HOTEL GLOBAL DECARBONISATION REPORT

Aligning the sector with the Paris Climate Agreement towards 2030 and 2050

November 2017

International Tourism Partnership
The voice for social and environmental responsibility in the hotel industry
137 Shepherdess Walk | London N1 7RQ | T: +44 (0)20 7566 8650 | itp@bitc.org.uk
www.tourismpartnership.org | www.bitc.org.uk

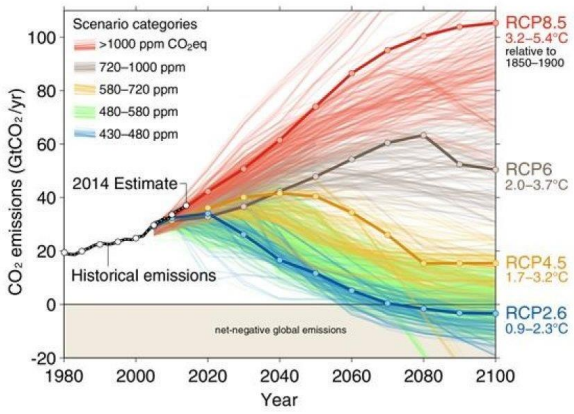
Executive Summary

Why this report?

The International Tourism Partnership – ITP – works with the world's leading international hotel groups, helping them collaborate for greater impacts on the key sustainability issues affecting the industry. In the lead-up to the launch of ITP's Goals for 2030, ITP worked with its member companies on the critical issue of carbon and, in seeking to set a meaningful and measurable Goal, we commissioned this report from Greenview to **better understand the current and projected climate impact of the hotel sector, the gap that needs to be closed to align with the Paris Climate Agreement and the most impactful actions the sector could take together to ensure future targets are based in science and decouple growth in the sector from growth in carbon emissions.**

Global climate action will affect companies

Scientists agree that the acceptable limit of global temperature rise is an average global temperature that is no more than 2 degrees above the average temperatures achieved before the industrial revolution, which has an equivalent in the limit of carbon dioxide that can be released into the atmosphere. Based on the science of climate change, this is the over-arching ***Science-Based Target***. This 2-degree scenario is the maximum possible increase in temperature to avoid the most catastrophic effects of climate change. **The 2-degree scenario requires a 50-80% global emissions reduction by 2050 from 2010 levels.**

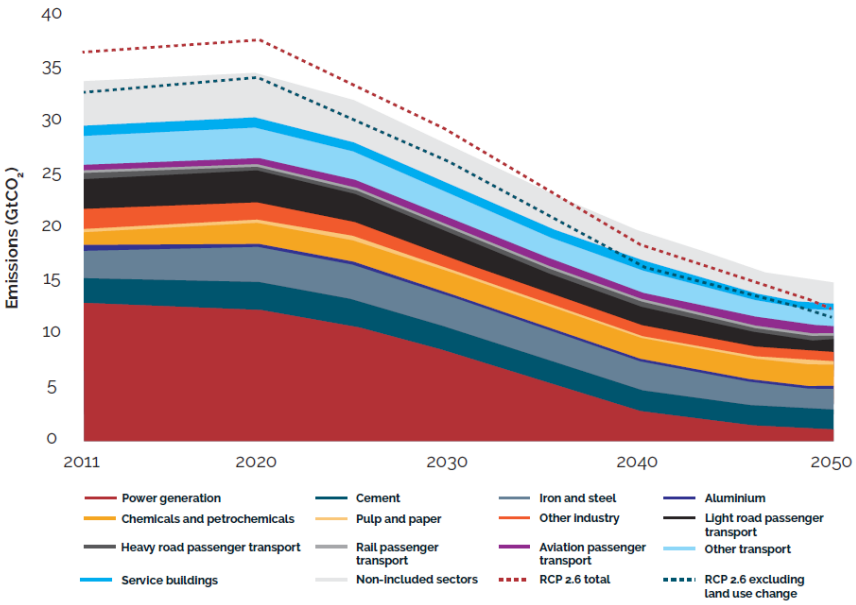


The resulting Paris Climate Agreement, a global accord to pursue this scenario, **will have specific implications for business**: national policies and regulations, taxes and/or cap-and-trade markets, renewable energy price parity increases, smarter and cleaner electric grids, and corporate accountability towards a higher standard on climate action. Many companies have responded to these trends by establishing leadership. Hundreds have declared commitments towards science-based targets and renewable energy.

As a result, to demonstrate leadership, or be recognised as keeping pace with trends, **companies will have to set better environmental targets, integrate these issues at the highest company levels and business models, and address climate change's relation to various business drivers.**

To be seen as leaders, hotel companies will need to set science-based carbon reduction targets

This study was undertaken to calculate the hotel industry's impact on climate change, and the level of reduction needed to achieve a science-based target. The industry's growth trajectory was calculated against established tools.



To keep pace, **the global hotel industry will need to reduce its greenhouse gas (GHG) emissions per room per year by 66% from 2010 levels by 2030, and 90% by 2050.**

This is above and beyond what most hotel companies have set for carbon targets this far.

Several opportunities exist for evolving to the next-generation thinking about sustainability

To mitigate climate change and achieve science-based targets, hotels and the hotel industry will need to advance their technological solutions and their organisational approach to the topic. **Technical approaches** to reducing carbon will need to be:

1. **More efficient:** pursuing the highest and most innovative levels of efficient technology, furniture, fittings and equipment (FF&E), and best practice operations; designing highly efficient buildings, engaging guests to be more efficient, and optimising the best solutions for carbon reduction through efficiency pathways.
2. **More renewable:** producing and sourcing more renewable energy directly on-site at properties, procuring energy from partners in innovative agreements, and supporting the acceleration of power grids toward renewables and away from fossil fuels.
3. **More electrified:** supporting the transition to electrification of equipment, and building an infrastructure to generate, store, and distribute electricity across a network.

