



# 5 STEPS TO CLIMATE POSITIVE REAL ESTATE



CUSHMAN &  
WAKEFIELD

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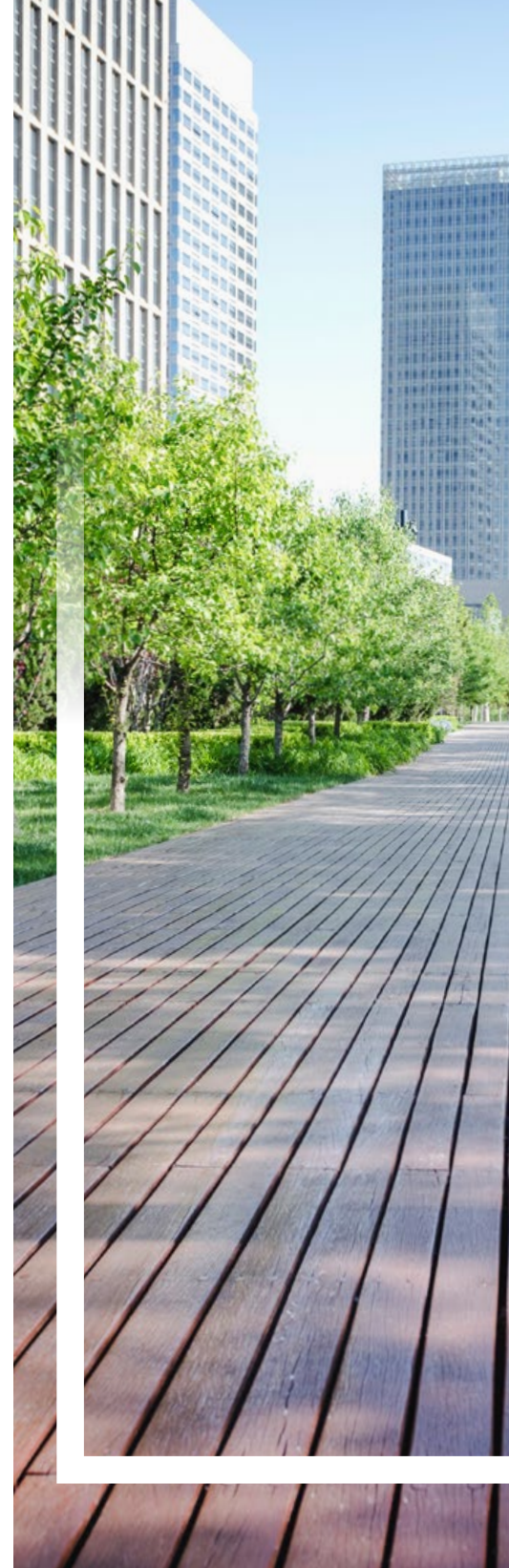
## UNDERSTANDING

# CLIMATE POSITIVE

Climate positive activities are aimed at not only achieving but surpassing net zero emission goals through eradicating additional carbon dioxide (CO<sub>2</sub>) and/or greenhouse gases (GHG) from the atmosphere. In short, it's about saving more GHG emissions than your actions produce, in order to create an environmental benefit. When developing a climate positive strategy, the first stage is to apply a carbon accounting framework. For instance, if a building product manufacturer wants to develop a climate neutral or positive product, they must determine the total carbon footprint of that product. The carbon footprint covers everything – from the energy needed to source the original material/s as well as to produce, supply, use and dispose of the product – to the emissions related to product original material/s sourcing as well as product production, usage and disposal.

Each activity that is needed to make/use/dispose of a building product or sustain a real estate-related enterprise or development is given an 'emissions factor', which is founded on each activity's potential to add to global warming potential (GWP). Because the carbon footprint is what is finally being gauged, the GWP of each activity is changed to a CO<sub>2</sub> measurement so they can all be totalled.

Once the total carbon footprint is calculated, as well as what needs to be counteracted to become carbon neutral, **then an additional measurement number, such as an extra 10% for example, can then be tagged on to estimate what is needed to go climate positive** (Figure 1).



**FIGURE 1:** The basic workings of climate positive

$$\text{CLIMATE POSITIVE} = \left\{ 100\% \text{ OF YOUR EMISSIONS REDUCED} \right\} + \left\{ X\% \text{ OF ADDITIONAL EMISSIONS REDUCED} \right\}$$

Source: Cushman & Wakefield Research



How enterprises actually achieve climate positivity can differ. Usually, however, they meet the requirements via a mixture of reducing carbon emissions, shifting to renewable energy, producing locally, investing into offsetting, purchasing carbon credits, etc.

