LIVERY CLIMATE ACTION GROUP

Annual Conference 2023

Merchant Taylors' Hall

03 July 2023

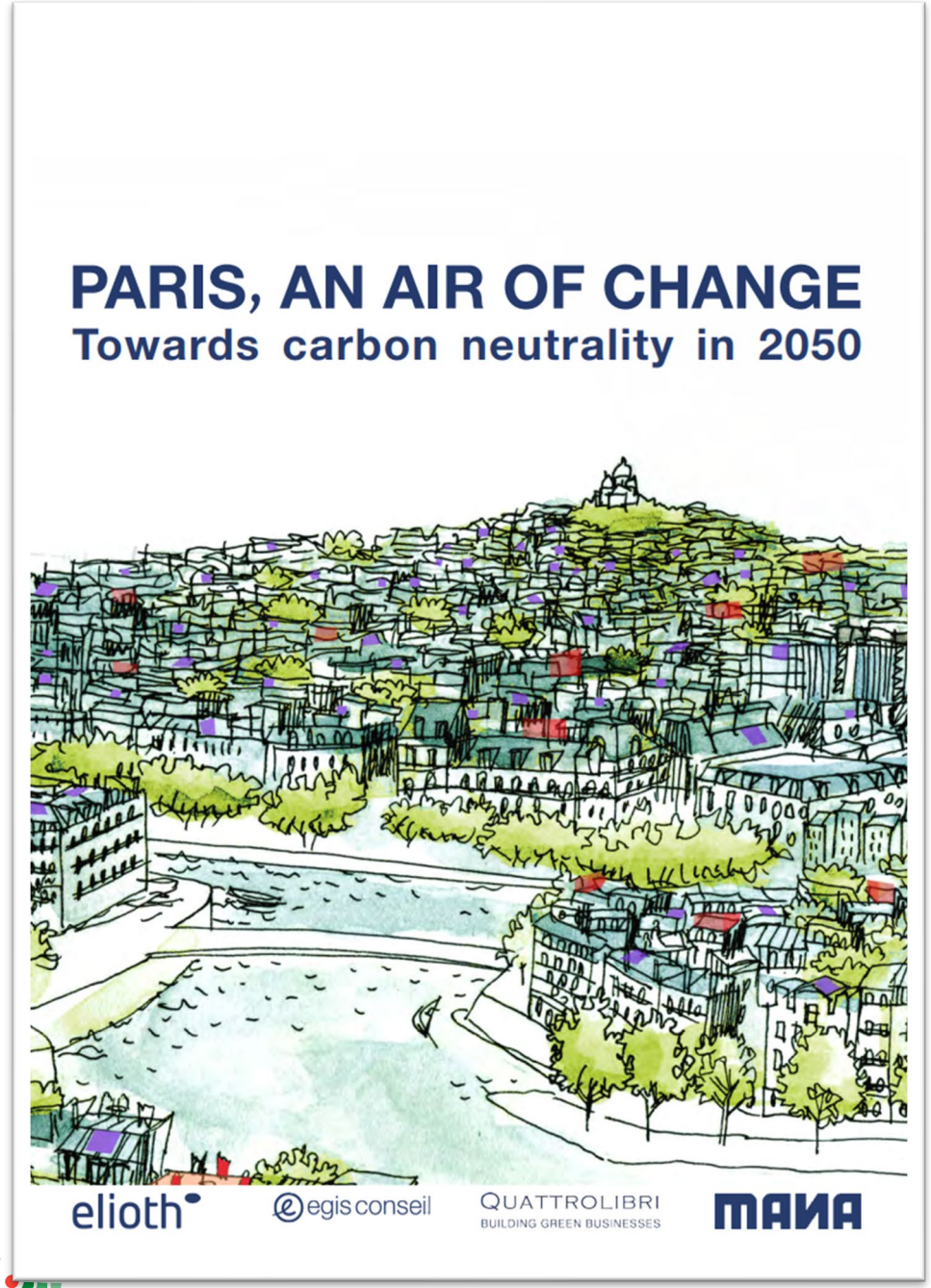
Conference Welcome,

Alderman, Alison Gowman

What can London learn from other cities?

Colin Hutchison, Elioth by Egis

A History of Paris



Main objectives

First, it has opted for an extended scope of emissions in order to comprehensively cover the emissions attributable to the Parisians.

Second, it aims for carbon neutrality no later than 2050, in order to align its goals with the Paris Agreement.

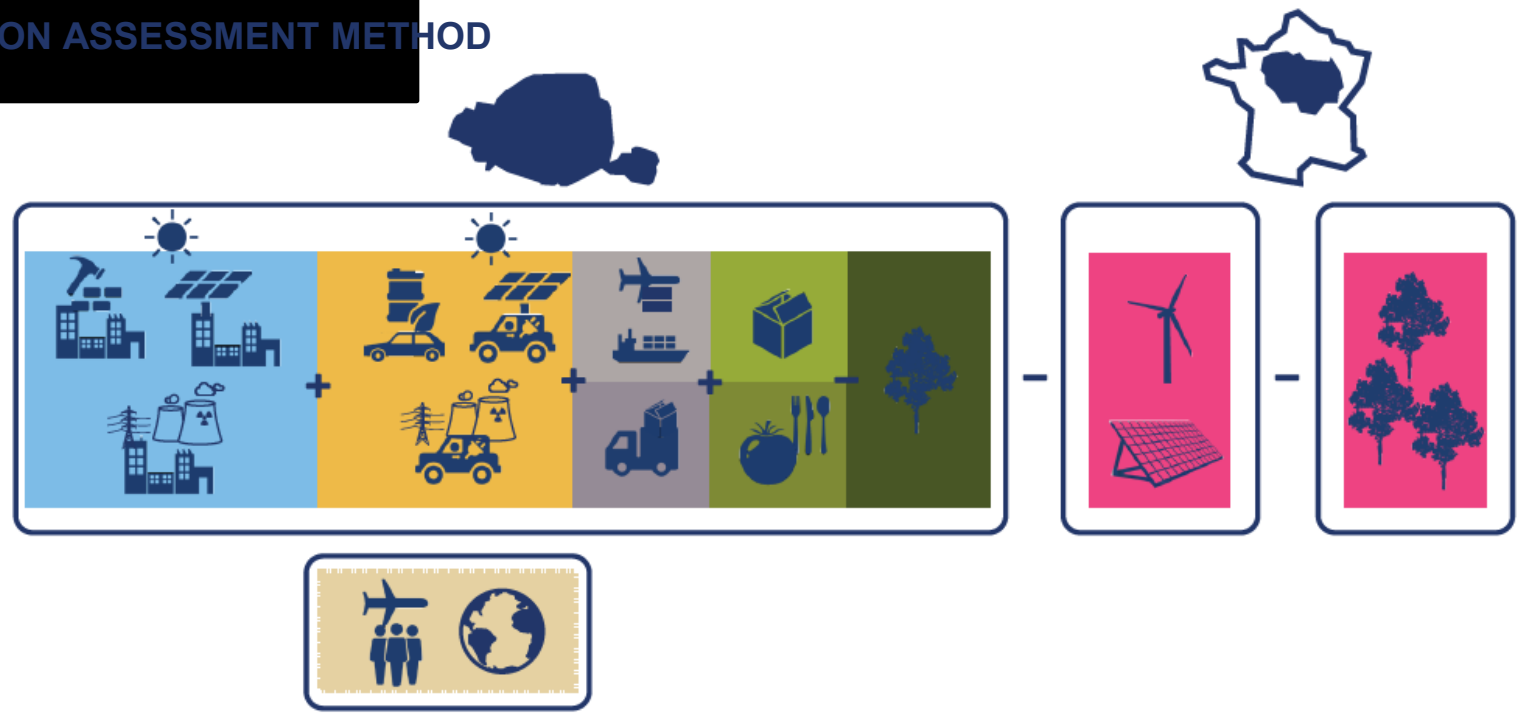
Third, it decided to extend the focus of the strategy beyond the usual theme-based approach and asked us to feature a sociological analysis in the strategy.

This study paves the way for the revision of its Climate Plan in 2017: it provides the City of Paris with an independent and impartial external expertise in drafting the transition path towards carbon neutrality.

A dedicated web site with the full report downloadable (368 pages)

GPC

CARBON ASSESSMENT METHOD



Population

+200 000

INHABITANTS

Mitigation

-70%

GROSS EMISSIONS

Renewable energies outside Paris

-10%

FURTHER

Capture and storage through carbon sinks

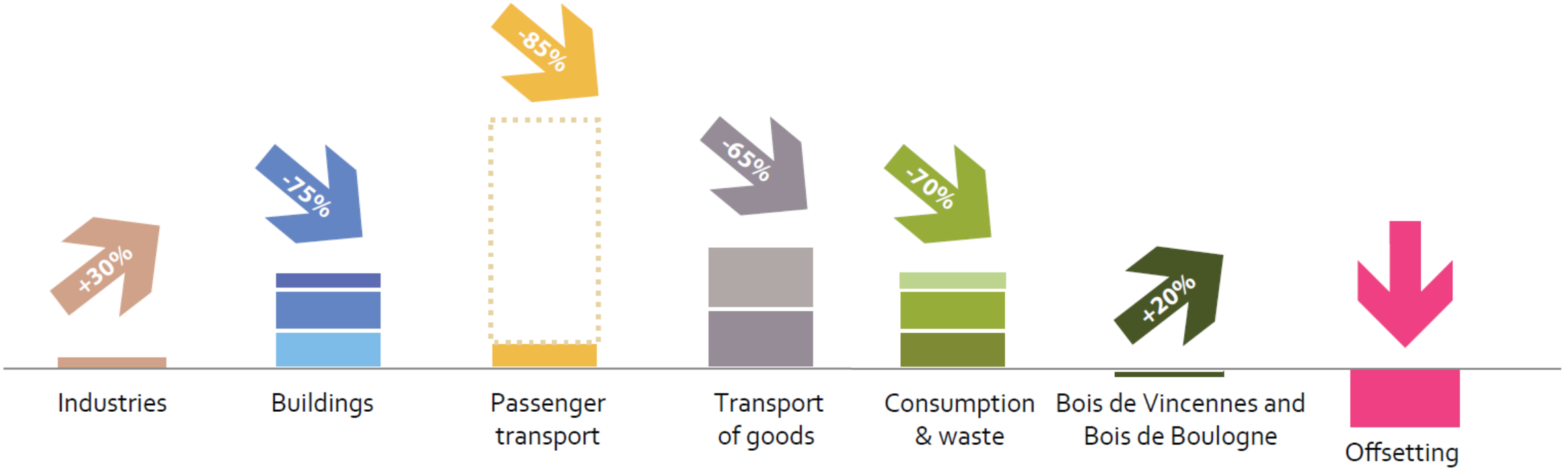
-20%

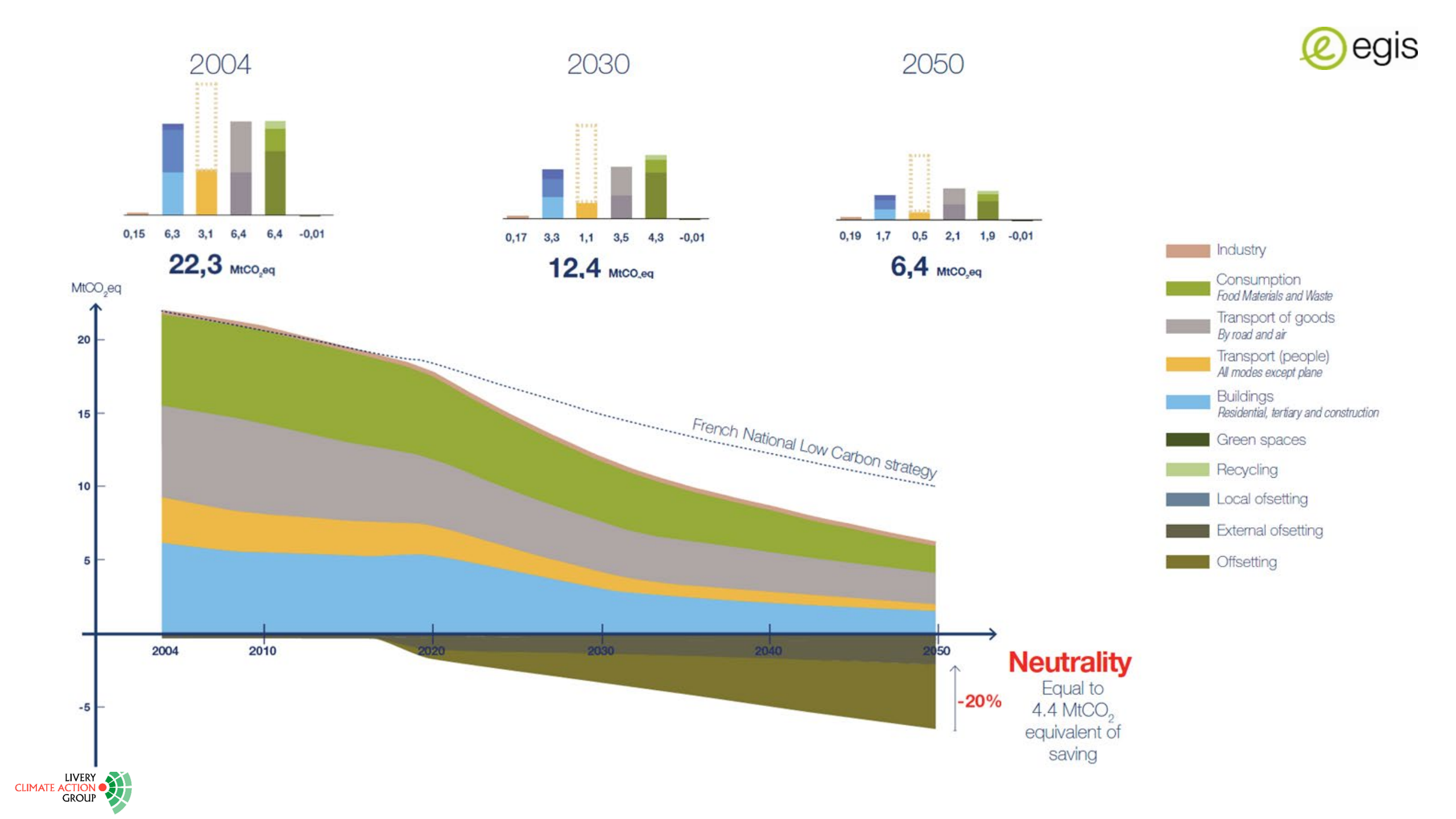
TO ACHIEVE CARBON NEUTRALITY

Paris Carbon Assessment – 2004 > 2050

6,4 MtCO2eq

10,3 MtCO2eq with air travel





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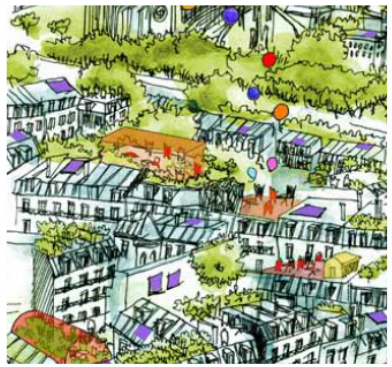
FOCUS ON BUILDINGS



COWORKING
+
SHARED LIVING
+
TELEWORKING
+
PARTICIPATORY HOUSING

2016

MAJOR RENOVATION:
10% OF TERTIARY BUILDINGS
12% OF SOCIAL HOUSING
2% OF PRIVATE HOUSING

0.05 MILLION M² OF SOLAR ROOFS

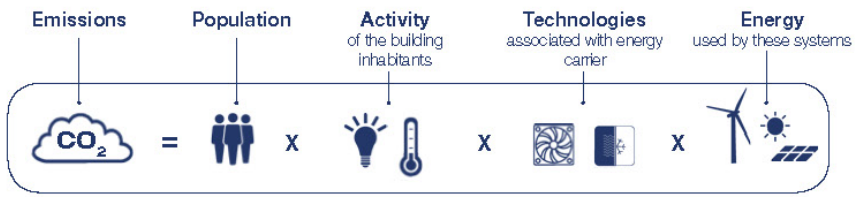
LAUNCH OF FIRST "LOW-CARBON BUILDING" LABEL

2050

MAJOR RENOVATION:
70% OF TERTIARY BUILDINGS
75% OF SOCIAL HOUSING
55% OF PRIVATE HOUSING

6 MILLION M² OF SOLAR ROOFS

THE CITY WILL TRIPLE ITS CARBON CAPTURE AND STORAGE THROUGH WOOD CONSTRUCTION



MANAGEMENT OF USES

Shared living practices are becoming widespread. Some buildings are designed for temporary or reversible uses, to respond to changes in visitor numbers to Paris. Local, connected, flexible and protean professional spaces are multiplying,

RENOVATION OF HOUSING

The renovation of social and private housing is about to be upscaled, thanks to public and citizen-based funding, and the development of new comprehensive and innovative offers from the building industry.

RENOVATION OF TERTIARY BUILDINGS

The professionalisation of the energy-related businesses has allowed tertiary sector consumption to be reduced rapidly by around 25%. Almost the entire tertiary building stock will be renovated by 2050 via EPC and third-party funding mechanisms.

OVERVIEW

THE ESSENTIALS

Only a comprehensive building strategy based on restraint and flexibility will be able to meet the requirements created by Paris' demographic and economic growth, while remedying inequalities.

Built-up area per person is a key point. The new ways of living and working in the city will embrace the new ways of life being shaped by Parisians, while allowing built-up areas to be limited.

The energy renovation of existing buildings is a priority project. The work carried out by the APUR (Paris Urbanism Agency) and APC (Paris Climate Agency) will allow us to propose a selection of effective and contextual solutions. On this solid basis, Paris will support the renovation of tertiary and residential building stock on an extended scale, while making sure to preserve the city's architectural heritage. This major project will be backed up by multiple comprehensive and innovative offers from local authorities and the banking sector to fund the works and guarantee energy performance.

The construction sector will enter the low-carbon, positive-energy building era. New supply channels in Ile-de-France for secondary raw materials and bio-sourced materials will be established and contribute to the boom in the local circular economy. Buildings will be considered carefully taking account of the very long period of time from construction through to demolition, along with all the aspects of energy consumption. Buildings will become energy producers and "smart", active components in local and national energy systems.

Anne Girault
Director of the Paris Climate Agency

Building in general will find its way by the end of the first half of this century. A more difficult question which remains is that of transport and mobility in general. It's also an issue which affects Ile-de-France. We need to learn to count differently: euros will no longer be enough, nor will KWh; it will be important to count carbon and have a more accurate view of our footprint and impacts.

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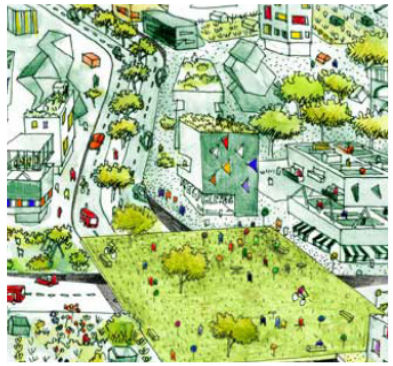
FOCUS ON TRANSPORT



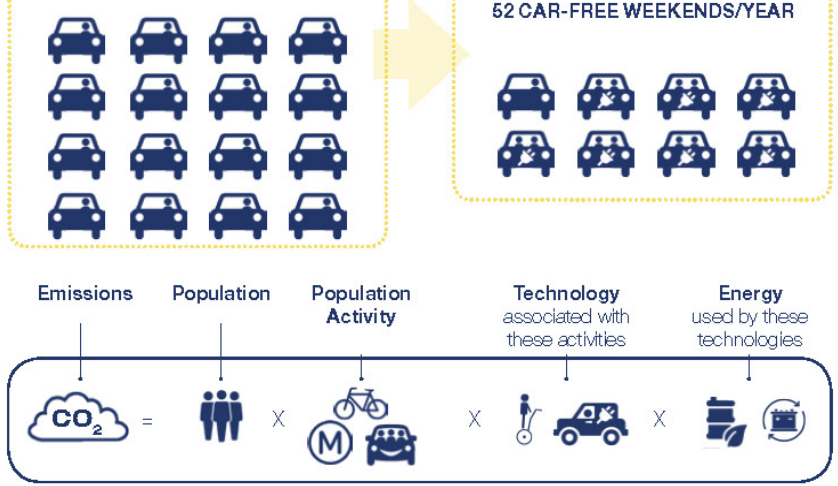
CARPOOLING
+
CARSHARING
+
TELEWORKING
+
MODAL SHIFTL

2016

600,000 CARS
PERS/CAR
1 CAR-FREE DAY/YEAR

2050

300,000 CARS
2 PEOPLE/CAR
52 CAR-FREE WEEKENDS/YEAR



NEW USES

Many solutions already exist for reducing the number of kilometres travelled by car in Paris without changing the city: increasing the occupancy of each vehicle, working nearer home, travelling differently…

CHANGING THE FLEET

The carbon impact of vehicles needs to be considered from an overall point of view. It depends on their manufacture (weight, materials…), use (fuel, speed…) and end of life (recycling…). Carsharing and transformations of vehicles will limit the impact of each automobile.

