



HEALTH, WELLBEING & PRODUCTIVITY IN RETAIL: **THE IMPACT OF GREEN BUILDINGS ON PEOPLE AND PROFIT**

FEBRUARY 2016

PROJECT LED BY:



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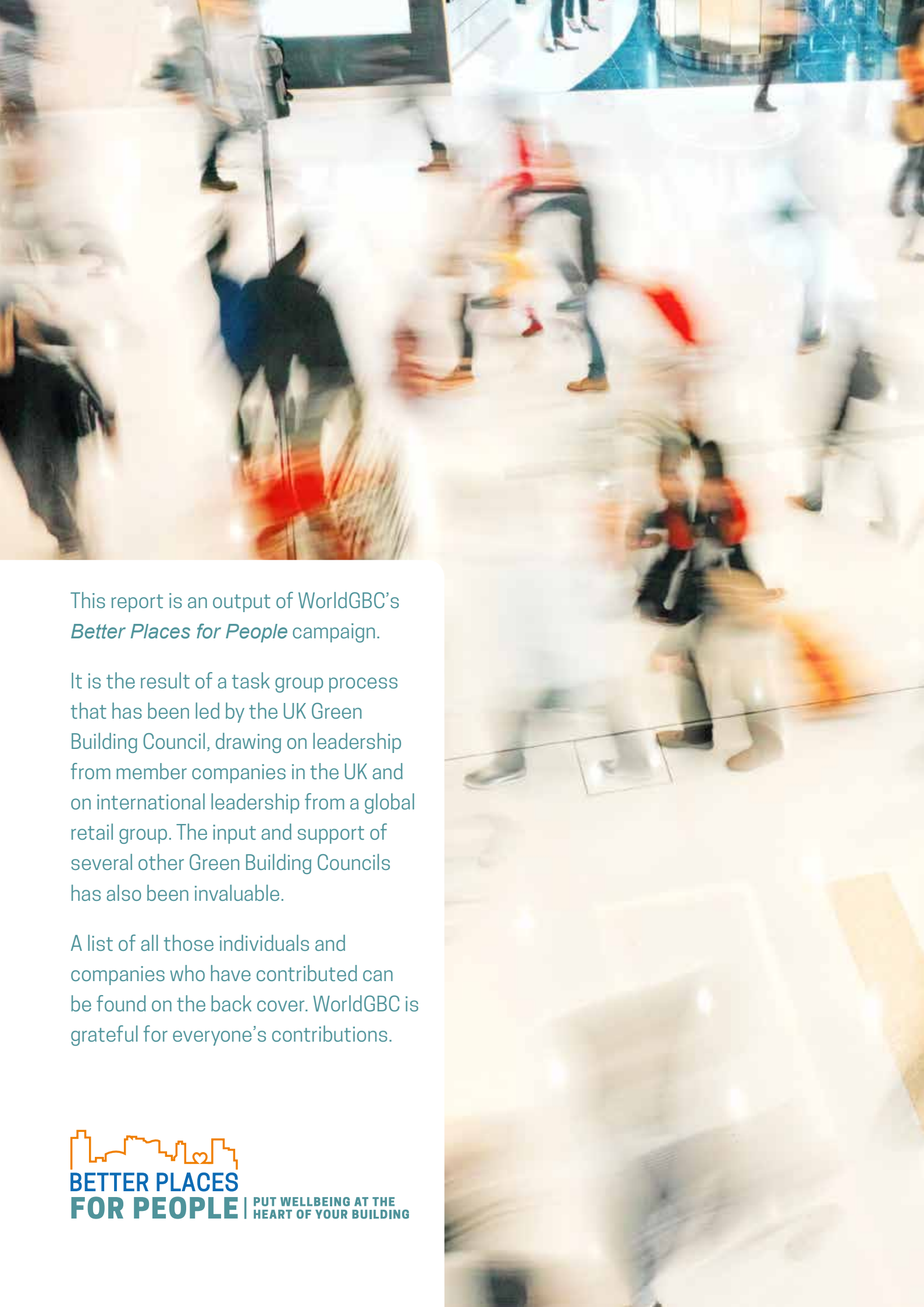


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This report is an output of WorldGBC's *Better Places for People* campaign.

It is the result of a task group process that has been led by the UK Green Building Council, drawing on leadership from member companies in the UK and on international leadership from a global retail group. The input and support of several other Green Building Councils has also been invaluable.

A list of all those individuals and companies who have contributed can be found on the back cover. WorldGBC is grateful for everyone's contributions.



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ADDITIONAL RESOURCES

Further resources on health, wellbeing and productivity in retail are available on the *Better Places for People* website including guidance notes and the following case studies

Case Studies in the Report

Well Retail Pilot – TD Bank, USA
Stockland's Healthy Approach – Australia
BuroHappold – Use of social media on a project
British Land HQ – York House, UK
PNC Financial Services Group & LEED – USA
Kingfisher PLC – UK
Marks & Spencer – Ecclesall Road, UK
CBRE – Digital Market Intelligence – Spain
RESET Certification – China

Appendix C: Additional Case Studies

Hysan Development Company Ltd,
– Hysan Place, Hong Kong, China
Langham Place Mall,
– Langham Place, Hong Kong, China
Swire Properties Ltd,
– Pacific Place, Hong Kong, China
Lendlease
– Barangaroo Development, Sydney, Australia

Website Case Studies

Cornish Associates – Mashpee Commons, USA
Cushman & Wakefield/NewRiver Retail – UK
JLL/Legal & General Real Assets – The Grafton Centre, UK
The Crown Estate – Public Realm, UK

For more information, please visit www.betterplacesforpeople.org to download.





EXECUTIVE **SUMMARY**

BACKGROUND AND INTRODUCTION

The construction and operation of buildings has a huge impact on resource use and the natural world, and therefore, green building represents a great opportunity to positively address environmental challenges such as climate change.

However, buildings are fundamentally for people. They should enhance our quality of life, whether at home or at work, or engaged in other activities – including leisure and retail. In fact, we would argue that a building is not truly “green” if it does not work for people.

One of the reasons that buildings are so intrinsically linked to our quality of life is the impact they have on our health and wellbeing, which in turn can influence our productivity in a commercial or work setting.

This is a topic which has well and truly risen up the agenda for the construction and real estate sector in recent years and might be seen as part of a welcome trend to put “the user” back at the heart of building design and operation. However, there is more to it than this.

Having reviewed extensive and robust evidence, the WorldGBC has demonstrated that low carbon, resource efficient and environmentally sensitive buildings can actually enhance the health, wellbeing and productivity of building users. That is a very strong element of the business case for green buildings.

This was the subject of our high profile 2014 report *Health, Wellbeing & Productivity in Offices: The Next Chapter for Green Buildings*, which received extraordinarily positive feedback. It presented the “overwhelming evidence” on the link between building design and user experience, and also proposed ways for organisations to measure the impact of their own building on their own staff.

In many ways, this report on the retail sector can be read as a complementary piece of work, which takes some of the key findings and proposals, and translates them into a retail context. That is how we would recommend the reader engage with it. However, for those not familiar with the offices work, it should also be possible to read this as a stand-alone document.

“The WorldGBC has demonstrated that low carbon, resource efficient and environmentally sensitive buildings can enhance the health, wellbeing and productivity of building users. That is a very strong element of the business case for green buildings.”



The report forms one of the first major outputs from WorldGBC's *Better Places for People* campaign, designed to fast-track the demand for and supply of buildings which support and enhance the health, wellbeing and productivity of the people within them. Fundamentally therefore, this is about *action*.

It does not purport to be the final word on the topic by any means, because this will be a long journey. But hopefully it will act as a key milestone or staging post, which serves to engage decision-makers, share lessons learned and create momentum. This is targeted at the retail sector and those who provide and manage retail space and the employers who occupy space. But there are also important findings which should be relevant to a wider audience.

“The WorldGBC’s Better Places for People campaign is designed to fast-track the demand for and supply of buildings which support and enhance the health, wellbeing and productivity of the people within them. Fundamentally, this report is about action.”

THE SIGNIFICANCE OF RETAIL

In the UK alone, where the project team for this report was based, retail accounts for almost half (43 per cent) of the total value of commercial property, and retail outlets are the biggest emitters of CO₂ within the commercial property sector.

Retail is therefore an important sector in its own right – in terms of its size and impact – for WorldGBC to address.

It is also a sphere that just about everybody has some level of interaction with. You may not be a “shopaholic”, but everyone needs food, clothing and other essentials, so it has a central position in our lives and in our cities and communities.

Retailers also tend to have a lot of data on financial or organisational performance, such as sales and footfall. This project was therefore an opportunity to consider a larger and more compelling set of relationships to make the business case for green buildings.

Even in an expanding online world, the vast majority of purchases still occur within stores. For retailers therefore “place” is not ancillary to the business, as it is sometimes viewed in the offices sector. In retail, place *is* the business.

Compared to other industry players, retailers also need less convincing about the importance of the overall health and wellbeing agenda. They can see the global trend for healthier products and services, and the growth in the health and “wellness” industry.





Hysan Place © Kerun Ip, Hysan Development Company Ltd

AIM OF THIS REPORT

Despite the increasing interest and awareness in health and wellbeing, it has not necessarily led to widespread action.

The reality is that many in the retail sector, like other sectors, need help in translating the concept of health, wellbeing and productivity into designing and managing properties. This is especially true for the vast amount of retail units that already exist, for which there are many opportunities to deliver better indoor environments and reductions in energy use.

For many retailers, and the industry as a whole, there is real potential to better use place to drive profit. As we demonstrate, there are all kinds of reasons why sustainability and property decisions are not better aligned, but the health, wellbeing and productivity agenda may force a reconsideration of this on commercial grounds.

This is because in certain circumstances there is emerging evidence – some of it demonstrated in the full report – that sustainable retail environments are becoming more attractive and profitable.

This report therefore seeks to help retailers make the connections between environmental and economic performance through a more guided and considered approach – one which encourages them and others in the industry to consider economic performance through an environmental (and human) lens.

MEASURING HEALTH, WELLBEING & PRODUCTIVITY IN RETAIL

The starting point for improving health, wellbeing and productivity in retail buildings is to understand how your spaces are currently impacting the people in your building (both staff and customers) and the performance of the organisation.

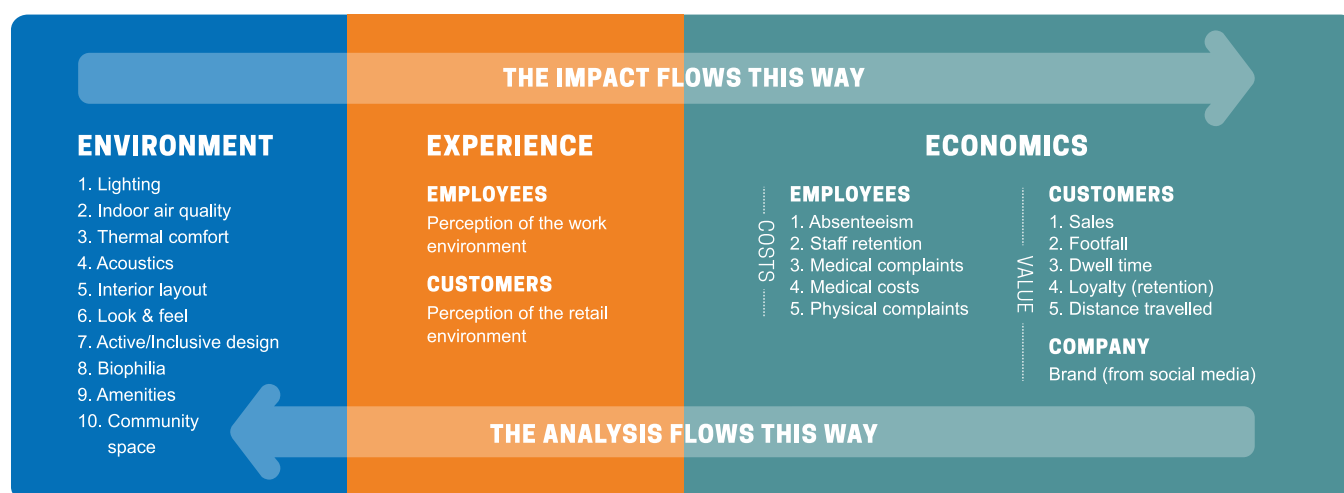
Therefore, at the heart of this report is what we have called the “Retail Metrics Framework”. The Framework attempts to make the health, wellbeing and productivity aspects of sustainable buildings accessible, personal and actionable for the retail industry. Again, for those familiar with our 2014 report on offices, parallels will be clearly apparent.

The Framework helps translate this very powerful but large set of issues into a measurable and manageable set of metrics that can inform better design and management decisions.

Using data and expertise that retailers already have, the Framework shows companies how to better understand the impact of place on profit. It provides five simple strategies (below) for engaging with a limited number of metrics that can uncover significant, untapped business intelligence.

“The reality is that many in the retail sector need help in translating the concept of health, wellbeing and productivity into designing and managing properties.”

THE RETAIL METRICS FRAMEWORK



The Retail Metrics Framework comprises three categories, or types of measurement:

ENVIRONMENT

This refers to the physical characteristics of the retail setting believed to have an impact on employees and customers. We encourage you to collect data on ten metrics, which are lighting, indoor air quality, thermal comfort, acoustics, interior

layout, look and feel, active and inclusive design, biophilia, amenities and community space.

We have included community space to reflect the fact that retail is not just about the stores themselves but also the public spaces they provide.

EXPERIENCE

This refers to how employees and customers perceive the space they occupy, which can be as important as objective measures of the space itself. Surveying employees and customers provides valuable direct feedback but employee and customer surveys, even those with health and wellbeing themes, seldom ask questions related to individual aspects of the building.

A different approach is needed for employees and customers. Employees will have more direct experience and prolonged contact with their environment and this presents the opportunity for more detailed and longer questions. However, the perceptions of customers are also highly important simply due to their numbers but also the choice they have over where to shop. After all, employees have to be in the store – customers do not.

ECONOMICS

This category covers the organisational and financial outcomes that may be influenced by environment and experience. We have included five metrics which tend to be thought of by retailers as costs, and mainly apply to employees, and five metrics which mainly apply to customers and can be thought of as revenue opportunities. We also include one overarching measure, “brand”. The metrics are relatively easy to quantify and monetise, with the exception of brand. However, since brand and public reputation is so important to retail we have included a measure of it as reflected in social media, to help retailers understand how brand is affected by perceptions of place.

staff retention, medical costs, medical complaints and physical complaints. These relate primarily to employees and represent lost productivity measures that may be associated with poor environmental conditions.

Customers/Value Although sales is perhaps the most obvious of these metrics, retailers also have an extensive understanding of consumer behaviour in the form of footfall, dwell time, loyalty and distance travelled.

Company/Value It is increasingly possible for brands or stores to be affected by what customers say online. Customers often focus on the physical environment when using social media. While it may be difficult to monetise, there is a brand value associated with place that deserves quantification and consideration.

Employees/Costs The five metrics included here were also used in the 2014 offices report: absenteeism,

“The Framework follows a simple logic that aligns with the mission of retailers everywhere: better environments lead to better experiences for people and that leads to better economics for retailers.”



Mashpee Commons © Cornish Associates

INITIAL LESSONS LEARNED FROM PILOTING THE RETAIL METRICS FRAMEWORK

We have identified five strategies that companies can adopt to help them use the Framework. These have been listed by level of difficulty from easiest to most difficult.

- 1.** Assess what employees and customers have already said about your store environments (through staff surveys, social media, etc.)
- 2.** Identify stores that have undergone refurbishments and compare financial results in these stores pre- and post-refurbishment
- 3.** Identify green stores within a portfolio and work backwards from the economic data to review relationships with environmental features/performance
- 4.** Sort the portfolio into “best-performing” and “worst-performing” stores and look for correlations with store environments and worker/customer experiences
- 5.** Trial the metrics in one or more stores, using a baseline starting today

These strategies, and our advice to individual actors, have been tested in the market – piloted within organisations who have been willing to share their experiences. Their feedback demonstrates the usefulness of the Framework and how other retailers could benefit:

- 1.** Executive leadership on this issue can drive powerful corporate results
- 2.** The Framework helps companies draw out existing but underutilised strategically important data and expertise
- 3.** The Framework can provide actionable intelligence even if data and engagement are limited
- 4.** The Framework can provide much better “joined up” thinking within companies leading to more consistent and profitable approaches
- 5.** The Framework explains to individuals within companies how they can take ownership over the issue and better their individual (as well as company) performance

“These strategies have been tested in the market – piloted within organisations who have been willing to share their experiences.”

NEXT STEPS

“The Retail Metrics Framework is designed for retailers to better understand and align environmental and financial performance.”

While retailers have quickly recognised that the health and wellbeing agenda offers business opportunities through their products and services, an understanding of how building design aligns with economic performance has – on the whole – been slower.