The technology exists today to fully decarbonise the sector

Solving the issue of climate change turns to how to accelerate the solutions currently available. To do so**, hotel industry leaders will need to support an evolution of thought and approach**:

1. **Evolve how energy and carbon are valued:** address sustainability as an issue central to any company and CEO legacy; understand the financial risk of inaction; set internal pricing and expand managerial accounting on carbon; and begin to view energy as a fixed-cost asset rather than variable-cost of operation.
2. **Evolve how capital is sourced for sustainability:** expand and innovate in available funding mechanisms such as crowdfunding carbon reduction, raising green bonds, and funnelling lower costs of capital to carbon reduction.
3. **Evolve how capital is spent:** establish corporate mandates to evaluate spend on climate change action, rethink renovation cycles for building upgrades, fund carbon research and development for hotels, and embed carbon reduction opportunities into charitable giving channels.

4. **Evolve collaborative approaches to climate action:** increase collaboration focus to the destination level, proactively engage hotel owners with solutions across portfolios; collaborate with peers on spend level commitments to generate scale, and engage in collaboration across other sectors.
5. **Evolve how climate action is communicated:** refresh internal company dialogue on climate change and company strategy to carbon reduction; set additional targets focusing on renewable energy with positive increases, establish forums for dialogue on these issues with hotel owners and developers, engage guests around solutions, and improve transparency on climate risk to investors.

ITP supports its members to answer this challenge

Business recognises the need for action. The hotel sector is growing year on year as global tourism demand increases. Growth brings many economic benefits, often to developing regions, but growth cannot equate to an increase in carbon emissions. For 25 years ITP has worked with the world's leading hotel groups for sustainable growth.

Our report reveals it is no longer credible to set simple efficiency targets; targets must be science-based. This is the trajectory for leading businesses, and the hotel sector can't afford to be behind the curve if it claims to be a force for good.

ITP members are already working together to drive change further and reduce GHG emissions at scale. Together they agreed to lead by example and send a call to action across the industry through ITP's Goals for 2030: "*ITP members embrace the ambition of science-based targets and encourage the wider industry to join their collaboration to develop carbon reductions at scale*".

This report shows the path businesses need to take. We're working with members to draw up both the roadmap for change and the metric for progress, and we invite hotel companies and the wider industry to join us to reduce carbon emissions at scale.

THE CALL FOR SCIENCE-BASED TARGETS

Establishment of the 2°C scenario to avoid catastrophic climate change impacts

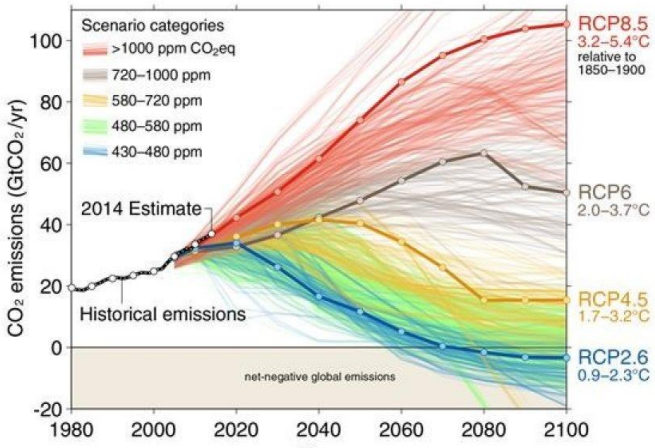


Figure 1: climate change scenarios per the IPCC 5th Assessment Report

The science underlying corporate science-based targets is based on the findings of the **Intergovernmental Panel on Climate Change's (IPCC's) Fifth Assessment Report.1**[i] In the Report, the scientific community provided its direst warnings to date – "*Warming of the climate system is unequivocal. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, and sea level has risen*."

To avoid "catastrophic climate change impacts," such as heatwaves, droughts, floods and wildfires, the IPCC Report outlined a scenario (called the RCP 2.6 Scenario)[ii] that would require limiting the rise in global temperatures to no more than **2° Celsius** compared to pre-industrial temperatures (under current "business as usual" scenarios, the IPCC concluded that global temperatures are expected to rise by **6° Celsius**). The 2°C limit is central to all methods of developing science-based targets.

The 2-degree scenario is based on the cumulative concentrations of greenhouse gases and pollutants resulting from human activities, including changes in land use. **The 2-degree scenario requires a 50-80% global emissions reduction by 2050 from 2010 levels.**

Global response and significance of Paris Climate Agreement for business

In Paris, a landmark, unprecedented agreement on climate change was reached in December 2015 where **195 countries committed to curb global temperature rises based on the recommendations of the scientific community** and take actions to reach zero carbon emissions this century[iii] (see key elements of the Paris climate agreement here). The Paris climate agreement is expected to have broad ranging implications for businesses, including:

1. The global agreement will likely cascade into a series of **national policies and regulations**. Some policies and regulations will incentivise innovation and low carbon investments. Others may result in higher costs associated with the use of fossil fuels.
2. Carbon emissions may be priced either through **taxes and/or cap-and-trade markets**. The World Resources Institute (WRI) estimates that approximately a quarter of the world's GHG emissions are or will soon be regulated by government carbon pricing[iv].
3. Increased pricing parity for **renewable energy** will begin to enter in the marketplace – increasing the viability and return on investment from low carbon energy investments in the private sector.

4. **Electricity grids** will become "smarter" and "cleaner" – reducing companies' greenhouse gas emissions from purchased electricity and enabling companies with renewable energy generation capabilities to sell energy back to grids.
5. Companies will be held to a **higher standard on climate action** and be expected to make meaningful reductions in greenhouse gas emissions. As an example, the World Green Building Council launched its" Net Zero" project in June 2016 calling on the global built environment sector to reduce emissions by 84 gigatonnes (84,000,000,000 metric tonnes) of CO_2 by 2050 through the construction of net zero buildings and renovation of existing buildings.