URBANISM

In order to encourage a modal shift, public spaces must adapt to new forms of mobility, and the space dedicated to cars (roads, parking) reclaimed by users.
The transformation of the ring road into an urban boulevard will mark the beginning of a new era. Green spaces, urban farming and housing will rub shoulders with other activities necessary for the transition and the development of the circular economy (recycling centres, logistics).

OVERVIEW

THE ESSENTIALS

Despite their relatively small share of the overall number of journeys (less than 15%), **journeys by car worsen the city's Carbon Footprint** and increase local atmospheric pollution.

Increasing the occupancy rate of vehicles and promoting teleworking will limit these impacts in the short term, without having to alter infrastructures.

The 21st century will see a profound change in our relationship with the car: the move away from car ownership to the purchasing of mobility services. Vehicles on the roads will have lower emissions, and be lighter and less powerful thanks to the technical and regulatory measures taken by the City to speed up the process already underway.

Public spaces will be transformed: pleasanter, quieter, greener and safer. The transformation of the ring road is the most striking example of this. Car-free days will become more frequent to **allow Parisians to reclaim their streets, which will be places of renewed activity and citizenship**.

Jean Robert MAZAUD
Urbanist and Architect - CEO of SPACE & SMAMA

Imagining that a new tourist cannot be environmentally ethical (CO_2 emissions rate, excessive consumption of resources, a factor in pollution, noise and urban congestion) is just as outdated as thinking that Airbnb and Blablacar do not meet a real need.

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Carbon capturing and the question of extra-boundary land aquisition

9 000 km²

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HIGH CARBON EMITTERS, BY DEFAULT

Monique
Age 65

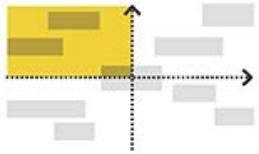
Jacques
Age 68

THE PRIVILEGED

Monique retires after a good career in the nuclear industry, Jacques retired 3 years earlier.
These former senior professionals are delighted with this new phase of their life. They have made pension contributions since the age of 24, and they feel in good health. They are living the good life! To mark the occasion, Jacques has replaced their car. He wanted a comfortable saloon for their travel in France, from festivals to exhibitions, stopping off to sample some gastronomy. Jacques supervised the renovation works on a Provencal farmhouse bought 10 years ago and enjoys this new pattern of living in two houses. Monique tells herself it's the time to acquire shares in a Burgundy wine domain: this is a promising gourmet stopover point on the road to Provence! Having free time in Paris is fantastic, they take advantage of all the positive aspects, the museums, visits to heritage sites, restaurants, and the traffic jams are forgotten. Their terrace on the 8th floor, landscaped by a big name, is the envy of their friends, and pleases everyone.

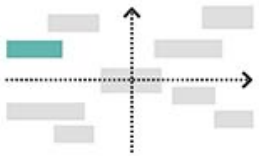
Monique retirement is not as peaceful as she thought it would be
Monique and Jacques thought they could enjoy a peaceful and comfortable retirement. They indulge themselves and travel a lot, in Provence, in the mountains, abroad (particularly to visit Stéphane). These trips expose them to the effects of climate change. In 2017, they have to cancel the trip offered by Monique's colleagues for her retirement. The bungalow was destroyed by a tropical storm. They notice that snow no longer falls at their friends' house in Valmorel, and that their holidays are ruined. They do some research into the subject and develop a greater awareness of climate issues, but this is an intellectualised awareness: they feel that it is closing in on them, but they do not take it too seriously…After a failure of the grape harvest in 2024, they decided to act and modify their eating habits, then they join a mobility centre and reduce the distance and frequency of their journeys. Their Provencal farmhouse narrowly escapes the fires of the terrible **heatwave of 2031.** Jacques dies of a stroke in **2033**. Monique sells the apartment for a life annuity to Léa, Eric and Nadia's daughter, before dying in **2038**.

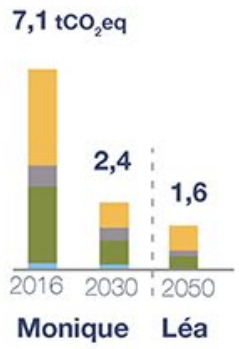
Lea welcomes her patients in monique's old apartment, on may 3 2050
Léa opened her psychotherapy practice 3 years ago. She playfully named it A-LEA Climatique. Most of her clients are people who have had to leave their region or country of origin because it was subject to violent climate events. She chose to set herself up in her huge apartment in Rue Morland with a clear view of Paris.



Dynamics of change

Climate change directly affects the lifestyle of the privileged, who gradually adjust their habits.





The 'North-West' quadrant, families whose practices rely heavily on carbon despite their awareness and acceptance of the objective of neutrality. These are families that are likely to commit, but who need help (the disadvantaged) or have not yet made a start (the privileged).

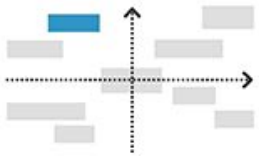
Stéphanie
Age 41

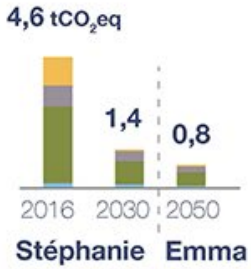
Théo
Age 13

THE DISADVANTAGED

Dynamics of change

The optimisation of resources (transport, housing) allows Stephanie to free up time for the activities she values (principally food-related).





Stephanie spends her life running.
Running after the passing time. Running after the dreams she no longer has. Running in the cold and the night to get to Saint-Denis Hospital where she works staggered hours as a care assistant. Running again to take Theo (her 13-year-old son) to football. Always running… Her life is a daily Olympic event. On her days off, she collapses exhausted on the sofa in her little apartment in Porte de Choisy. Stephanie has just one dream: to leave Paris to go south. The south, the south…She repeats the words like a mantra, like a promise of happiness. Images from postcards fill her mind…She falls asleep to the sound of cicadas. Tomorrow is another day.

Stephanie stands firm, public services make her life easier.
Stephanie has worked at Saint-Denis Hospital as a care assistant since 2014. Through the APHP Company Mobility Plan initiatives, in 2025 she finds an equivalent job at the **Pitié-Salpêtrière Hospital** closer to her home. The "big data social" programme which matches social housing data with commuting needs has identified Stephanie as a priority individual. This programme is part of a more general approach that tries to bring jobs and the workplace closer together. In particular, financial assistance is offered for relocation. Theo studies for a Vocational Baccalaureate in Vehicle Maintenance at the Orly Industrial Training Centre. In 2022, Thierry takes Theo on as a workman. He takes over Thierry's garage in **2032**. In 2028, Theo meets Léa: the daughter of a customer. They set up house together in the 15th district. In **2033** and **2035**, Léa gives birth to Paul and Virginie. The couple separate in **2045**. Stephanie works until **2044**. The legal retirement age is now 69. She no longer feels independent since she became aware of her Alzheimer's in 2045. In **2048**, Theo places his mother in the **Moncley Alzheimer's Home**, close to the high-speed train station in her native Doubs. She hardly ever comes to Paris and isolation accelerates the disease.

March 11 2050, a campaign day for the whole family
Emma is a candidate in the March municipal elections. She has chosen to be involved in public action after suffering acute asthma attacks as a child. Her partner Gabriel, is a language programmer and spends a lot of time caring for Victoire. Their daughter was born after four years of IVF attempts and has just celebrated her first birthday.

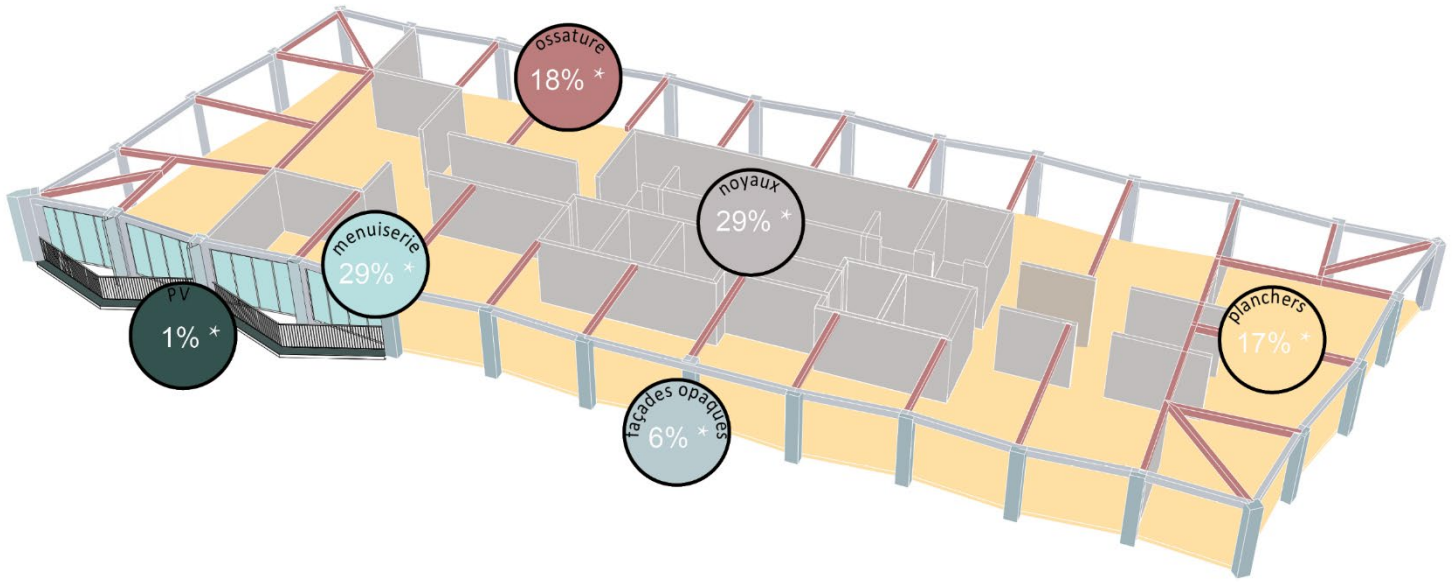
BRUNESEAU

A new district linking up Paris and Ivry, embracing the boulevard périphérique to make it a genuine mixed-use urban habitat, the Inventer Bruneseau project adopts a clear low-carbon posture, in line with Paris City Hall's Climate Plan goals.

Timber to be used as a structural material in high-rise buildings.
The desired outcome is to replace 50% of the volume of concrete by wood.

The design of a 'carbon-oriented' energy smartgrid, to optimise the actual carbon footprint of the district.

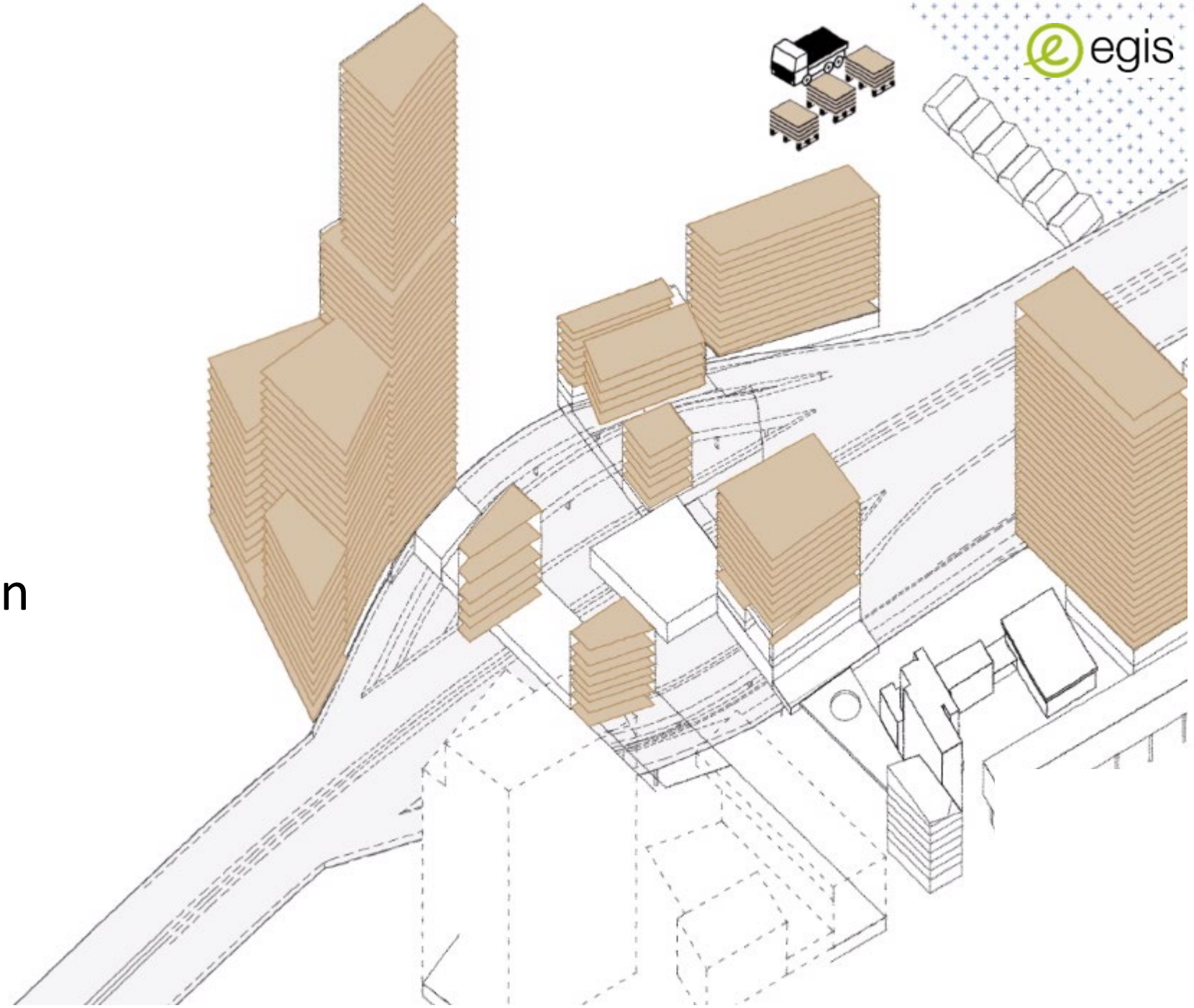
High-rise Ecological Design



CL

10,000 m3 of structural timber

One of the largest carbon sinks in Europe



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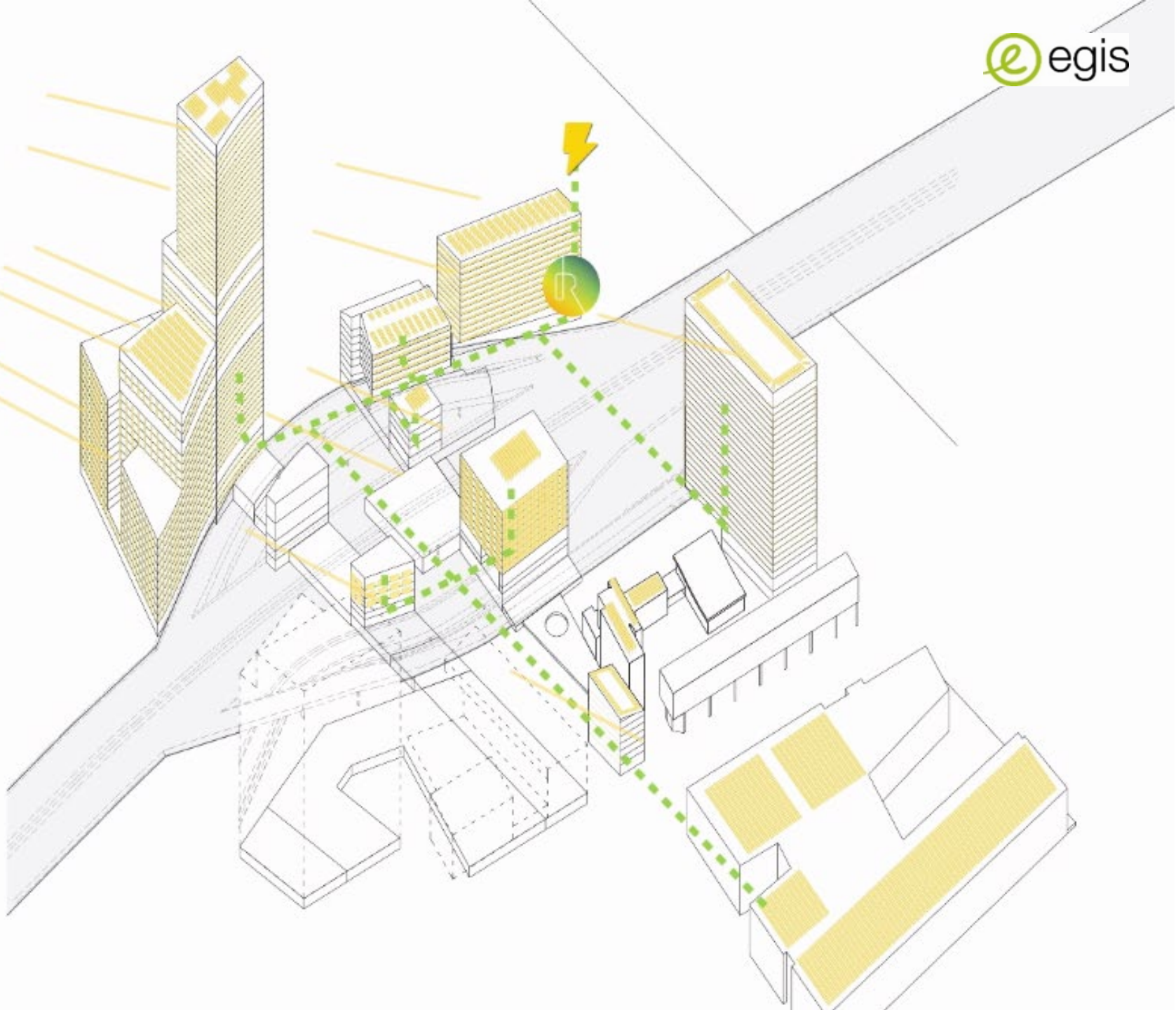
8300 m2 of photovoltaic