Lastly, the advantage of climate-positive programmes and schemes is the overflow advantages they produce for other people, enterprises, or localities that may not have the resources or plans to lessen their own carbon footprints. Here, their own carbon footprints are able to be offset by those currently up-and-running and successful climate-positive programmes and schemes.

## TRANSFORMING YOUR REAL ESTATE

Buildings can realise climate-positive results in a number of ways, and simply put, the steps to climate positive are the steps to net zero plus that extra mile, whatever takes you to remove more GHG than you're producing. Your strategy should include a mixture of the following steps:

### STEP 1: CHOOSE:



the optimal building location, design & energy modelling, eco-friendly materials, renewable energy and intelligent energy management systems

### STEP 2: MAXIMISE:



the structural efficiency, insulation and GHG reduction systems

### STEP 3: MINIMISE:



the material and operational wastage and water usage

### STEP 4: MAINTAIN:



the hardware and software

### STEP 5: RE-USE:

upon current-use obsolescence



LET'S  
LOOK AT  
THESE  
STEPS  
IN MORE  
DETAIL:

## STEP 1:

# CHOOSE WISELY

## 1. BUILDING LOCATION

A building's location has a big impact on its general carbon footprint. Highly efficient buildings in general should be aligned along an east-west axis, thereby amplifying any north- and south-facing glazing natural lighting and thermal effect. Whether the building is located in shade or not, at a certain latitude or at a certain altitude can also affect the lighting and thermal dynamics of the building and therefore the amount of energy used, and emissions generated.

Moreover, where a building is constructed will also influence the carbon footprint and the possibility for carbon build-up in the landscape due to many factors, including impact on the natural environment if the building is built in a rural 'green' area, or the proximity of the source of the building materials used and the distance to the construction site, when considering carbon emissions from building material transportation.

Additionally, siting the building near public transportation can reduce its carbon footprint due to the enhanced public transport travel convenience offered and at hand to the building's inhabitants/users at any given time.

## 2. BUILDING DESIGN AND ENERGY MODELLING

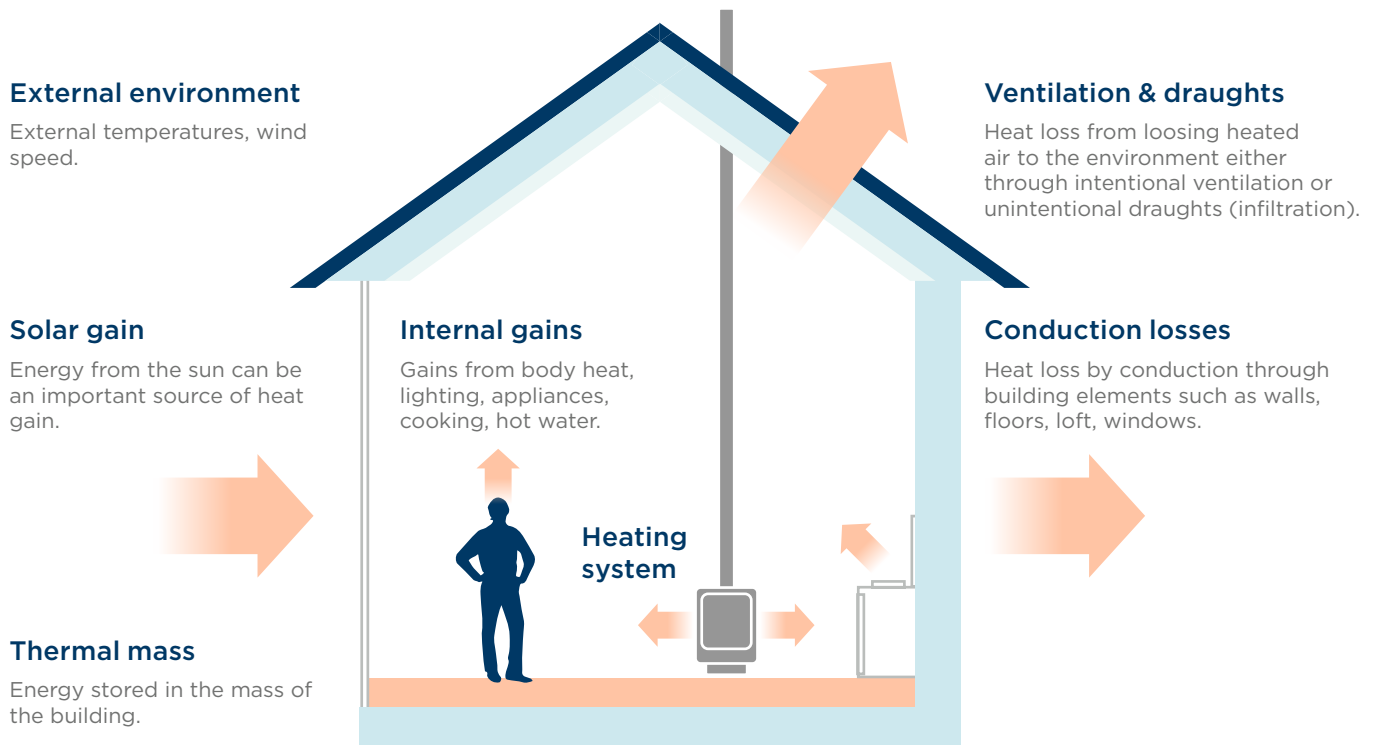
Initial building design and then energy modelling optimisation early in the course of design can realise a significant reduction in energy consumption and future carbon emissions. By taking into account the footprint, building materials, building systems and good design impactful results can be produced. For example:



**A slim footprint in an optimally orientated building can exploit natural lighting and views while lessening solar heat gain, and;**



**Open space design can lessen the amount of interior material used (Figure 2).**

**FIGURE 2: A simple building energy model**

Source: OpenEnergyMonitor, Cushman & Wakefield Research

### 3. ECO-FRIENDLY, LOW CARBON, REUSED OR RECYCLED MATERIALS

#### Eco-friendly building materials

Employing a wooden structure in place of steel and concrete, or wood sidings as opposed to vinyl, can lessen the amount of embodied carbon in a building. In many instances, it might not be possible to elude the use of carbon-intensive products altogether, however, the building might be able to employ slightly lower carbon-intensive substitute materials.

Carbon sequestering materials are also alternatives. Utilising agricultural products, such as wood, straw or wool insulation, that sequester carbon can have a significant bearing on how much embodied carbon is entrenched in a project.

#### Low carbon concrete

Emissions per ton might not be high for concrete, however, its weight and general usage make

concrete the largest source of embodied carbon in most building projects. Lower carbon concrete mixes can be created by mixing fly ash, slag, calcined clays, or even lower-strength concrete where practicable.

#### Reused and recycled building materials

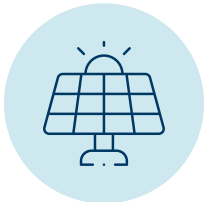
Recovered building materials usually have a lower embodied carbon footprint than newly produced building materials, as the carbon used to manufacture them has already been consumed. With recovered wood for instance, the energy that would have been used in felling the tree, transporting it to the mill, and processing it, would not only be saved but the tree that was never felled would still be sequestering carbon.

A building project can also try to use recycled building materials when undertaking construction. Recycled steel is one example. Virgin steel, in particular, can have an embodied carbon footprint that is five times larger than that of high-recycled content steel.



4. RENEWABLE ENERGY USE

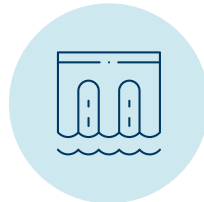
One of the biggest moves towards the creation of climate-positive buildings is the shift towards the usage of renewable energy. There are a number of sources of renewable energy a building can choose, but the main ones include:



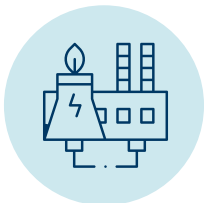
Solar power  
(Figure 3)



