present, there is no widely adopted benchmark in place yet. As a potential benchmark may attract guests to environmentally friendly alternatives, we believe such a next step is likely to materialize, especially when quantitative hotel impacts are visible on booking websites. That way, not just the location and price are taken into consideration, but the environmental costs associated with a night in a hotel as well.

Your next steps as a hotelier

We invite you to become part of this journey and to seize the full potential of a sustainable hotel operation! Are you curious how a greener operation could increase your revenue? Would you like to know the environmental hotspots of your hotel? Do you want to show your guests you tackle sustainability effectively? Would you like to attract more guests, while reducing costs? Then join Ecochain and reveal your environmental potential.

"Based on the results of the scan, we have already started to develop a plan for a 'green bar' where we will make use of products from local and sustainable initiatives"

Double Tree Hilton Amsterdam Centraal Station

With Ecochain you can gain insight into your environmental impacts, which can be benchmarked to a hotel average. Once the impacts are known, these can be monitored and investigated, to uncover circular opportunities within the hotel which can reduce environmental impacts and increase revenue. Every improvement can be based on both an environmental and economic assessment, and once improvements have been realized a new hotel impact can be calculated immediately. Please feel free to contact us for more information.

APPENDIX

Methodology

The environmental impact of hotel operations is calculated with Life Cycle Assessment (LCA), using EcoChain software. The consumption of utilities and food, the production of waste, laundry activities, furniture and amenities are taken into account.

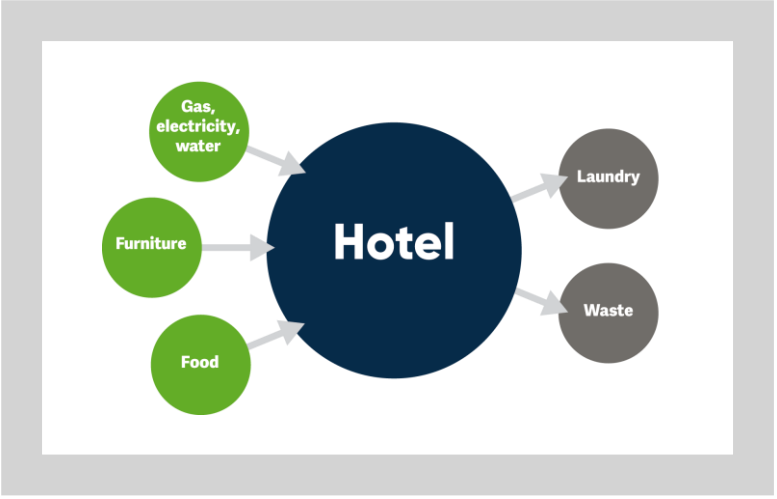
Life Cycle Assessment

Most of the emissions of hotels do not take place at the hotel itself, but in its supply chain. The generation of electricity by an electricity plant, the production of furniture in a factory and the production of food on a farm are all examples of activities in the supply chain associated with emissions, all of which are not directly visible when staying at a hotel.

"This scan should have been performed before we started looking for circular initiatives"

Koplopergroep Hotels Amsterdam

With LCA, the emissions of the hotel and its supply-chain can be calculated and scaled to the emissions associated with one hotel room during one night. This is done by first collection simple data, such as the yearly electricity and natural gas consumption, food consumption, waste production, laundry and furniture. To uncover their environmental impact, this data is then combined with emission data deriving from the Ecoinvent 3.4 database, the most comprehensive database in the world. This database contains emission data of over 14 thousand average activities, ranging from the generation of electricity to the production of food, making it possible to map the emissions of the hotel and its constituents without the need to measure these emissions throughout the supply-chain.



When all emissions are known their impact can be expressed in impact categories, such as climate change, toxicities and environmental costs. This is done using scientific calculations methods, which define the impact of an array of emissions to air, water and soil to one or more impact categories. For this particular study CML2001 is used, which includes the Environmental Cost Indicator (Milieu Kosten Indicator, MKI) that represents the combined environmental costs of emissions on all impact categories.