Regeneration investment in peripheral urban areas



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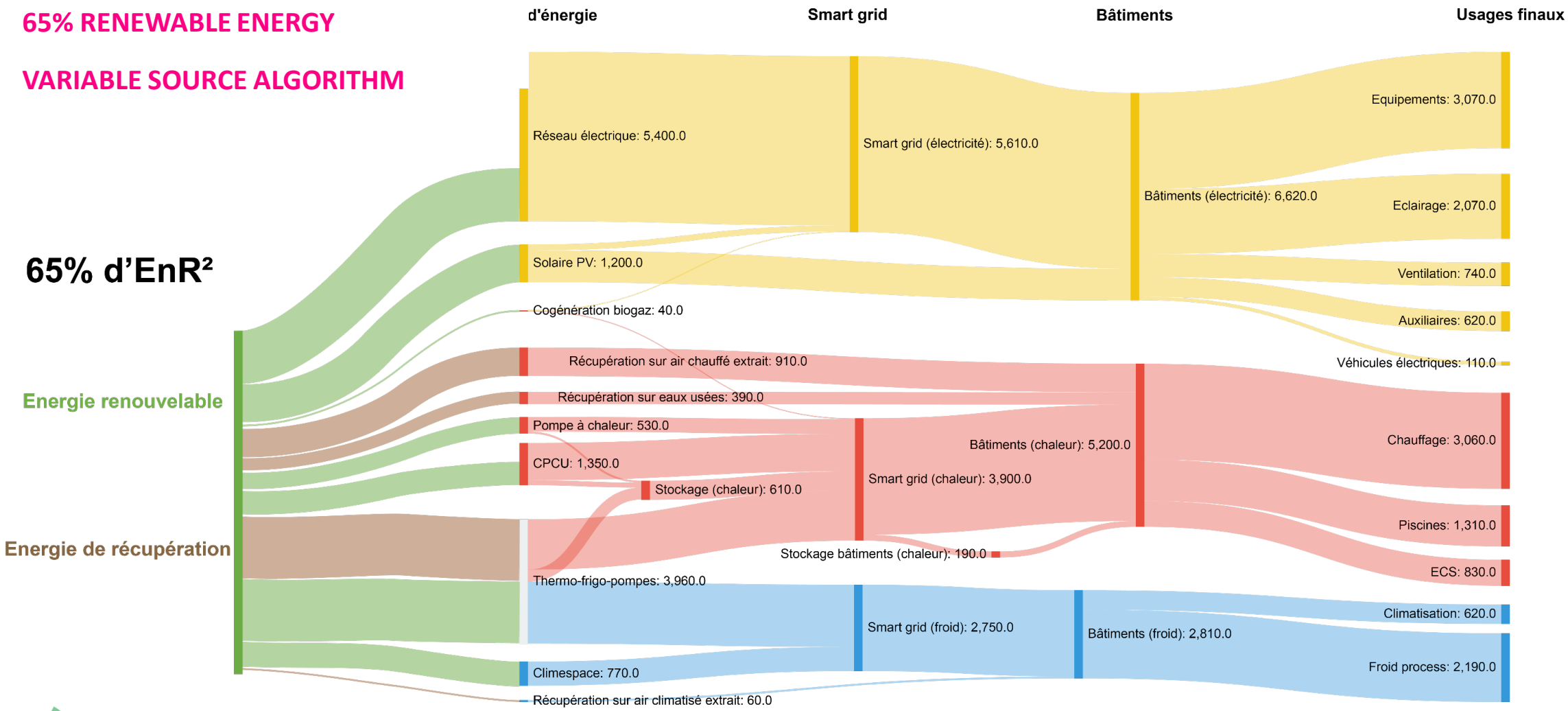
A Low Carbon Smart Energy Grid

65% RENEWABLE ENERGY

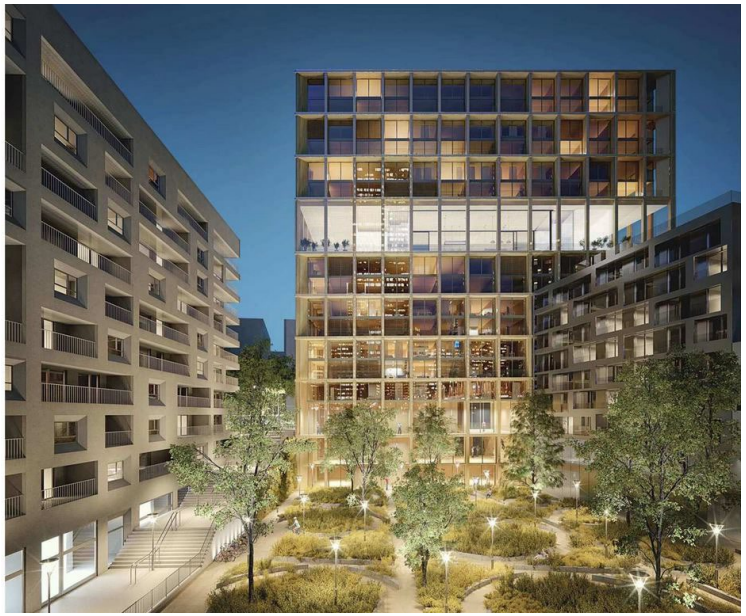
VARIABLE SOURCE ALGORITHM

65% d'EnR²



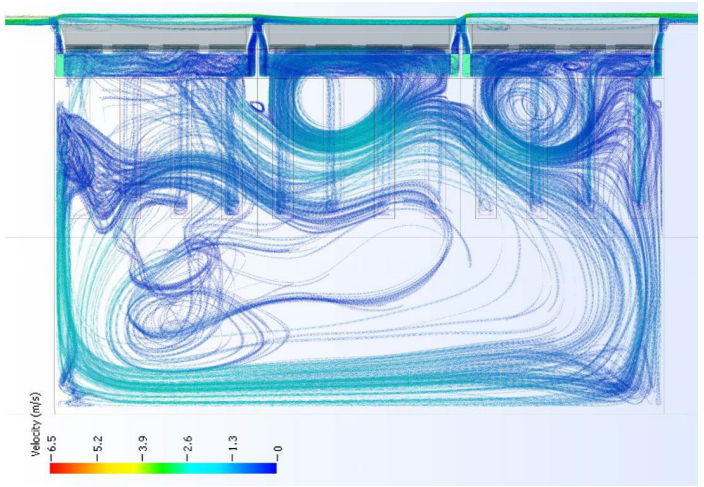
WOOD'UP

The project is a 17-floor student accommodation building with a structure made entirely of wood.



MONTPARNASSE TOWER

In 2030, the city of Paris will be able to breathe again. In osmosis with the climate, the wind, the light of the sky, the Montparnasse tower will be a tower of its time.

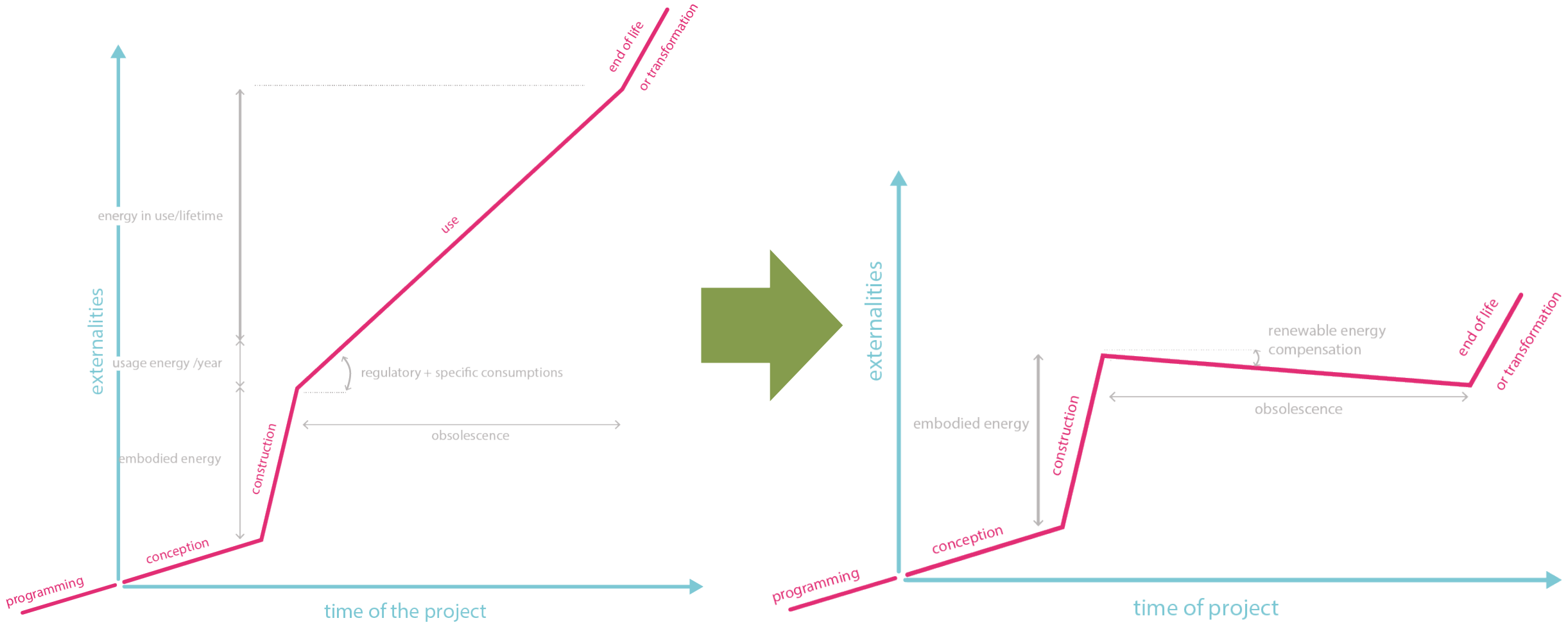


RE2020

Energie – Bioclimatisme – Carbone – Confort

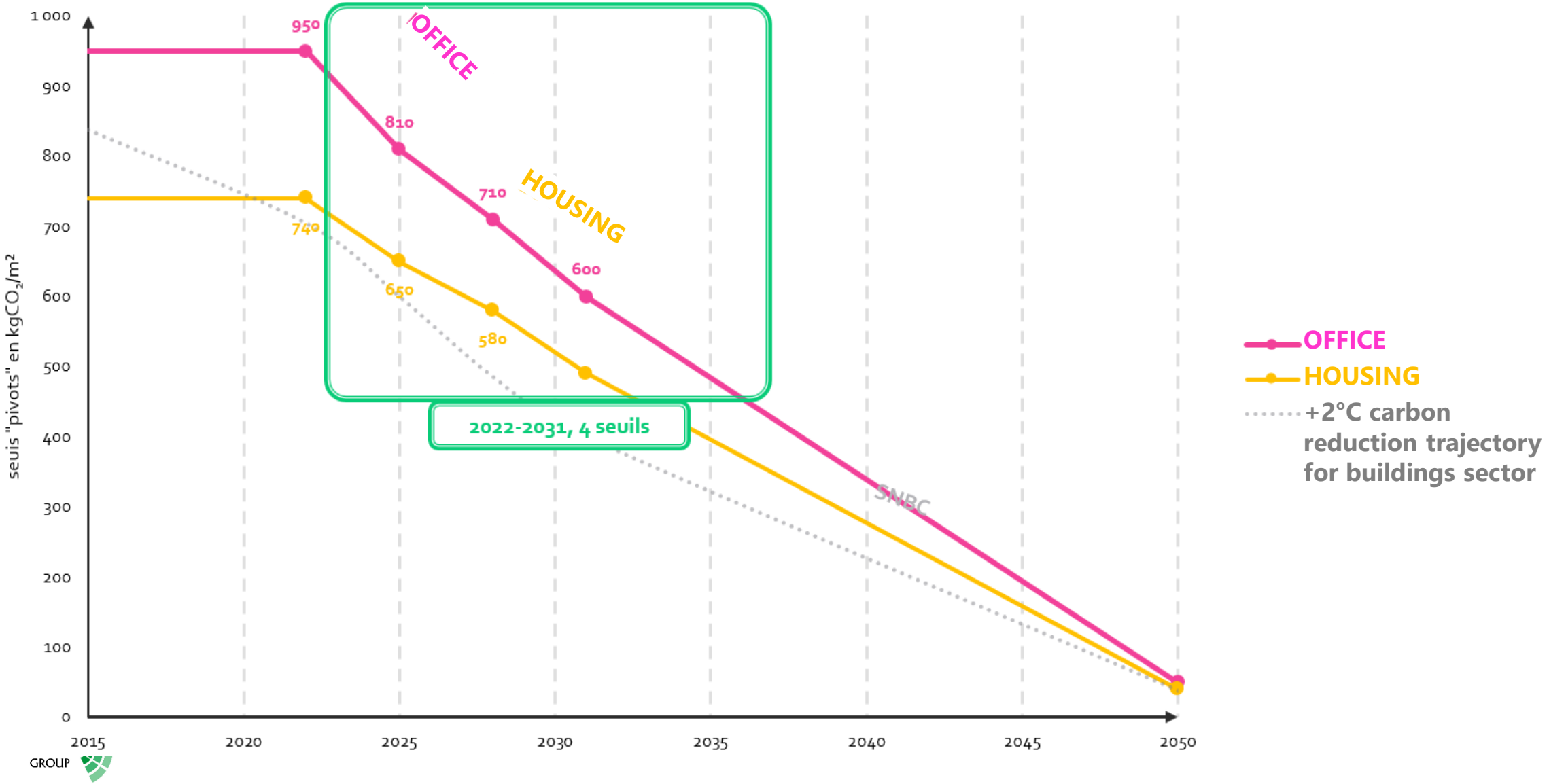
Evolution of the carbon footprint of projects

From use energy to embodied energy



Carbon trajectory

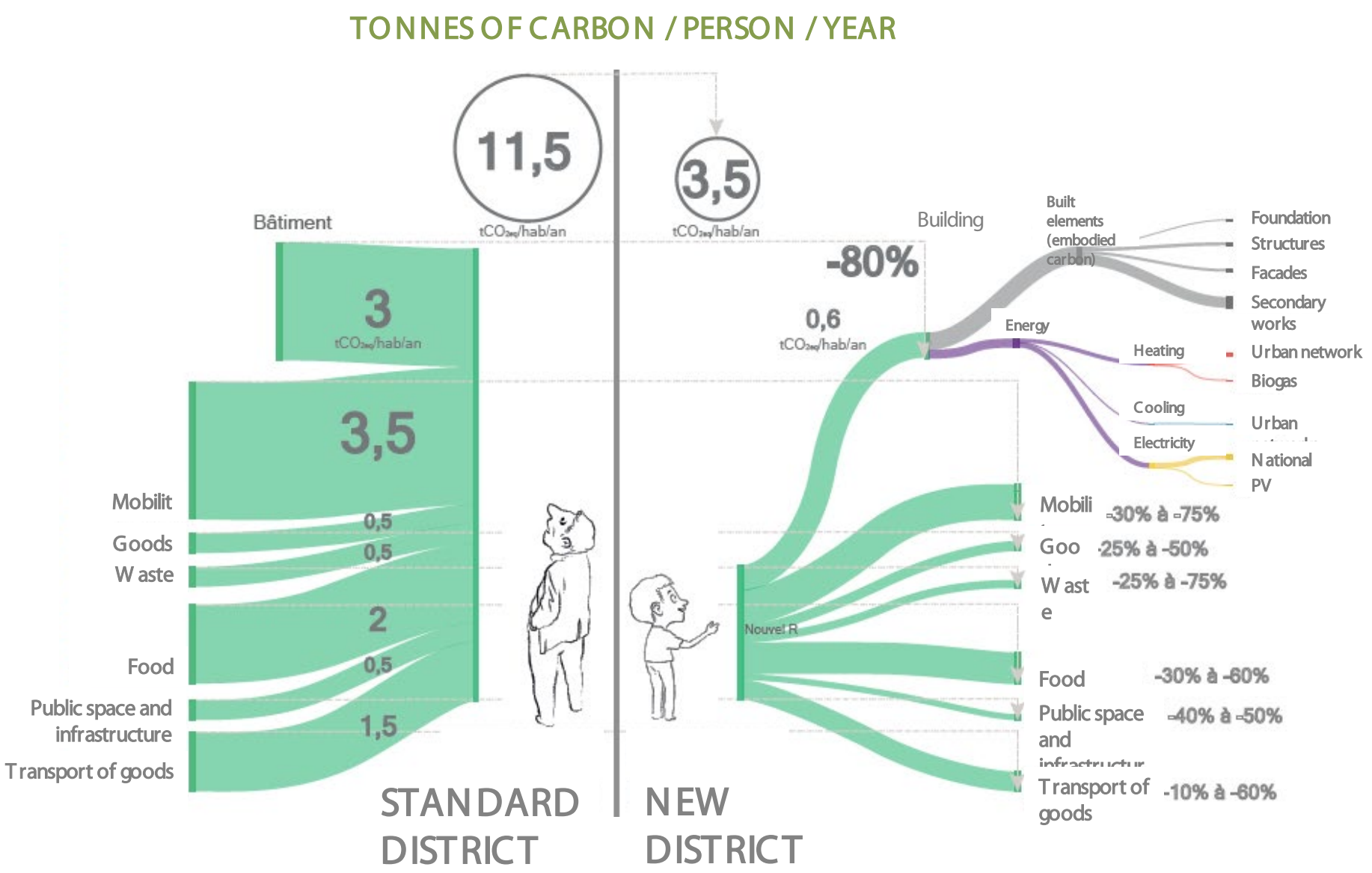
Evolutions In Regulations Thresholds



Next step initiatives

- A label to distinguish districts with an exemplary carbon footprint
- A performance-based approach: quantifying and limiting the carbon footprint
- Looking beyond buildings to users and their mobility, food and consumption practices

District Scale Carbon Reduction



Head Quarters : Forestry commission (ONF)

Design

+ Client requested a timber building

+ Constructor already there in design stage facilitates the choice of construction products