The Retail Metrics Framework is designed for retailers to better understand and align environmental and financial performance. This report deliberately focuses on the main question retailers are already asking themselves: How can we better understand the relationship between the environments we provide and the economics that result?

Emerging technology will help to simplify this question and the Framework has been designed to consider such changes. New, inexpensive and reliable environmental sensors are already helping retailers measure environmental factors.

Customer perception surveys can be hosted online or on store apps, and retailers can use free social media to better understand their stores. The economic metrics will increasingly be measured by simple mobile phone signals. In short, engaging with this topic through the Framework proposed is likely to become even cheaper, easier and more accurate in the future.

This report represents the latest step on a journey of measuring health, wellbeing and productivity of green buildings and linking it to tangible business benefits. We invite you to join us on this journey, by engaging with the Retail Metrics Framework and sharing your experiences through our *Better Places for People* campaign and your local Green Building Council.







MAIN REPORT

INTRODUCTION

When the WorldGBC report *Health, Wellbeing & Productivity in Offices: The Next Chapter for Green Buildings* was published in September 2014, retailers were quick to respond.

Within weeks of its launch, several companies expressed an interest in a similar project on retail. Not only did they see parallels across the sectors, but they also had an additional selling point – they had data, and lots of it. Much of this data was about productivity and it was both precise and expansive at the same time: precise in that it looked at data on a building-by-building basis; expansive in that it went beyond employees to the much wider world of customers. It was a chance to consider a larger and more compelling set of relationships to make the business case for sustainable buildings.

In addition to collecting the data, retailers had a clear idea of why they were collecting it. They understand that creating better retail environments lead to better experiences, and better experiences lead to better economics. They also recognise the importance of the overall health and wellbeing agenda to their customers. For example, they see the demand for healthy products and services as becoming the more profitable aspect of the modern retail experience, and the growing popularity and profitability of healthy food and beverage offerings.

Perhaps most importantly, they are beginning to see it in their buildings as well. Gone or going are the “grey box” retailers, only to be supplanted by new kinds of architecture that embrace many of the environmental features this report highlights.

However, general knowledge and specific action are very different things. Retailers need help in translating the concept of health, wellbeing and productivity into designing and managing properties because aligning their properties with this agenda is a large, currently underutilised, business opportunity. This is true for both existing retail units - for which there are many opportunities to deliver better shopping environments and reductions in energy use - as well as the design of new stores.

Our work shows that important data often remains in siloes and does not get translated into effective decisions. Important collaborations within companies fail to occur and intelligence that is free and readily available is therefore often overlooked.

What is most noticeable is that health, wellbeing and productivity is still often divorced from the larger retail strategy. Money continues to be spent on improving the sustainability of stores (e.g. energy efficiency or renewable technologies) but these decisions are often taken in isolation from the primary mission of retail – namely, providing an experience that makes people want to come, stay and spend. Although retail is changing quickly, some within the industry continue to buy, build and manage buildings that have insufficient consideration for the people who work or shop within them.

The subject of this report then is about change, and the actions that lead to it. It is about empowering retailers to look within their own properties to understand and monetise how better, more sustainable physical environments can drive profit. It is not enough to point to exemplar new buildings or the next opportunity. Real change must begin now, starting with data that may already be available at retailers’ fingertips. This report provides the tools and strategies to enable them to start.



THE WHY & THE HOW

For years, the question around health and wellbeing in buildings was one of “why?” The WorldGBC produced a report in 2013, *The Business Case for Green Building*, which addressed this question.

The response was overwhelming. The report was the most downloaded item in WorldGBC history and the chapter on health, wellbeing and productivity was the one that generated the most excitement. Then, in 2014, the WorldGBC published the offices report that created a new dialogue not just about why the agenda was important but how it could be used strategically by companies to improve their own performance.

The question we now hear most is not “why?” but “how?” It is not simply enough to be aware of why a relationship exists between building design and health, wellbeing and productivity - you must also understand how to act upon it.

We begin this report by showing how retail is different from other sectors and what its dynamics reveal. We then detail the formation of what we have called the Retail Metrics Framework, which represents an attempt to make the health, wellbeing and productivity aspects of sustainable buildings accessible, personal and actionable for the retail industry. We then set out the strategies for implementing the Framework based on the actual piloting of the metrics within companies.

Big societal and technological changes are afoot globally that are driving health and wellbeing into the built environment as never before. Towards the end of the report we will detail these drivers and what it may mean not only for retail, but the built environment as a whole.



WHY RETAIL IS DIFFERENT TO OFFICES

Many of the environmental factors (such as air quality or thermal comfort) thought to affect people's health, wellbeing and productivity in offices are also relevant to the retail environment, for both employees and customers.

In some ways, this is not surprising, as the same set of environmental factors tend to be important across all sectors – offices, retail, residential, and other building types. For example, good daylight and views out to nature help you work, sell and live better.

However, retail is different to offices because of the addition of another distinct building user – the customer, and this adds to our understanding of the influence of sustainable buildings on people. Retail therefore opens three new important lines of inquiry: agency, productivity and value.

Agency

Retail adds an important new cohort – customers – to our understanding. Employees and customers are not the same. Workers have to be in a particular space, customers do not, and have more freedom than workers in terms of where they choose to be. Because of this “free agency,” good environments have the potential to attract customers. So where they go and how they behave in different environments are fundamentally important questions for developing the business case for greener, healthier retail spaces.

Productivity

Measuring productivity can be difficult. Many of the variables that are used to demonstrate the business case in offices – such as absenteeism or staff retention – are important and reliable, but they only begin to scratch the surface of the productivity question. These types of financial metrics are primarily about negative measures of productivity – the time people are out of the office, the degree to which they leave organisations, or the amount of time they are sick. Even revenue, a more direct measure of productivity, is notoriously difficult to measure in offices, since so much of revenue is generated outside of or independent of place.

In retail however, measuring productivity can be easier. Footfall, dwell time and sales are all routinely measured by retailers as indicators of individual store performance. The financial metrics in retail are considered not only in more detail, but also crucially on a place-by-place basis. This enables a closer study of the links between environmental and financial performance in a very specific setting.

Value

A study of retail moves the discussion away from lost costs to value added. The Framework we introduce in this report focuses not just on money that can be saved (through lower retail worker absenteeism, staff turnover, etc.) but also on money that can be earned (from customers) by providing better retail environments. This represents value and a much more powerful motive for stimulating industry action.

APPROACHING THE FRAMEWORK

What makes retail so exciting – the amount of data to review – also makes it potentially daunting for some retailers to engage in. One of the main challenges we discovered over the course of this report is that retailers have a lot of data and need more help managing (or thinking differently about) it.

That is why the Framework is deliberately concise: ten components of the environment to consider, two experiences to measure (staff and customer) and ten economic metrics to review. It is also why we set out five strategies for approaching the Framework from various angles and starting points. We want different kinds of businesses to be able to engage with this work.

Whilst there is no shortage of the amount of data, we recognise that not everyone has access to certain types of information and not everyone is in a position to lead on this issue. Our aim is to show retailers what they can do with the resources they have and so the Framework focuses on data and expertise they generally have access to. We have sought to make the costs of entry low and the payoff potentially high. Even if you collect no additional data, we provide the tools and strategies to begin to draw significant value from what you already have, with the people you currently employ, in a matter of hours.

The Framework is also designed to extract value even if based on partial engagement. We have provided suggestions about how to experiment one step at a time and we urge you to engage with the Framework in stages so that you can recognise the aspects that are most relevant to your business.

We believe the Framework is both attractive and powerful for those in retail who buy, build or manage different kinds of properties, and should be viewed as a “crib sheet” to help guide them through what is often a complex and challenging landscape.



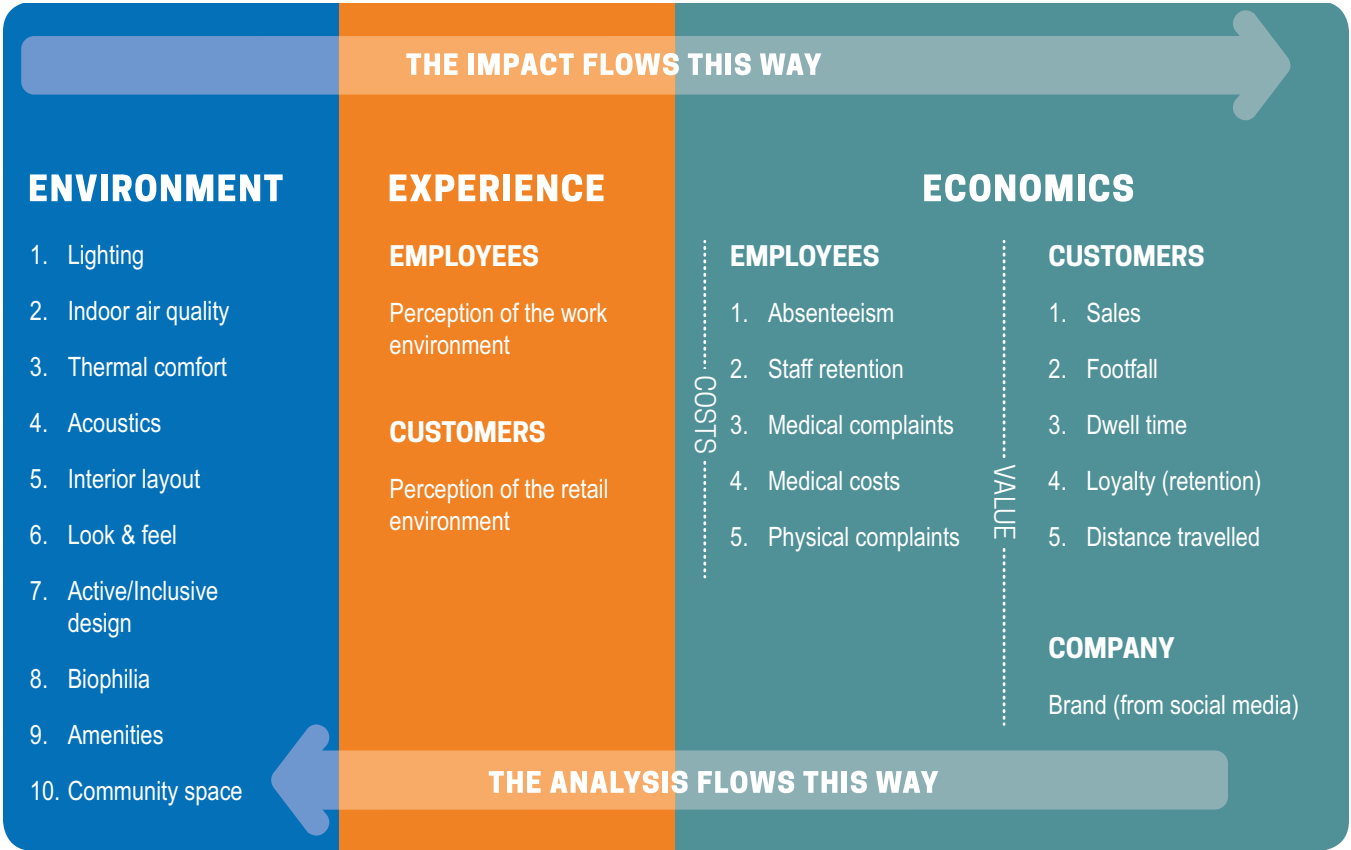
RETAIL METRICS FRAMEWORK

The Retail Metrics Framework follows a simple logic that aligns with the mission of retailers everywhere: Better environments lead to better experiences for people and that leads to better economics for retailers.

Environment

This refers to the physical characteristics of the retail setting believed to have impacts on employees and customers. We encourage you to collect data on ten metrics, which are lighting, indoor air quality, thermal comfort, acoustics, interior layout, look and feel, active and inclusive design, biophilia, amenities and community space.

We have included community space to reflect the fact that retail is not just about the stores themselves but also the public spaces they provide.



It is helpful to think about the environmental factors in terms of two categories, “quantitative” and “qualitative.”

Factors that can be measured quantitatively can usually be captured by existing building management systems, or, increasingly, through the use of sensors such as those for lighting, indoor air quality, thermal comfort and acoustics. Other factors do not lend themselves to being easily measured numerically and require more qualitative assessment. Words to consider here are “more” or “less.” For example, do back of house and customer areas have more or less space, more or less greenery, more or less active and accessible places, more or less opportunities for engaging in healthy eating or exercise, more or less activities in common areas?



	QUANTITATIVE	QUALITATIVE
Factors	<ul style="list-style-type: none"> • Lighting • Indoor Air Quality • Thermal Comfort • Acoustics 	<ul style="list-style-type: none"> • Interior Layout • Look & Feel • Active/Inclusive Design • Biophilia • Amenities • Community Space
Result Type	Numerical reading or measurement	Descriptive
Method	Via building management system or via sensors	Via specification review or walk-around

While indicators of good and bad practice differ around the world (and hence why they are not provided definitively here), measuring these ten factors over time provides, in the very least, a baseline for each space. To go further, a number of best practice guides are available through organisations such as ASHRAE, BSRIA and the EPA which provide minimum acceptable levels and best practice performance targets. Similarly, green building rating tools such as LEED, BREEAM, BEAM Plus, Green Star, SKA and others assign credits that serve as reference and aspiration.

Appendix A provides a description of the ten environmental factors along with some guidelines for good performance and suggested best practices.



This part of the Framework refers to how employees and customers perceive the space they occupy, which can be as important as objective measures of the space itself.

Experience

It is not enough to simply measure and assess the physical environment and correlate this with business performance. It can be the case that the physical environment performs well quantitatively, for example meeting and exceeding energy performance and air quality standards, but is nonetheless viewed less favourably by occupants who find it visually uninspiring or even demotivating.

Surveying employees and customers provides valuable direct feedback. Still, some employee and customer surveys – even those with health and wellbeing themes – fail to ask questions related to individual aspects of the physical environment. Simply asking for perceptions of the retail environment, and zeroing in on specific areas of concern, can lead to low-cost opportunities, from lowering temperatures to creating more interesting and stimulating environments.

The Framework suggests undertaking a “perception study” of both employees and customers, with a slightly different approach for each. Employees will have more direct experience and prolonged contact with their environment and this presents the opportunity for more detailed surveying. The perceptions of customers are also important due to their number and also the choice they have over where to shop. After all, employees have to be in the store – customers do not. So a survey of customers should generally be shorter and consist of questions that customers can understand and want to answer. Incentivising participation has also proven a valuable tool for retailers undertaking such surveys to-date.

Conducting the survey at different times, for example pre and post refurbishment, is also key. The WorldGBC has developed a guidance note on conducting a perception survey of office employees that is also suitable for retail employees¹, and a sample customer survey for use by retailers².

See the *Better Places for People* website for the Guidance Notes on conducting *Employee and Customer Surveys*



1 http://betterplacesforpeople.org/wp-content/uploads/2015/12/offices_perception_survey.pdf

2 http://betterplacesforpeople.org/wp-content/uploads/2015/12/perception_survey_guidance_note.pdf



Gunwharf Quays © Land Securities

Economics

This category covers the organisational and financial outcomes that may be impacted by environment and experience. We have included five metrics which tend to be thought of by retailers as costs, and mainly apply to employees, and five metrics which mainly apply to customers and can be thought of as revenue opportunities. We also include one overarching measure, “brand”. The metrics are relatively easy to quantify and monetise, with the exception of brand. However, since brand – and public reputation – is so important to retail we have included a measure of it as reflected in social media, to help retailers understand how brand is affected by perceptions of place.

Employees – cost metrics

The five metrics included here were also used in the 2014 offices report: absenteeism, staff retention, medical costs, medical complaints and physical complaints. These relate primarily to employees and represent lost productivity measures that may be associated with poor environmental conditions.

A description of these five metrics and guidance on how to better measure and relate them to buildings can be found in *Appendix B*.

Customers – value metrics

In the Retail Metrics Framework we have divided value into five metrics. These are metrics that retailers are familiar with and which are directly impacted by, at least in part, place. They are sales, footfall, dwell time, loyalty and distance travelled.

Sales

There are numerous ways that retailers measure sales – by area, size of shopping cart, conversion rates, and so on. In the Framework our recommendation on how to measure them across retail units is limited to one principle – to employ consistency.

Footfall

Footfall is the measurement of the number of people entering a specific retail area. It is a good idea to measure footfall across a broad period of time and in different sales situations (during sales, holiday periods, etc.) so that the data gathered is representative and not something significantly induced by other factors such as special product offerings or inclement weather.

Dwell time

Dwell time is a measure of the time a customer spends in a particular location. There is a strong correlation between dwell time and sales. Retaining customers within an environment for longer periods of time is a crucial retail strategy.



Loyalty

Loyalty is a variable that measures repeat business and can either be for a particular destination or a particular brand. It is usually measured either through loyalty cards, customer payment information or by asking a customer to provide a post code. Classifying the different reasons for return visitors is difficult, but it is also true that a customer would be unlikely to repeatedly visit if the environment was performing poorly.