APPENDIX

Ecochain
(integrated, collaborative, accessible)

Ecochain makes environmental impact transparent. This enables organizations to create more long term value as organizations are able to make better informed decisions in which natural capital is integrated. Ecochain enables innovation, procurement, marketing, finance & reporting professionals with the environmental information they need. It supports them in their journey to make better-informed decisions and to disclose more complete, timely and reliable information, aligned to stakeholder perspectives. Ecochain is designed along three principles: Integrated, Collaborative, and Accessible.

Integrated: unlocking the power of activity based footprinting

The most important innovation in the Ecochain application is the use of 'Activity-Based Footprinting' (ABF). ABF helps organizations to prepare for 'mass-LCA' of all its products and hence delivers a huge efficiency gain. Moreover, ABF makes sure that the company and product footprint always reconciles 'by design' and therefore provides the accounting rigor you need.

Collaborative: promoting cooperation with value chain partners

Ecochain is based on network technology. It connects organizations in the value chain so they are able to share their footprinting results to others in the value chain, while keeping most precious information confidential. As all parties in the supply chain use a harmonized approach, using similar standards scope and boundaries, they operate in a level playing field that promotes advanced collaboration in the value chain.

Accessible: enabling everyone to make sustainable change

Life-Cycle Assessment (LCA) and non-financial reporting technology exists already for many years. For a long time, such technology could only be used by people that received advanced training. At Ecochain, we believe that there is a smarter way of organizing things by means of advanced simplification while keeping scientific rigor. In doing so, our technology can be used by a wide audience which extends beyond the LCA specialist. In this way we fulfill our purpose: 'Enabling everyone to make sustainable change'.

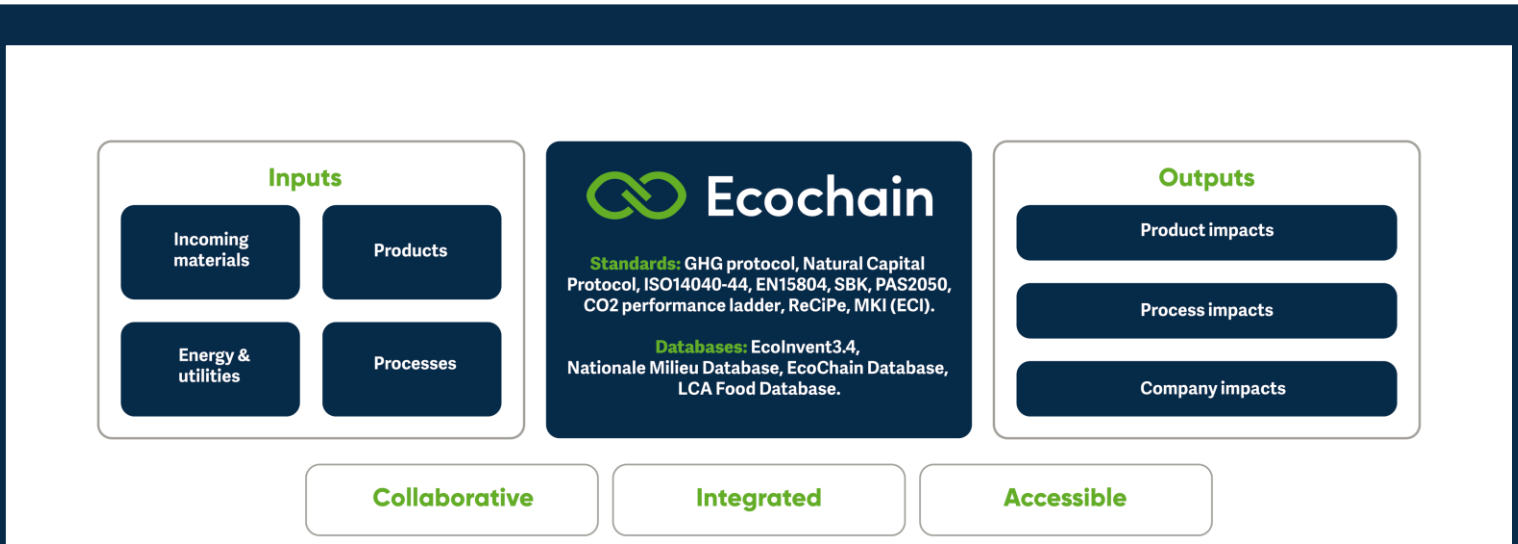


Figure 3: EcoChain

Over EcoChain

Ecochain

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