+ reuse of materials

+ 620m² PV panels installation

+ Balance found between carbon footprint and energy production

+ No cooling system but a refreshing ventilation system

- PV panels embodied carbon

- Large window areas

Construction

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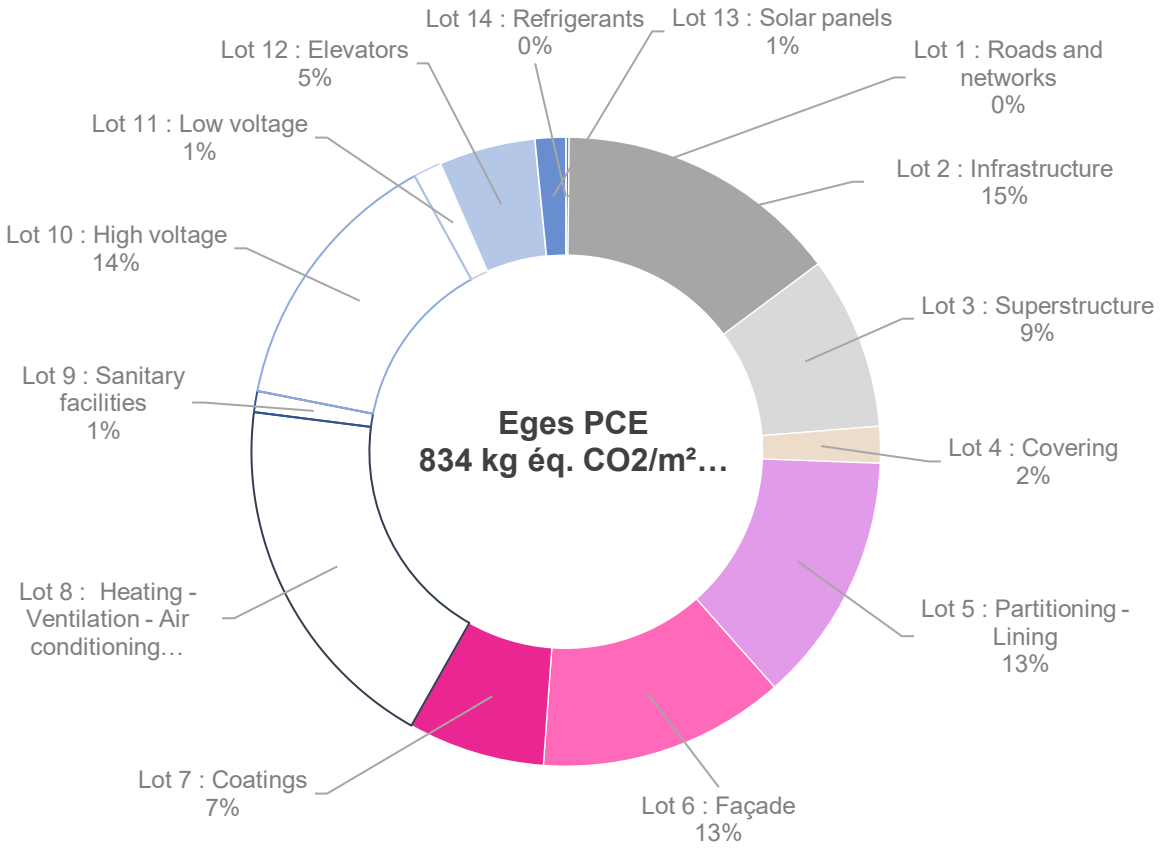
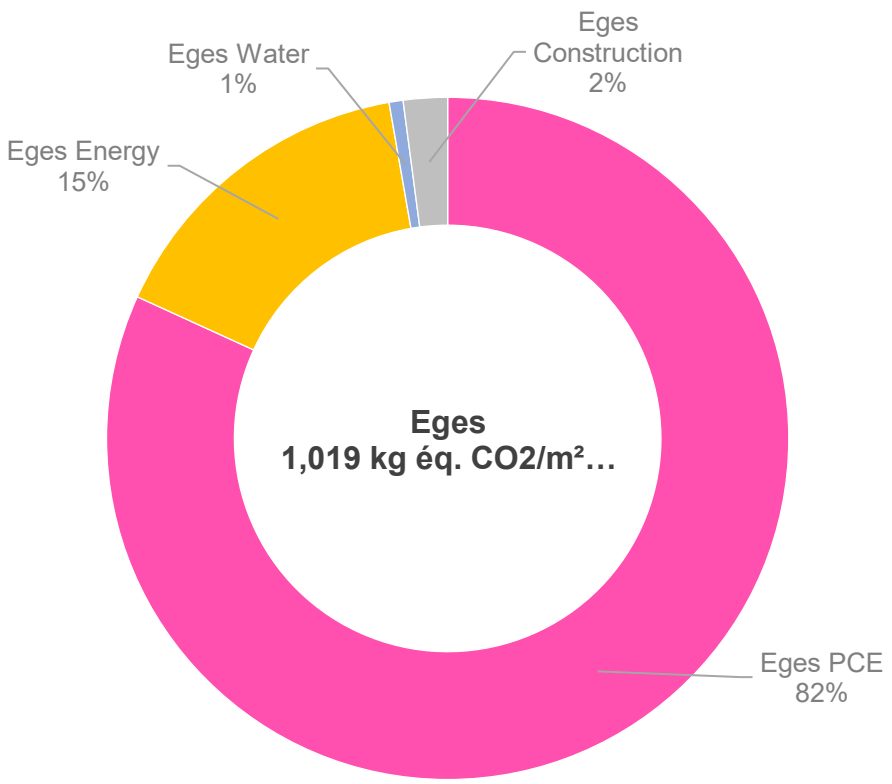
ONF Global Carbon Analysis

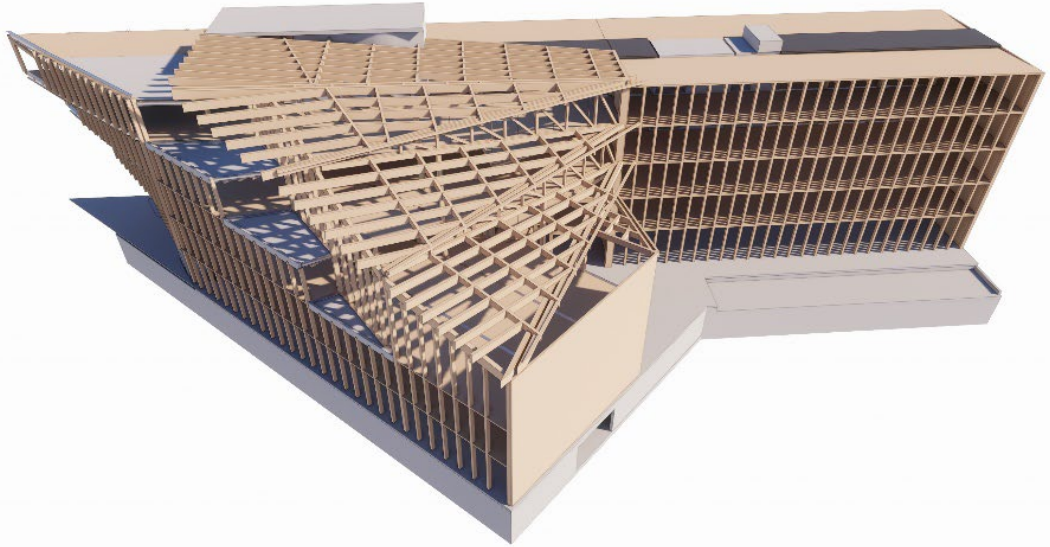
PCE contributors

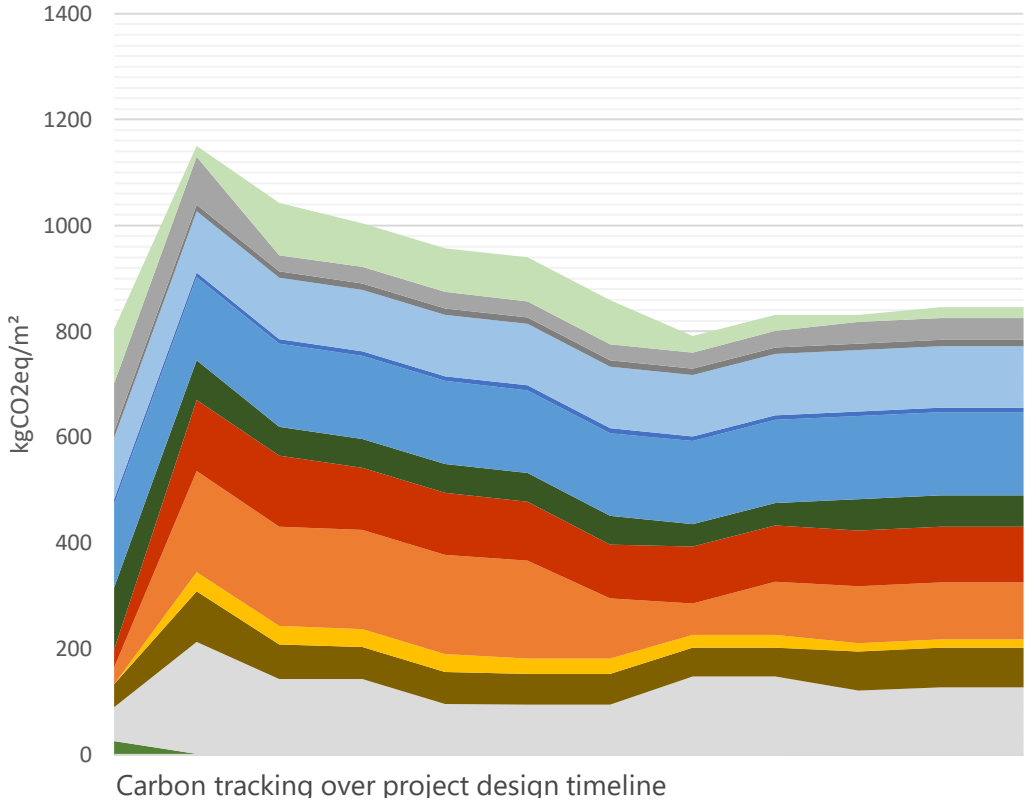


Overall carbon balance of the project



Head Quarters : Forestry commission (ONF)





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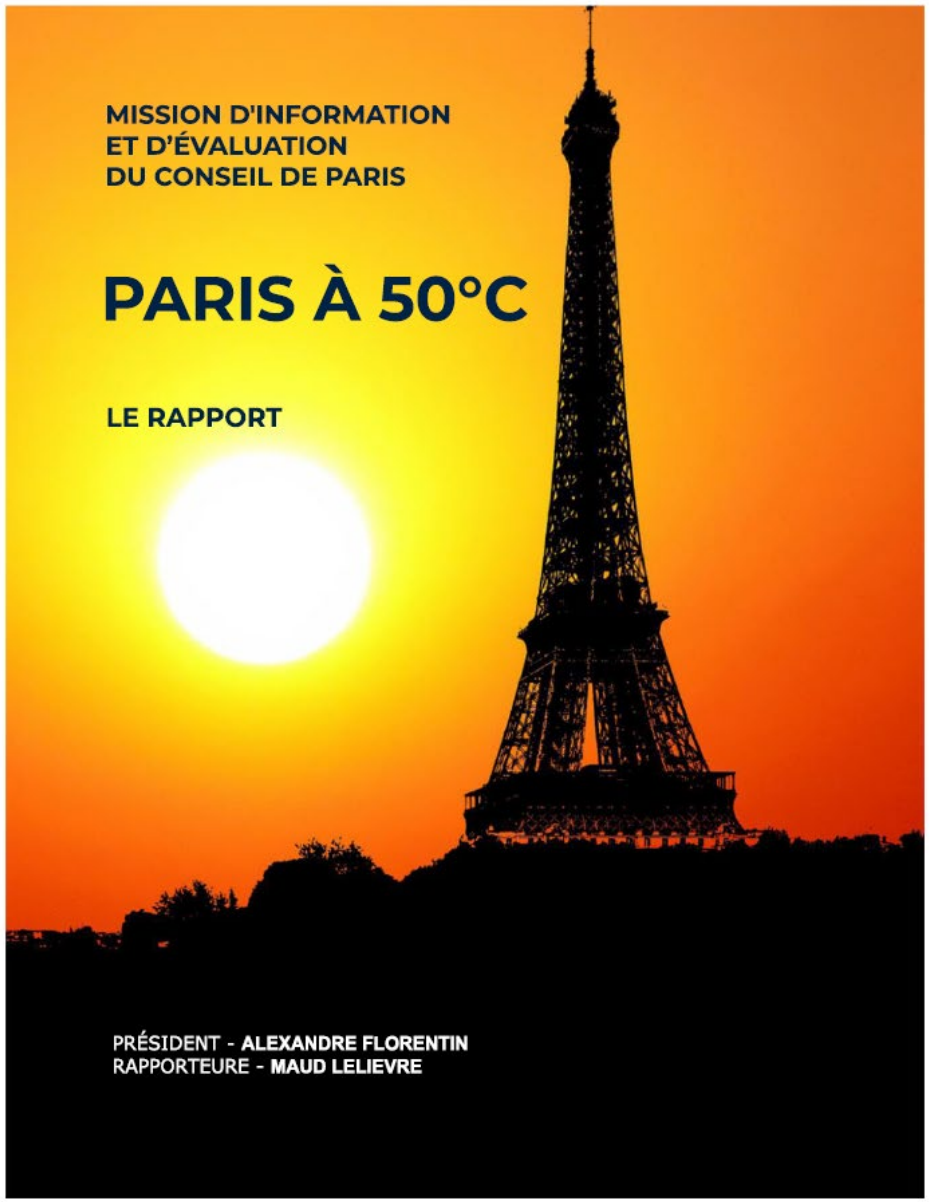
VILLE DE
PARIS



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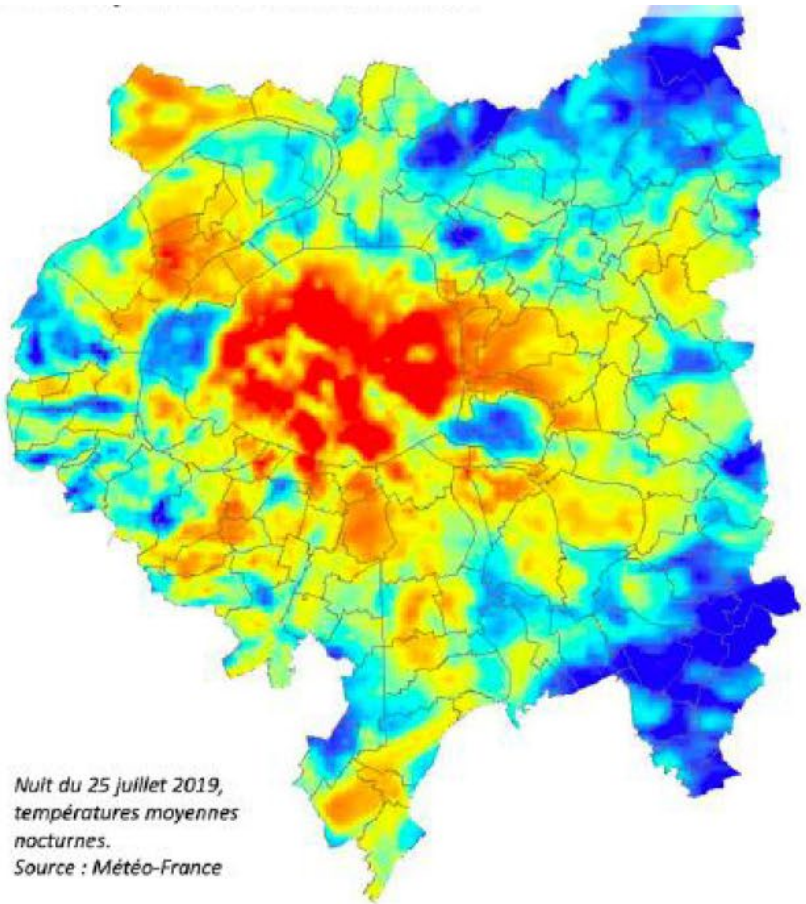
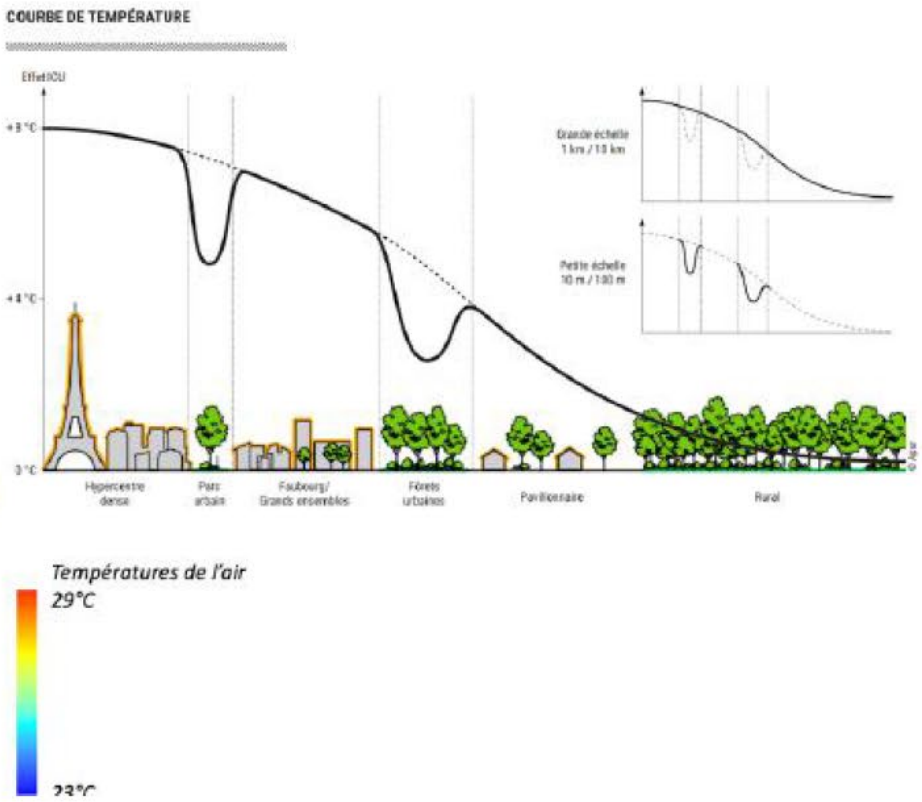
CLIMATE ACTION
GROUP

PLU BIOCLIMATIQUE



Nuit du 25 juillet 2019, températures moyennes nocturnes.
Source : Météo-France



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Carbon neutrality, a sustainable city objective

Without seeking to present a zero / zero carbon / net zero / neutral etc... balance sheet, or seeking to "offset" emissions, the effort made by a company, a district or a building must be managed according to **3 distinct pillars**:

A. Strive to reduce as far as possible the **emissions generated by the district** within the area under its control works and energy supply

B. Create conditions that will **enable others to avoid emissions**
users, local authorities, neighbours, the supply chain, etc.

C. Maximise long-term **carbon storage, inside and outside the neighbourhood**
In bio-sourced products and green spaces, and in local areas

Breakout Workstreams #1

1. Creating a smart, sustainable and efficient building using real time data? Paul Sheedy, Unifi.id

MISSION

Target Net-Zero Now

unifi.id

Building Intelligence.

KEEP CALM AND CARRY ON

PANIC NOW AND CHANGE FAST

You cannot manage what you cannot measure

Providing actionable data is the foundation needed to understand your building and substantiate your NetZero reporting.

Data → Information → Wisdom

unifi.id

Building Intelligence.

The unifi.id Solution

Multiple occupancy technologies, meshed with environmental sensors to maximise efficiencies in corporate buildings.

The actionable data that allows building managers to reduce wastage by up to 30% immediately, with an RoI as low as 32 days.

unifi.id

Building Intelligence.

Where to focus:

Security

Security are notified when unauthorized breaches occur.

Reception

Occupant profiles instantly appear to reception staff on entry.

FM Optimisation

Data led FM based on needs not schedules, alerts triggered automatically.

Safety & Evacuation

Automated occupancy and safety evacuation monitoring in real-time.

NetZero Targeting

Occupancy data meshed with environmental data enables efficiency in buildings.

unifi.id

Building Intelligence.

unifi.id

Building Intelligence.


40.1% of UK energy comes from fossil fuels
Only 13.6% Globally comes from Renewables
unifi.id
Building Intelligence.


Estimated 40% of buildings not on LED
unifi.id
Building Intelligence.


LandTech
pathr.ai
coyote SOFTWARE
emissis
SPACEFLOW
LAVANDA
DISRUPTIVE TECHNOLOGIES
CoreLogic
flatfair
PAVEGEN
Realyse
LANDBAY
nested
bricklane.com
Trussle
BRAINBOX AI
Office App
demand logic
VTS
mallcomm
unifi.id
Building Intelligence.


Can we Change?
unifi.id
Building Intelligence.

Tech Companies

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Building Intelligence.

Corporates

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Building Intelligence.

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Building Intelligence.

Sixty-Two Floors

+

13,000 occupants

↓

How many Two Stairwells?