Initial response from the business community

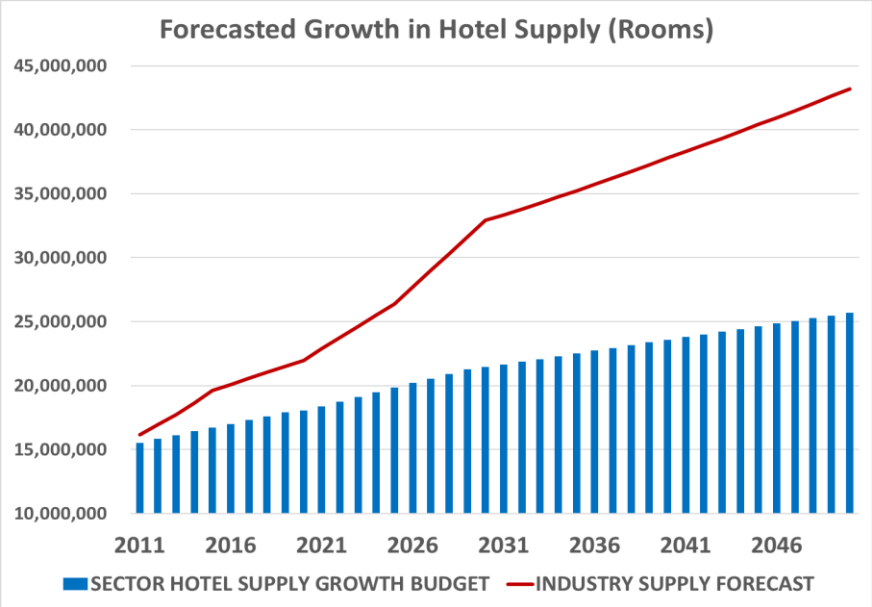
The business community has begun to catalyse corporate actions to align with the IPCC research and the policy direction set forth following the Paris climate agreement. A series of business initiatives have begun to mobilise companies around the concepts required for science-based targets. These initiatives are listed in the "*The Business End of Climate Change*"[v] report which published a first global figure of the necessary business contribution to keep temperature rise below 2˚C: the private sector as a whole needs to cut its GHG emissions by 3.7 billion metric tonnes of CO_2 equivalent a year. Key business initiatives include the Science-Based Targets Initiative, We Mean Business Coalition, RE 100, EP 100, the Low Carbon Technology Partnerships Initiative.

INDUSTRY FOOTPRINT, SCENARIOS AND ISSUES

Science-based targets for carbon reduction in the hotel industry

Based on the method and data sets used as described in Appendix 1**, the global hotel industry will need to reduce its GHG emissions per room per year by 66% from 2010 levels by 2030, and 90% by 2050.** In comparison, the Sector Decarbonization Approach (SDA)'s macro-sector target for all types of commercial buildings is 48% by 2030 and 82% by 2050. The hotel industry's science-based target is more ambitious than that of commercial buildings in general due to the growth forecast of the industry. However, given that the overall SDA scenario rests on the electricity grid essentially becoming decarbonised by 2050, the hotel industry's trajectory demonstrates a scenario consistent with the overall planet's decarbonisation needs.

Figure 2: forecast growth in hotel supply vs. SDA forecast growth for all types of commercial buildings



Of the 66% reduction needed by 2030, based on national commitments of countries with the most hotel supply, 16% **(nearly a quarter of the total reduction) will be achieved through external grid improvements in efficiency and renewables that countries will implement without the hotel industry's efforts** (though they may involve increased costs of energy).

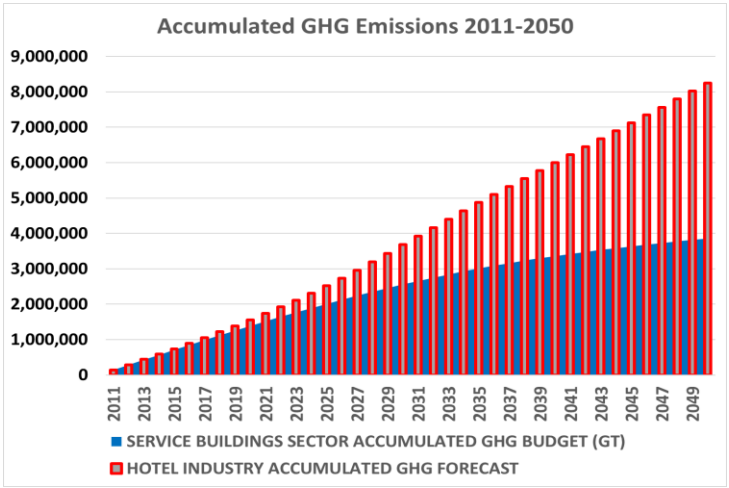
On average, 50% of the reduction will need to be achieved internally, for which three options exist: energy efficiency, renewable energy, and other mitigation mechanisms. Several variables and nuances should be considered when interpreting this information at the industry and company level:

- Energy efficiency reductions are not at parity with carbon reduction due to varying emission factors. For example, a kWh of electricity may produce two to three times as many GHG emissions than a kWh of natural gas in many places. Therefore, further study will be needed to determine the rate at which energy efficiency can accelerate the decarbonisation. However, it should be clear from the figures above that **energy efficiency alone will be largely insufficient to meet the target**. Though new builds may achieve significant reductions in energy intensity of 30-40%, given the current best practices and capital cycles of building envelopes and heating, ventilation and air conditioning (HVAC) equipment, hotels will need to add renewable energy as a component to reducing carbon intensity worldwide between 2010 and 2030**.**

- Under the current estimates **the top 15 emitters (countries) collectively represent 90% of the total hotel industry GHG emissions.** This phenomenon occurs because higher carbon emission factors for generating electricity within a country result in higher carbon figures for the hotel industry. Many of the forecast top 40 countries in terms of supply growth – and primarily Asian countries as China (including Hong Kong and Macao), Thailand, Indonesia, Malaysia, Korea, and Japan – have relatively high GHG emission factors for electricity (>0.5 $kgCO_2e/kWh$). The forecast 2030 electricity emission factors have heavy weighting in the business-as-usual forecasts.

- China alone is forecast to comprise 33% of the Accumulated GHG Emissions Budget, with the USA comprising 15%. **Collectively, the US and China represent nearly half of the entire industry's GHG emissions budget**. Achieving industry-level targets will only be viable if energy efficiency and renewable energy use are greatly accelerated in China and the US.

Figure 3: Forecast business-as-usual (if no action is taken to reduce emissions) accumulated GHG emissions of the hotel industry vs. the carbon budget of all commercial buildings.