Distance Travelled

As with loyalty, patronage that demonstrates extra effort is worth noting, and distance travelled to a shopping destination can be indicative of this. If customers are coming a long way there is something in the offering for doing so, and this may be correlated with the physical environment.

Company – value metric

Brand

While it may be difficult to monetise, there is a brand value associated with place that deserves quantification and consideration. Social media and review sites with their direct connection to the customer and a flow of real-time data offer something significantly more powerful for understanding the impact of the environment on people - a direct tool for companies to assess the performance of their physical assets. Perhaps most significantly, social media with its very public profile does something else: it makes building performance evaluation available to everyone.



TD North Bethesda © TD North

CASE STUDY:

WELL RETAIL PILOT, TD BANK, BETHESDA, USA

The International WELL Building Institute® (IWBI) introduced the WELL Retail Pilot in February of 2015, following the successful launch of WELL v1 for Commercial & Institutional Office Buildings in October of 2014. The WELL Retail Pilot program builds off from seven years of research and collaboration with leading physicians, scientists and industry professionals that has culminated in the WELL Building Standard®. The WELL Retail Pilot is designed for scalability to allow projects to apply for certification across a large portfolio of similar type properties. It can be implemented in new and existing projects. Specific to retail, WELL addresses both the worker and customer experience in seven areas: air, water, nourishment, light, fitness, comfort, and mind.

Participation in the WELL Retail Pilot carries many benefits including direct engagement with IWBI through the pilot development process and public recognition for being an industry leader and early adopter of WELL.

Project Name: TD Bank Bethesda Branch

Location: 7628 Old Georgetown Road, Bethesda, MD, 20814

Size: 2,787 square feet

TD Bank's new retail branch in Bethesda, Maryland is pushing the envelope of a truly sustainable bank branch by pursuing both LEED certification and WELL certification. These complementary programs demonstrate a commitment to doing what is best for our planet and our people by offering a holistic vision of sustainable design.

TD's pursuit of WELL certification builds upon their already well-established practices of incorporating health, wellness and sustainability into the design and operation of its retail bank branches and corporate office locations. Workplace wellness is of utmost importance to TD to ensure that employees are happy, healthy and productive while they focus on delivering a legendary customer experience. Implementing WELL Retail standards will demonstrate TD's wellness commitment to a broader audience and ensure that customers benefit from the enhanced banking environment. The WELL Retail Pilot will complement the Bank's corporate office space in Toronto, Ontario that was completed in September 2015 and is pursuing WELL Certification.

TD Bank has chosen to focus on several health and wellness elements in the building design for the Bethesda, MD branch.

- **Indoor Air Quality:** TD is implementing several strategies to enhance indoor air quality for its staff and customers visiting the branch. The project has selected sustainable building materials that will not off gas and pollute the indoor environment. To supplement, the building mechanical system will incorporate MERV 13 rated particulate filters and ventilation strategies to allow for more air circulation within the space. In addition, TD is considering ways to communicate air quality information to occupants and visitors through the potential use of display monitors and devices that share information on temperature, humidity and carbon dioxide.

- **Biophilia:** The building will incorporate elements of biophilia (natural aesthetics), such as a living green roof and wall, landscape graphics and a selection of natural materials. This will support an improved aesthetic environment for both employees and customers.

WELL Retail Features Pursued by TD Bank:

- **Feature 15:** Increased Ventilation - Exceed ASHRAE fresh air supply rates by 30%.
- **Feature 73:** Ergonomics - Provide standing support such as a foot rests and anti-fatigue mats at workstations in which employees are required to stand for extended periods of time.
- **Feature 88:** Biophilia – Qualitative - Create and implement a biophilia plan that incorporates nature and natural patterns into the design through environmental elements, lighting, and space layout. Also highlight human-nature interactions within the building and site through views, landscaping and environmental design.

"Given TD's commitment to workplace wellness, we are focused on ways to reduce stress and increase productivity for employees while enhancing the customer experience in each bank location. Incorporating biophilia on the interior of the branch, in addition to the exterior green roof and wall, will provide a unique customer experience that demonstrates our commitment to sustainability and creates a connection to nature through sight, sound and texture. As we experienced with our corporate space pursuing WELL Certification, improved air quality is something that employees and customers will notice immediately and recognise as a benefit of being in this healthier WELL building."

– Martha MacInnis, Design Director, TD Bank

As their commitment to success, TD Bank is working with WELL as part of a case study pilot program to document the impacts of the WELL Certification and use lessons learned to apply to future locations.





CASE STUDY: STOCKLAND'S HEALTHY APPROACH, AUSTRALIA

Better Food, Better Places, Better Business

Over the last decade, shopping centres have increasingly focused on healthy food as a way to engage communities and draw in customers. Stockland, a major Australian retail developer, is looking to fresh and healthy food elements as a major component of their retail offering.

"Food is a place-making tool," notes Caitlin Sanford, a development manager with Stockland, "and a visit to a shopping mall is an opportunity to eat healthy food, and even attend a cooking class." Re-thinking shopping centres as sources to promote healthier eating and interaction is an innovative and attractive business opportunity.

Stockland shopping centres are designed not only to provide better food options, but also a better in centre experience. In contrast to the typical food court, Stockland offers a more contemporary, cleaner look and feel. This is accomplished through natural materials like timber and stone, where possible, along with natural elements and landscaping. As Sanford notes, "people linger longer in beautiful places", so creating healthier, people-centred environments can have a more positive effect on shopping centre revenues.

An example of this thinking is Stockland's recently completed A\$228 million expansion and redevelopment of Wetherill Park Shopping Centre in western Sydney. Stockland Group Executive and CEO of Commercial Property, John Schroder, said "After more than 30 years in Wetherill Park, we knew that a big part of the way the local community celebrates is through festivals and food, shared with friends and family, so that's exactly what we've created: a new, free-flowing shopping centre where people can meet, shop, eat, socialise, be entertained and be seen. It delivers an unparalleled retail experience, anchored by fresh food and fast casual dining with a modern twist on laneway-style street food vendors and entertainment."

The centre features two full-line fresh-food supermarkets and an expanded "fresh food precinct." Another new element is an outlet for Jamie's Ministry of Food, a project founded by the famous chef, Jamie Oliver, and his non-profit Foundation. Jamie's Ministry of Food offers classes that promote cooking simple, nutritious food at home and on a budget.

The expansion of the centre was awarded a 5 Star Green Star Retail Centre Design representing 'Australian Excellence' in environmentally sustainable building practices. Stockland has also considered sustainability beyond the rating tools, incorporating a number of important ongoing community initiatives and facilities into the Wetherill Park development. These include, cycling and shower facilities to encourage active engagement to and from the centre and community focused public art projects.



Stockland
it's your place

HOW RETAIL IS CHANGING

One of the more interesting developments in retail that helps to highlight the relationships between environment, experience and economics is the rise of a new kind of retail space – open air malls and “lifestyle centres.”

As opposed to the traditional covered shopping centre, open air malls and lifestyle centres have a different style of design. They tend to be connected sets of stores with uncovered but active common areas. They have large, open and pedestrianised walkways with longer views and greater connections with nature. As the name “open air” suggests, they rely much more on natural ventilation and daylight. They also tend to emphasise other environmental factors from our Framework, including higher rates of biophilia, active/inclusive design and community space.

According to research by the International Council of Shopping Centers, there is evidence to suggest that lifestyle centres perform better than conventional malls in terms of economics. The number of stores visited and the number of repeat visits within a 30-day period has been shown to be higher at lifestyle centres than conventional malls. While shoppers at lifestyle centres have a lower dwell time, their average spend per hour is higher. Sixty-five percent of shoppers at lifestyle centres reported a better overall atmosphere and shopping environment than at traditional malls³.

A number of articles have addressed what are perceived to be a consumer preference for a more natural and/or outdoor shopping setting. As *The New Yorker* noted in a piece called “Are Malls Over?”⁴

“As any cubicle dweller knows, people like natural light and fresh air and, when deprived of them, feel oppressed. So are people alienated by those older malls, with their raw concrete, brutalist architecture and fretful, defensive air? Developers have a shorthand for this style: the ‘classic graybox.’”

Since 2010, more than two dozen enclosed malls have closed in the U.S. and 75 others are on the brink of failure, according to Green Street Advisors⁵. Other industry calculations estimate that about one-third of the 1,200 enclosed malls built in the U.S. are “dead or endangered.”⁶



³ <http://general.icsc.org/srch/rsrch/researchquarterly/current/rr200294/article1.pdf>

⁴ <http://www.newyorker.com/business/currency/are-malls-over>

⁵ http://www.nytimes.com/2015/01/04/business/the-economics-and-nostalgia-of-dead-malls.html?_r=0

⁶ <http://www.cnbc.com/2015/06/07/doubling-down-on-the-rebirth-of-the-american-shopping-mall.html>

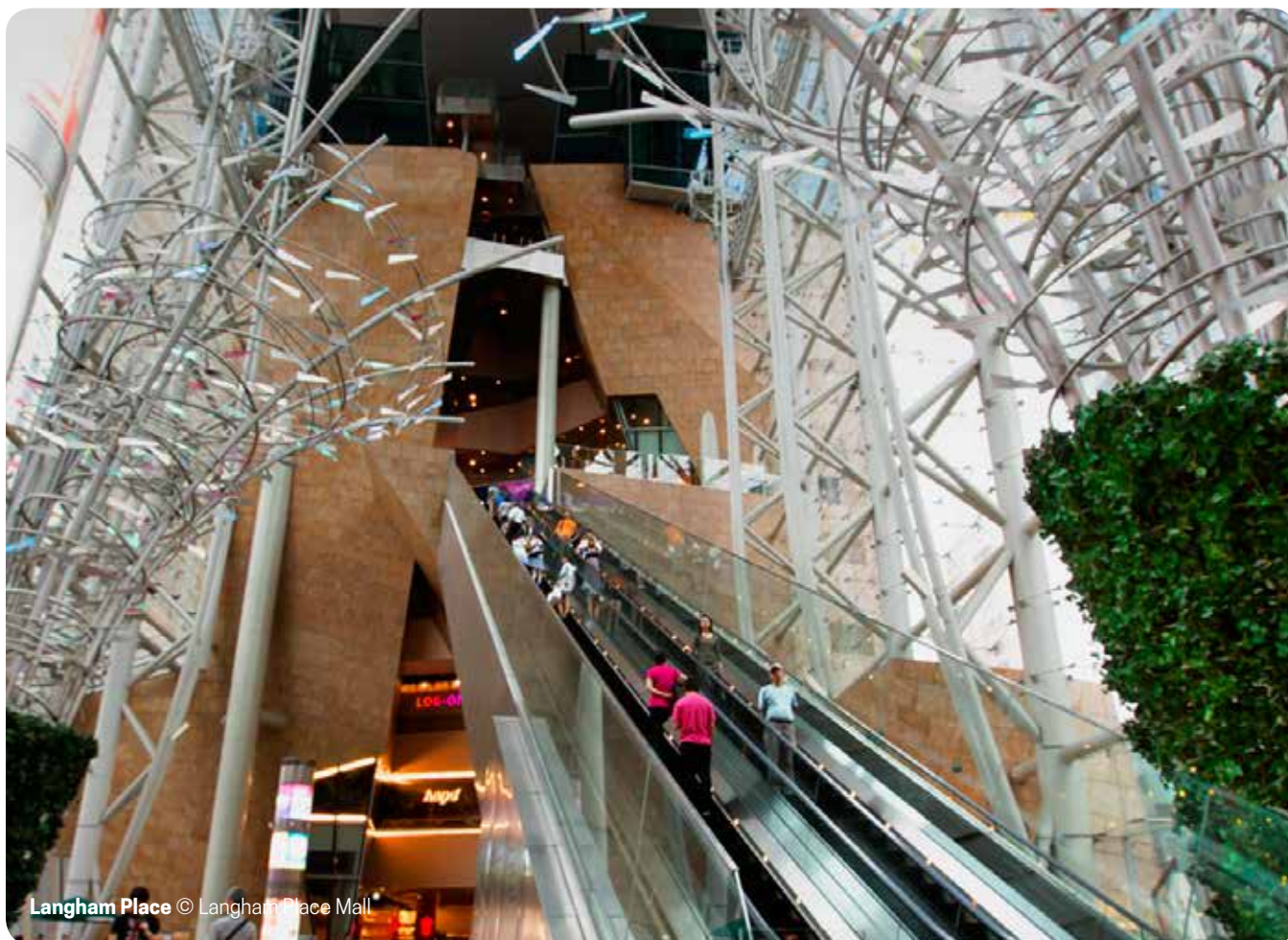
A CLOSER LOOK AT TWO FACTORS

Two metrics – daylight and biophilia – in particular appear influential to customer behaviour.

Perhaps the best known studies of daylighting are those conducted by Walmart. Walmart developed a concept store in which only half of the store was daylit, and found that in those daylit areas, the sales per square foot were significantly higher.⁷

This Walmart example matches the findings of a more extensive study of daylight in California. This study analysed 75 chain stores over a period of two years. Stores with poor daylight were re-fitted with skylights. The resulting profits per square foot from increased sales were about twenty times the savings in energy costs.⁸

As with daylight, there is research that suggests that customers are likely to buy more merchandise in stores with more natural surroundings⁹. Research shows that when customers are shown images of retail spaces they rate places with greenery as friendlier and more deserving of their patronage; say they would stay longer and visit more frequently; and report they are willing to pay a higher price for the same product when it is pictured in a more natural setting.



Langham Place © Langham Place Mall

⁷ Browning B. (2012) *The Economics of Biophilia: Why designing with nature in mind makes sense*. Available: <http://www.terrabinbrightgreen.com/reports/the-economics-of-biophilia/#the-importance-of-nature-in-retail-spaces>

⁸ Ibid.

⁹ Ibid.

STRATEGIES FOR ENGAGING WITH THE FRAMEWORK

We have identified five strategies that companies can adopt to help them use the Framework. These have been ordered by level of difficulty from easiest to more involved and we have provided some explanatory text behind each.

The Framework suggests that companies should start by selecting one or more stores with interesting economic outcomes – for example stores that are performing surprisingly well or surprisingly poorly or where rates of employee illness and turnover are particularly high or particularly low. From this starting point, the Framework suggests then working backwards from ‘economics’ to understand correlations with ‘experience’ (what did people say about the environment?) and the actual ‘environmental’ conditions.

Economics is where any analysis should start because this is the end game for retailers and the area where they are likely to have the most existing data.



STRATEGY 1:

Assess what employees and customers have already said about your store environments (through staff surveys, social media, etc.)

There is likely a wealth of data already available to retailers in the form of past staff and customer surveys and on social media. Screening responses by the right keyword (such as “comfortable,” “dark,” “noisy,” etc.) can help retailers understand how different physical environments affect staff and customer perceptions. It is then possible to correlate these kinds of perceptions with business results, such as staff retention and customer sales.

This same kind of analysis is even more powerful when retailers investigate what is being said about their places on social media. One of the more interesting developments is the possibility of using social media to “map” perceptions of environmental performance, including strong “likes” and “dislikes”. Crowdsourcing consumer experiences reported through social media provides an easy and cheap building performance evaluation tool. It is now possible to search and rank large properties such as shopping centres on well-known platforms such as TripAdvisor. The result is that perceptions of retail spaces are more ubiquitous and publicly-available, and potentially could influence where others choose to work and shop.

CASE STUDY: BUROHAPPOLD, USE OF SOCIAL MEDIA METRICS ON A PROJECT

BuroHappold was appointed to undertake Building Environmental, MEP and Structural engineering concept design development for a retail mall project in Europe. As part of this project, they conducted a best practice review of large retail malls, explored the latest initiatives, use of new technology and strategies to attract shoppers.

This work was undertaken with a view to delivering long-term sustainability for the mall, covering environmental, social and economic considerations.

For this project, social media data in relation to ten top shopping malls were analysed in order to inform the design. The ten malls had collectively more than 50,000 tweets, 150,000 followers, and 4,000 mentions over the course of a week. They looked at a selection of malls across the UK and identified common positive and negative comments. Data collected were tagged with time, username, language, source of tweet, hashtags “#...”, images in tweets, and shopping centre they were tweeting about. Opinions from review

sites were also considered and the resulting trends and key take home messages are summarised below.

Positive feedback:

- Variety of shops and eating areas, catering to all types
- High-end feel
- Amenities, modernity, cleanliness
- Easy to get to and free parking
- Friendly staff, great atmosphere
- The ability to spend all day under one roof without doing any shopping
- Events hosted at the mall
- Beauty, aesthetics
- Initiatives

Negative feedback:

- Disorganised and expensive car parking
- Traffic, along with an expectation that malls should take ownership of this
- Noisy, under-lit, overcrowded space
- Crowded and hard to find way around
- Unappealing food, rude staff
- Disconnect between opening hours and transport options
- Poor customer service

Using this data, BuroHappold highlighted key drivers and trends relevant to the design team for inclusion in the mall concept proposals, from place making and identity, to brand and user experience, to design and operation and technology. The concept proposals responded to how users shop as an end to end journey.