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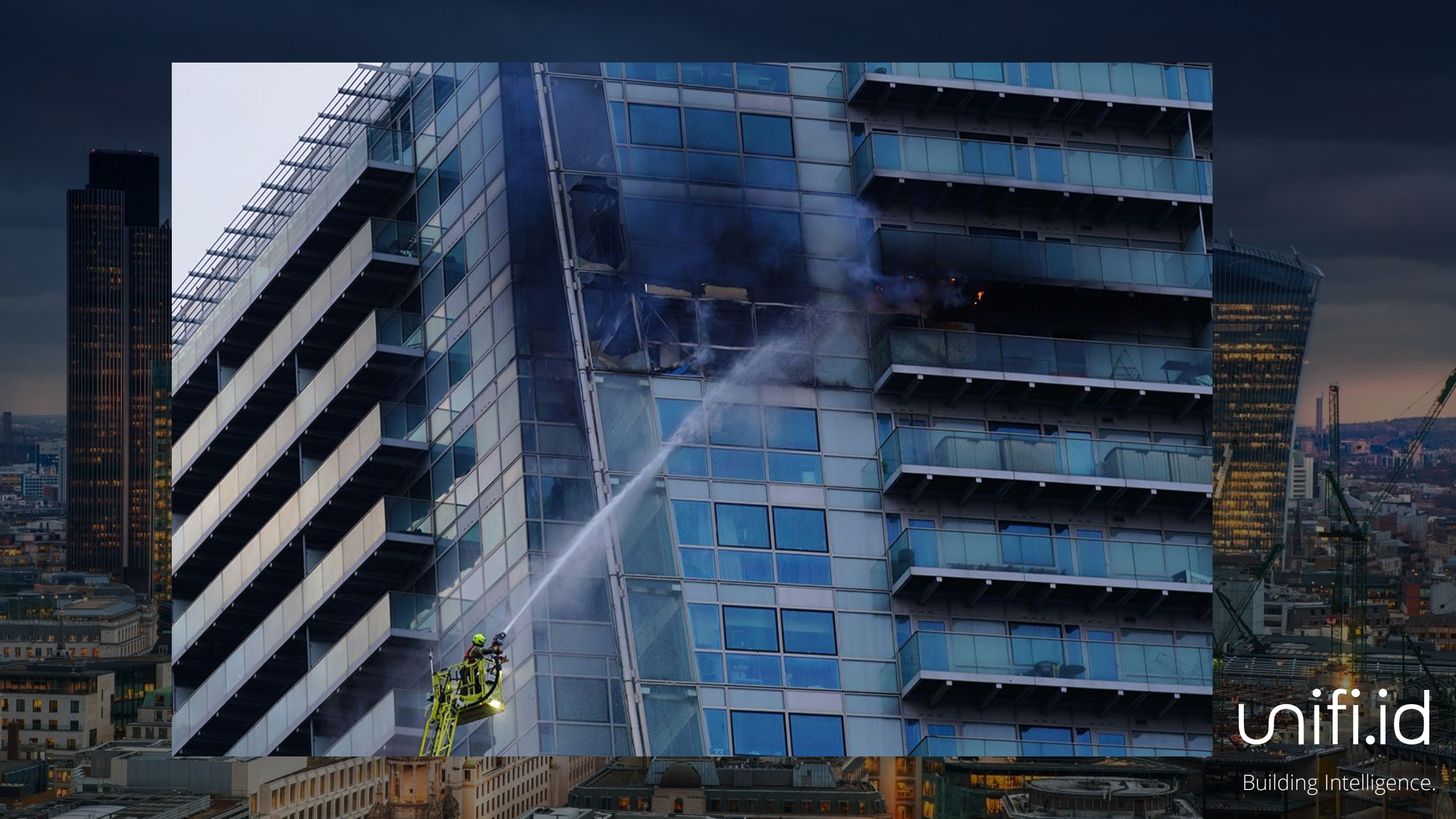
Building Intelligence.



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Building Intelligence.

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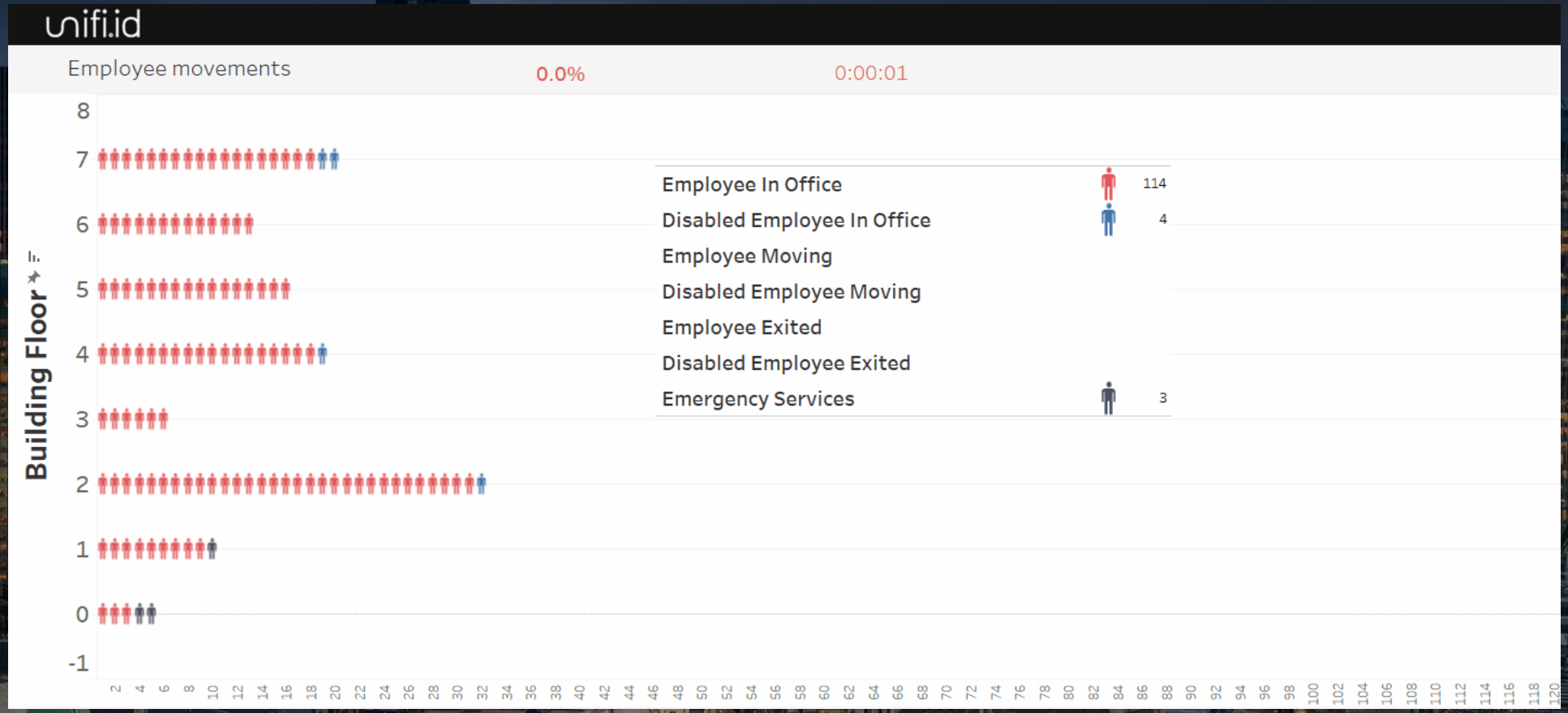
Real-time Fire Evacuation Drill Using Occupancy Data



Occupancy Data allows the highly efficient evacuation of any building

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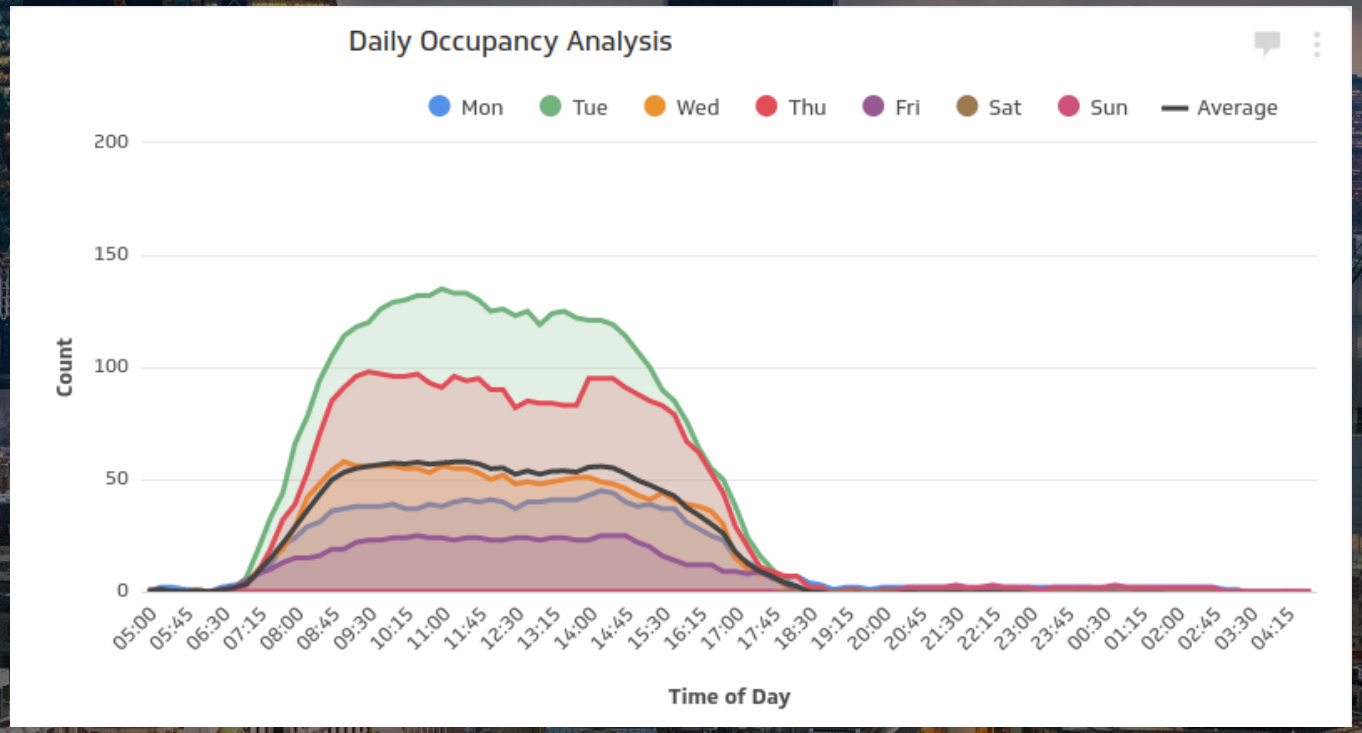
Building Intelligence.

Occupancy Levels Versus Potential Total Capacity.

Our tech allows you to understand the occupancy of buildings.

Tuesday has 141 people in, Friday 24. The average sees 56 occupants.

Doesn't seem so bad, does it?



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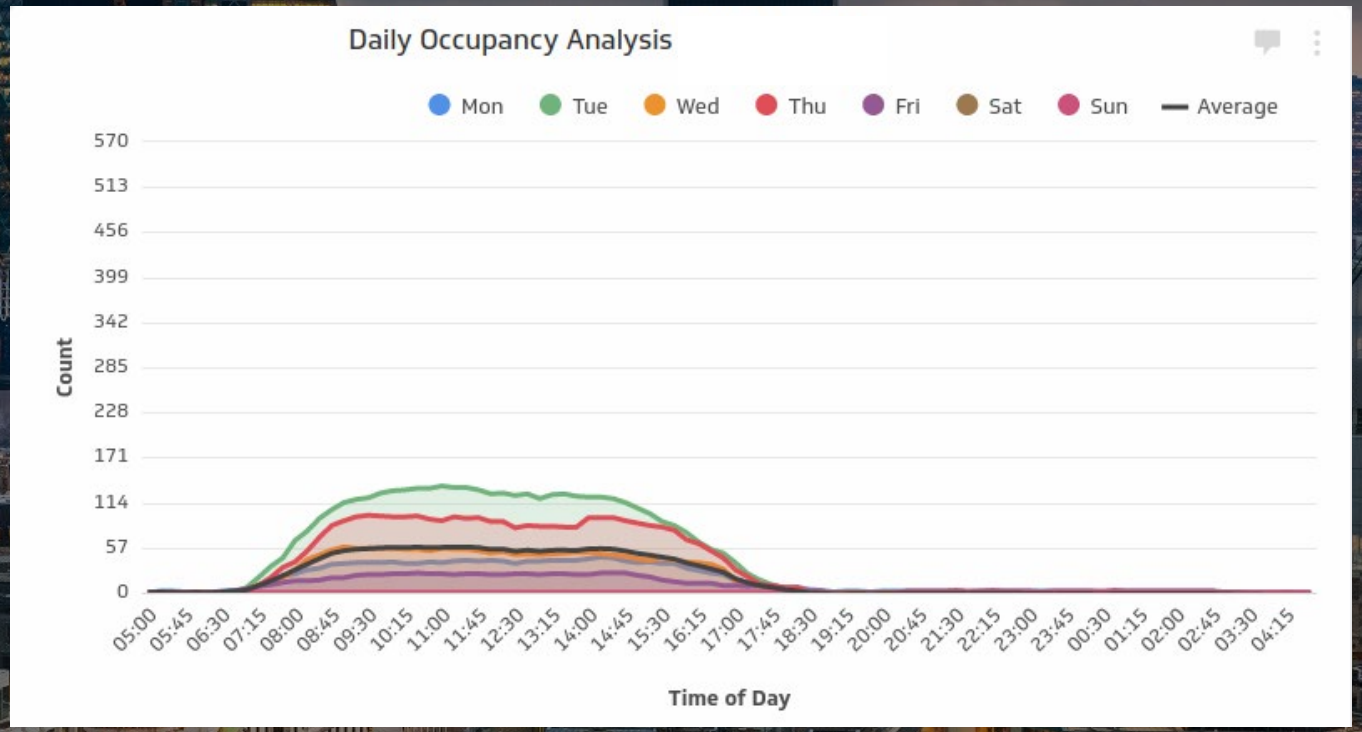
Occupancy Levels Versus Potential Total Capacity.

Now, look at the bigger picture...

Compare occupancy levels to the potential capacity, a very different conclusion.

Data allows for informed decisions on day-to-day operations and FM.



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Anonymous Sensors for Efficient Facilities Management

Anonymous usage data allows smarter FM, based on usage not schedules.

In 2023, it is time to change, the “New Norm” has delivered a need for change now.

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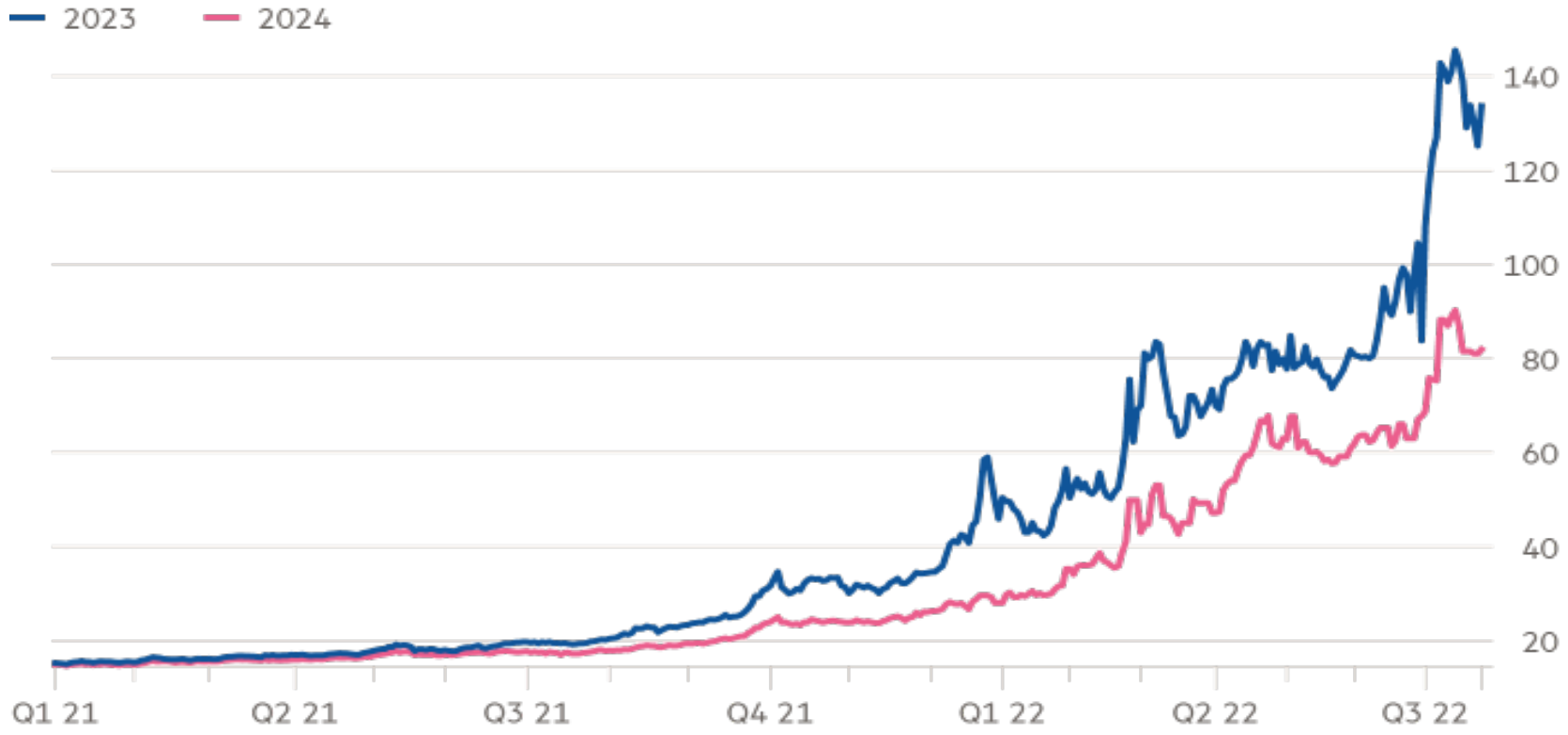
European gas prices expected to remain elevated for years

Price for yearly forward (€ per MWh)