Setting a hotel company-specific science-based target

While the calculations in the prior sections represent industry-wide figures in global studies on sector-wide decarbonisation, ultimately the advent of *Science-Based Targets* was intended for corporations. Calculations will need to be performed for each company to set a science-based target. Greenview developed the **Hotel Science-Based Target Estimation Method** for ITP members to enable them to calculate their own target. **This method is currently the only hotel sector-specific method available for hotel companies**. The method and guidance are available for ITP members. Contact ITP for more information.

Science-based carbon target hotel industry challenges

Monitoring progress on industry-wide carbon targets will require addressing several issue to widen the scope of emissions that are currently accounted for:

- **Independent, non-branded hotels.** The hotel industry is different from other major sectors as globally approximately two thirds (including 75% outside the US) of the hotel supply is not part of a corporate chain. The variety and number of smaller hotel companies make it harder to harmonise practices and track progress globally.
- **Franchised properties.** The majority of energy usage and GHG emissions comes from franchised hotels that historically have not been counted within most brands' current inventories.
- **Alternative lodging.** The definition of "lodging" or a "hotel" has evolved over time and will continue to evolve or modify in the coming decades (e.g. Airbnb, serviced apartments, wellness centres). Future industry decarbonisations pathways will need to take this evolution into account.

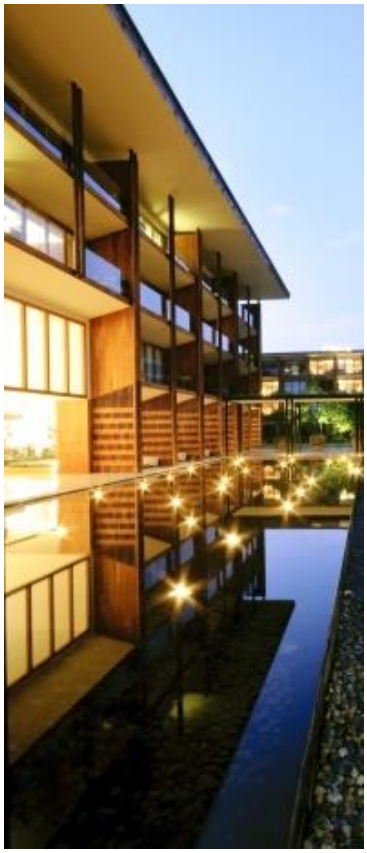
ACHIEVING SCIENCE-BASED TARGETS AND ASSOCIATED REDUCTIONS

A paradigm shift is needed in the way hotel companies approach energy to achieve the level of reduction needed. Regardless of any adjustments to the factors and assumptions used in the present study, the resulting targets will be ambitious and will require more action at an accelerated pace, than has been seen to-date. This will require swifter adoption of new technology, industry collaboration, and restructuring energy as part of a company's budgeting processes. The efforts required to achieve a 66% reduction by 2030 and a 90% reduction by 2050 can be categorised into three viable methods:

1. Increasing efficiency of equipment and operations

This is already becoming a common practice, but needs to catalyse new innovation as it arises, and is insufficient to achieve significant reduction amid industry growth alone. Along with external grid efficiency, energy efficiency has been the cornerstone of hotel carbon reduction achievements in the past two decades.

New technologies have emerged and scaled-up, and new operational practices have become common. Moving forward, energy efficiency will need to evolve to incorporate:



- **Higher efficiency:** e.g. efficient lighting (LED lightbulbs) and HVAC
- **Build for efficiency**: new builds and retrofits will need to be as efficient as possible, and designed for future efficiency upgrades as they arise.
- **Guest efficiency:** opportunities can be explored to engage the guest to be efficient in the most sensible places
- **New efficiency:** making more use of new technologies beyond the most frequently used ones: efficient lighting, variable frequency drives, boiler/chiller upgrades, and occupancy sensors.
- **Carbon efficiency:** The potential for carbon reduction needs to be embedded in the analysis and planning. For example, if two energy efficiency projects can both achieve a 20% return on investment (ROI) but one is for reducing natural gas usage (a 5% carbon reduction) and the other electricity usage (a 10% carbon reduction), then the electricity efficiency project should be prioritised.

Case Study – fuel cell installation

Hyatt Regency Greenwich, Hyatt Hotels Corporation

The Hyatt-owned property in Connecticut (United States) installed a 500kW fuel cell providing up to 75% of the hotel's energy load and creating annual utility cost savings. By generating its own electricity on-site, the hotel reduces its carbon emissions by about 40% compared to electricity purchased from the grid. Multiple factors helped the project's success:

- The hotel has the appropriate space needed for the equipment and is located in a state where the economics worked out. The hotel was able to take advantage of a state rebate in addition to the federal tax incentive, and could leverage a high spark spread (difference in cost between electricity and natural gas).
- The project involved a variety of actors: corporate and regional office engineers, the corporate asset management group, the hotel director of engineering and director of finance, the General Manager, the vendor, the utility, and the state rebate programme.

Case Study – combined heat and power installation

Radisson Blu Hotel Frankfurt, Carlson Rezidor Hotel Group

Thanks to an on-site solution, the Frankfurt Radisson Blu will generate its own renewable energy in the future. E.ON has installed a fuel cell CHP (Combined Heat and Power) that has a huge advantage over conventional power generation systems: they generate electricity and heat in a non-combustion process which is virtually absent of pollutants such as nitrous oxide or fine dust particles. The use of the innovative fuel cell technology allows the Radisson Blu hotel to generate a large share of the energy needed to run the hotel free of emissions. The produced heat replaces a large part of the expensive local district heating.

The electricity from the fuel cell covers up to 80% of the hotel's requirements, so that only about 20% of the electricity must be sourced from the grid. Installation partner E.ON. assured total savings of approximately €750K over the 10 year contract. The actual savings are expected to be higher. The CO_2 savings are equivalent to 595 Tonnes of CO_2e per annum.

2. Increasing the prevalence of renewable energy

Anecdotal use of renewable energy can be found across the industry, however as a percentage of total energy use, it is negligible. The primary pillar of the Sectoral Decarbonisation Approach's scenario to meet the 2-degree target is decarbonising the power grid almost entirely by 2050. Looking at the SDA's modelling, if the power grid is not decarbonised the other components will not add up to the 2-degree scenario. The hotel industry will need to accelerate the use of renewable energy for its own direct use on-site, as well as support utilities in their acceleration of transitioning the power grid toward renewables:

- **On-site renewable**. Wind power, solar power, ground sources of heating and cooling, and biofuels will need to be transitioned into the hotel's energy production for electricity generation and HVAC.