Please visit the *Better Places for People* website for more detail on this case study and a *Guidance Note on how to conduct a social media analysis of your space*.

See www.betterplacesforpeople.org

**BUROHAPPOLD
ENGINEERING**

STRATEGY 2:

Identify stores that have undergone refurbishments and compare financial results in these stores pre- and post-refurbishment.

Examining financial results before and after refurbishment is one of the clearest ways to measure the impact of the physical environment on business performance. In a store refurbishment, many factors (location, customer base, staff, etc.) remain the same so that the interventions (changes to the physical environment) can be isolated and analysed. It is then possible to try to correlate environmental and economic performance.

It should be noted that stores that undergo refurbishment - sustainable or not - often experience a temporary boost in sales lasting up to 12 months or more – the so called “honeymoon effect”. Organisations can assess whether the positive impact of sustainable refurbishments is stronger and longer with stores that incorporate health and wellbeing considerations simply by extending the period for analysis to 18 or 24 months, while being mindful of any external factors (e.g. new external competition) that could also affect results.

CASE STUDY:**YORK HOUSE, BRITISH LAND HEADQUARTERS, LONDON, UK**

The below case study involves an office, rather than a retail setting, but it is included because it represents an early and exemplary application of the Offices Metrics Framework and the lessons and benefits that can be learned from undertaking the process.

Early findings from a recent study show that our Head Office refurbishment is making people feel happier, healthier and more productive. This is good news for our radical programme to promote wellbeing and productivity across our portfolio. Looking at the data from our Head Office study at York House, it's interesting to think what the effect on the marketplace will be of smartphones starting to introduce apps that put data relating to wellbeing at everyone's fingertips – when people can easily check what air quality is like wherever they are, and see whether aspects such as lighting, temperatures and air pressure are optimised for their wellbeing. Will occupiers' HR teams and the people who work, shop and live in our places want closer links with building management teams? Will data relating to wellbeing and productivity play a greater role in leasing decisions? Will wellbeing rise even further up the agenda for architects and designers?

Before our refurbishment works started at York House, around 80% of our staff completed a survey on their perceptions of the office environment. Their views informed MoreySmith's designs, increasing focus on areas such as lighting, facilities and air quality. A follow up survey after the

refurbishment reveals significant changes in perceptions, providing compelling evidence for the impact of the works on people's sense of wellbeing and productivity. In addition to the perception survey, we also positioned 18 sensors around the offices before the refurbishment works started to establish baseline data for environmental conditions that affect people's personal comfort levels and wellbeing. These include humidity, lighting, noise, pressure, temperature and Volatile Organic Compounds (VOCs). The final aspect of our study involves analysis of human resources data to explore the potential financial impact of the office environment on aspects such as staff turnover, medical costs and days lost to sickness, as well as staff complaints to the facilities management team on temperature and lighting. We will be carrying out a comparison review of all these metrics at our financial year end.

Based on the success of their head office project, British Land is pursuing a similar pilot with the Retail Metrics Frameworks during the current refurbishment of Meadowhall Shopping Centre, Sheffield, UK.

Please visit the British Land website for more detail on this case study. See Blog *A World of Wellbeing at our Fingertips* at <http://views.britishland.com/>



STRATEGY 3:

Identify stores within a portfolio and work backwards from the economic data to review relationships with environmental features/performance.

This method was adopted in a highly influential study of LEED buildings, where researchers noted a clear, positive relationship between retail building certification and better worker experience and better overall business results. It could be performed with any kind of environmental building certification, including BREEAM, LEED or the WELL Building Standard.

This is a particularly useful method to consider when there are a large number of properties involved. Simply cross-referencing properties with green certifications against financial results can be an effective, low-cost way to confirm whether there is a general correlation between sustainable environments and better store performance.

It is important to remember that stores with certifications may not necessarily be those that employ all of the environmental features our Framework cites as important. Nevertheless, using certification status, particularly where there are a lot of properties to consider, is an important first step to help companies streamline their inquiry and test high level findings.



Swallow Street © The Crown Estate

CASE STUDY:**PNC FINANCIAL SERVICES GROUP & LEED CERTIFIED BRANCHES, USA**

Researchers at the University of Notre Dame conducted a study that compared the financial performance in 494 retail bank branches of PNC Financial Services Group. The study compared the performance of 52 LEED certified bank branches with 442 noncertified branches and controlled for other important variables, including the age of facilities and consumer demographics.

Comparing non LEED certified facilities to LEED certified facilities, the authors reported:

- LEED facilities opened 458 more consumer deposit accounts and had over \$3 million more in consumer deposit balances per facility per year over noncertified properties.
- LEED facilities also opened 25 more consumer loan accounts and had almost \$1 million more in loan balances per facility per year than noncertified facilities.
- Utility costs per employee in LEED branches were significantly lower than in the non-certified buildings, by about \$675 per employee.

On the basis of the study, the authors concluded, “these results clearly show that revenue in LEED certified facilities is greater than non-LEED facilities.”¹⁰

¹⁰ <http://business.nd.edu/uploadedFiles/Conlon%20and%20Glavas%202012.pdf>

STRATEGY 4:

Sort the portfolio into “best-performing” and “worst-performing” stores and look for correlations with the store environments and worker/customer experiences

This is a continuation of the previous strategy, but without using the cue provided by a building certification. Where many properties are involved, it may be helpful to isolate the top 10 or 20 performers and then work backwards to see if they have any positive physical features in common.

This might involve bringing in store development personnel and facility managers who know buildings best, alongside human resources and finance professionals (similar to the approach recommended in the offices report). Experience has shown that as little as an afternoon session conducted in this manner can yield findings that are fundamental but often overlooked because pockets of useful data are not shared and evaluated across teams.

CASE STUDY: KINGFISHER PLC, UK

Kingfisher, the international home improvement company, took a comprehensive approach to piloting the Framework and sifted its portfolio by store success as recommended in this report. Although the portfolio data did not reveal irrefutable correlations, the individual store data and HR evidence did show a high level relationship between better environment and experience and improved economic performance, which warrants further investigation.

The process also provided some important insights into how best to investigate the impact of buildings on people and therefore business, specifically within a retail environment. Firstly, a more controlled survey is recommended that focuses on specific physical factors. It should be clear what factors are excluded / included. These surveys should be carried out on controlled stores where physical changes are

taking place both before and after the change so that there is a baseline to compare results and additionally within the same customer base.

Secondly standardised templates and processes – perhaps recommended by the UK GBC – should be used to provide a consistent approach to analysis across stores.

Thirdly, guidance on what to do next will be useful to avoid questions of “so what?” It is interesting to note that all internal teams and individuals were interested and engaged in the project and all asked to see a copy of the results. Kingfisher is now looking to carry out further studies within controlled environments.



Merthyr Tydfil © Steve Williams Photography, Kingfisher

STRATEGY 5:

Trial the metrics in one or more stores, using a baseline starting today

Trialling the metrics from a standstill is challenging but not as difficult as it might first appear. For existing buildings you will already have at least some of the metrics, and for new construction, you can use the Framework to guide a gap analysis between current specification and new design and management practices to consider. The goal here is not perfection, but rather expanding a way of thinking within your company towards data-based decision-making, including measuring the physical environment and employee and customer perceptions of your space in an on-going manner over time.

It is worth highlighting that Strategies 4 and 5 require the engagement of several teams within a company and some creative approaches to data analysis. It is not critical that you measure all of what we suggest, nor that you examine every interaction between the environmental, experiential and economic aspects of a store. Our experience shows that even looking at some metrics and some aspects of the Framework can be an extremely informative exercise. In the sections that follow, we provide guidance and recommendations based on the experiences of the Retail Task Group who informed this report.



Ecclesall Road © Marks & Spencer



CASE STUDY: MARKS & SPENCER, ECCLESALL ROAD, SHEFFIELD, UK

As a member of the UK-GBC Retail Task Group, M&S chose to retrospectively apply the WorldGBC Retail Metrics Framework to Ecclesall Road – one of M&S' Sustainable Learning Stores in Sheffield, UK. This store combined a variety of sustainability initiatives under one roof and at the time of launch pushed new boundaries in terms of sustainability and innovation. Since its opening in April 2011, M&S has been assessing the performance of every sustainable feature in Ecclesall Road.

Through the process of applying the Framework, observations were made by M&S that have informed further development of the Framework and associated tools. These included:

- **Comprehensive Data** – M&S started by mapping available data against the metrics under the Framework. Whilst Ecclesall Road is a Sustainable Learning Store with a detailed Post Occupancy Evaluation, M&S was not able to provide data for every single metric. Based on this, only by applying Strategies 2 and 5 for piloting the metrics can we be confident that all metrics will be covered.
- **Metric Definitions** – M&S ran an internal workshop with key stakeholders to gain support, feedback and input. This workshop highlighted the need for clear definitions for the environmental metrics, which resulted in the creation of a guidance note, by WorldGBC, on 'Best practice and benchmarks for healthy retail environments' to address this.

FINDINGS

M&S took existing data from its Post Occupancy Evaluation and from sources identified in the internal stakeholder workshop. M&S then assigned this data to the metrics under the Retail Metrics Framework. M&S has identified positive experiences from customers and employees that relate to specific environmental metrics:

- **LIGHTING:** 87% of customers state that light levels were satisfactory throughout the store.
- **THERMAL COMFORT:** 84% of customers state that temperature was satisfactory throughout the store.
- **BIOPHILIA:** Staff members report liking their ability to sit by the window in the staff common room and look out at the greenery and their surroundings.

These are just a few examples of positive relationships between environmental performance and customer and employee experience, which starts to support the *Better Places for People* Campaign. M&S is continuing to collect data for Ecclesall Road from sources across the business in order to build a bigger picture of its performance against all three elements of the Framework. M&S also plans to apply WorldGBC Retail Metrics Framework to their UK store portfolio in line with Implementation Strategy 4, and looks forward to sharing lessons in 2016.



See the Better Places for People website for more details on the Ecclesall Road case study

LESSONS FROM THE PILOTS

Over the course of developing and refining the Framework, a number of organisations on the Task Group trialled the metrics and processes within their own organisations to determine suitability, feasibility and resources required. These “test runs” were instrumental to the development of our thinking. This section sets out a summary of what we learned.

Top 5 Lessons Learned

1. Executive leadership on this issue can drive powerful corporate results
2. The Framework helps companies draw out existing but underutilised strategically important data and expertise
3. The Framework can provide actionable intelligence even if data and engagement are limited
4. The Framework can provide much better “joined up” thinking within companies leading to more consistent and profitable approaches
5. The Framework explains to individuals within companies how they can take ownership over the issue and better their individual (as well as company) performance

1. Executive leadership on this issue can drive powerful corporate results

Companies that piloted the metrics found this point to be crucial. These comments from one representative are so telling that they bear repeating here in their entirety:

The is no overarching role or responsibility that ‘owns’ health and wellbeing and the various team members didn’t necessarily work together on a day to day basis or share information. There was no role to pull these teams together in the absence of the WorldGBC project and despite an interest or want from some individuals they either didn’t have the remit or didn’t feel empowered to do so. Essentially, to carry out this work, there needed to be an ‘owner’ that has the remit to engage various teams and gain access to sometimes confidential data.

A sense of ownership over this agenda, within the divisions of a company and its top management, is fundamental. Frequently, our working group members noted that “everyone gets this issue.” But understanding the agenda and being able to do something about it are quite different things. The dynamics of a common problem (like climate change) and an opportunity (like health, wellbeing, and productivity) are actually quite similar. When the problem (or opportunity) is large and everyone has a role to play, no one person (or group) is able to do all of it and so therefore no one person (or group) is directly accountable.

The Framework tells different actors – CEOs, Sustainability Executives, HR, FM, etc. – what aspects of their business are related to health and wellbeing, and gives them tools to better understand conditions in a forward-looking manner. It allows individual teams to understand what they can do to help a company connect the dots from their own remit to wider company success.

But as the comment above suggests, very little of this goes anywhere without support from top management. In our own experience of piloting the metrics we have seen that those organisations with the most executive level commitment and dedicated support achieve the most.



Cheshire Oaks © Marks & Spencer

2. The Framework helps companies draw out existing but underutilised strategically important data and expertise

The amount of data that retailers collect on shoppers is staggering and the measurements of store performance are numerous and detailed. Retailers were correct when they stated that they could help define productivity better. It is the set of metrics within our Framework that they know best and understand clearly.

In our experience, what is missing is a strong sense of how financial outcomes relate to the actual physical conditions present inside of stores. Across the test runs, retailers were not fully aware of the research data on the effects of indoor environments on profits. They also lacked some information about the state or their own indoor environmental quality. Yet it is the indoor environment that retailers are directly responsible for, and over which they can exert a great deal of control.

Retailers also had a good grasp of the customer experience. Customer insight teams and social media miners are very prominent in retail. There are whole teams devoted to examining what customers are saying, in real time, about products and brands on social media.

What is missing, however, are TripAdvisor and Twitter searches based on the actual physical environment. This is somewhat surprising, since in reviews of shopping centres and other large retail sites on social media, comments about temperature, crowdedness and noise are some of the main reasons for negative reviews. When our Task Group members reviewed their typical employee and customer survey questionnaires, there were few questions about the kinds of environmental metrics that have been shown to impact people. There is a significant amount of actionable intelligence that is not currently being mined within companies.

Although retail environments are tracked reasonably well, our group noted that some important physical measures like daylight were not typically measured by retailers as part of ordinary business; the importance of biophilia was not known. Despite this, managers generally know their stores well and have a good understanding of what their staff and customers like in an environment.

What facilities managers did not do – even though they knew it was important – was relate to senior executives their overall assessments of good and bad performing stores. Since most interactions with facilities managers occur when something is wrong rather than right, the whole division may be viewed as one that involves costs and short-term interventions and not one that can enhance value.

All of this unused potential became abundantly clear when our retail Task Group members convened workshops to discuss the Framework. Typically a workshop involved the following actors: property, facilities management, retail design, customer insights, sustainability and human resources. Surprisingly, many of these people were meeting for the first time, even though each had a large amount of useful data that could be brought to bear on decisions made by others within the same company.



Newcastle © Marks & Spencer

Even though the workshops lasted little more than a couple of hours, pulling together different teams under a common mission proved incredibly useful. Working together, they could present a more unified and effective vision to their employees and customers.

The applications for better data and capability are numerous but the general lesson is singular: retailers would have a much better chance at improving business by simply looking at data they currently have through the lens provided by the Framework.

3. The Framework can provide actionable intelligence even if data and engagement are limited

There was a general sense that the Framework helped to simplify concepts, but also a feeling that it could be unwieldy if tackled all at once. As we note in the above section on the Framework itself, not all of the metrics need to be engaged for the Framework to be useful. It may be better to address a few metrics or relationships in stages.

Our fundamental concern is not to create new work, but instead to make the job of measuring health and wellbeing easier. So the metrics are best considered as guideline categories to look at if you have been measuring them already or guideline categories to consider measuring going forward. We have kept the number to a minimum and suggested that you work with the metrics you already have as a starting point. Our implicit expectation is that you should not go too deep into the Framework unless you see it working for you, at which point you will be encouraged by your own experience to invest more time and resources.

In terms of what to measure, it is imperative not to start with detailed measurements of the environment looking for the “right numbers” that will show a direct relationship with employee and customer satisfaction or overall profit. Some of our Task Group members were disappointed when they took this approach. Environments are important, but they are not all that is important. In one memorable example, the poorest environments actually had better satisfaction and profit levels: a little digging revealed that the management style in these stores was different and more effective in promoting customer and staff satisfaction, as measured in perception surveys.

That is why the Framework suggests looking at outcomes and working back to environment. This is because the economic data in retail is likely to be much more available, while environmental data may be more difficult to secure. Basically, moving from right to left across the Framework tells you the level of difficulty involved in getting information and enables you to decide how relevant the separate categories are to each other. Each metric should not, and does not, require the same level of scrutiny.

To give an example, try this: If you have a portfolio of properties, measure revenue and compare this to the type of retail units, those with lots of daylight and those with less. Some important financial relationships may begin to reveal themselves right away. In this manner, you will be drawn to consider the wider Framework and to assess other metrics that have been shown to impact retail business.

“...Indoor Environmental Quality (IEQ) encompasses good daylight, fresh air, positive views and connection to the outdoors. All of these conditions can be extremely beneficial in a retail environment. Studies have found that for every 1% rise in visitor ‘dwell time,’ there is a 1.3% increase in sales: the longer people linger, the more they buy, and at more than a one-to-one ratio”.