Wind power



Hydropower



Geothermal power

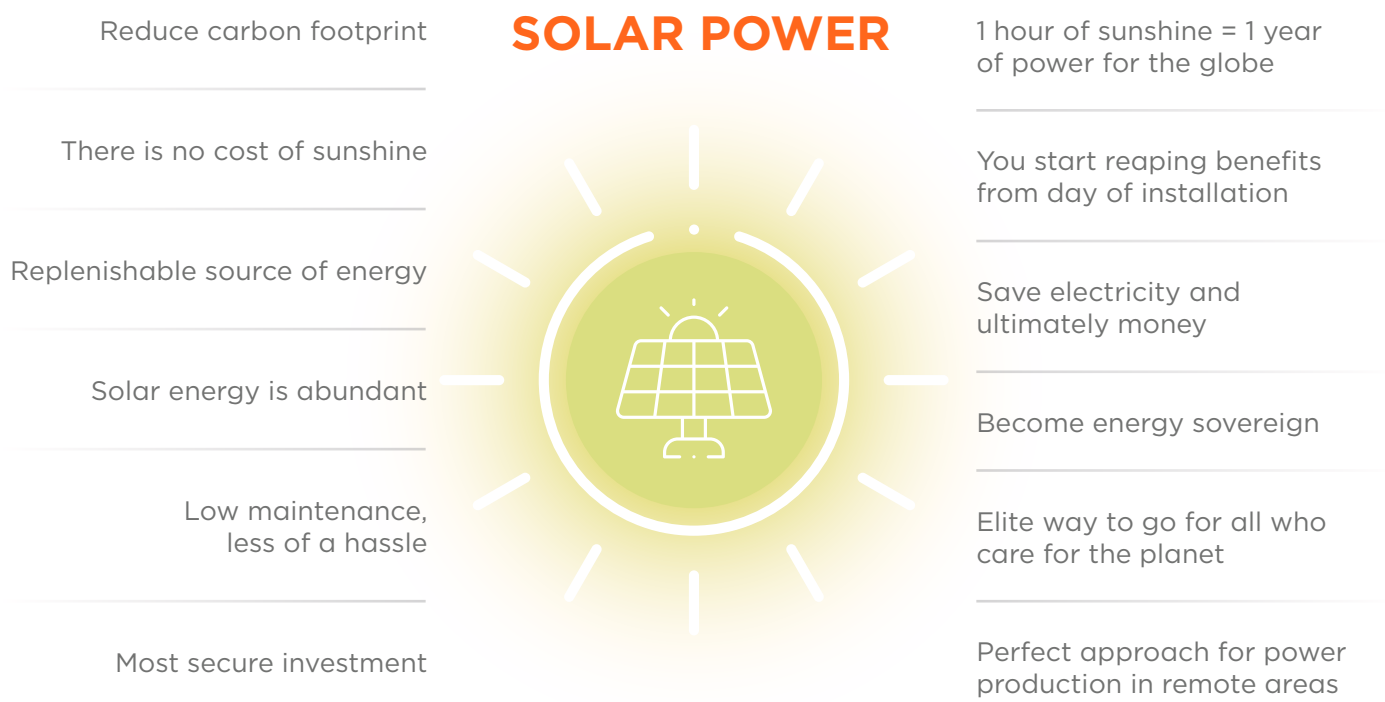


Tidal power



Biomass power

FIGURE 3: Selected benefits of solar power

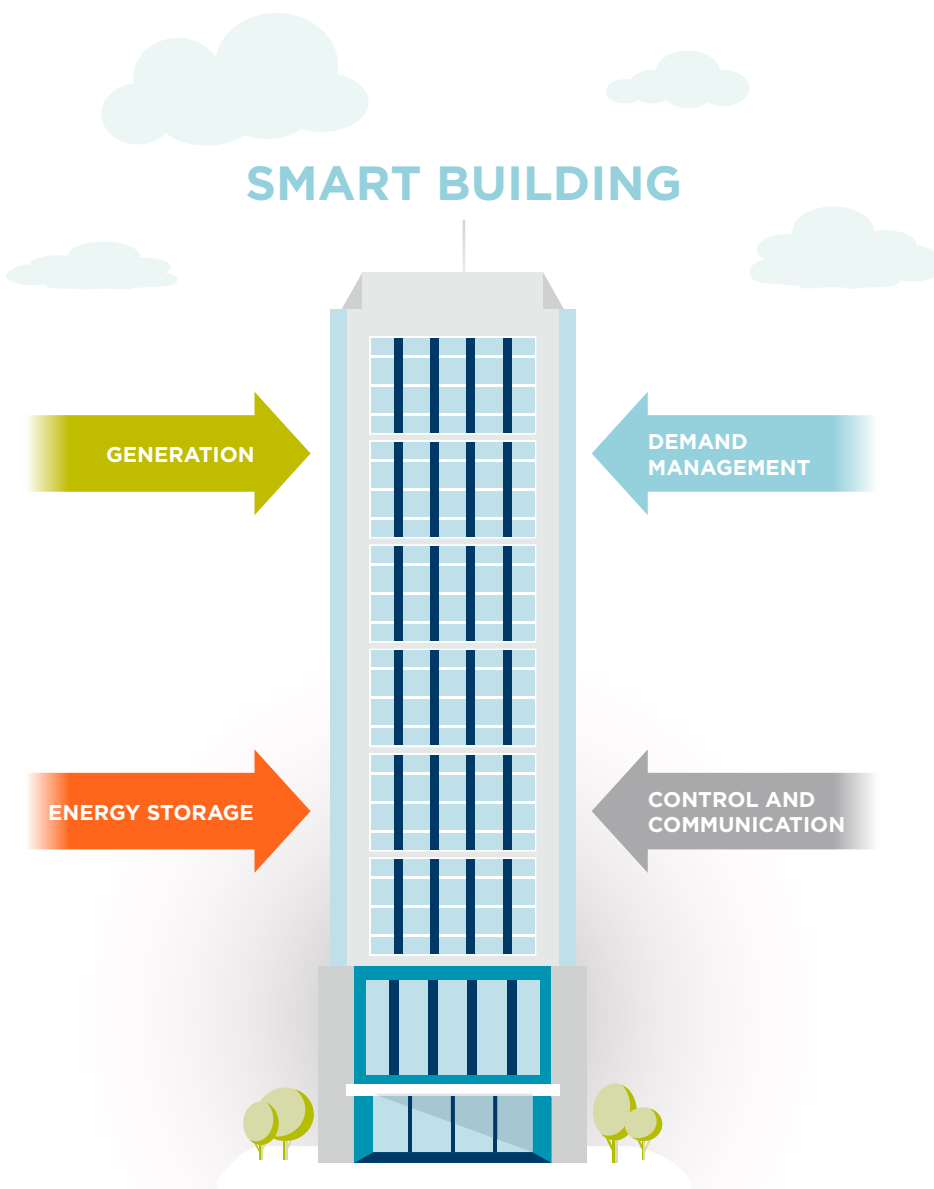


Source: 661 Solar, Cushman & Wakefield Research

## 5. INTELLIGENT ENERGY MANAGEMENT SYSTEMS

Well-chosen smart building energy management systems offer an integrated platform for managing building energy usage. They also facilitate the efficient use of electricity resources. The utilisation of generally distributed sensors allows for the monitoring of ambient temperature, lighting, room occupancy and other inputs necessary for the efficient management of climate control, security and lighting systems (Figure 4).

**FIGURE 4:** Elements of a smart building energy management system



Source: Science Direct, Cushman & Wakefield Research





## STEP 2:

# MAXIMISE THE EFFECT

## 1. STRUCTURAL EFFICIENCY

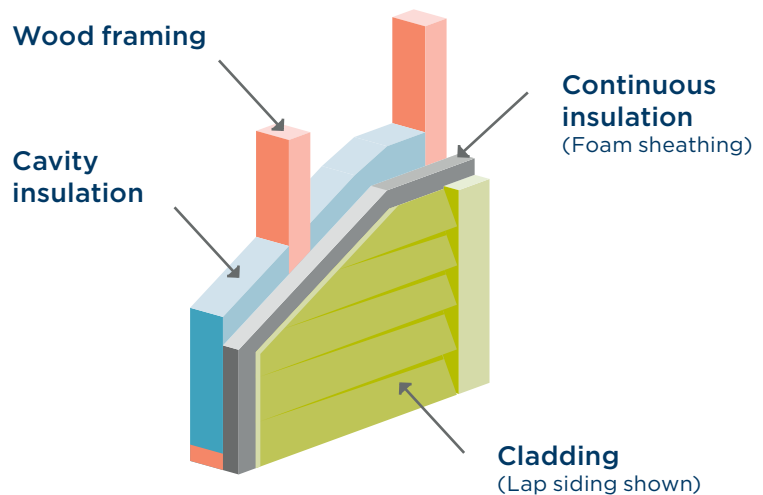
As most of a building's embodied carbon is in the structure, a building project should try to realise optimum structural efficiency. This can be achieved in a number of ways, including the utilisation of optimum value engineering wood framing methods, efficient structural sections, and slabs.

Furthermore, a building project can try to use fewer finished materials. Utilising polished concrete slabs as finished flooring, for example, saves the embodied carbon from carpet or vinyl flooring finishing. Unfinished ceilings are an additional possible source for embodied carbon savings.

## 2. INSULATION

A building can use continuous insulation to reduce the energy used for interior thermal comfort optimisation, and therefore, the associated carbon footprint created by the associated energy usage. Continuous insulation is insulation that is uninterrupted across all building structural members without thermal bridges other than fasteners and service openings. It is fitted to the interior, exterior or is integral to any opaque surface of the building. Continuous insulation offers thermal, air, water, and vapour control layers in one system (Figure 5).

**FIGURE 5: Continuous insulation**



Source: [continuousinsulation.org](https://continuousinsulation.org), Cushman & Wakefield Research