- **"Near-site" renewable.** This term is used here to differentiate from directly generated onsite (Scope 1 emissions) or offsite purchases from utilities, and denotes the opportunities for hotels to purchase energy from third parties separate from the utility grid (or as a para-utility partner) in purchase power agreements (PPAs), Sleeve PPAs[vi], or community solar projects[vii].

- **Supporting utility renewables**. As demonstrated in the science-based target calculations, a sizeable portion of the decarbonisation will be met through external efforts of countries to upgrade their power grids. Hotels can support utilities to transition to decarbonisation through Renewable Energy Certificates (RECs) and Green Tariffs with premiums embedding renewables, along with other guest engagement mechanisms.

Case Study – Landal GreenParks aims for climate neutrality by 2030

Landal GreenParks, Wyndham Hotel Group

Landal GreenParks is part of Wyndham Hotel Group, which committed to work towards science-based targets in April 2017. The overall goal of Landal is to be climate neutral by 2030 by implementing diverse measures, all the while focusing on improving the customer experience:

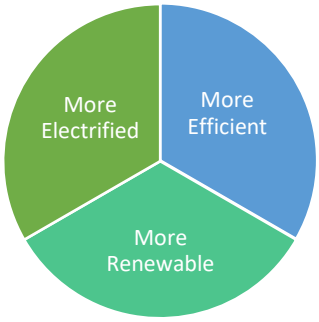
- Eliminate CO_2 emissions from energy usage through energy efficiency, purchasing 100% green electricity and offsetting 100% of gas purchases and increasing its on-site renewable energy production capacity.
- Eliminate CO_2 emissions from transport by reducing fuel consumption and flights, progressively switching to 100% electric vehicles by 2030, and offsetting the remaining impact.
- Reducing CO_2 emissions from waste by purchasing only recyclable materials.

3. Increasing 'electrification'

In order to meet the 2-degree scenario, the power grid needs to decarbonise and more renewables need to be used onsite. 'Electrified is the term used for transitioning from certain energy use being powered by fuel burning, to being powered by electricity, as well as electricity distribution. Electrification will become an essential component of hotels achieving science-based targets, and increasingly important as the concept of net-zero buildings becomes more prevalent:

- **Electrifying equipment.** Hotel facilities will need to shift to electric-driven chillers (already the most common). However, large opportunities also exist in heating which will need to be accelerated (e.g. the Suntec Singapore Convention Centre's recent conversion of the kitchen to all-induction appliances).
- **Storing electricity.** Hotels will need to become equipped with batteries for buildings (e.g. Tesla's PowerPack). Commercial building battery technology for storing electricity on-site will become more scalable and viable. Hotels will be able to embed storage of energy as part of the strategy towards low-carbon solutions as well as energy cost savings.

Of the viable carbon reduction methods listed above, the most important method for hotels over the coming decades will be the use of renewable energy. A 90% reduction by 2050 essentially signifies near-total decarbonisation toward carbon-neutral growth beyond. New hotels will need to be *net-zero* at some point. To do so, the hotel industry can refer to the mantra: ***More efficient, more renewable, more electrified.***



Carbon offsetting what's left?

Carbon offsetting presents tangible opportunities for tourism businesses to protect ecosystems, benefit vulnerable communities, take action, and engage the traveller. Travel and tourism faces a threat of perception, with travellers seeking opportunities to reduce their carbon footprint. The hotel industry can take a stand with the rest of travel and tourism as a specific sub-sector and support carbon-related projects in destinations to preserve natural heritage and help fund renewable energy development.

Renewable energy will be the primary pathway to decarbonisation, and carbon offsetting can also include support for the development of renewable energy. The most important action is to act strategically and collectively across the industry to create effective, engaging carbon offsetting mechanisms (e.g. market-based incentives) that leverage the strength in numbers of hotel companies and hotels within destinations to decarbonise the energy grid.

Addressing scope 3

Achieving carbon reductions at scale in the hotel sector will also rely on the capacity of operators to collaborate and influence with the wider industry. Significant mitigation opportunities exist in the supply chain, and from collaboration with construction and development companies. Hotels can drive significant change, reaching millions of guests every year, through promotion of vegan and vegetarian menu options, certified paper, wood, and seafood, and have an immensely positive impact with a great story to tell. Collective action across travel and tourism will be needed.

EVOLVING CORPORATE ENERGY AND CARBON MANAGEMENT

The technological solutions laid out in the previous section exist and are ready to be implemented. They are the easy part of achieving science-based targets. **The difficult part is not figuring out *what* to do, but *how* to get them implemented.**

Science-based targets require a significant change in application of a hotel company's financial resources which currently are not accessible to the company's corporate responsibility/sustainability executive. Science-based targets will need to become an initiative championed by C-suite executives of hotel companies and real estate companies, beyond traditional ROI modelling and allocation of energy costs as a utility budget line-item. The following solutions will require restructuring and innovation of much of the hotel industry's business-as-usual operations. Further details and examples of each solution are available for ITP members, contact ITP for more information.

Evolve how energy and carbon are valued

Companies need to evolve the mindset of ROI as the only rationale for sustainability and carbon reduction, and accept that many business drivers increasingly are involved in this issue. Furthermore, the concept of ROI needs to expand to include new sources of capital and value (e.g. carbon pricing) in calculations.

- **Present the financial risk of inaction.** Energy costs will rise, carbon-related regulation, taxes and fees will emerge, and incentive opportunities will be provided for first movers.
- By **adding in the risk of cost increases for energy and managing carbon emissions**, ROI calculations become more feasible. Reductions in emissions translate to financial savings above most costs of capital required to achieve them[viii]. Studies are emerging to put a value on the cost of inaction and the associated market[ix] and investor risks[x].
- **Set an internal price of carbon**, whereby a company places a monetary value on its carbon emissions which is taken into consideration for applying capital across the company (see case of Microsoft[xi]).