4. The Framework can provide much better “joined up” thinking within companies leading to more consistent and profitable approaches

One of the criticisms most often levelled at sustainability is that it is potentially expensive without necessarily delivering value, or that the benefits of environmental actions are not clear to the bottom line. It is interesting to note that in the sectors with the widest customer audience (retail and residential), building certifications are at their lowest. Retail accounts for a little over 10% of all LEED-certified projects¹¹, and 7% of all BREEAM projects¹². As some have noted, retailers have historically focused on external risks in their sustainability efforts while ignoring internal opportunities:

Research shows that energy efficiency and waste reduction are prioritised among retail operators. As important as these cost reduction measures are, they overlook the strategies with the highest value proposition for retail projects—improving the quality of the indoor and exterior environment. Indoor Environmental Quality (IEQ) encompasses good daylight, fresh air, positive views and connection to the outdoors. All of these conditions can be extremely beneficial in a retail environment. Studies have found that for every 1% rise in visitor “dwell time,” there is a 1.3% increase in sales: the longer people linger, the more they buy, and at more than a one-to-one ratio¹³.

The experiences of our Task Group bear this out. Although the persons typically responsible for thinking about health and wellbeing in buildings are sustainability professionals, they are often one-step removed from larger corporate strategy. Their primary responsibilities are about the usual sustainability expectations – reducing external impacts in existing properties and ensuring certifications/ sustainability credentials in new build. To get information about other aspects of building performance (and profit) requires considerable work, since it is held by others who may not have the same level or enthusiasm for sustainability. It may take several months for even the most dedicated sustainability expert to convene a workshop of parties to contribute to this agenda.

What the Framework does, which is critical for moving sustainable decisions closer to business strategy, is provide a set of sustainability criteria that are aligned with company mission: profit. It is no accident that this Framework begins and hinges upon better economic performance, because until that can be demonstrated, sustainability may be regarded by some as an add-on expense and not integrated into property strategies in the way that it can and should be.

Companies agree that this agenda is understandable and relevant to everyone, inside the business and externally, because health and wellbeing affects everyone and can be understood by everyone. Retailers are already actively promoting health and wellbeing in terms of the kinds of products and services they provide – why should buildings be any different? The Framework therefore presents a

¹¹ <https://www.arcadis.com/media/A/3/0/%7BA30C91C1-92C1-47DB-9117-944B0CBE0034%7DRTKL%20Sustainability%20Report2014.pdf>

¹² <http://www.breeam.com/filelibrary/Briefing%20Papers/BREEAM-Annual-Digest---August-2014.pdf>

¹³ <https://www.arcadis.com/media/A/3/0/%7BA30C91C1-92C1-47DB-9117-944B0CBE0034%7DRTKL%20Sustainability%20Report2014.pdf>



H2O Rivas - Vaciamadrid © Sarompas Alpha Tiger Spain

concrete set of relationships and items to test that enables sustainability to be spoken in a language that everyone – including executives – can understand and address.

The fact that retail architecture has been changing and continues to change in a way that suggests a relationship between sustainable places and profits, is important to emphasise. While certifications have lagged somewhat in retail, new thinking has not. This sector, more than most, is beginning to build based on people. That is a clear direction of change.

5. The Framework explains to individuals within companies how they can take ownership over the issue and better their individual (as well as company) performance

This agenda is not just about the retailers who occupy the space or even the landlords who provide the space. The metrics we ask retailers to consider are the same ones that are important to asset managers and investors. Energy efficiency and reduced carbon emissions, as critical as they are, are not what bring people through the doors. But if lower energy and carbon are associated with a more pleasant retail environment and fewer costs and higher returns, then more players will be motivated to act.

To be able to demonstrate competency in this area is a highly valuable professional skill. It is valuable for designers and architects whose job it is to create places that not only look good but perform well. Asset managers in possession of buildings that promote health and wellbeing can sell them this way – as they are currently not doing. Investors who are on top of this issue can begin to design due diligence lists so that they can mitigate what is almost certainly a short-term risk – the poor performance of buildings in areas other than energy.

Associations of human resource professionals, facilities management providers and other building or service professionals will need to upskill their members in order to be able to provide the kinds of advice and services that can set them apart. This is a broad agenda with broad global appeal. Throughout the process of testing these metrics, none of our participating global organisations stated that any of the metrics seemed insignificant to their business.

This was certainly the case with organisations who trialled the metrics and observed a general, uncommon enthusiasm among many different parts of their companies. Several members noted that individuals could see the relevancy of the issue to their roles, but lacked a sense of how to move things forward when so many other factors were in play. This is understandable and indeed one of the reasons why we encourage individuals (or companies) to understand how they can use the data they know well within their own roles and then begin to link this with other data points that may be beyond their typical thinking. It is not difficult (as became evident when individuals from different parts of the organisation met in workshops) for people to see the connections with other parts of the business and begin to align objectives. But what it does require is a bit of entrepreneurial thinking which the Framework tries to encourage.

FROM STATIONARY TO ACTIVE: EXERCISES TO CONSIDER

During the course of the work, we considered this issue of ownership, both within companies and across the larger retail industry.

We were repeatedly struck by the opportunities to work within this agenda using the Framework from very different angles. We were also continuously reminded that we need to provide role-specific guidance for how to do so. In this section, we begin what will be a much larger WorldGBC effort to set out specific guidance for individuals and companies to begin to capitalise on the opportunities presented, specifically to retail.

In the next part of this report, we:

1. Set out current roles and typical thinking in the industry;
2. Show how new ways of thinking could present business opportunities; and
3. Identify ways to use the Framework to move forward.

Retail CEO / CFO

Current Thinking	New Thinking	Framework Application
Buildings are a cost to be minimised. This is best done by providing an amount of space that cost-effectively enables our products to sell.	Use health and wellbeing agenda to drive better stores, lower costs, create more loyal customers and have better profits.	Assign an internal lead with sufficient authority to start investigating spaces, using the Framework as a shared language. Encourage team members to work towards understanding their role in promoting healthy places.

Sustainability Executive

Current Thinking	New Thinking	Framework Application
Focus on those aspects of a project that must be done by regulation or client demand, with little thought/influence to the broader ways that companies can leverage sustainability into their businesses.	Leverage sustainability into overall company value by showing how the health and wellbeing agenda relates to sustainable buildings and influences profit.	Pull together a workshop to engage decision-makers with the metrics and Framework. Use a new approach to work from business outcomes back to customer and employee perceptions and to environmental metrics.

Customer/Brand/Marketing Professionals

Current Thinking	New Thinking	Framework Application
Assess what customers say about products, brand and overall offerings. Place is a source of commentary, but usually around complaints that are not particularly pertinent to wider business.	Consider how customers enjoy their experience in physical stores and use properties to enhance brand value and their loyalty.	Review past survey questions and mine social media data using searches that “trigger” information related to the environmental metrics. Create new tools to track how physical places contribute to the customer experience.

Facilities Maintenance

Current Thinking	New Thinking	Framework Application
Keep the building operational and ensure that complaints are dealt with efficiently and kept to a minimum.	Enhance physical spaces to improve customer and employee experiences and drive profits.	Review the ten environmental factors in the Framework and identify the performance of stores and correlate this to the store's economic variables.

Human Resources

Current Thinking	New Thinking	Framework Application
Retail employees are affected by their surroundings but many HR departments do not have much influence over the spaces that are taken nor may be able to measure the elements of place that affect people.	Help the company perform better by identifying how places are impacting people and, in turn, business success. Develop a larger profile in the organisation and influence wider business decisions.	Put in place common metrics and a Framework across portfolios to help identify which buildings are enhancing the workforce and those that may be hampering employees. Understand which environmental metrics affect employees.

Owner / Investor

Current Thinking	New Thinking	Framework Application
Many consider the main goal to lease out all retail space and to meet the standards expected of tenants.	Tenants are demanding or will soon demand healthy spaces. Increase the value of assets by staying ahead of the market.	Sort the existing portfolio with the data available – which may be limited to a building log of physical complaints. Determine based on the evidence whether financial and environmental performance are correlated and, if so, how.

Agents

Current Thinking	New Thinking	Framework Application
Many agents consider property as a commodity that must be rented or sold. Location and price are key. Clients care primarily about leasing costs.	Healthy spaces are more attractive to tenants and have good, long-term value.	Understand what features can promote health, wellbeing and productivity and actively use these aspects to market property and increase business.

Property Manager

Current Thinking	New Thinking	Framework Application
The responsibility is to provide spaces that retailers want. At present, there is no strong demand among tenants for healthy spaces.	Retail units that are managed well to enhance health and wellbeing will provide a commercial benefit to the retailer and there is a commercial advantage to the business.	Work on calculating the metrics Framework with interested tenants to start to provide healthier spaces that tenants will value more.

Design / Build Team

Current Thinking	New Thinking	Framework Application
The main concern about the space/ building is how it can provide maximum economic value to clients and meeting the design brief.	Explain how a building's health and wellbeing credentials are beneficial for clients and incorporate this understanding into design practices to promote longer-term relationships and repeat business.	Become experts in the environmental metrics associated with sustainable retail design and their potential economic impacts, as with lifestyle centres. Assess capital, maintenance and operating costs versus traditional retail assets.

THE METRICS IN ACTION



Here are six projects that are underway based upon the Retail Metrics Framework:

1. An owner is working with a retail tenant to track how improvements in the common areas can improve the objective and subjective measures of the environment and drive traffic into the retailer space.
2. An owner is monitoring environmental conditions within the back of house areas to see what impact this has on employee health and wellbeing, and conducting a perception survey of employees to help drive refurbishment decisions.
3. A human resources department has introduced new absenteeism policy that better tracks illnesses associated with place.
4. A property team is using the WorldGBC Framework to articulate the customer/staff impact of interventions to build a stronger business case.
5. A group finance team will use the metrics presented by the Framework as part of the post investment review. This would build data robustness and heighten the importance of the impact of more qualitative customer/staff experience on retail outcome.
6. A company is sorting its entire portfolio by economic results and correlating business outcomes with physical environments and worker/customer experiences.

EMERGING TECHNOLOGY: THE RETAIL OPPORTUNITY

New technology is beginning to have a significant impact on how both consumers and retailers measure health, wellbeing and productivity. From sensors measuring environmental metrics, to online customer perception surveys and social media, such technology offers cheaper, easier and more accurate methods of collecting and interpreting data.

Given that real estate is the single biggest asset class in the world and health and wellbeing is a booming social trend, we allocate space here to trends innovations that are set to further transform the way we engage with this topic.

Wearables

People increasingly want to quantify their lives by using technology to measure, benchmark and improve performance. Wearable technology enables people to know more about their health and how their environment is impacting them. The “quantified self” is a new term which describes this trend toward collecting, benchmarking (and, in some cases, publishing) information gathered from personal technology.

These technologies provide a rich stream of data that gives individuals a new way of understanding the world around them and its impact on them personally. App designers, in turn, are also getting better at understanding how people want to use wearables and creating platforms that gather and display the data in ways that are easy to represent and map.

The industry is seeing explosive growth: global sales of wearables reached \$14 billion in 2014, and is predicted to rise to \$70 billion by 2024. An estimated one in five Americans owns a form of wearable technology¹⁴.

Environmental mapping

We can see forthcoming disruption in the newfound ability to map environmental performance at a granular level, in real time, using increasingly ubiquitous technology. Cities now have maps of real-time outdoor air quality, much of it recorded by ordinary citizens. Air quality sensors on vehicles are a reality, with one of the 2015 winners of the London Climathon competition named as Airbike, a sensor system that attaches to bicycles and gathers air quality data in real time giving an accurate picture of an entire city’s external air quality¹⁵. Applied to retail environments, such mapping could lead to more or less desirable places within a shopping centre, for example, based on daylighting and air quality.

Social media

As we explained in the strategies on engaging with the Framework, social media has given consumers unprecedented access to product data and retailers access to detailed reviews of customer experience in terms of branding, buildings and events, in an array of categories. The days of sending an email to the customer complaints department are ending. Voicing an online opinion is progressively becoming easier but also increasingly transparent. A quick search on TripAdvisor and Twitter reveals valuable information on place, and allows customers to quickly understand and compare retail locations. In turn, retail shop owners and managers may find themselves allocating resource towards monitoring and communicating with customers on these various platforms as a new kind of customer service.

Please visit the *Better Places for People* website to download the Guidance Note “How to conduct a social media analysis of your space” at betterplacesforpeople.org

¹⁴ <http://www.prnewswire.com/news-releases/wearable-technology-2014-2024-technologies-markets-forecasts-254355281.html>

¹⁵ <http://www.businessgreen.com/bg/news/2414305/london-climathon-competition-hails-air-quality-innovation>

Environmental sensors

Environmental monitoring allows businesses and consumers to affordably purchase sensors that measure environmental metrics such as daylight, pollution, comfort and sound. These sensors can perform a variety of tasks, from detecting life threatening air pollution levels through to helping identify the difference between reasonable air quality and optimum air quality.

Environmental sensor manufacturers are highly aware of the value to consumers of visualisation and interpretation of data. Rather than limiting the information dispensed to numerical figures, sensors now come with in-built user platforms designed to help consumers by providing advice and assisting them on the next steps towards a healthier and supportive environment.

CubeSensors, Foobot and NetAtmo are just three examples of environmental sensor technologies that are now widely available at a retail level. The range of features and price of each sensor varies but all share some common environmental metrics.

- CubeSensors measure temperature (in degrees Celsius), relative humidity (as a percentage), light (lux levels), noise (decibels), indoor air quality including PM10, PM 2.5, carbon dioxide and volatile organic compounds (in parts per million or ppm) and pressure (in mBar).
- Foobot focuses on indoor air quality with temperature, humidity, carbon monoxide, carbon dioxide, PM 2.5 and total VOCs.
- NetAtmo, billed as a “weather station” for your smart phone, monitors temperature, humidity, air quality, carbon dioxide and sound.

All of these sensors are able to sync with smart phones and supply the user with a sophisticated platform that translates the data into an easy to read dashboard and data visualisation. They can send notifications to phones and have visual alerts on the sensors themselves usually deploying green, amber and red traffic light colours to alert users to performance. This data is visualised on dashboards in real time, giving users instant, immediate information and control over their environment.

We may soon reach a point where additional equipment to track metrics is not needed at all, with technology embedded in the next generation of smart phones. The emergence of these technologies is potentially game-changing, allowing customers to exercise their choice of preferred location in response to unfavourable environmental data.

CASE STUDY: CBRE DIGITAL MARKET INTELLIGENCE, SPAIN

Digital Market Intelligence (DMI) is a tool that CBRE has introduced in the Spanish market. It allows shopping centre managers and retailers to gather information about the physical environment and customer behaviour in real time. It is currently being used to measure dwell time and loyalty, two of the outcomes captured in the Retail Metrics Framework.

DMI interacts with customers through their mobile phones. Customers who sign into the shopping center app receive exclusive promotions and offers to specific segments as well as information such as news, coupons, cinema timings organised according to their personal preferences. Some shopping centres are even tying all shopping centre activities such as events, playground information, special services etc into the app. Customers are asked a few questions and this information is used to create a customer profile. In turn, the shopping center management can then track user movements throughout the mall environment and tailor messages and offers to customers as they move throughout the space.

A CBRE client is currently using the technology to test the effectiveness of a refurbishment of a new green rest area by calculating the dwell time and use of the area before and after the implementation. This is in line with Strategy 2 that is discussed earlier in this document.

In its current form, DMI enables shopping center managers to easily and objectively measure how customers interact with certain elements of the environment. They can test, for example, whether areas with larger amounts of daylight or biophilia attract and retain customers, as is suggested by the research. This kind of information will allow CBRE clients to manage and design shopping centres strategically, integrating sustainability factors that work into overall business strategy.

In the future, connecting the DMI system to building management system offers others significant sustainability opportunities. It could, for example, allow the shopping center management team to simultaneously reduce energy and provide a better customer experience by:

- Adjusting HVAC based on visitor density per area;
- Controlling acoustics and scents based on visitor density and location

DMI and technologies like it represent the future of retail, allowing retailers to better understand the effect of specific locations on customer behaviour and overall business outcomes.

CBRE



H20 Rivas - Vaciamadrid © Saronpas, Alpha Tiger Spain



H20 Rivas - Vaciamadrid © Saronpas, Alpha Tiger Spain

CASE STUDY: RESET CERTIFICATION, CHINA

Launched in 2009, RESET™ was developed in China and rethinks and simplifies project certification. There are no mandatory mechanical design submittals. There are no required air exchange rates. There are no checklists, prescribed paths, exceptions and alternative paths. There are simply air quality targets across five parameters which must be monitored in real-time.

Monitoring: RESET focuses on results, measured via accurate real-time monitoring and communicated directly to users via mobile devices.

RESET measures and report to users in real time:

- PM2.5 (Particulate Matter)
- TVOC (Total Volatile Organic Compounds)
- CO₂ (Carbon Dioxide)
- RH (Relative Humidity)
- Temperature

Significance: The RESET certification makes information more accessible to ordinary individuals and enables them to better understand the performance of their indoor environment and its potential impact on their health, wellbeing and productivity.