### STEP 3:

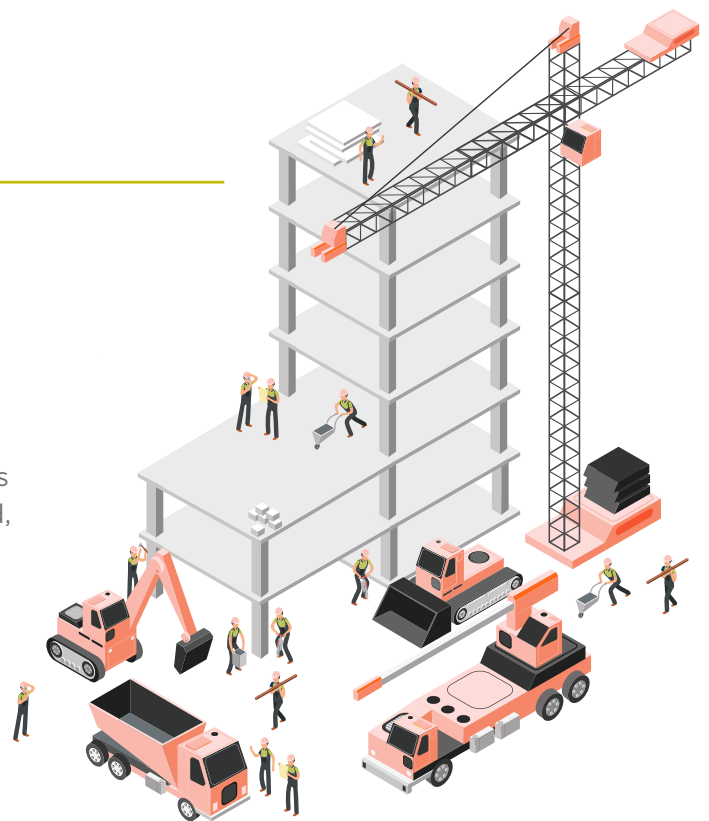
# MINIMISE THE EXCESS

## 1. MATERIAL WASTE

Designing and producing building materials in modules can lessen wastage. It's preferable for a building project to consider common sizes for common building materials. For example, for a wooden building project, conventional material sizes for common building materials include 4x8 plywood, 12-foot gypsum boards, 2-foot increments for wood framing and pre-cut structural members.

## 2. OPERATIONAL WASTE

When operational, buildings, particularly public and commercial buildings, can minimise wastage and subsequent carbon emissions in many ways, including, establishing exact goals for lessening the volume of wastage, performing recurring reviews targeted at lessening wastage, and installing systems that reuse waste materials.



## STEP 4:

# MAINTAIN THE APPARATUS

## 1. PLANT, MACHINERY, SENSORS AND DEVICES – MAINTENANCE AND USAGE OF THE LATEST TECHNOLOGY

Plant and machinery, such as heating, ventilation and air conditioning systems (HVAC), that are frequently maintained and updated, can assist in lessening a building's carbon footprint by being as efficient as they can be in terms of energy usage. A building can even employ sensors that gauge air quality to ascertain how much ventilation (and energy usage) is needed.

### Light-emitting diode (LED) lighting

Lighting can account for as much as 40% of the energy used in some commercial buildings. According to the Climate Group, LED lighting generally realises energy savings of between 50% and 70% in comparison to conventional lighting.

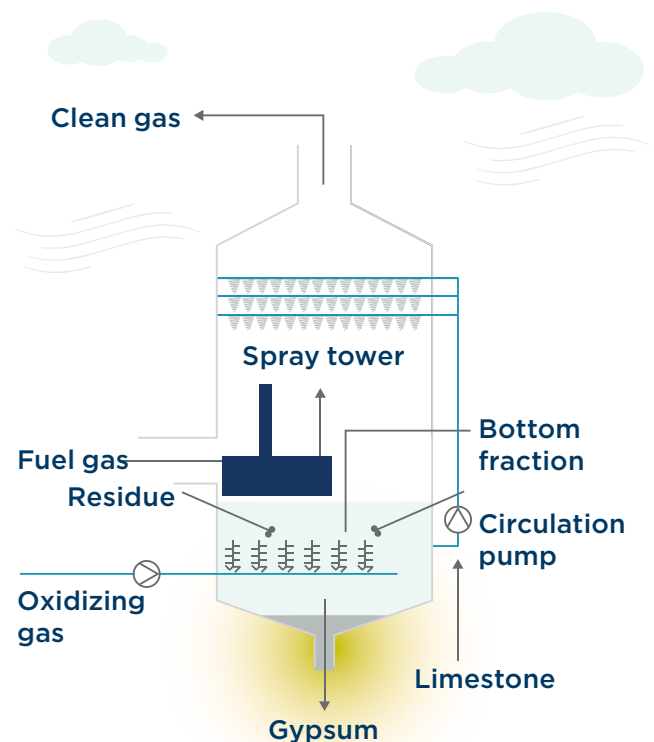


## 2. GREENHOUSE GAS (GHG) EMISSIONS REDUCTION SYSTEMS

A scrubber is an example of one such GHG emissions reduction system. Scrubbing is the broad term associated with flue gas treatment procedures. There are both liquid- and solid-type gas treatment procedures that are a function of the physical and chemical properties of the pollutant being removed. Among others, they include wet scrubbers, dry scrubbers, adsorbents, and mercury removal.