Pricing a carbon cost per room

Applying an average carbon price per metric tonne of US$20-$40 (which will increase over time) to the industry average of 9.2 metric tonnes of CO_2 per room per year, **the price of carbon for hotels will be approximately $184 to $386 per room per year**.

For example, an **average property of 300 rooms will have related annual costs of carbon** – whether it be from increased energy costs, carbon taxes, cap and trade, or increases in other industries affecting supply chain procurement – **of approximately $55,000 - $110,000.**

- **Expand managerial accounting for carbon.** To achieve science-based targets, spend on actions and technology to reduce carbon emissions will need to be drawn from other (or new) budget line-items including marketing, operations and charitable giving. Carbon's potential for generating revenue (see below page 14) and financing at low cost of capital will need to be added.
- **Treat energy as a fixed-cost asset.** Hotels treat buildings as assets for their real estate value. In the future, energy will also be an asset of similar structure. Capital expenditure

for onsite generation, self-storage, and the selling of energy through decentralised grids may fundamentally change the way hotels account for energy.

- **Relate the impact of climate change on company growth strategy.** Companies can evaluate climate change implications to various components of growth strategies, and recognise that growth based on performance indicators of floor area or supply will need to have the greatest weighting on decarbonisation.
- **Address climate change as CEO legacy opportunity**. Leaving a legacy for humanity, for the business, and for the planet, has no better opportunity for impact than climate change.

Evolve how capital is sourced

Current limitations on the 'business case' for implementing sustainability actions, and in particular carbon reduction, stem from them being seen as an expenditure not tied to other revenue or lending sources. In addition to energy evolving to be an asset, the evolution of how carbon is embedded into business affords numerous opportunities to generate additional revenue sources and access capital.

- **Raise green bonds**. Companies can raise green bonds to access capital at a low cost in order to make viable renewable energy and energy efficiency projects with longer payback periods. For hotel companies this opportunity is immense, considering the synergies with renewable energy generation/storage/distribution across a large portfolio (see Apple's case[xii]).
- **Crowdfund carbon reduction**. If hotels can crowdfund a portion of the spend required for renewables and raise bonds at lower cost of capital, the entire premise of ROI is revamped. Renewable energy can be accelerated (and scaled), and end-of-life projects for replacing capital equipment can be expedited, and guests can feel satisfied with their actions and their stay (see Soneva's environmental levy and Ecostay programme)

Evolve how capital is spent

What is the ROI on the corporate sustainability department? What is the ROI on the marketing department? What is the ROI on the CFO? What is the ROI on charitable giving? It is likely that sustainability is the only area that is viewed under the lens of needing to prove ROI as a line-item rather than being viewed as a core component of the company. If carbon reduction is only dependent on obtaining a satisfactory ROI based on reduced cost (and per above, from sources using a traditional cost of capital), then science-based targets are unlikely to be realised.

- **Establish a mandate**. Companies can set policy for specific goals, and/or five-year plans to identify all potential zero or low investment opportunities and high return investments. A mandate for action will help achieve the acceleration necessary to implement these in alignment with reduction targets.
- **Rethink renovation cycles.** Companies need to examine the cycles in which renovations and retrofits are undertaken, particularly regarding renovations and end-of-life replacements, so that they are not limited to renovation cycles and can be aligned with hotel owner strategies for allocating capital.
- **Earmark the reserve for replacement.** Management agreement structures commonly provision reserve funds to be spent on property improvements and maintenance over time. Soft mandates can be set for carbon efficiency to be considered when allocating this reserve budget over time.

- **Fund carbon research and development.** Efficiency, renewables, and carbon reduction afford immense opportunities for hotel companies to proactively fund and find solutions (e.g. Solar Decathlon).
- **Embed carbon into charitable giving** by transitioning from 'random acts of philanthropy' to strategic approaches for charitable giving and community impact programmes (e.g. the Carbon for Water project in Kenya, or funding neighbouring local communities with electricity from renewable sources through hotel equipment).

Evolve approaches to collaboration

Significant carbon reductions can only be achieved through collaborative efforts with stakeholders. This includes cross-departmental collaboration within hotel companies, as well as initiatives to engage hotel owners and developers, local destination stakeholders, travel buyers and the guest. Key efforts will need to include:

- **Increase focus at the destination level**. Bridge the gap between industry-wide discussions at corporate level, and property-level discussions at destination levels, by identifying destinations with optimal opportunities to implement solutions such as Community Solar projects (e.g. in Aruba, Hawaii**,** Victoria, Australia, Copenhagen).

  Help owners with portfolio solutions. Solutions will need to be developed to convene owners, reduce the barriers to obtaining financing and provide them with additional opportunities to invest in low-carbon technologies.

- **Give scale through spend commitments.** Hotel companies can help renewable energy scaling up and cost reduction by collaborating at a destination or portfolio level with vendors through integrated procurement solutions such as Avendra, which is now addressing sustainability across the supply chain of operating supplies and equipment (OS&E) and furniture fixtures and equipment (FF&E).
- **Engage in collaborative initiatives**. The hotel industry will likely be able to develop a broader cross-sector strategy business to address climate change. Hotel companies need to join in relevant dialogues such as the Renewable Energy Buyers Alliance, RE100, We Mean Business, CDP Commit to Action and work streams associated with UN Sustainable Development Goals and industry-wide sustainability initiatives.

Evolve how carbon is communicated

To strengthen collaborative efforts, hotel companies will need to take an introspective look at how they communicate their programmes to build awareness and achieve their objectives. More engagement will be needed with the correct messaging that calls to action to support initiatives, rather than just boasting about a company's achievements or requesting that guests reuse towels.

- **Make the internal dialogue relevant**. Ambitious carbon reduction goals should be socialised throughout all levels of the organisation. Case studies can be built to address misconceptions that a low carbon strategy requires compromising financial returns (e.g., Average IRR of 27% on $8.2 billion in investments to support companies' science-based targets[xiii]) or that renewable energy will always be more expensive than fossil fuels.
- **Set a long-term renewable energy target**. Adding a renewable energy target to communicate internally and externally will help contextualise the shift toward renewables and create a positive, comprehensible goal to work towards.