See the *Reset website* for more details on the certification and visit the Reset platform to compare air quality data in some major cities



Other customer behaviour tools already in the market include:

Beacon technology

In-store features such as displays, gondolas and even mannequins can now carry small “beacons” which push out a signal, usually via Bluetooth signal or NFT (Near Field Technology), which make connections between the customer and the store. The technology allows retailers to give customers further information on a display (price, location within store, promotional information) via smartphone technology, and can also track usage and therefore locations within the store. However, this technology still suffers from barriers such as customers having Bluetooth or NFT settings switched on, in order to pick up the signal and sufficient interest in the resulting information.

Path Intelligence

Path intelligence technology works through tracking mobile phone signals within a mall environment to provide the critical insights on the paths customers take throughout the store. This gives retailers information on which to base important design decisions from fire safety paths to crowd control (distributing shoppers more evenly across an area to avoid blockages).

Mall apps

Mall apps are normally free for customers to download and provide them with information regarding navigation as well as content such as brands and promotional offers. For retailers, it means that critical path intelligence can be gathered showing where customers shop, where they pass through and how long they dwell for without having to invest in or maintain additional hardware.

Retailers can begin the use these technologies to tap into the health and wellbeing agenda. When used together with the environmental and experience metrics from the Framework, they can provide a more detailed picture of how consumer behaviour relates to place.



CONCLUSIONS & NEXT STEPS

While retailers have quickly recognised that the health and wellbeing agenda offers business opportunities through their products and services, an understanding of how building design aligns with economic performance has – on the whole – been slower.

However, emerging evidence from lifestyle centres and the development pipeline itself suggests that this understanding is changing. The concept of health, wellbeing and productivity in retail is encouraging a rethinking of sustainability from a focus on external environmental risks to an assessment of internal opportunities, and a shift from avoided costs to gained value. This added value is felt all the way up and down the chain, from investors right through to customers.

This is resulting in the lines between sustainability strategy and overall business strategy becoming far more blurred. In fact, “sustainable” and “profitable” are increasingly being viewed as one and the same, and the industry is already moving in the direction this report suggests.

Our research and pilots show that the evidence for this new approach to retail buildings is already taking root: in the experiences of HR directors and FM professionals, in customer surveys and TripAdvisor reviews, and in the economics of uncovered versus covered malls.

The report presents a Framework that is designed for retailers to better understand and align environmental and financial performance. It deliberately focuses on the main question retailers are already asking themselves: How can we better understand the relationship between the environments we provide and the economics that result?

Emerging technology will help to simplify this question and the Framework has been designed to consider such changes. New, cheap and reliable environmental sensors are already helping retailers measure environmental factors. Customer perception surveys can be hosted online or on store apps, and retailers can use free social media to better understand perception of their stores. The economic metrics will increasingly be measured by simple mobile phone signals. In short, engaging with this topic through the Framework proposed is likely to become even cheaper, easier and more accurate in the future.

This report represents the latest step on a journey of measuring health, wellbeing and productivity of green buildings and linking it to tangible business benefits. We invite you to join us on this journey, by engaging with the Retail Metrics Framework and sharing your experiences through our *Better Places for People* campaign and your local Green Building Council.



APPENDICES

For additional resources, please visit the *Better Places for People* website:
www.betterplacesforpeople.org

APPENDIX A: BEST PRACTICE APPROACHES AND BENCHMARKS FOR HEALTHY RETAIL ENVIRONMENTS

As part of the *Better Places for People* Campaign, the WorldGBC has developed the Retail Metrics Framework. Modelled on last year's landmark offices report (*Health, Wellbeing and Productivity in Offices*), the Framework sets out three categories – Environment, Experience and Economics – and a series of metrics for retailers to consider. The logic of the Framework is simple: better environments lead to better experiences that lead to better economics for retailers. The following guidance note aims to inform interested parties about best practice approaches to designing retail environments with the Framework as a guide.

The Retail Metrics Framework identifies ten key environmental factors, which are addressed below. The first four environmental factors are indoor air quality, thermal comfort, lighting and acoustics, and these can be assessed and monitored using specific metrics for each environmental factor. The following six environmental factors are biophilia, interior layout, look and feel, active/inclusive design, amenities and community space, and these are typically taken into account through considering qualitative design guidance under each environmental factor as there is little or no widely recognised metrics or minimum standards. Each environmental factor and best practice approaches are presented below to demonstrate how designers can optimise the built retail environment in order to increase perceived health, well-being and productivity.

1 Lighting

The amount of lighting, and particularly daylight, within a building can influence the occupants comfort, mood, health and safety. Traditionally, high levels of daylight have not been targeted in retail environments, but daylight can have a beneficial impact on health and wellbeing and studies have demonstrated that it also has a positive impact on financial metrics. The influence of daylight on retail performance was demonstrated by an experiment¹ that observed a maximum 40% increase in sales after increasing the amount of daylight through roof lights. The research goes further and claims that “daylighting has as much explanatory power in predicting sales as other more traditional measures of retail potential such as parking area, number of local competitors and neighbourhood demographics”. Furthermore, increased exposure to daylight can effectively help address Seasonal Affective Disorder (SAD).

Lighting also influences the circadian rhythms, which are physical, mental and behavioural changes that follow a roughly 24-hour cycle, responding primarily to light and darkness. Recent research shows that increasing the use of electric light at night can cause sleep deficiency, contributing to the overall ill-health of individuals².

Four different metrics are commonly used in lighting design as follows:

Quantity of light: The amount of light measured on the horizontal and vertical planes in the lighted space, also called illuminance or light level, is measured in 'lux'. Different retail contexts require different light levels, typically ranging from 300 lux (e.g. shopping malls) to 1,000 lux (e.g. supermarkets)³.

Quality of light: is revealed as its colour temperature rating and 'Colour Rendering Index' (CRI) rating. The rating goes from 0-100 and describes how a light source makes the colour of an object appear to human eyes and how well subtle variations in colour shades are revealed. The higher the CRI rating, the better its colour rendering ability. The higher quality daylight bulbs have a CRI rating higher than 90⁴.

¹ Hescong Mahone Group. (1999) “Skylighting and Retail Sales: An investigation into the relationship between daylighting and human performance.” Condensed Report, Fair Oaks.

² SCENIHR. (2012) “Health Effects of Artificial Light”. European Commission.

³ CIBSE. (2015) “Guide A - Environmental Design”, Table 1.5 “Recommended comfort criteria for specific applications”.

⁴ Society of Light and Lighting. (2009) “The SLL Lighting Handbook.”

Daylight: the quantity of light can be achieved by electric lighting alone, but most people have a strong preference for daylight for several reasons, including that it has a balanced spectrum of colour and helps one relate to the external environment. Daylight levels inside a building are dictated by the building form and orientation of floor plates, the amount of glazing on different facades, the shape and optical characteristics of glazing, the palette of material finishes (reflectance) and the design of shading devices. In recent years there has been a strong shift away from static and overly simplistic metrics such as daylight factor, which only considers the ratio of internal light level to external light level under a single overcast sky condition. Contemporary good practice is to adopt dynamic daylighting metrics that are orientation dependent, climate-based (they use historic weather data specific to the geographical location of the building), and annualised (they use hourly simulation to predict performance over the full calendar year, taking account of a full range of different solar positions and sky conditions). Dynamic daylight metrics include measuring the percentage of the time a given area of floor plate receives Useful Daylight Illuminance (UDI) or Spatial Daylight Autonomy (sDA). The latter is easier to conceive and articulate; ‘Spatial Daylight Autonomy’ describes how much of a space receives sufficient daylight to completely negate the requirement for artificial lighting, and for what proportion of the year this is achieved during occupied hours. Environmental assessment schemes such as LEED v4 propose good practice as at least 55% of occupied floor plate being adequately daylighted (between 300-3000 lux) for 50% of annual occupied hours. Best practice targets would be achieving this over 75% of the occupied floor plate.

Glare: can arise from strongly directional sources, such as the sun, or reflected sunlight, from specular or glossy surfaces and increasingly common from heavily glazed buildings. It is a cause of annoyance to occupants and potentially dangerous for traffic external to the building. Thus designers should aim to minimise glare as much as possible. Design considerations are similar to those listed above under daylight, but also require particular care in the positioning of digital media, tills or workspaces. To reduce the risk of internal glare, one approach could be controlling Annual Sunlight Exposure, which is the percentage of the floor plate containing permanently occupied spaces that has intense direct sunlight during the year. This is based on the premise that too much direct sunlight, which can cause visual discomfort (glare). LEED v4 proposes good practice as limiting the number of occupied hours where the illuminance value exceeds 1,000 lux to a maximum of 250 per year, for at least 90% of the occupied floor area. Best practice

may involve conducting dynamic glare simulations (akin to the dynamic daylight simulation described above) to test Daylight Glare Probability for key locations in the building e.g. where occupants may be using computer screens at a till or in an office.

A designer can positively influence building lighting design by ensuring light fixtures have a high CRI. LEDs now offer a real alternative to conventional lighting with luminaire efficiencies exceeding traditional technology. Daylighting should be maximised at a very early stage in the design while controlling glare and ensuring good uniformity in order to avoid bright spots. Furthermore, it should be kept in mind that both fixtures and daylight will contribute towards heat gains within the building and can increase the risk of overheating.

2 Indoor Air Quality

There are various health and comfort issues associated with poor air quality ranging from mild discomfort to severe respiratory problems. In the context of retail, the wealth of experiments carried out demonstrate that retail environments with lower air quality tend to have a higher client and staff dissatisfaction level, which will in turn lead to less time being spent in the retail environment and fewer repeat customers⁵.

Four different metrics are commonly used to assess air quality as follows:

Pollutant concentration: common pollutants include volatile organic compounds (VOCs), formaldehyde, ozone, carbon monoxide, particulate matter and other airborne chemicals that are known to have adverse effects on human health. Acceptable pollutant concentrations will vary for each pollutant and removal methods often include filtration. Best practice approaches are to avoid introducing pollutants into the indoor environments through specifying materials, furnishings, fittings, adhesives and sealants which have very low or no VOC's. Restaurant and café kitchens can emit carcinogens and these spaces will need to be considered carefully.

CO₂ concentration: as the concentration of CO₂ rises it can cause headaches and drowsiness, leading to occupant discomfort. Typical recommended levels for concentration

⁵ DP, Wyon. (2004) “The effects of indoor air quality on performance and productivity”.

of CO₂ inside a building are between 1,150 and 1,600 ppm⁶. However, to achieve a medium to high indoor air quality (IAQ) the average CO₂ concentration should be controlled below 900ppm⁶.

Odour: research shows that an occupant's perception of indoor air quality is strongly influenced by odour. Numerical guidelines are hard to determine for this factor, but odours can be controlled by a good ventilation strategy which includes introducing adequate fresh air supply to the space.

Humidity: the moisture content of the room air should be controlled to prevent the growth of mould, which can effect odour and air quality, as well as limit the amount of particulate matter suspended in the air. Very low humidity increases the probability of static shock to occupants of a building. Typical recommended relative humidity (RH) levels are between 40-70%⁷.

The supply of fresh air is a crucial component of air quality maintenance. The minimum standard for fresh air supply rate in the UK is between 5 to 8 l.s-1/person⁸ depending on space type but it is recommended to achieve at least 12.5 l.s-1/ person⁹ for medium, or 20 l.s-1/person for high, indoor air quality. The optimal fresh air supply rate will vary depending on the type of retail space and the occupancy density. Furthermore, air quality can be significantly influenced by the design team through the choice of ventilation strategy, for example, from natural to mechanical ventilation. The installation of CO₂ and air quality sensors can help optimise ventilation control for retail buildings as they are often large areas with unpredictable occupancy.

3 Thermal Comfort

Thermal comfort in the context of retail environments is crucial to ensure that customers will remain within the building and to ensure high staff productivity. Excessive heat and cold can reduce performance of mental tasks. However, a slightly warm body state can facilitate tasks that are better done in a relaxed frame of mind (e.g. shopping, helping clients), while a slightly cool state can facilitate tasks that require alertness and vigilance (e.g. working a till). Balancing these two ends of the spectrum, and taking

relative temperature into consideration by following seasonal external temperature variations, enables buildings to keep within that sweet spot often referred to as the zone of 'thermal comfort'.

Five different metrics are commonly used to assess thermal comfort as follows:

Temperature: there are three main measures of temperature; the air temperature, the mean radiant temperature and the operative temperature. The latter is a simplified measure of human thermal comfort derived from air temperature, mean radiant temperature and air speed. The recommended operative temperatures to achieve thermal comfort vary seasonally and according to the type of retail environment. For example, within shopping mall concourses these can vary from 12-19°C in Winter to 21-25°C in summer and for other retail areas (e.g. supermarkets, small shops) these can vary between 19-21°C in winter and 21-25°C in summer¹⁰.

Air speed: the cooling effect of air movement is well known, and is welcome in warm conditions, but air speed should be carefully considered in the design of retail environments. Design air speed should vary according to the desired operative temperature although it is generally recommended to minimise air speed fluctuations as much as possible in order to limit occupant dissatisfaction.

Humidity: relative humidity is an important environmental factor that can affect thermal comfort in a building. For higher temperatures, relative humidity can have a significant effect on skin temperature and thermal sensation, causing a negative effect on occupant's thermal comfort. The same comments and guidelines applied to humidity for air quality can be used for thermal comfort.

Activity level: metabolic heat production is largely dependent on activity and is measured in 'met', with values ranging from approximately 0.7 met (sleeping) to 7.6 met (basketball)¹¹. The expected activity in retail environments varies from 1.3 met in small shops to 1.8 met for shopping malls¹². The activities which shoppers are doing in retail spaces should be considered as this will have an impact on the appropriate environmental conditions that will provide good occupant comfort levels.

6 Table 4.5 "Approximate sedentary CO₂ concentrations associated with air quality classification". CIBSE. (2015) "Guide A – Environmental Design".

7 "Section 1.3.1.3 Humidity". CIBSE (2015) "Guide A – Environmental Design".

8 Table 2.9 "Summary of recommendations". CIBSE. (2005) "Guide B – Heating, ventilating, air conditioning and refrigeration".

9 Table 4.1 "Ventilation and indoor air quality classification (source: BS EN 13779 (BSI, 2007))". CIBSE, (2015) "Guide A – Environmental Design".

10 Table 1.5 "Recommended comfort criteria for specific applications". CIBSE. (2015) "Guide A – Environmental Design".

11 Table 1.4 "Typical metabolic rate and heat generation per unit square of body surface for various activities". CIBSE. (2015) "Guide A – Environmental Design".

12 Table 1.5 "Recommended comfort criteria for specific applications". CIBSE. (2015) "Guide A – Environmental Design".

Clothing: the insulation level provided by clothes is measured in 'clo'. Wearing more clothes means that lower temperatures will achieve improved occupant thermal comfort. Indoor clothing alters seasonally; people will wear light-weight dresses and shorts during summer (0.6 clo) and thicker, heavier ensembles with more layers in winter (1.0-1.2 clo)¹³. This means occupants can tolerate a room that is 2.5°C less in winter compared to summer months.

A building designer can have an influence on the environmental metrics that determine thermal comfort: temperature, air speed and humidity. These factors can be controlled by implementing the most appropriate heating, ventilation and air conditioning (HVAC) strategy combined with appropriate thermal insulation and zoning, and taking heat gains from the sun, people, equipment, etc. into consideration.

4 Acoustics

Noise pollution is known to cause a wide array of physical and behavioural symptoms that can negatively impact the profits of retailers by driving users away and lowering the wellbeing of staff. Such symptoms include: ear pain or discomfort, annoyance, anxiety and decreased productivity.

Metrics and design considerations commonly used to assess acoustic conditions include:

Background noise: refers to the noise generated, for example, by building services installations and people. The typical design noise criterion for retail areas is between 35-50 NR or 40-55dBA¹⁴; Targeting a specific level across this range depends on the type and density of retail space.

Privacy and speech interference: the comfort of a conversation between two individuals can be lessened by the background noise, for example, if one is in a very quiet area there is no privacy and it is hard to hold a conversation, inversely when in a loud social area one's voice must be raised to uncomfortable levels to be understood. Thus attention must be paid to adjusting background noises to retail conditions as well as dampening reverberant noises that will make it difficult to hold a conversation without having to raise one's voice.

Designers can create improved acoustic conditions for retail environments by using background noises to mask unwanted distraction and reduce noise levels to avoid stress. This can be achieved by creating a more reverberant acoustic to enable weak background noise to mask distracting noises. Additionally, adding acoustic insulation and considering the acoustic absorption of surfaces can reduce background noise to acceptable levels. The levels of reverberation/absorption required can vary depending on the type/density of retail space.