Source: Refinitiv

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The A.I.M.S. Strategy

Assessment → Implementation → Measurement → Sharing

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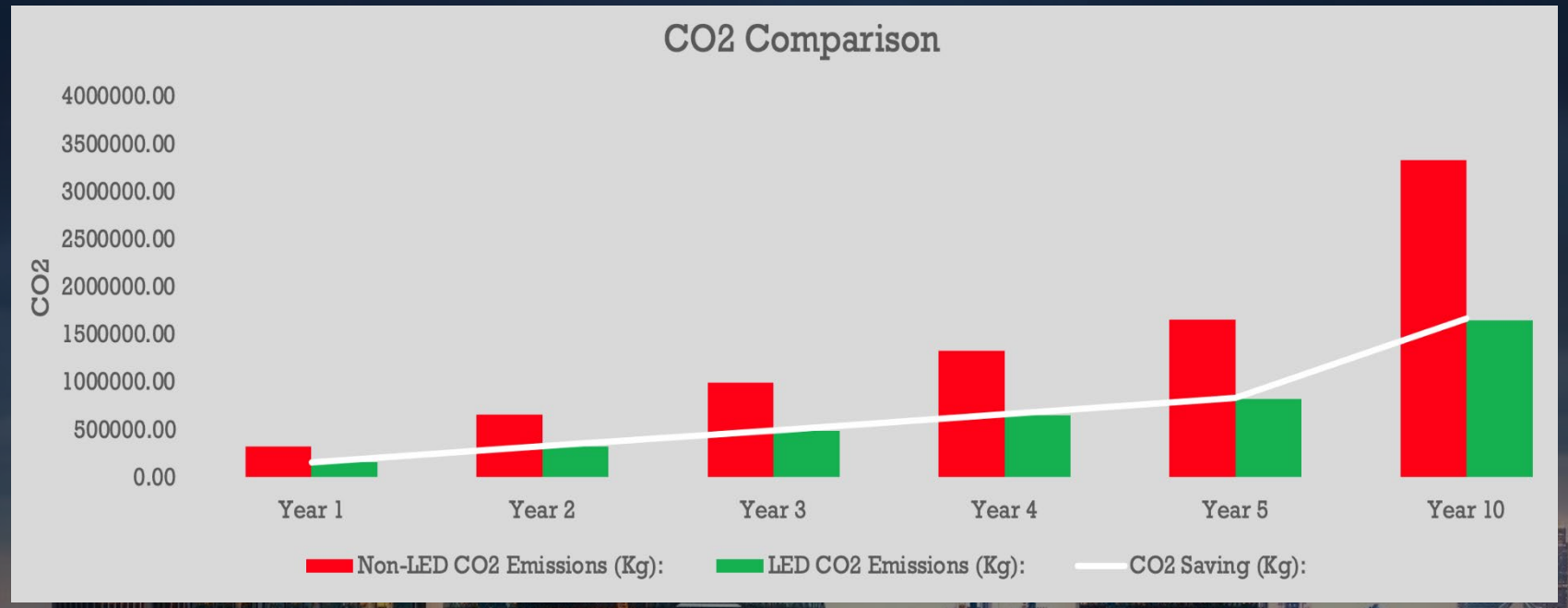
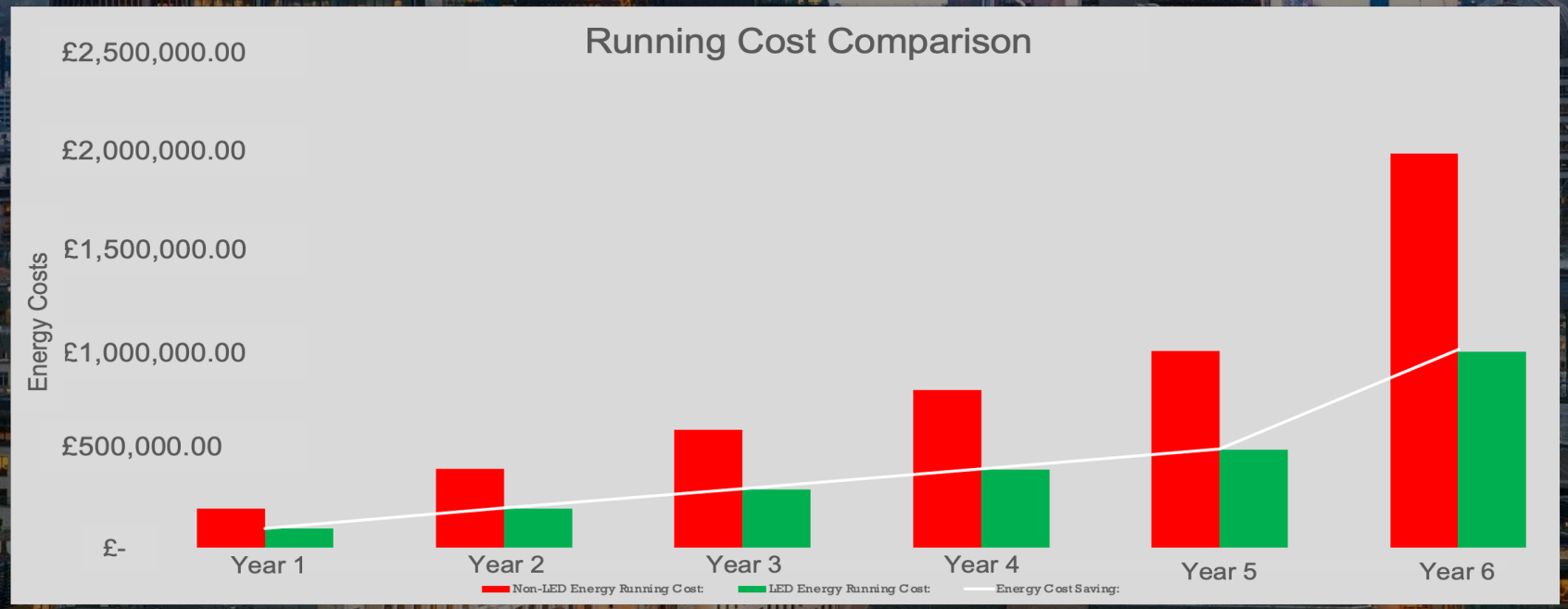
Building Intelligence.



Year 1: 167,971.32 Kg

Year 5: 839,856.59 Kg

Year 10: 1,679,713.19 Kg



Year 1: £99,171.26

Year 5: £495,856.29

Year 10: £991,712.58

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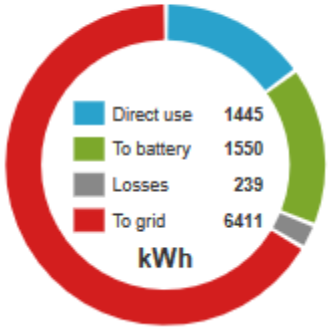
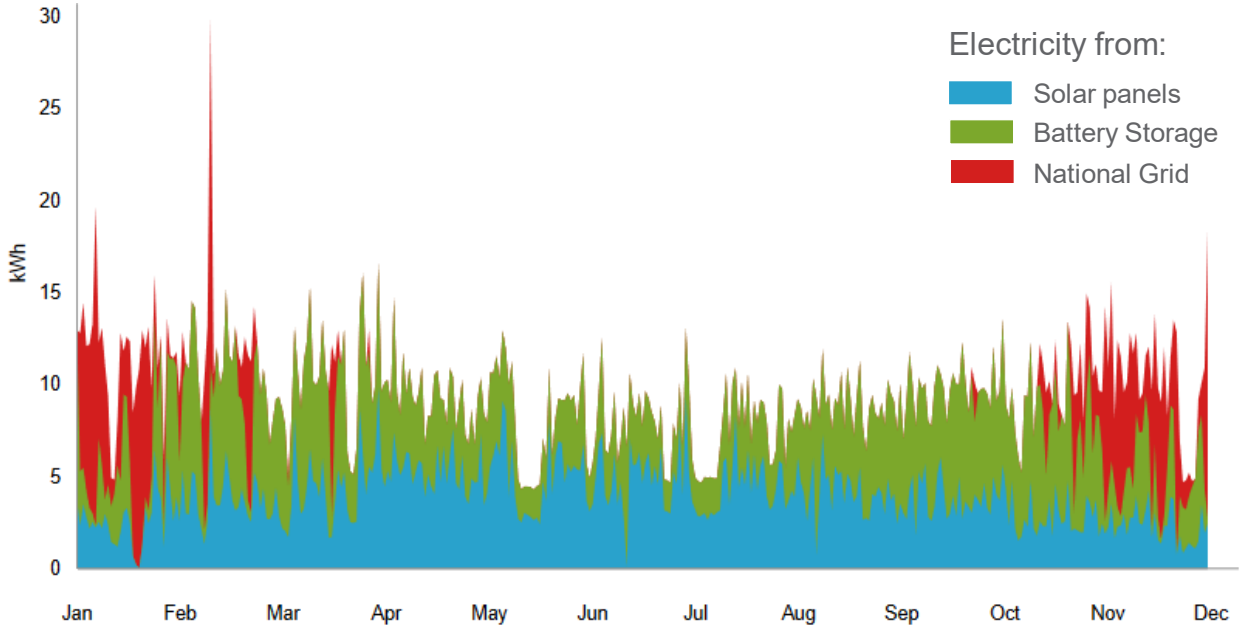
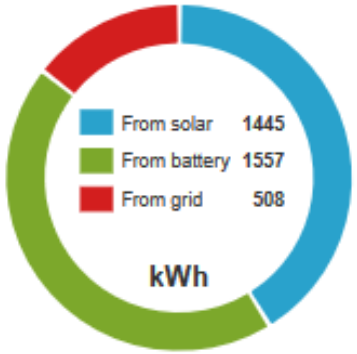
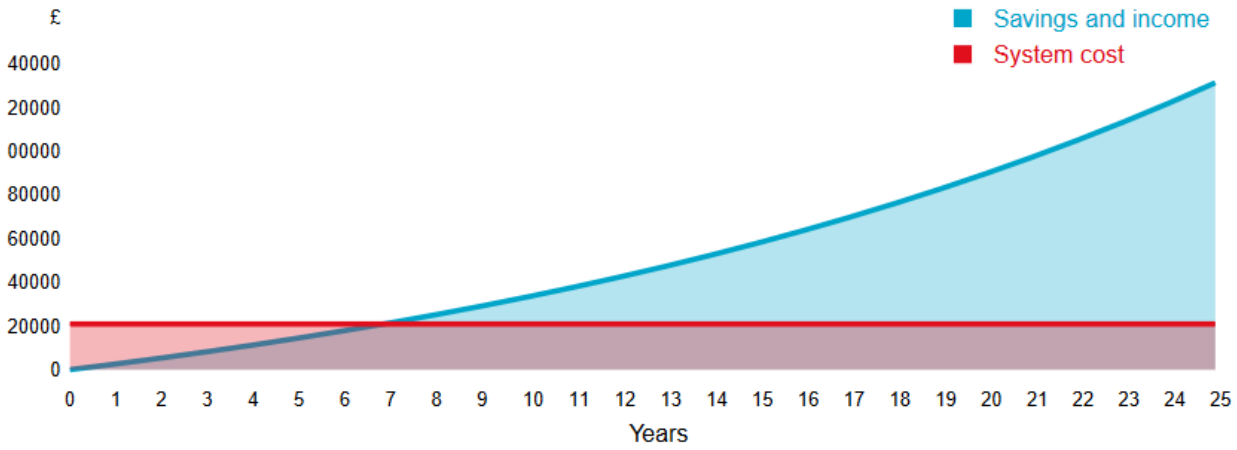
Annual Generation





Annual Consumption





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Why AI Matters
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Objectives of using Artificial Intelligence for Predictive Analysis

1. Examine the impact of external stimuli (e.g., weather, public holidays, public transport strikes) on occupancy levels

2. Accurately predict a 48-hour forecast for building occupancy for changes in BMS settings

METHODOLOGY

Multi-step forecasting strategies

Recursive Benefits:

+ Simplicity
+ Single model required

Recursive Drawbacks:

– Past errors influence future predictions exponentially

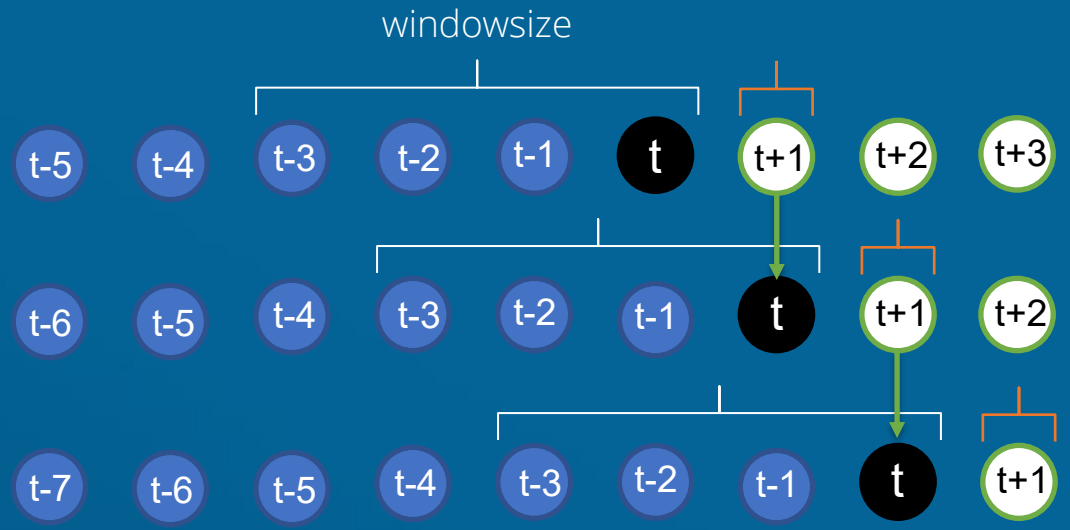
Direct Benefits:

+ More accurate

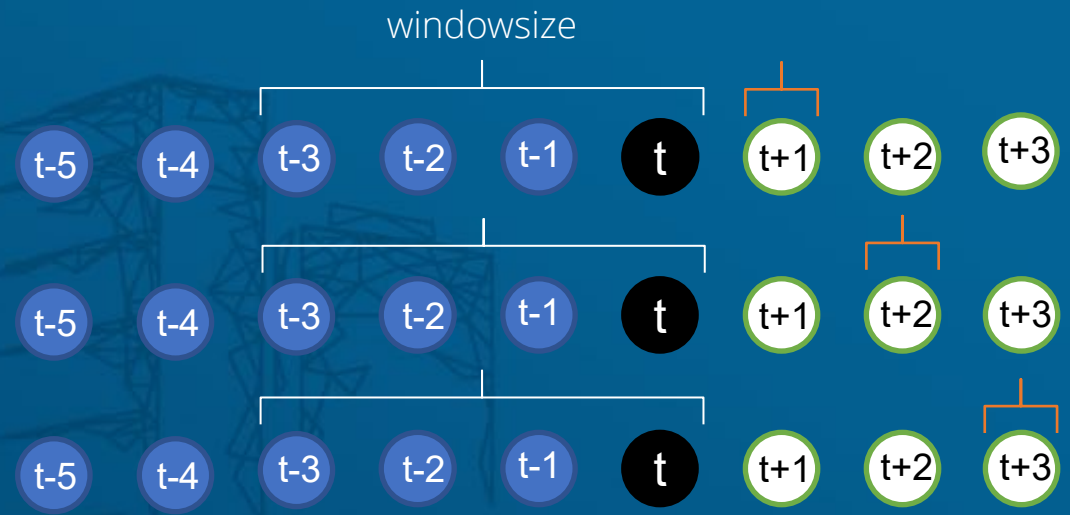
Direct Drawbacks:

– Computationally expensive

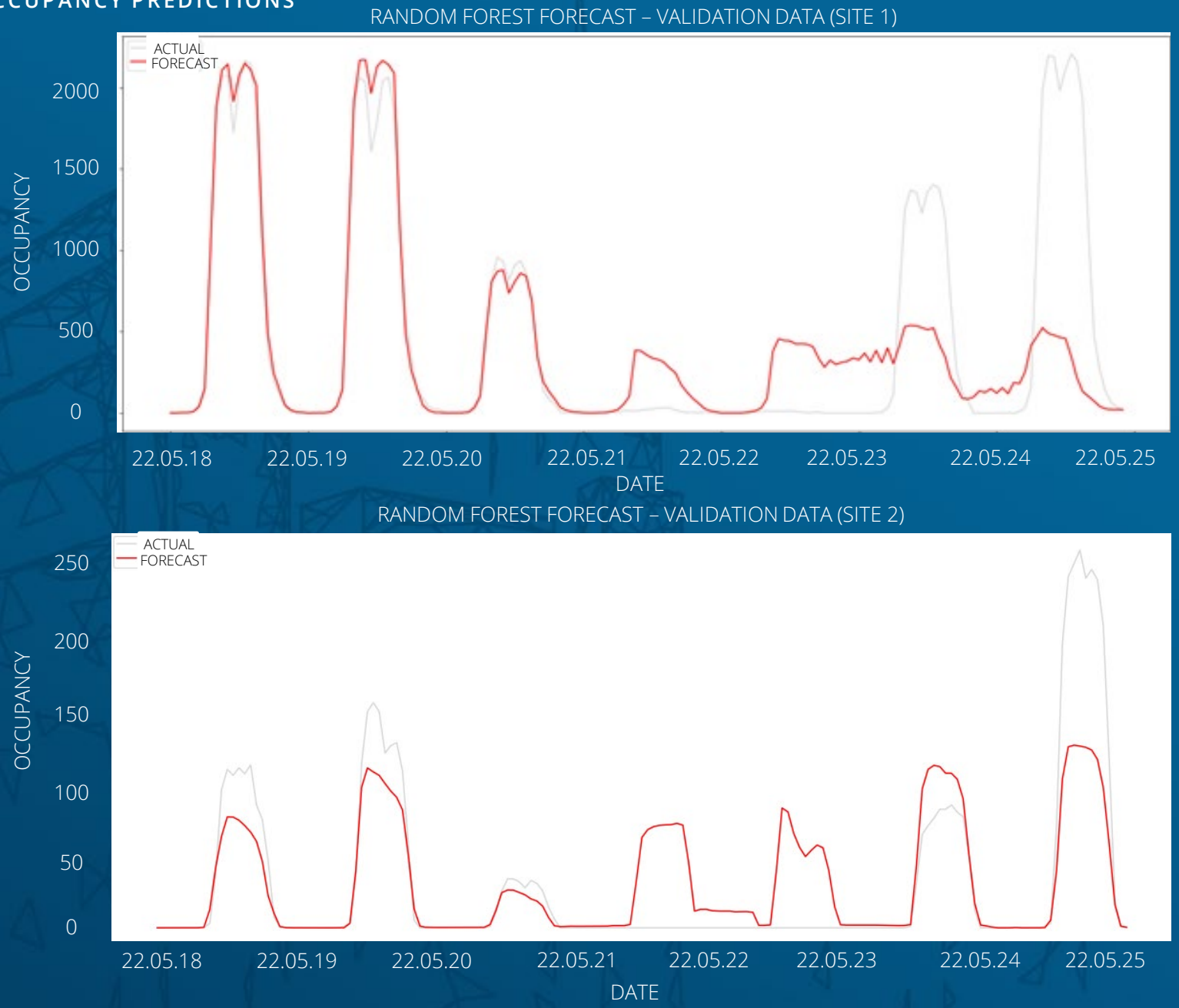
RECURSIVE



DIRECT



RANDOM FOREST OCCUPANCY PREDICTIONS



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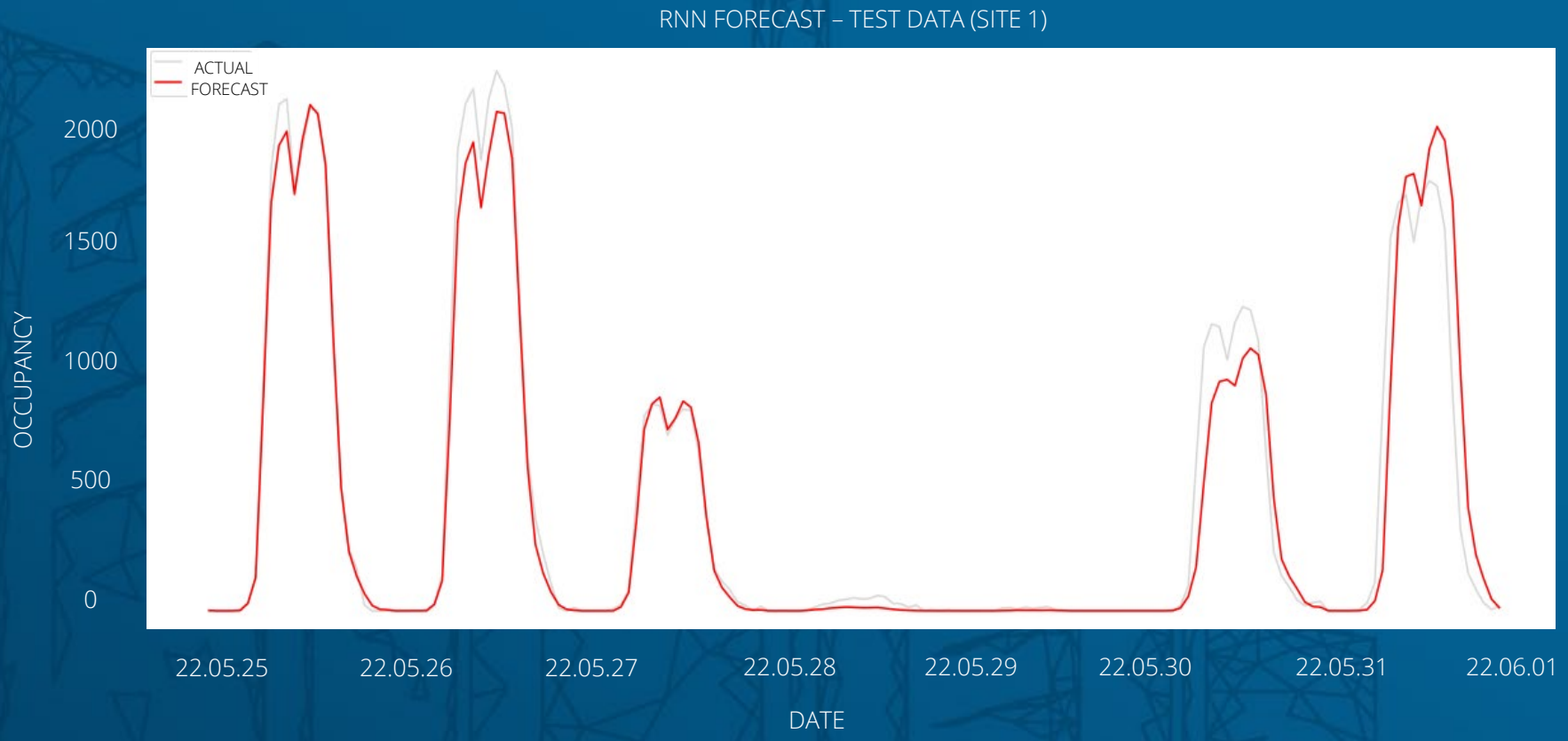
RNN OCCUPANCY PREDICTIONS



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SUMMARY

What we learned

+ Recurrent Neural Networks (RNN) capture the data the most efficiently for accurate forecasting

+ This AI model predicts occupancy within 8% with minimal data

+ A higher data volume equals a more accurate forecast

+ Shorter time horizons equal more accurate forecasts

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MISSION

Target Net-Zero Now

Our mission is to provide the actionable data to bolster your bottom line and substantiate your NetZero reporting.