- **Discuss climate change with hotel owners and developers**. The hotel industry's ability to meet science-based targets hinges upon the owners of the real estate to invest in efficient buildings and renewable energy. Hotel brands need to embed sustainability and climate change into owner discussions (e.g. through the Hotel Owners for Tomorrow coalition).
- **Engage guests around solutions**. Sustainability influences accommodation quality and customer satisfaction, and guests can be engaged in programmes to support efforts such as carbon offsetting[xiv]. The innovations can be showcased to guests to pair carbon reduction with interesting anecdotes and components of the guest experience.
- **Improving risk disclosure and transparency** will be a key factor for companies seeking investments through 'green finance'. Sectors have the opportunity to agree on the risk data that will be most material for investor scrutiny, and thus reducing their future disclosure costs through a constructive dialogue with investors.

Case Study – Soneva's road to achieving science-based carbon targets

Soneva Residences, Resorts and Spas

Soneva is committed to science-based targets as a course of action to limit the rise in global temperatures to 2 degrees Celsius by the end of the 21st century. As a result, Soneva became carbon neutral in 2012 for both direct and indirect resort operations. In addition to dealing with operational matters such as energy, water and waste, the company has gone beyond its remit and addressed the CO_2 emissions derived from guests' international air travel.

Soneva has measured and monitored its CO_2 emissions since 2008. The company further developed a Total Impact Assessment tool including an Environmental Profit & Loss supply chain analysis in 2014. In 2008, Soneva introduced an environmental levy of 2% of room revenue and made this levy obligatory, hence, guests would need to actively opt out of it, which hardly anyone has done. The Environmental Fund has raised US$6 million to date which has been invested via the Soneva Foundation in projects that have mitigated over 400,000 tonnes CO_2.

As Soneva's resorts are not connected to the grid, their main challenge with renewable energy is storage. Soneva Fushi has installed 700 kWp solar PV that covers the resort's electricity needs during the day. The resort installed the first 70 kWp in 2009 which was the largest renewable energy plant in the Maldives at the time. Soneva Fushi has extended this tenfold through a power purchase agreement, which has reduced its energy bill by 25% without need for heavy investments.

CONCLUSION

There's no retreating from climate change. Current reports reveal atmospheric levels of CO_2 hit record highs in 2016. Sea levels are rising, extreme weather events are becoming more frequent, ice caps are shrinking.

Business recognises the need for action. The hotel sector is growing year on year as global tourism demand increases. Growth brings many economic benefits, often to developing regions, but growth cannot equate to an increase in carbon emissions. For 25 years ITP has worked with the world's leading hotel groups for sustainable growth.

Our report reveals it is no longer credible to set simple efficiency targets; targets must be science-based. This is the trajectory for leading businesses, and the hotel sector cannot afford to be behind the curve if it claims to be a force for good.

This report shows the path businesses need to take. We're working with members to draw up both the roadmap for change and the metric for progress, and we invite hotel companies and the wider industry to join us to reduce carbon emissions at scale.

Annexes

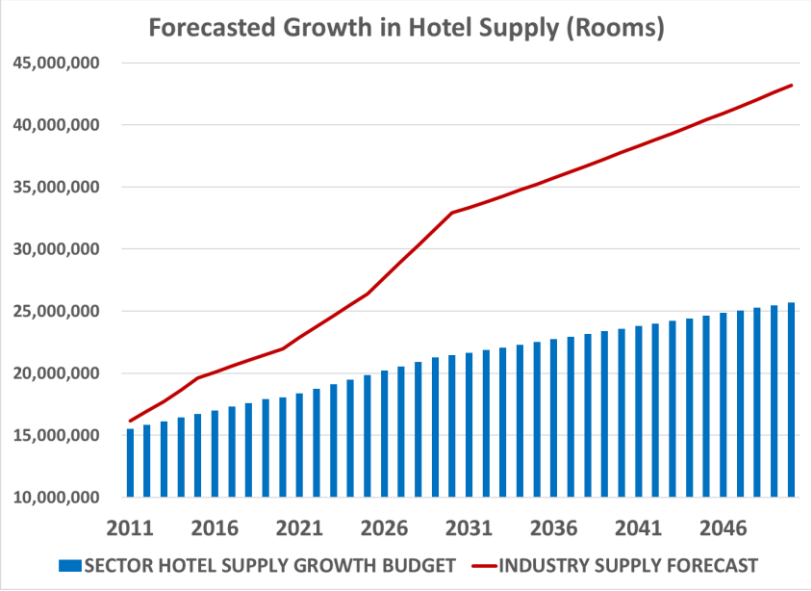
Annex 1 - industry science-based target calculation

Science-based targets have applications for countries, for business sectors and for companies. For companies, the targets are based on a company's market share within its sector. At high level, sectors have been assigned their carbon reduction pathways based on projected growth and decarbonisation plans. The Sectoral Decarbonisation Approach (SDA) has put forth this information, and at present at the most granular level the hotel industry falls within Service Buildings, which encompasses all types of buildings and is not specific to hotels. **This sector has a foreseen growth of 66% by 2050 from a 2010 baseline**. However, with travel and tourism forecasted to double by 2030 from 2010 levels, the service building activity scenario is too conservative to be applied to the hotel industry. An accurate SDA scenario for hotels is needed for hotel companies to develop credible, accurate science-based targets.

Greenview used the SDA methodology as a base, incorporating some additional considerations and forecasts to develop the Hotel Science-Based Target Estimation Method as outlined below. The final result is an industry target, industry forecast, and industry gap in accumulated GHG emissions. This methodology can be applied to individual hotel companies, building off the industry-level figures produced in this current calculation. Furthermore, this can be adjusted annually as variables change, and to track progress against this target. The Hotel Science-Based Target Estimation Method was performed through the following steps:

1. **Forecast the industry supply growth by region** using hotel supply data, growth projections and forecasts[xv]
2. **Forecast the industry supply growth.** Figure 2 below demonstrates the variance between the hotel industry's forecast growth (red line) against the overall forecast of 'service buildings" used to generate a decarbonisation scenario for all buildings. As can be seen from the graph below, the hotel industry supply is forecast to grow much more than commercial buildings' supply in general.