5 Interior Layout

Ill-considered interior layout of retail establishments can cause disorientation, overcrowding, and stress, which will have a negative impact on retailers' performance. Two key considerations of interior layout can influence wellbeing in retail environments:

Legibility: Design of paths and crossings, differentiation of different sections, signage, and the location of vertical circulation affects the shoppers' ability to navigate or orient themselves within the store. Shopping in ordered or legible retail environments can improve user mood¹⁵. Consideration of strategies to improve retail legibility is recommended to improve shopper wellbeing. These recommendations would be relevant to Grid-Flow Layouts typical in supermarket retailing, Guided-Flow Layout typical of furniture stores and Free-Flow Layouts in mass fashion.

Density: Retail density of people and objects/merchandise in a limited space can impact shopper wellbeing. The impact is related to the motivation of the shopper. Task-oriented or utilitarian shoppers typically respond negatively to high human density, where hedonic or recreational customers may have more positive responses to high human density. High spatial density typically produces negative responses in both types of shopper¹⁶. High spatial density has a strong negative impact on perceived control, leading to a decrease in pleasure, purchase likelihood, and return custom¹⁷.

Designers of retail environments must balance the desire to maximise retail density with the understanding that increased retail densities and lack of legibility will negatively impact shopper wellbeing and in-so-doing negatively influence

13 Table 1.3 "Thermal insulation values for typical garments and corresponding reduction in acceptable operative temperature for sedentary occupants". CIBSE. (2015) "Guide A –Environmental Design".

14 Table 1.5 "Recommended comfort criteria for specific applications". CIBSE. (2015) "Guide A –Environmental Design".

15 Portella, A. (2014) "Visual Pollution: Advertising, Signage and Environmental Quality", Ashgate Publishing Ltd.

16 Fiore, AM, (2010) "Understanding Aesthetics for the Merchandising and Design Professional", 2nd Edition, Fairchild Books, New York.

17 Fiore, AM, (2010) "Understanding Aesthetics for the Merchandising and Design Professional", 2nd Edition, Fairchild Books, New York.

financial metrics. Security should also be considered in this respect, and can be addressed, for example, by adopting passive security measures such as avoiding blind spots, non-intrusive lighting, and tree buffers.

6 Look and feel

The look and feel of retail establishments can either stimulate wellbeing or provoke agitation. Look and feel influences both the ability to initially attract the customer and the ability to retain the customer within the retail environment. Some design strategies, such as arousing colour treatments, attract the customer in the short-term but in the medium to long-term can have a negative impact on customer wellbeing and reduce dwell time. Design strategies must balance the objective to attract customers with retaining customers. Look and Feel can be evaluated through two key design considerations:

Aesthetics: Aesthetics includes colour treatment, texture, shapes and artwork within the retail environment. Colour can produce autonomic biological reactions, emotional responses and capture attention¹⁸. Typically red colour stimuli increases blood pressure, respiratory rate, frequency of eye blinks, and brain function, while exposure to blue decreases physiological responses for each of these factors. Using colour as a stimulus to capture attention has the potential to decrease wellbeing by causing visual discomfort. Design of retail establishments should recognise the need to attract customers whilst maintaining shopper comfort. Research shows that although warm colours (red and yellow) attract shoppers, they are seen as more tense than cool colour treatments, which were associated with a more pleasant and positive shopping environment¹⁹. Warm colour treatments successfully attract customers, but to ensure shopper comfort the extent of warm colour treatments in the store interior should be carefully considered. However, the type of retail establishment influences the degree to which warm colour treatments should be moderated. Task-oriented shoppers, for example grocery store customers, find high-arousal (warm colour treatments) unpleasant, whereas recreational consumers derive more satisfaction from high-arousal retail environments²⁰. Excessive use of different textures can appear cluttered and visually overwhelming.

Ergonomics: The ergonomic design of the retail environment can influence customer dwell time and price acceptance. The results of one study undertaken in a used-car sales showroom revealed that uncomfortable customers sitting on hard, cushion-free chairs made monetary offers that were 28% lower than customers sitting in soft chairs²¹.

Designers can create retail environments that promote shopper and staff wellbeing through careful consideration of aesthetics and ergonomics. This should include careful consideration of advertising, feature lighting, cleanliness, and maintenance.

7 Active/Inclusive Design

Active Design

Encouraging health in retail environments can be achieved by active design and access to facilities such as gyms, bicycle storage, and green space (which are discussed further in the next Section). Active design optimises the building design by encouraging building occupants to undertake physical exercise as part of their daily tasks. Two key considerations for promoting best practice Active Design in retail environments are:

Interior Design: Designing internal staircases that are accessible, appealing, generously sized, and visually prominent can encourage physical activity²². Emphasising alternatives to escalators and lifts, through design and motivational signage, should be encouraged where possible.

Facades and Massing: Incorporating variety and transparency, multiple entries, and canopies into retail exteriors contributes to a pedestrian-friendly environment that encourages walking²³.

Inclusive Design

Perceptions of wellbeing can be influenced in retail environments by the degree to which diversity is considered in the design strategy. Failure to respond to staff and shoppers with diverse needs can cause perceptions of frustration and exclusion. Five key considerations of inclusivity are:

18 Bellizzi, J., Crowley, A. (1983) The Effects of Color in Store Design, vol 59, No.1

19 Bellizzi, J., Crowley, A. (1983) The Effects of Color in Store Design, vol 59, No.1

20 Kaltcheva, V., Weitz, B. (2006) "When Should a Retailer Create an Exciting Store Environment?" Journal of Marketing, vol 70, p.107-118.

21 Williams, L., Ackerman, J. (2011) "Please Touch the Merchandise" accessed <https://hbr.org/2011/12/please-touch-the-merchandise>

22 City of New York. (2010) "Active Design Guidelines: Promoting Physical Activity and Health in Design".

23 City of New York. (2010) "Active Design Guidelines: Promoting Physical Activity and Health in Design".

Religion: Responding to the needs of different religious groups may include providing access to multi-faith spaces of worship.

Gender/Gender identity: Consideration should be given to whether facilities and layout in retail establishments, for example toilet facilities, respond to the needs of different gender groups. Responding to social norms may increasingly involve going beyond binary gender definition in retail design.

Age: The design of retail environments should respond to the needs of customers of different ages. Older customers may suffer from lessening physical strength capability, visual impairment (ability to focus/see detail/adapt to changes in brightness/manage extremely bright light), and hearing impairment (reduced sensitivity to high frequency and the spoken word)²⁴. There may be additional safety concerns or spatial needs for younger customers.

Ethnicity: Retailers should encourage the creation of environments that respond to diverse ethnic backgrounds.

Disability: Regulations typically describe the minimum accessible design standards to areas, including access to the building, car parking, entrances, corridors and passageways, building facilities, and sanitary accommodation. These will differ by location.

A designer can create inclusive retail environments by considering the needs and aspirations of all potential user groups. Currently the only aspect of inclusivity mandated in building design standards in the United Kingdom is disability, but best practice design should consider how to respond to diverse needs in retail environments.

8 Biophilia

Biophilia is an innate and genetically determined affinity of human beings with the natural world. It has been demonstrated that exposure to the natural world (through any of the five senses) has a positive effect on an individual's wellbeing by reducing stress levels²⁵. In studies of retail environments biophilic design was shown to have a positive impact on dwell time and price acceptance²⁶. There is currently no common metric to measure biophilia or minimum standards established, but there are a number of design

considerations that can be incorporated into the retail environment to stimulate biophilic responses including:

Direct experience of natural spaces: this can include links to parks, terraces, green facades, and high quality public realm adjacent to the retail environment.

Views: access to a view can be rated by determining the amount of view visible within a 90 degree cone from any given place within the retail environment. A grading system can be set up for different amounts of visible views and additional points can be added for longer, more natural and brighter views. Access to a 'long view' of nature is preferable.

Interior design: this can include connection with plants, water, and animals in the retail interior, or in larger retail establishments (such as shopping malls) in dedicated spaces such as central courtyards and atriums. Interior design can also incorporate biophilia through symbolic connection to nature in digital media, pictures, natural patterns, shapes and textures.

Place-based design: a design approach that connects the retail establishment with the culture and ecology of the local area can encourage feelings of wellbeing. People have a strong physical and psychological need to identify with the places they live and work, which generates feelings of safety and security²⁷.

Maximising access to natural spaces, views, and place-based design may influence site location, form and orientation of the building, it is therefore crucial to consider views and biophilia during the early stages of a project's inception.

9 Amenities

Access to amenities impacts the health and perceived wellbeing of retail staff and customers. Proximity to amenities has a positive influence by increasing convenience and promoting physical activity. Three key considerations of provision of amenities can be assessed as follows:

Access to amenities: Agglomeration can be described as the co-location of different shops and facilities. Studies have found that agglomeration adds to the attraction of a retail location to draw multi-purpose shopping trips²⁸. Agglomeration increases the convenience of the trip by providing a means for

24 Clarkson, J, Coleman, R, Keates, S, Lebbon, C (eds.). (2003) "Inclusive Design: Design for the whole population", Springer-Verlag, London.

25 Terrapin Bright Green. (2012) "The Economics of Biophilia: Why designing with nature in mind makes financial sense."

26 Y. Joye. (2010) "The effects of urban retail greenery on consumer experience: Reviewing the evidence from a restorative perspective".

27 Kellert, S, Heerwagen, J, Mador, M. (2008) "Biophilic Design: The Theory, Science and Practice of Bringing Buildings to Life", John Wiley & Sons, Inc, Hoboken.

28 Fox, E, Postrel, S, McLaughlin, A. (2007) "The Impact of Retail Location on Retailer Revenues: An Empirical Investigation". Accessed: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.131.2950&rep=rep1&type=pdf>

the shopper to complete various tasks in the one location. Amenities can include restaurants or food outlets, a variety of retail outlets, healthcare, gyms, childcare, and entertainment. A healthy lifestyle can be encouraged by providing facilities that support exercise, such as gyms, or healthy eating.

Transport and Facilities: Access to reliable transport options can decrease stress for staff and shoppers in retail establishments and improve physical and/or mental health through increased physical activity. Promoting public transport has beneficial environmental impacts and increases the opportunity for walking trips. To optimise connection to transport links clear signage should be provided, comfort of transit stops maximised, and pathways designed to be safe and secure. Cycling uptake is enabled by the provision of locker rooms, secure bicycle storage and drinking fountains.

Quality and provision of open space and public realm: Access to green space offers opportunities for physical activity and biophilia effects, resulting in physical and psychological benefits. The quality of the public realm influences how staff and shoppers experience the journey to and from the retail establishment. This includes aesthetics, maintenance standards, and perception of personal security.

Retailers can promote health, wellbeing and productivity by considering how appropriate amenities may be provided within or adjacent to a retail establishment, by addressing transport and associated facilities in the design strategy, and by optimising the quality and provision of the public realm and open space as the 'gateway' to the retail establishment.

10 Community space

Engaging with the community to understand and respond to their needs can deliver mutual wellbeing benefits to the community and the retailer. There are a number of ways retailers can engage with and respond to community needs:

- Skills/employability programmes
- Contributing to local community services/events
- Creating community hubs with the retail establishment offering swap libraries and clothes swaps
- Donate unsold clothing/food/equipment to charity partners
- Provide space for exhibitions/events/activities
- Engage with groups such as the Empty Shop Network to provide temporary space for local organisations in empty retail spaces

Building social capital has a direct positive impact on community by promoting interpersonal health and wellbeing but can also have positive economic impacts because "confident and resilient communities are more productive and best placed to achieve economic growth"²⁹. One retail example demonstrated that community engagement and the provision of community activities increased footfall by up to 5% year on year, and retailer sales by over 10%³⁰.

Summary

This guidance note has provided a short introduction to the environmental factors that can influence health, wellbeing and productivity in retail environments. Designers can improve the health, wellbeing and productivity of retail environment occupants by using the metrics to assess design proposals and incorporating the best practice approaches and design considerations described above. However, it should be noted that each context is unique and there are often complex interactions between design features and the types of environments that are created. Optimising health, wellbeing, and productivity outcomes may involve balancing different factors against each other rather than simply targeting specific outcomes for individual metrics. Also, best practice standards can vary for each country, for example, CIBSE in the UK and ASHRAE in the USA. Employing a high quality design team that understands these relationships is recommended in order to create healthy, well and productive environments that also minimise their reliance on resource consumption.

This guidance note was drafted by BuroHappold Engineering and edited by the World Green Building Council project team. The project team sincerely thanks BuroHappold for their expertise and on-going support of the project.

²⁹ Ferguson, G. (2015) "Our high streets need a sense of community just as much as retail", New Statesman, 22 July. Accessed 23 December 2015: <http://www.newstatesman.com/politics/2015/07/our-high-streets-need-sense-community-just-much-retail>
³⁰ Milton, A. (2014) "Back to Basics: Stakeholder & Community Engagement". CBRE, Accessed 23 Dec 2015 <http://cbreinnovationwatch.com/?p=548>

APPENDIX B: COSTS / EMPLOYEES METRICS AND MEASUREMENT

The Retail Metrics Framework identifies five measures related to retail employee health, wellbeing and productivity -- absenteeism, staff retention, medical costs, medical complaints and building complaints. These represent costs to retailers and incidences of higher rates of these measures are associated with poor indoor environments.

A description of these metrics and guidance on how to better measure and relate them to buildings can be found below.

Absenteeism

Number of days (or hours) of absence due to illness annually

One of the most fundamental and established relationships in the literature on healthy buildings is that of poor indoor environmental quality and higher rates of sickness, manifested by increased rates of absenteeism. Absence through sickness comes at a major financial cost to companies. Most retailers have some system for measuring absenteeism, but often it ends there. Even if retailers track absenteeism levels they may not know why that absence has occurred because they do not record a specific cause. Seldom is this measure considered more widely in the context of the physical environment.

One way to begin to understand whether your spaces are negatively impacting the health of your employees is to do the following:

1. Track and record the number of absences reported by all of your employees.
2. Identify a specific reason for the absence (e.g. whether it is health-related or for some other reason).
3. Break down your overall absenteeism by store (across and, where feasible, within retail areas).
4. Compare health-related absenteeism rates in different locations.
5. If rates are noticeably higher in one location, consider possible physical causes.

For organisations that have a number of locations, or for those that can examine pre and post move or refurbishment data, there are many comparisons that can be made. For retailers that have only one (or a small number of locations), there are a couple of options. Firstly, they can

do comparisons within retail areas since the quality of space even within the same building can differ dramatically. Secondly, they can benchmark their spaces against national statistics on average absenteeism rates where available. If the numbers are significantly higher than expected, retailers may wish to consider a physical cause.

Staff Turnover

Percentage of regular, full time employees leaving employment (voluntarily or involuntarily) in a given year.

Most retailers track staff turnover in the normal course of business and most track reasons for leaving. Clearly, many reasons for leaving are not related to dissatisfaction with the retail environment. Nevertheless, because employee turnover is so costly for retailers it is worth exploring further in relation to the retail area itself. To begin tracking the relationship between buildings and staff turnover, it is helpful to consider only that category of staff turnover in which the employee voluntarily leaves the organisation. We propose that organisations:

1. Track and record staff turnover for all employees on an annual basis. Turnover is defined as the percentage of employees who leave employment in a given year.
2. Within turnover, identify the percentage of staff that left voluntarily.
3. Break down this category by location (across and, where feasible, within retail areas).
4. Compare voluntary leaving rates in different locations.
5. If rates are noticeably higher in one retail area or location, consider possible physical causes.
6. Where an employee is leaving, ask what the motivation is through an exit interview or survey.

Turnover rates can be tricky when looking across retailers (and geographies) simply because some types of retailers (and locations) have rates that vary substantially. It is important, therefore, that retailers compare turnover rates in an appropriate fashion. Staff turnover is slightly different from absenteeism in that it is likely less related to health issues and more to wellbeing, motivation or perception of the employee environment. It is therefore useful to consider turnover rates in relation to self-perception surveys.

Medical Complaints & Private Medical Costs

Incidents of reported/documented medical complaints resulting from the physical work environment or work activity; and expenses associated with providing medical insurance or medical care to employees annually.

These are separate metrics but grouped here because of the close linkages. If the health of employees (both physical and mental) is related to buildings, we would expect medical complaints and medical costs for employees to be higher in buildings without features that promote health and wellbeing.

Medical costs, defined as the expenses associated with providing insurance or medical care to employees annually, are almost always tracked for retailers as a whole. Companies that do provide medical insurance cover for their staff can get actual costs broken down by staff member and therefore by location. Medical complaints (like physical complaints in the section below) may also be tracked formally or informally, but again are seldom aggregated and evaluated at the retail space level.

For medical complaints and private medical costs, we propose that retailers:

1. Track medical complaints on a retail location or area basis.
2. Request insurance costs by employee (and therefore location) where possible.
3. Benchmark medical complaints and costs across the portfolio and determine those retail properties that have levels significantly above the average number of complaints.
4. Where results are substantially different or unexplained consider possible physical causes.

Medical costs (which we recognise will be more or less relevant in different retailers in different countries) are not always paid in the same way, and are usually aggregated across companies. This presents more of a difficulty of separating costs on a retail location.