Don’t procrastinate or greenwash your ESG commitments.
Buildings need to cut costs and understand real usage needs

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Building Intelligence.

2. Fundamentals of the Future; time to act?

Tom Willcock, Hollis

Decarbonising public and private buildings through retrofit

Bekir Andrews, Wates Group I Jon Moorhouse Constructive Thinking Studio I Tim Freeman, Energy Specifics

Wates

LCAG Annual Conference, 3rd July 2023

Merchant Taylors' Hall

"Bridging the gap between knowledge and action"

Decarbonising public and private sector buildings through retrofit.

LIVERY CLIMATE ACTION GROUP

Introductions – Our Partnership

Presenters today:

Bekir Andrews is Environmental Sustainability Director for the Wates Group one of the leading privately-owned, construction, development and property services companies in the UK. A specialist in delivering carbon reducing new build and retrofit projects.

Tim Freeman is Managing Director of Energy Specifics Limited Energy Specifics specialising in energy efficiency building assessments and energy saving upgrades.

Jon Moorhouse is CEO of Constructive Thinking Studio Limited specialists in PAS 2035 and 2038 Design, Energy Modelling, Energy Performance Appraisals, CGI visualisations and Planning Appraisals.

Agenda:

Drivers & Challenges

The Solution: Step by step process of creating a plan for your property through to delivery and monitoring its performance.

Introductions – Drivers

Wates

A deadline of the 1 April 2023 for all rented commercial property to have an energy performance certificate (EPC) rating of band 'E' or better. Failure to achieve a rating of band “E” or better will see landlords face potential fines of up to £150,000.

Commercial buildings will be required to reach EPC C by 2027 and EPC B by 2030 in order to be lawfully let.

The new Publicly Available Specification (PAS) 2038:2021 sets out requirements on retrofitting non-domestic buildings for improved energy efficiency. The PAS defines a “whole-building” retrofit processes that supports improved energy efficiency, leading to reduced fuel use and carbon emissions, whilst improving internal air quality and comfort. It is optional at the moment.

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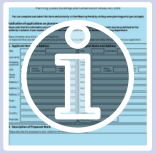
Introductions – Challenges



Any changes that affect architectural characteristics or historic interest of a historic building and are deemed “special interest” require listed building consent. Lack of detailed design information for historic buildings can therefore lead to delays in the build process as multiple additional local building consent applications maybe required as works progress and new challenges are uncovered.

Focus on specific interventions without considering their impact on whole building can lead to unintended consequences such as mould and damp. High levels of insulation often require addition mechanical ventilation.

EPCs generally provide little to no correlation of the actual energy efficiency of a building and their recommendations are often too generic.

LIVERY CLIMATE ACTION GROUP

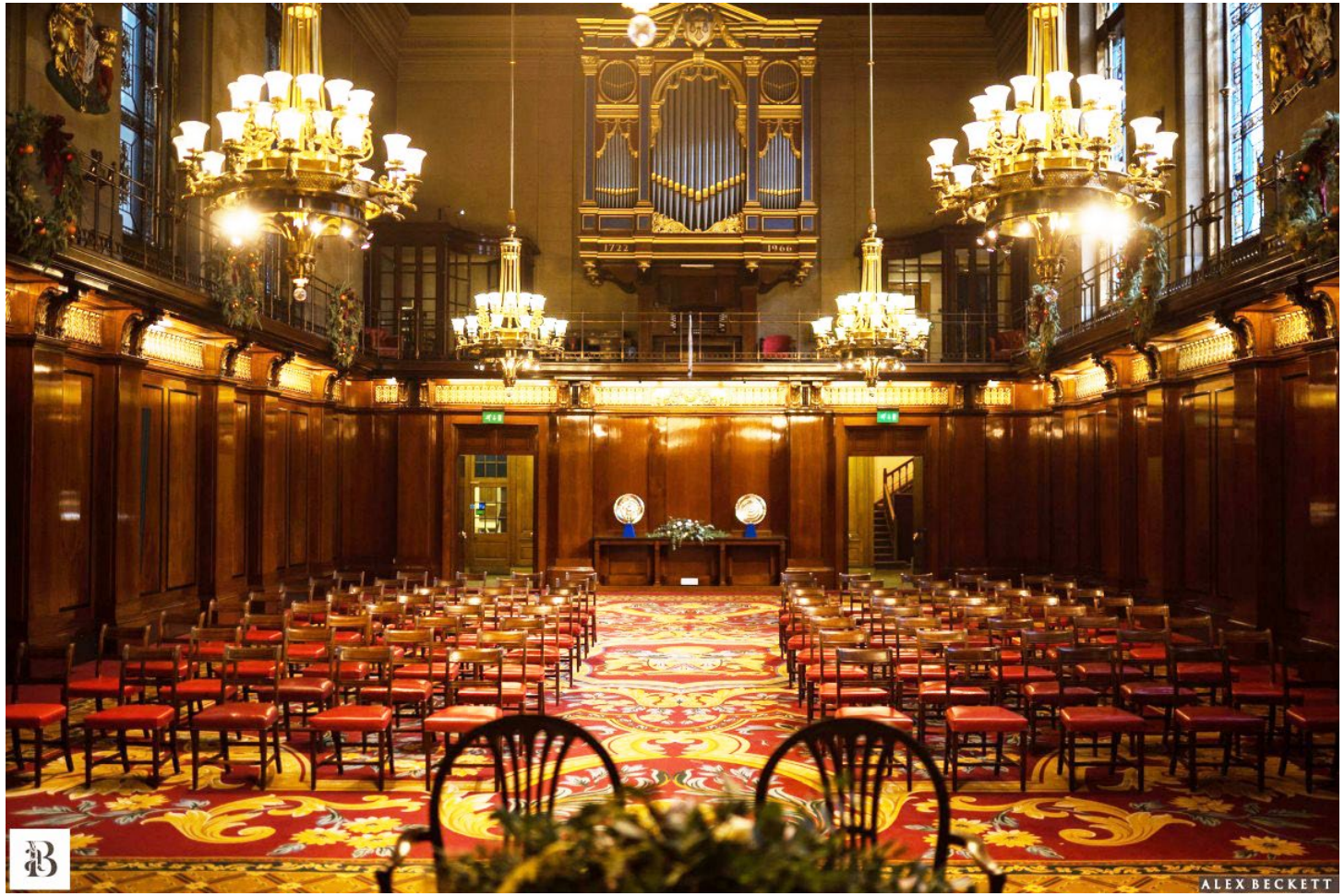
The Solution - Step by step process

STEP 1 – Landlord - Agree a project budget and environmental assessment target for the overall programme. Appoint a project team. Key roles:

- ✓ **SBEM Assessor** - Leads the assessment of the existing building to produce an Improvement Plan. The assessment includes the use of the building, its condition, energy performance, available funding and can advise on legislation.

- ✓ **Retrofit Contractor** - The plan can also include programme and cost proposals.

- ✓ **Lead Professional / Retrofit Designer** - Leads the design and specification of the retrofit measures. Creates the BIM model.



Step by step process

STEP 2 – Expert - Provide a fee to scan the buildings and validate the current EPC.

OUTPUT - Accurate LiDAR scanning of the building:

- ✓ Creates a digital twin. This can incorporate existing survey data and acts as the single point of truth for all future works to the building
- ✓ Allows for detailed building plans and schedules that can be used to order materials and allow for off-site manufacture where possible
- ✓ Feeds into planned and responsive maintenance regimes
- ✓ Gives cost certainty on the scope and quantity of works required
- ✓ Provides the platform for asset tagging elements of a building as part of the Golden Thread of information required for the new Building Safety Act.

Step by step process

Step 3 – Expert - Create a BIM Model of the building and produce scope of works which enables clear improvement steps.

Step 4 – Collaboration - Agree scope of works with the client which best meets the environmental assessment target.

OUTPUT - This will give the landlord an overview of the path to reducing energy consumption and carbon reduction'

Step by step process

Step 5 – Expert - Price and programme the scope of works and provide a return-on-investment calculation.

Step 6 – Collaboration - Agree the scope and price with the client.

OUTPUT -This will give the landlord a tool to drive improvements via planned retrofit

Check-list

- ✓ Meeting legislation – Best Practice
- ✓ Increasing energy efficiency and introducing the net zero pathway
- ✓ Cost reduction
- ✓ Corporate commitments (ESG)
- ✓ Reduction of asset management and repairs
- ✓ Risk Mitigation of unoccupiable buildings
- ✓ Access to finance

Thank you

We are here all afternoon if you wish to come and talk to us.

Wates

ENERGYSPECIFICS
Because Energy Matters

CONSTRUCTIVE THINKING

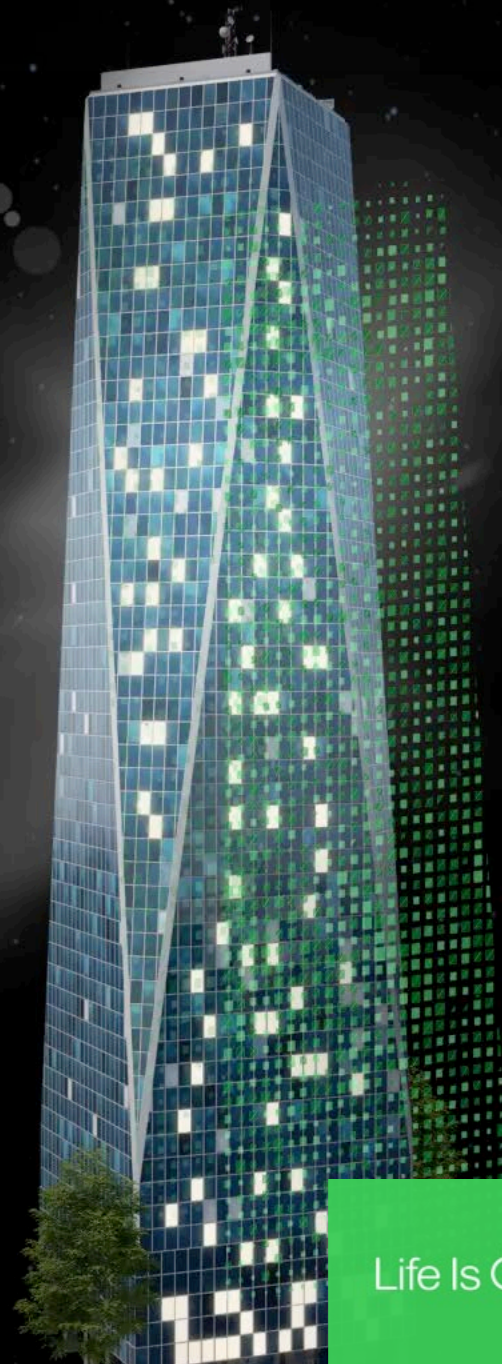
Buildings of the Future: Leveraging Digital Solutions for Enhanced Energy Efficiency and Sustainability

Matt Wallace, Schneider Electric

SCAN ME

Matt Wallace *IEng MIET*
Marketing Director - UK&I Digital Energy
Schneider Electric

Digital Solutions for Enhanced Energy Efficiency and Sustainability



Life Is On | Schneider Electric

We provide Digitised Energy & Automation solutions for efficiency and sustainability

Key figures for 2022

5% of revenues devoted to R&D

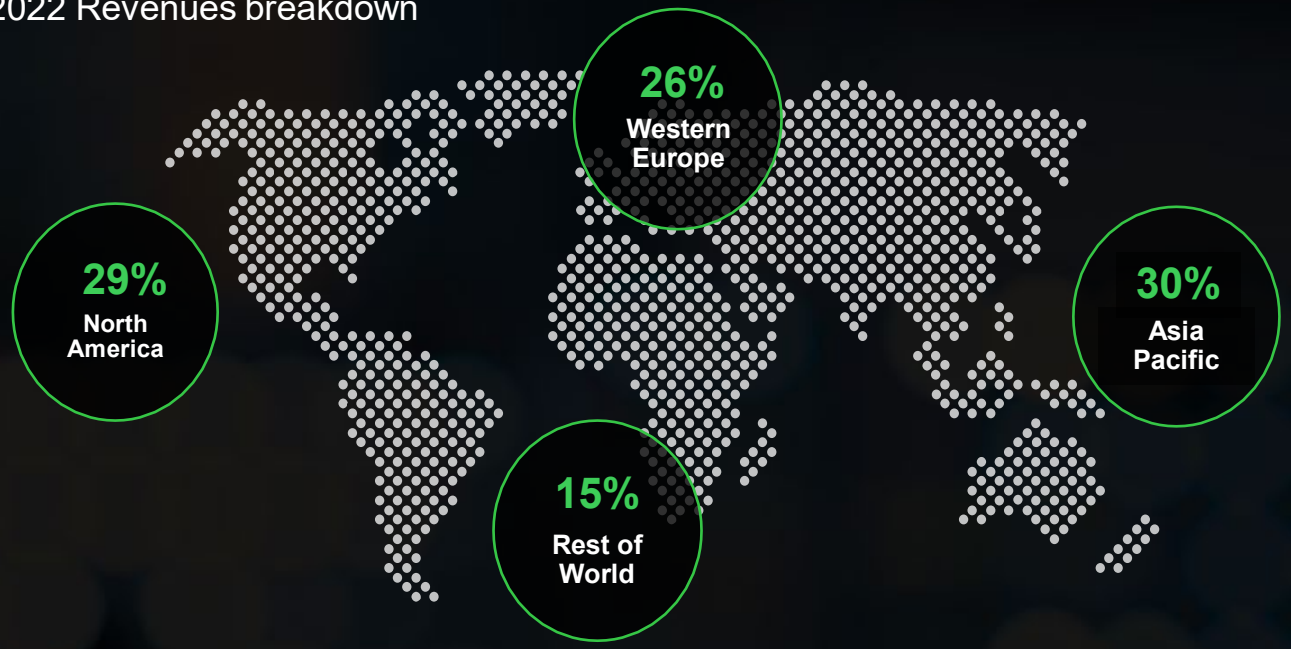
€34 billion
2022 revenues

160,000+
Employees in over 100 countries

50% Digital and services

A well-balanced global presence

2022 Revenues breakdown



77%
€19 billion

EcoStruxure™
Innovation At Every Level

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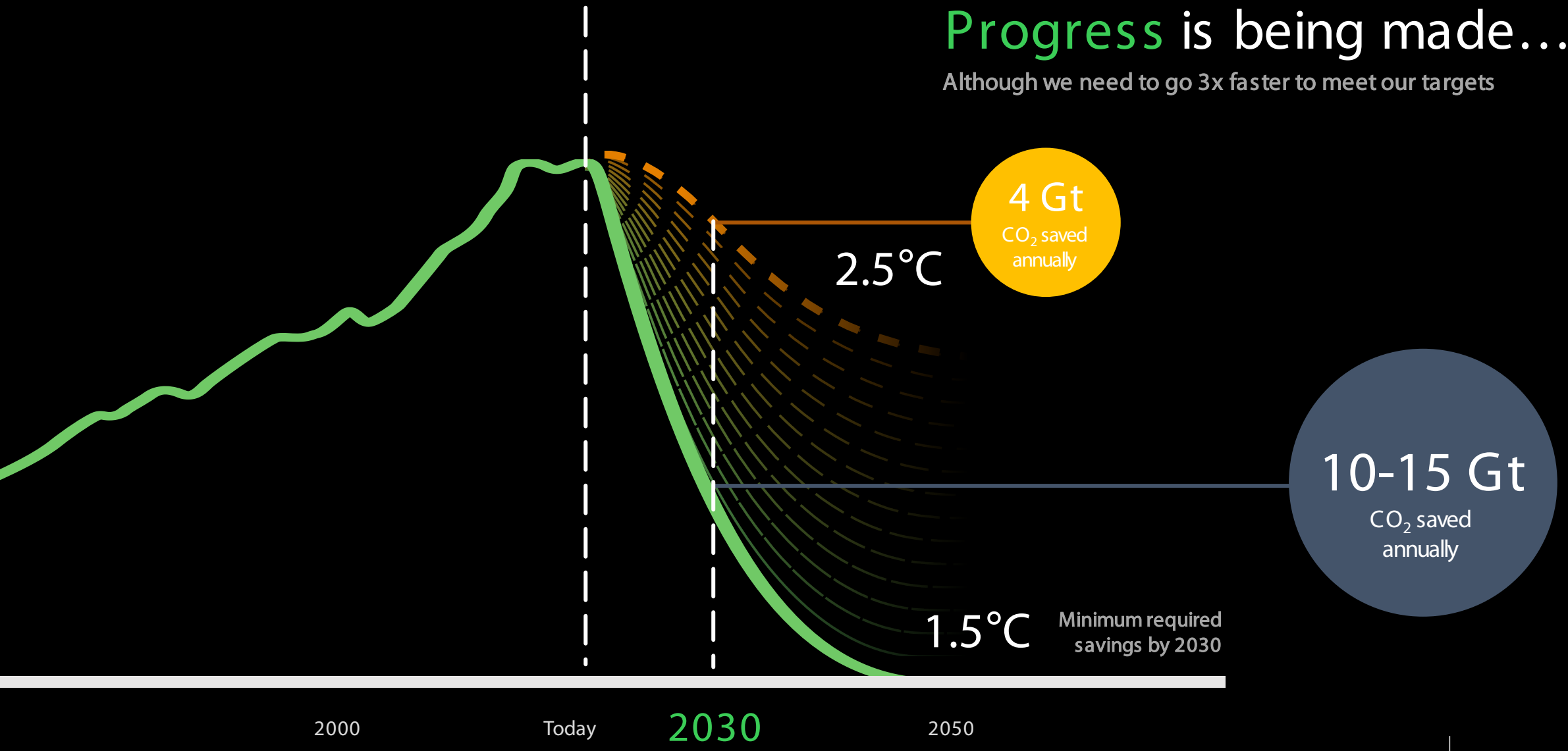
 |