Figure 2: Forecast growth in hotel supply vs. SDA forecast growth for all types of commercial buildings



3. **Forecast the power grid carbon intensity by country.** Using data from the International Energy Agency (IEA).
4. **Estimate the industry current footprint.** Using the Hotel Carbon Footprinting Tool[xvi], the median GHG emissions per room per year of each country was multiplied by each country's current supply.
5. **Estimate the industry baseline.** The baseline year for science-based targets is 2010.[xvii]
6. **Estimate the industry carbon budget**. An annual GHG Emissions Budget was calculated for each year from 2011 through 2050. Then, each year's Annual GHG Emissions Budget was summed up for the Accumulated GHG Emissions Budget.
7. **Set the industry carbon target.**
8. **Estimate the business-as-usual industry GHG emissions forecast.** Using the forecast carbon intensity of electricity for each country in step 3 and the projected supply growth in step 2.
9. **Estimate the emissions target gap** to demonstrate the levels of reduction for the industry to address.

Figure 3: Forecast accumulated GHG emissions of the hotel industry vs. all commercial buildings

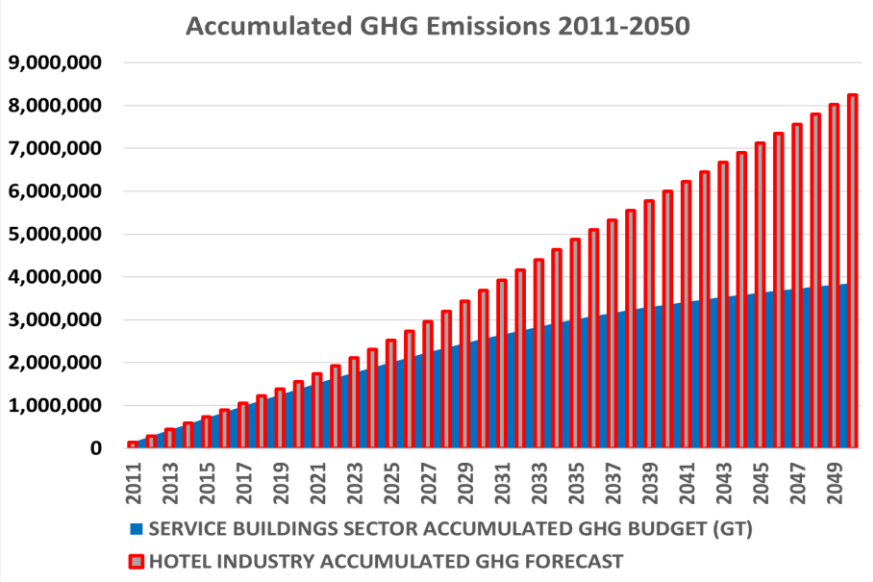


Table 1: Hotel industry targets

HOTEL INDUSTRY TARGETS	2010	2014	2030	2050
Baseline				
2010 Baseline MTCO2 per Room per Year	**9.227**	**9.227**	**9.227**	**9.227**
Business-As-Usual MTCO2 per Room per Year	**9.227**	**8.056**	**7.767**	**5.284**
Business-As-Usual Accumulated GHG Emissions (MT)	**N/A**	**663,291,576**	**3,684,095,566**	**8,247,108,036**
Science-Based Target Scenario				
Reduction in GHG Emissions per Room per Year	**N/A**	**-18.2%**	**-66.2%**	**-89.5%**
MTCO2 per Room per Year	**9.227**	**7.547**	**3.115**	**0.966**
Carbon Budget (MT)	**N/A**	**565,863,734**	**2,556,540,868**	**3,857,504,703**
Portion of Target Met By External Emission Factors	**N/A**	**-12.7%**	**-15.8%**	**-42.7%**
Gap To Be Met By Energy Efficiency, Renewable Energy & Offsetting	**N/A**	**-5.5%**	**-50.4%**	**-46.8%**
Accumulated GHG Emissions Gap since 2010 (MT)	**N/A**	**(97,427,842)**	**(1,127,554,698)**	**(4,389,603,333)**

Endnotes

[i] http://www.ipcc.ch/report/ar5/
[ii] The RCP 2.6 Scenario, idem.
[iii] http://www.wri.org/blog/2015/12/paris-agreement-turning-point-climate-solution
[iv] http://www.wri.org/blog/2015/09/business-case-science-based-targets-reduce-emissions
[v] Source: CDP, We Mean Business, June 2016
[vi] See http://www.nortonrosefulbright.com/knowledge/publications/149117/corporate-renewable-ppas-a-framework-for-the-future
[vii] http://www.seia.org/research-resources/solar-power-purchase-agreements, https://www.greenbiz.com/article/power-purchase-agreements-renewables-IBM-Kaiser-NRG
[viii] For more detail see http://www.worldwildlife.org/projects/the-3-solution
[ix] https://www.aviva.com/media/upload/EIU-cost-of-inaction.pdf
[x] http://www.ceres.org/roadmap-assessment/roadmap-in-action/explore-by-topic/performance-operations/carbon-asset-risk
[xi] https://www.greenbiz.com/article/how-microsofts-internal-price-carbon-saved-it-10-million-year
[xii] http://www.reuters.com/article/us-apple-greenbonds-idUSKCN0VQ2K2
[xiii] The Science-Based Targets Initiative reports that companies that have already set targets aligned with climate science are achieving better financial return on low-carbon investment, reporting an average internal rate of return (IRR) of 27%.
[xiv] For further examples see http://www.mandalaresearch.com/index.php/purchase-reports, http://www.hotelnewsnow.com/Articles/26539/Survey-Sustainable-travel-on-the-rise, http://news.booking.com/sustainable-travel-2016#_edn1, http://www.nielsen.com/us/en/press-room/2014/global-consumers-are-willing-to-put-their-money-where-their-heart-is.html
[xv] Sources: JLL, STR Global, Oxford Economics
[xvi] www.hotelfootprints.org
[xvii] 2010 was the inflection year most referenced in the IPCC Fifth Assessment Report in terms of actual GHG emissions, and its trajectory for future emissions onward. It is the baseline year used by SDA and CDP's Science-based target evaluations as it also has the best data set and analysis for global emissions by sector