However, retailer medical costs raise another tantalising opportunity that cannot be ignored – the possibility of arguing for lower insurance rates based on lower rates of health problems. Some retailers are already arming employees

with fitness trackers in the hopes of lowering insurance premiums. If data on physical health could be overlaid against data on healthy buildings and shown to have a relationship, then there is the longer term possibility that occupiers of healthy retail buildings may be able to argue for lower insurance rates. For many retailers, medical/insurance costs represent large numbers and are currently untapped by those who make the business case for healthy buildings. Comparing figures in your buildings against average statistics may present a new opportunity for you to leverage healthy environments into financial savings from third parties. This already happens with many companies now having ‘wellness’ plans (gym membership etc) and buildings represent a prime opportunity for this kind of thinking.

Physical Complaints

Number and type of complaints reported to the company of physical discomfort associated with the work environment or work activity.

Physical complaints, like medical complaints, are usually collected by retailers, but often on an ad hoc basis, or in a centralised database that is seldom considered by anyone beyond the facilities managers. Yet we know that complaints about thermal comfort, air quality and light quality do have a major impact on staff productivity. Monitoring physical complaints and grouping them by retail area is a relatively easy exercise for companies to undertake. While this requires a bit more effort than most companies currently expend, the financial reasons for beginning this effort is clear – employee productivity has been shown to be strongly and adversely affected by poor physical environments.

We recommend that retailers:

1. Track and record physical complaints reported by all of your employees, making an effort to include even minor complaints that normally go underreported.
2. If not too burdensome, track speed of response, and whether a complaint was resolved in a satisfactory fashion.
3. Evaluate the type and number of physical complaints by location (across and, where feasible, within retail spaces).
4. Where rates are noticeably higher in one building or location, consider possible physical causes.

APPENDIX C: CASE STUDIES COORDINATED BY HONG KONG GBC



CASE STUDY 1: HYSAN PLACE, HYSAN DEVELOPMENT COMPANY LTD, HONG KONG, CHINA



A peek through the 'Urban Windows' of Hysan Place – a green retail hub that has the wellness of its neighbourhood in mind

Location: Causeway Bay, Hong Kong SAR

Balancing between development and wellness of a community is always a challenging issue, especially in metropolises like Hong Kong, where lands are scarce resources with high development costs. While striving to build tall and compact structures to maximise the use of building space, impacts on communities brought about by high-rise and high-density developments, such as the lack of greeneries and the induction of urban heat island effect are often underestimated.

Being a landmark at the heart of Causeway Bay, a renowned commercial district in the world, Hysan Place was one of the first recipients of BEAM Plus Platinum certification for new buildings, and was the first mixed-use office and vertical mall complex in Greater China to be awarded LEED Platinum for Core and Shell. Hysan Place also demonstrates how a building can benefit its users as well as its neighbourhood through a number of sustainable and cutting edge designs.

Among the most obvious green features are “Urban Windows” – large openings at lower levels of the building developed using Air Ventilation Assessment test and Computational Fluid Dynamics (CFD) simulation. They have proven to be effective air passages to enhance natural air ventilation and improve the micro-climate, as well as the air quality in Causeway Bay. These “Urban Windows” also lessen the wall effect and help retain good visual permeability by serving as the neighbourhood’s view corridors. Apart from the “Urban Windows”, the green roof and sky gardens set at different retail floors offer a number of green, outdoor realms for the enjoyment of the customers, tenants and the public in the high-density concrete jungle. They also provide a green vista for those looking out from neighbouring buildings. The extensive coverage of vegetation (2,084 m², 47% of site area) helps mitigate the urban heat island effect and improve the air quality in the district. In addition, a “Sky Wetland” with indigenous flora and vegetation on the refuge floor not only adds greenery to the site, but is also used to recycle grey water.

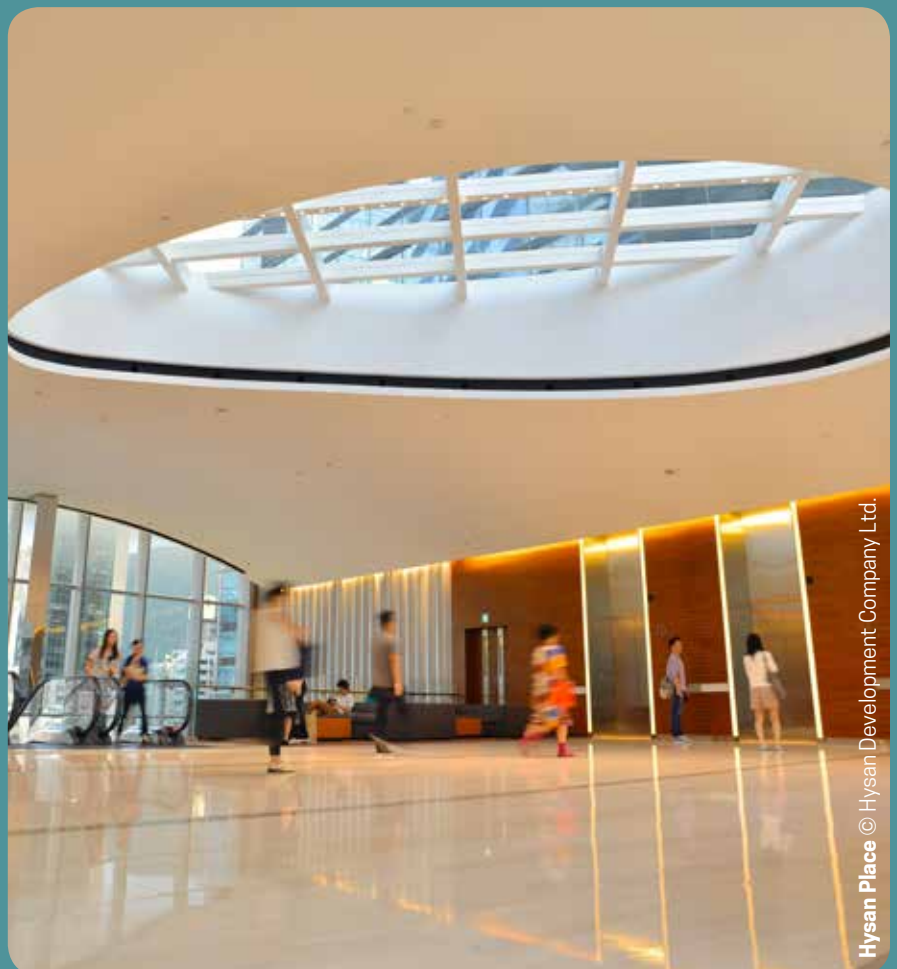
The focus on environmental sustainability does not stop there. There are many features that can help ensure energy savings and reduce carbon emissions. One such feature is huge central skylights and side windows installed in different levels of the retail floor which allow deep penetration of sunlight into the atria, while also cutting down on energy consumption. The shoppers are in contact with natural daylight and the atria give a focal element that brings the shoppers upwards in a journey of exploration across the different zones. Another feature is a hybrid cooling system at the low zone retail floors that utilise the prevailing wind effect and stack effect in the cooler and drier seasons to cut down on air-conditioning and achieve energy saving.



While the building's features benefit its users and surrounding communities, Hysan has not forgotten to promote sustainable lifestyle and a positive work and life balance through different activities. For instance, Hysan's "Urban Farm" allows dozens of stakeholders to cultivate a variety of vegetables at each three-month session. Hundreds of farmers, including school children and underprivileged members of the nearby communities, have enjoyed organic farming time on top of this iconic building. With a backdrop of lush greenery, Sky Garden provides a perfect venue for tenant to run yoga sessions to the public which are designed to be educational and fun.

Hysan's Director of Projects, Ir Sunny Chan stated "Some design elements of Hysan Place exceeded certification requirements. We are proud that the project brought tangible benefits to users and the community as a whole, as well as to the surrounding environment."

All in all, Hysan Place serves as a good example on how a commercial building can balance between practical development and sustainability in a highly urbanised area. It is a friendly green neighbour to showcase what can be done to succeed commercially and environmentally.



CASE STUDY 2: LANGHAM PLACE, LANGHAM PLACE MALL, HONG KONG, CHINA



Langham Place © Langham Place Mall

High-density retail development in one of the busiest commercial districts in Hong Kong

Location: Mongkok, Hong Kong SAR

Hong Kong is one of the few cities in the world in which density per capita can exceed 130,000 people per square kilometre.

Langham Place is a retail development at the heart of one of the busiest and most dense retail districts in Hong Kong, packed with relatively old 12-storey buildings, teeming with local shops and food outlets and surrounded by narrow streets packed with cars and pedestrians.

The success of this retail centre is that through urban redevelopment, it is able to offer shoppers a shopping centre away from the traffic noise and pollution, the owners with a high revenue return building project and a green and sustainable building to the community.

Some of the successes of this retail centre:

Promoting active design as a key design principle: Due to the unprecedented arrangement of the shopping arcades to high levels, two pairs of very long express-escalators spanning 4 levels at a time, i.e. from 4th-8th and from 8th-12th have been provided, taking continuously large number of visitors from the 4th level of the Grand Atrium right to the uppermost section of the Mall and then allowing people to naturally meander down through the interesting arcades by ramps and open staircases in descending and spiraling arrangement, enjoying a totally different shopping experience, at the same time saving a lot of electrical consumption in elevators operations, which were used by elderly and disable visitors.

- According to the owners of the retail centre, this centre is able to save \$0.34 M in maintenance cost per year as compared to using conventional lifts and escalators.
- Urban Oasis within concrete jungle: With street level given mostly to public transport interchange, the heart of the retail centre is located at 4th level with a grand atrium which is 10-storey high (60 m) glass box to recreate the openness of street life away from the traffic noise and pollution and yet with a controlled indoor environment of minimum energy consumption and a good IAQ. The grand atrium also provides ample indoor space for small scale events and exhibitions for the shoppers and the publics in the high-dense city centre. The extensive curtain wall offers shoppers with good day and night view-outs of the adjoining streets through the glass box of the Grand Atrium. It also maximises the use of natural light in the mall by allowing the penetration of daylight, a sacred element in the high dense city center into the grand atrium (and reduces the energy and cost for lighting). Most of the shops are housed within a huge "Rock", solid wall façade construction that cuts out unnecessary heat gain from the hot and humid environment.



- This design allows over 90% of the shops to be inward looking to create a themed internal shopping experience with optimum view-outs at the Grand Atrium and a better energy efficient retail centre.
- Retail Centre with provisions for amenities and facilities for the public: A major part of the street level is given to public transport terminus, buses, minibuses etc. The retail centre is interconnected to the mass transit railway and major public transits through subway and covered walkway that serve most of Hong Kong. These infrastructures serve as second layer of street and help to relieve crowded condition on street level, allow safe and easy access to different destinations regardless the weather conditions, e.g. tropical cyclones and rainstorms, and create extra spaces for shops and facilities in city centre where spaces is extremely limited. Community facilities are provided as part of the development.

This high-dense retail development is typical of many of the retail centres in Hong Kong which attempts to reduce the carbon footprint and to maximise utilisation of a site.

Key features of this development in respect to WorldGBC's research

- IEQ: Good IEQ standards
- Noise and acoustics: Away from the noise and air pollution of cars in the immediate environment. Elevated shopping areas with good views of the neighbourhood
- Lighting: Natural lighting (daylight) through the roof and the sides of the retail centre
- Biophilia: Introduction of sky gardens for shoppers and planting within the centre
- Amenities and location: Direct access to the mass transit system, bus and minibus terminus to different areas of Hong Kong, provision of government social facilities, e.g. Youth Centre, nursery
- Look & feel: A corner, named the LIVE Stage, is designed for music performance. Three times a week, the mall invites different local musical performers to give live performance in the mall and the shows are opened to the publics for free. The shows are also broadcasted in different levels of the mall
- Active space (design and layout): Promotion of staircases and ramps as principal design items within the retail space. Two sets of escalators measuring a total of 83 metres for direct access to higher levels of the shopping mall.

CASE STUDY 3: PACIFIC PLACE, SWIRE PROPERTIES LTD, HONG KONG, CHINA



Pacific Place © Swire Properties Ltd

Location: Admiralty, Hong Kong SAR

Background

Originally completed in 1990, the Pacific Place Mall's location in the heart of Hong Kong, and its extraordinary success over the years, have made it one of the most valuable pieces of real estate in the world.

The design of the luxury mall has resulted in a unique ambience, creating a place to linger in and enjoy. In 2011, the 711,000 sq ft facility underwent a contemporisation project with the aim of enhancing shoppers' well-being and experience; in 2014 the project won a Merit Award under the Hong Kong Building (Renovation / Revitalisation) Category of the Quality Building Award.

"When we commenced the contemporisation project, our vision was to enhance the overall architecture and ambience of the mall," said Ir Cary Chan, General Manager of Swire Properties' Technical Services and Sustainability Department. "To meet this objective, we invested more than HK\$2 billion into updating and upgrading the mall, successfully transforming it into a stylish and contemporary setting that offers an enhanced shopping experience."

Design and Materials Consideration for Long-term Upkeep of Building

The contemporisation project design emphasised the use of materials for their inherent natural properties, including their natural variations and ageing characteristics, as well as their warmth and durability. The project also aimed to create a timeless design that will be appreciated for many years to come regardless of changing fashions and trends, including unique details such as sand-cast lift buttons, bronze handrails and timber benches.

Site Planning, Neighbourhood and Cityscape Considerations

The four-storey Pacific Place Mall is located within a self-contained facility that houses shops and restaurants, forming a podium for four 50-storey towers directly above that are occupied by offices, serviced apartments and four hotels.

With its location atop a major public transport interchange, including a variety of road and rail connections, and along the main pedestrian routes to neighbouring developments and Hong Kong Park and key government buildings, up to 130,000 people pass through the Pacific Place Mall every day. With this in mind, the design of the contemporisation project aimed to increase space, greenery and seating, and to improve access and circulation to better integrate the complex with the neighbourhood and the rest of the city.

Distinctive and Sustainable Features

The outdoor area on top of the shopping mall had previously been dominated by vehicle traffic and cluttered with raised planters surrounded by pyramid-shaped glass structures. The space was transformed by replacing these pyramids with areas of flat glass that allow more natural light into the mall

and also can be walked on or driven over, creating an open usable space atop the mall. Various events are also being hosted throughout the year, including special exhibitions and seasonal celebrations for the shoppers' enjoyment.

In addition, above the mall and between two of Pacific Place's hotels stands what has been billed as the world's most expensive tree. Originally planted in 1870, the 20-metre-tall tree was preserved in its original location by Swire Properties during the construction of Pacific Place at a cost of almost HK\$24 million. Today, the banyan tree stands in an enormous 10-metre- deep, 18-metre-wide "flowerpot" that has been incorporated into the structure of the Pacific Place Mall, providing a quiet, shady spot for members of the community to enjoy.



CASE STUDY 4: BARANGAROO DEVELOPMENT, LENDLEASE, SYDNEY, AUSTRALIA



Supporting tenants on health & wellbeing in retail fitouts at Barangaroo South in Sydney, Australia

Lend Lease is taking an active role not only on sustainability, but health and wellbeing in the Barangaroo South development.

At fit out stage, our retail tenants are required to go beyond minimum compliance on several factors that impact health and wellbeing and are covered by the World Green Building Council's Retail Metrics Framework, including:

- 1. Lighting** – Tenants are required to achieve a 25% improvement on minimum regulatory requirements to minimise energy consumption and are also required to ensure lighting does not result in excessive glare;
- 2. Indoor Air Quality** – Tenants are required to utilise only paints, adhesives and sealants and floor coverings that result in low VOC emissions and composite wood products that have low formaldehyde emissions. Tenants generating odours are also required to install exhaust hoods and required filtration to ensure that there is no polluting odour within the tenancy or discharged from the building.
- 3. Thermal Comfort** – Tenancies are serviced by base building mechanical systems designed to enable a high level of thermal comfort. Where tenants modify the base building systems they are advised on potential impacts to their comfort. Where tenancies have shopfronts that open to the outside,





Barangaroo Retail © Lendlease

they are required to have them closed during adverse ambient conditions to minimise energy consumption and maintain comfort conditions.

Beyond these requirements, our tenants are also encouraged to do the following:

- Retain a specialist lighting consultant to ensure that appropriate illumination is provided and glare is minimised;
- Retain an acoustics consultant to advise them on internal noise levels, reverberation and any acoustic privacy issues;
- Install indoor plants to improve indoor air quality and support biophilia;
- Follow our “Design for Dignity” guidelines, which go beyond minimum compliance for inclusive design.

To encourage greater numbers of our retail tenants to achieve sustainability certifications, we collaborated with the Green Building Council of Australia on a Green Star volume certification process. This process makes it easier for us to educate our retail tenants on a broad range of sustainability issues and provides them with a path to obtain their own Green Star rating at a vastly reduced cost.



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