Additionally, related to scrubbers, there are also variants, such as electrostatic precipitators and desulfurising processes (Figure 6).

**FIGURE 6:** A typical scrubber system



Source: Chegg, Cushman & Wakefield Research



## STEP 5:

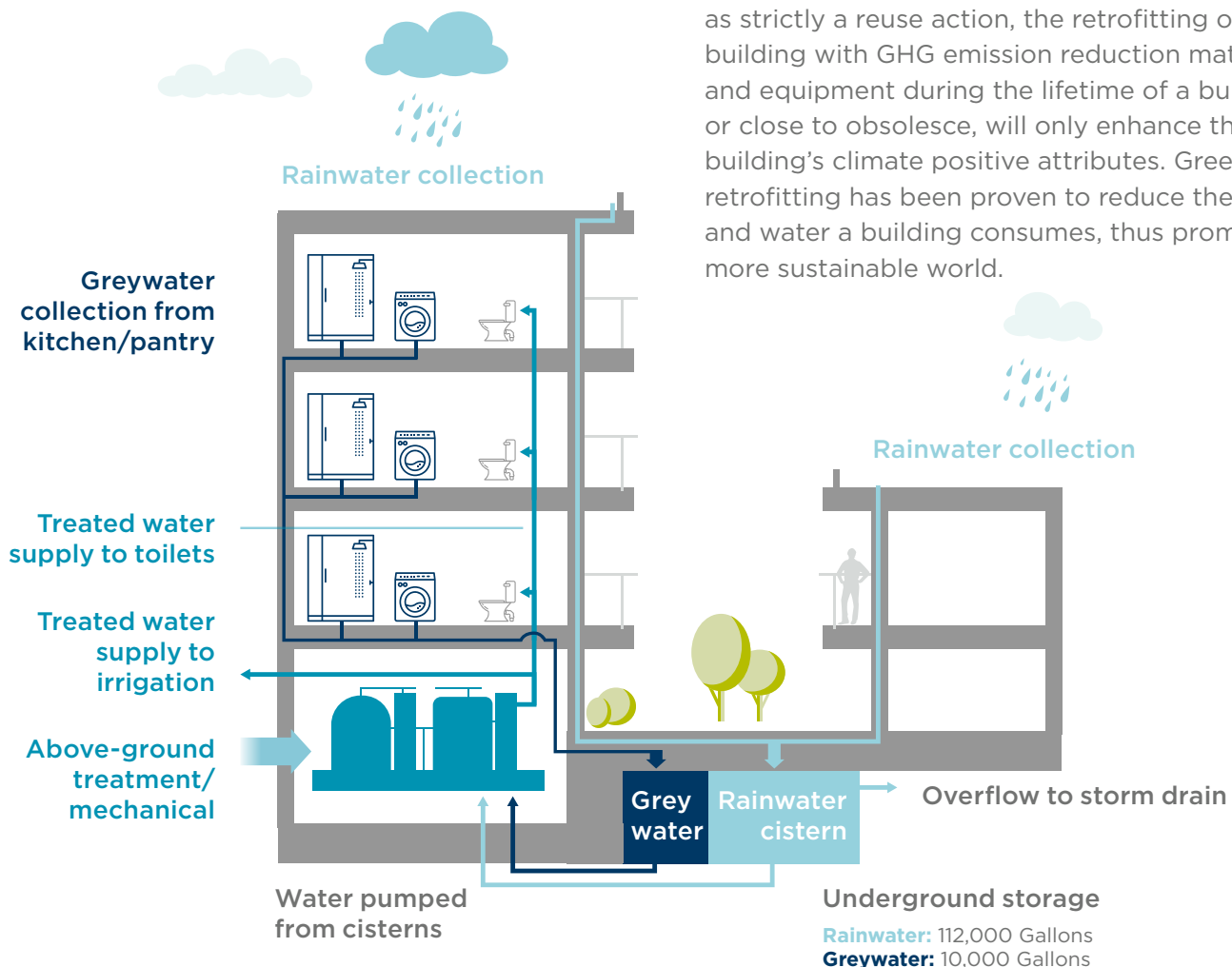
# RE-USE THE STUFF

## 1. WATER USAGE

The supply, treatment and utilisation of water all impact a building's carbon footprint. In addition to well-maintained plumbing and high efficiency toilets, it is the usage of a greywater water reuse system which has a really positive impact on an operational building's water usage reduction strategy. This system is able to considerably lessen a building's need for fresh clean water by redirecting any wastewater for various other uses, such as toilet flushing or plant irrigation (Figure 7).

**FIGURE 7:**

### A simple building greywater system



## 2. BUILDING REUSE/RENEWAL

According to the American Institute of Architects, reuse/renewal projects can save 50%-75% in embodied carbon emissions when compared to building a new building. This is very much the case if the foundations and the structure of the existing building have been well-maintained since most of the embodied carbon exists there. Generally speaking, where there is a remaining building that can be reused, then work should be directed towards recreating a building that is not only sustainable and energy-efficient, but one that can yield substantial positive benefits throughout its extended life.

As a side note, even though it might not be seen as strictly a reuse action, the retrofitting of a building with GHG emission reduction materials and equipment during the lifetime of a building or close to obsolesce, will only enhance the building's climate positive attributes. Green retrofitting has been proven to reduce the energy and water a building consumes, thus promoting a more sustainable world.

Source: [ecologicalconcerns.com](http://ecologicalconcerns.com), Cushman & Wakefield Research

# PROVING YOUR ASSET IS CLIMATE POSITIVE

Disclosure, rating and benchmarking systems that are used to positively prove how sustainable real estate or an enterprise is, (and if any are able to achieve a climate-positive outcome), are many. Two systems that have gained market traction recently are:

► **At the enterprise level – The Task Force on Climate-Related Financial Disclosures (TCFD), and;**

► **At the real estate level – The Global Real Estate Sustainability Benchmark (GRESB).**

The TCFD system allows enterprises to recognise and disclose climate-related risks and opportunities so as to enable informed decision-making for investors, lenders, insurers and other related participants. The use of the TCFD system aids enterprises as they ascertain and handle transition and physical climate risks.

Aligned with the Global Real Estate Sustainability Benchmark (GRESB), the TCFD system focuses on the transition and physical risks that can be mapped to the Climate Disclosure Standards Board (CDSB) Framework and the Sustainability Accounting Standards Board (SASB)'s climate framework. Physical risks embrace extreme weather events, such as drought or flooding, and the long-term effect of rising average global temperatures, while transition risks take account of the global transition to a low-carbon economy, new regulations, and innovations in energy efficiency.

## Steps to adoption

If considering TCFD adoption and implementation, there are a number of initial steps enterprises could initially take and some of the main ones include:

- Launch a sustainability committee;
- Set up sustainability working groups under the sustainability committee;
- Create and advance sustainability strategies that tackle the physical and transition climate-related risks and opportunities, and;
- Establish key performance indicators (KPIs) and goals to examine and realise the efficacy of the sustainability strategy.

## TCFD – What's next?

One significant development recently has been the formation of a new International Sustainability Standards Board (ISSB) to develop, in the public interest, an all-embracing global baseline for high-quality disclosure standards to meet the needs of investors. The TCFD system will complement and play an integral role in this scheme alongside other related systems, such as the Science Based Targets initiative (SBTi).

## THE GLOBAL REAL ESTATE SUSTAINABILITY BENCHMARK (GRESB)

GRESB is a sustainability performance rating system that has a greater focus on the built environment and is now widely used by real estate enterprises, funds, investors, and banks. In 2021, more than US\$5.7 trillion in gross asset value across 117,000 assets was ascertained via the GRESB rating system.

GRESB assesses the environmental, social and governance (ESG) performance of real assets, which include real estate. In terms of environmental issues, the rating system encourages enterprises to reduce GHG emissions, lessen wastage, and conserve water and energy. Founded on a 5-star rating system representing the portfolio's rating against its



contemporaries, the benchmark is utilised to heighten the performance of real estate portfolios and the global real-estate property sector, and subsequently, appeal to investor capital (Figure 8).

**FIGURE 8: The GRESB benchmark**



Source: GRESB, Cushman & Wakefield Research

## Why engage GRESB?

There are many reasons why enterprises are using the GRESB rating system, including:

- ▶ GRESB offers institutional investors the data and information required to examine and manage the sustainability risks;
- ▶ GRESB helps push ESG matters to the forefront of business decision-making;
- ▶ Shareholder value is enhanced with the advancement in sustainability performance, and;
- ▶ GRESB-engaged enterprises are recompensed with more efficient, more sought-after properties, as well as greater returns and reduced risk.

## GRESB and real estate investment trusts (REITs) performance

According to the University of Cambridge, REITs with higher GRESB scores better their contemporaries in terms of returns. In addition, the same findings demonstrated that when adjusted for risk, there is a meaningful correlation between REITs' portfolio sustainability indicators and their performances in the stock market.

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# THE TAKEAWAY

Following the five steps, going climate positive and employing proof-positive disclosure, rating and benchmarking systems for sustainability will be the green route that many organisations will take when it comes to their real estate interests. By adapting and integrating this approach, organisations will be progressing further than carbon neutral, by saving more GHG emissions than they are generating, thereby better positioning themselves to achieve their green goals and contributing to a more sustainable world.





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