To tackle the climate crisis, we must decarbonise

Progress is being made…

Although we need to go 3x faster to meet our targets



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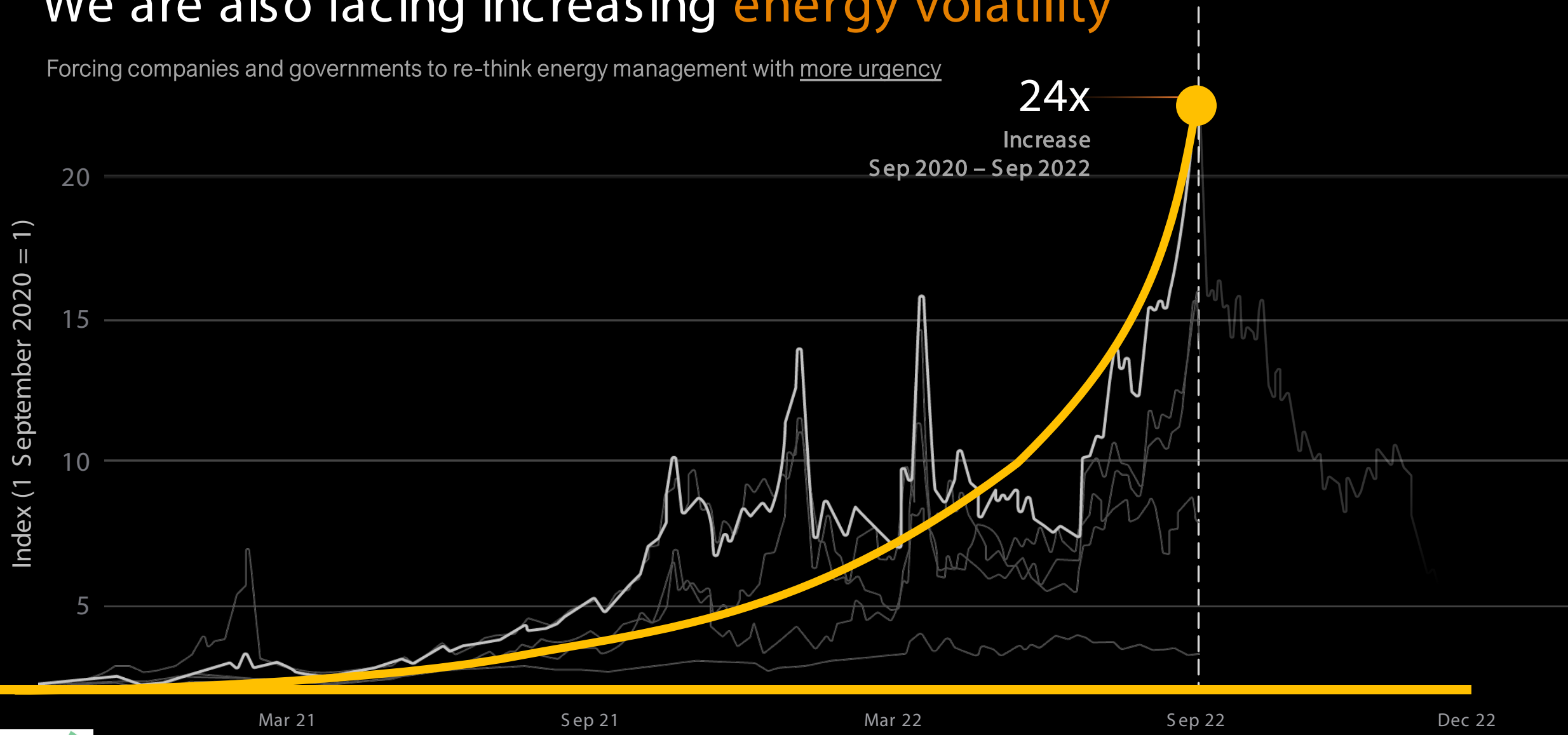
We are also facing increasing energy volatility

Forcing companies and governments to re-think energy management with more urgency



European gas reached a multiple of almost 25 between Sept '20 and Sept '22

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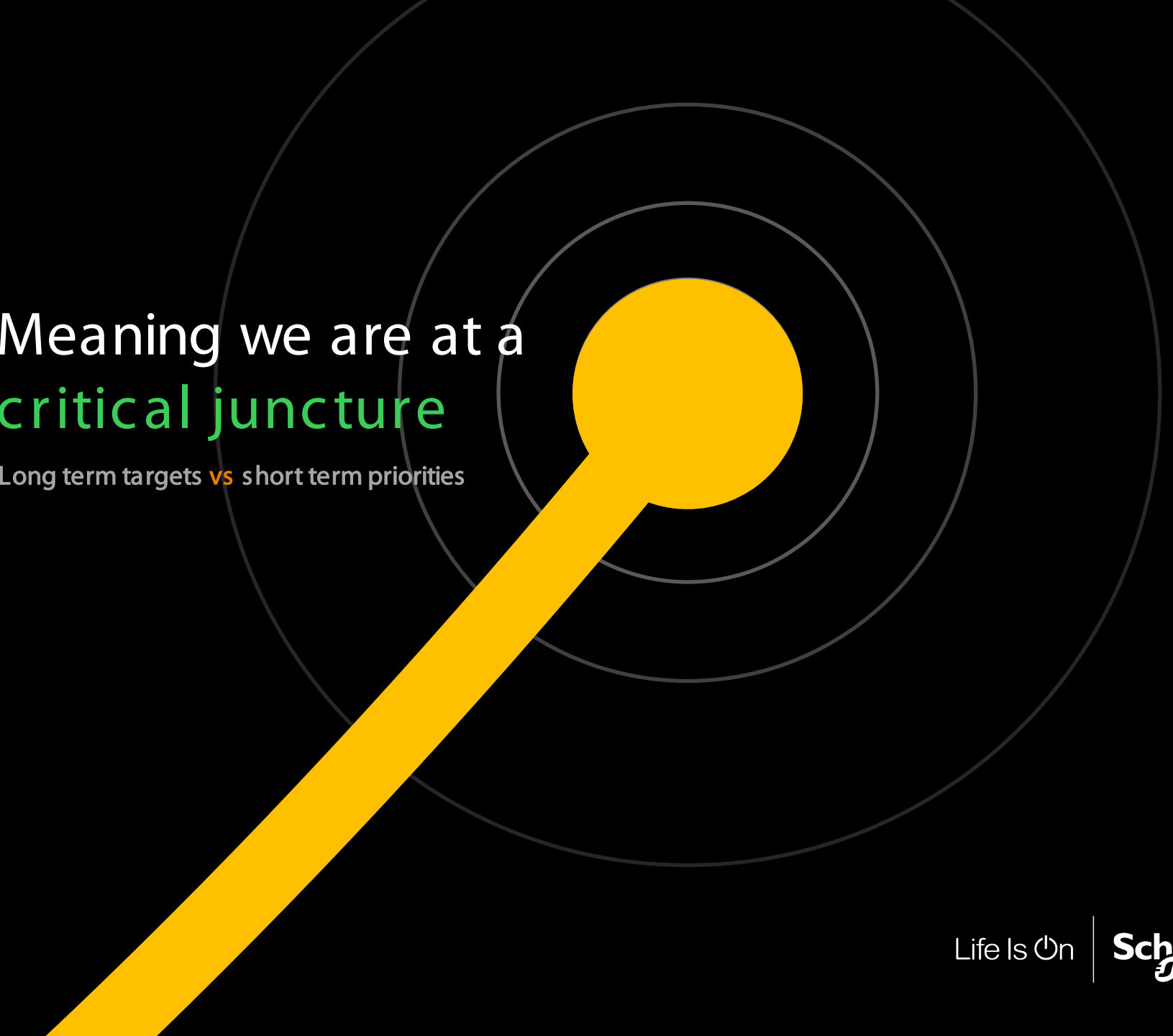
Meaning we are at a critical juncture

Long term targets vs short term priorities



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Short term

Energy crisis

The solution for both is Energy Management

Long term

Climate crisis

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Wates

Buildings account for

37%

of global CO_2 emissions

(13.3 Gt)

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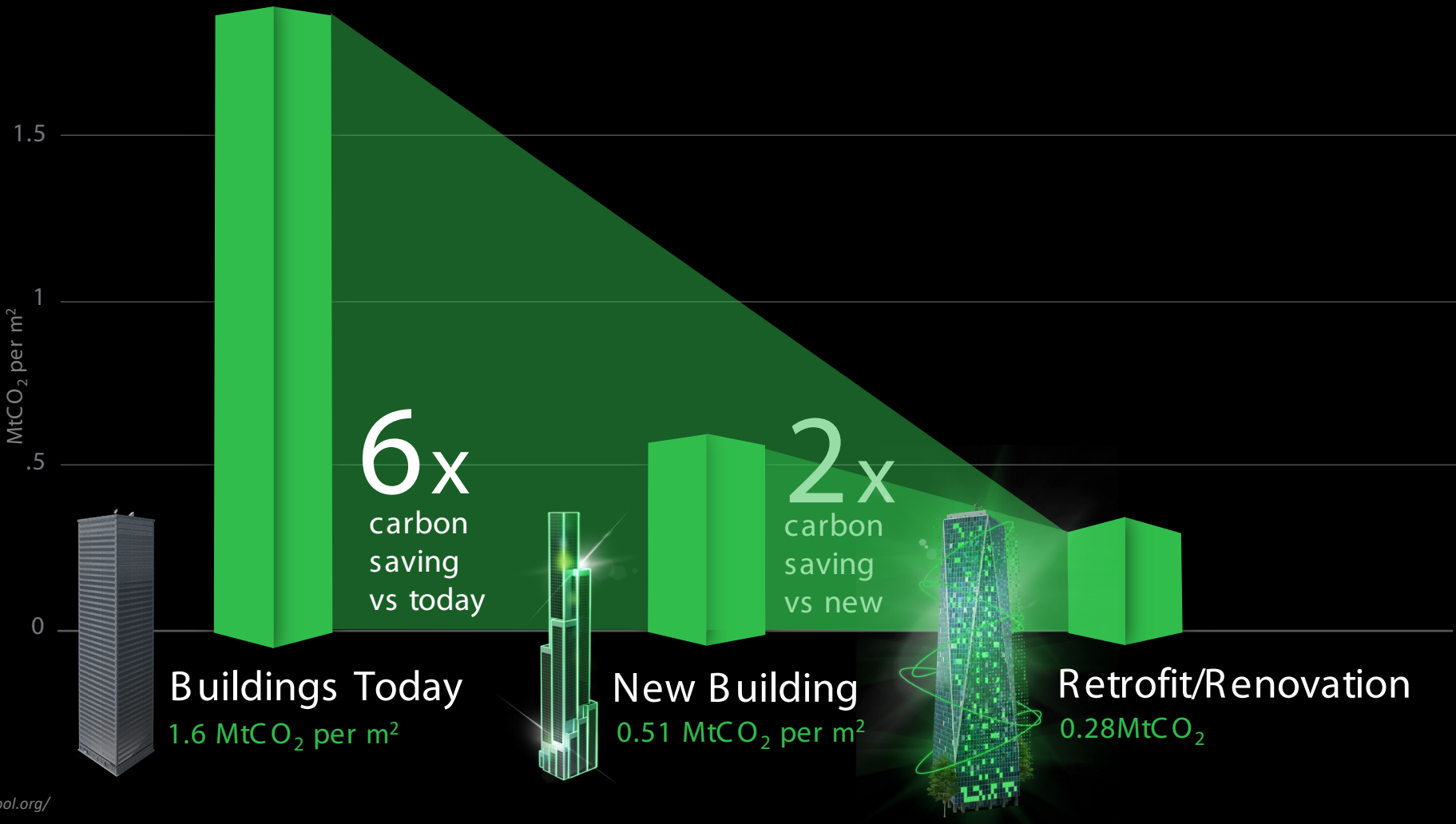
To accelerate action, the industry needs to focus on retrofitting existing buildings

80%

of today's buildings will still be in use in 2050



Carbon intensity modelled for representative office building using: *https://caretool.org/*
Assumptions based on CBECS 2018 database

LIVERY GROUP
CLIMATE ACTION

Decarbonising supply is just one side of the energy coin...

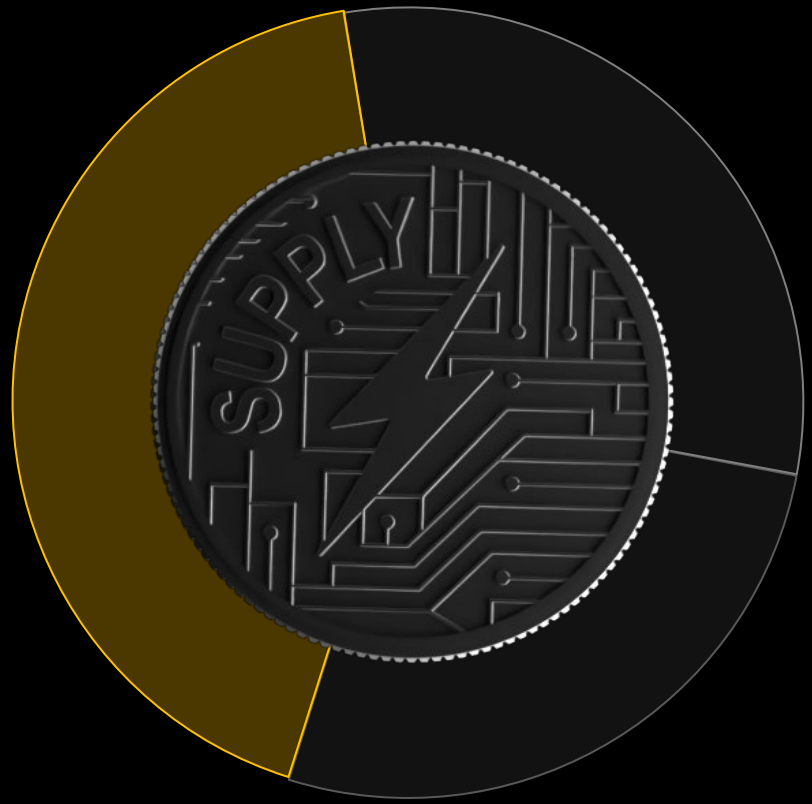
Replace

energy supply

45%*

Offsite renewables purchasing
PPAs

Onsite renewables generation
Solar, microgrid, storage



*Contribution to net-zero energy by 2050

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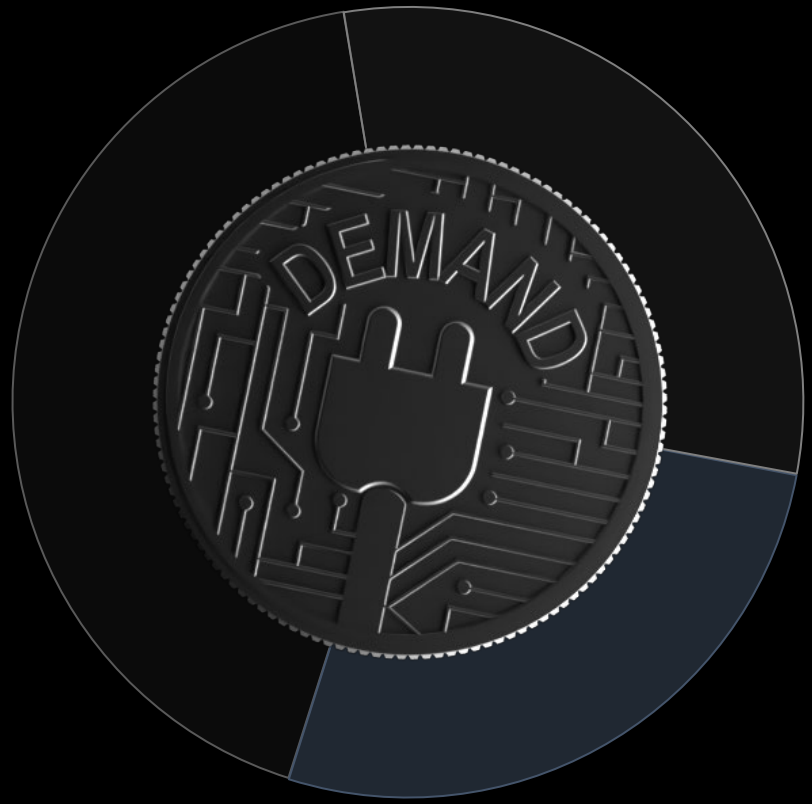
SUPPLY

We need to look at both sides… and tackle energy demand



Reduce

for efficiency and circularity

25%

Design & Build for Low Carbon

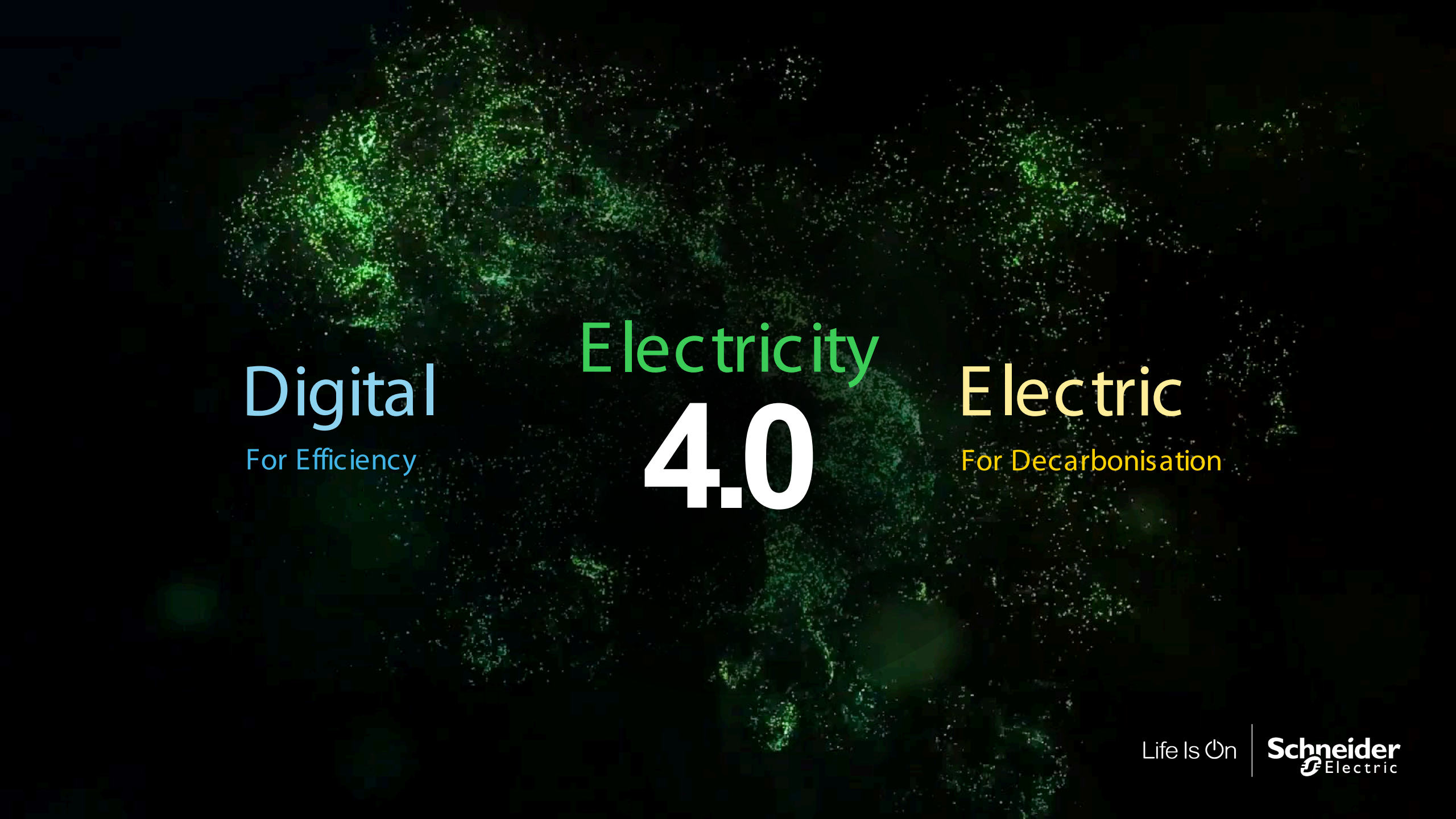
3D-6D BIM design to reduce embodied carbon

Measure, Monitor & Save

Connected systems and software for real-time data, insights and automation

Circularity for sustainability

Choose green by design, with extended life, efficient usage & clean disposal options


Digital
For Efficiency
Electricity
4.0
Electric
For Decarbonisation
Life Is On
Schneider Electric

Digital + Electric = Sustainable

For Efficiency

For Decarbonisation

Green and Smart Energy

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Bridging ambition and action with an integrated approach

Strategise

MEASURE enterprise baseline

CREATE decarbonisation roadmap

STRUCTURE program & governance

ENGAGE ecosystem

COMMUNICATE commitment

Digitise

MONITOR resource usage & emissions

IDENTIFY saving opportunities

REPORT and benchmark progress

Decarbonise

REDUCE energy use

ELECTRIFY operations

REPLACE energy source

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IoT

Common Threa aspects is Data

IT

ACCELERATION

Driven by pervasive penetration of

MOBILITY & ANALYTICS

+

CONVERGENCE

=

ENTERPRISE OPTIMISATION

OT

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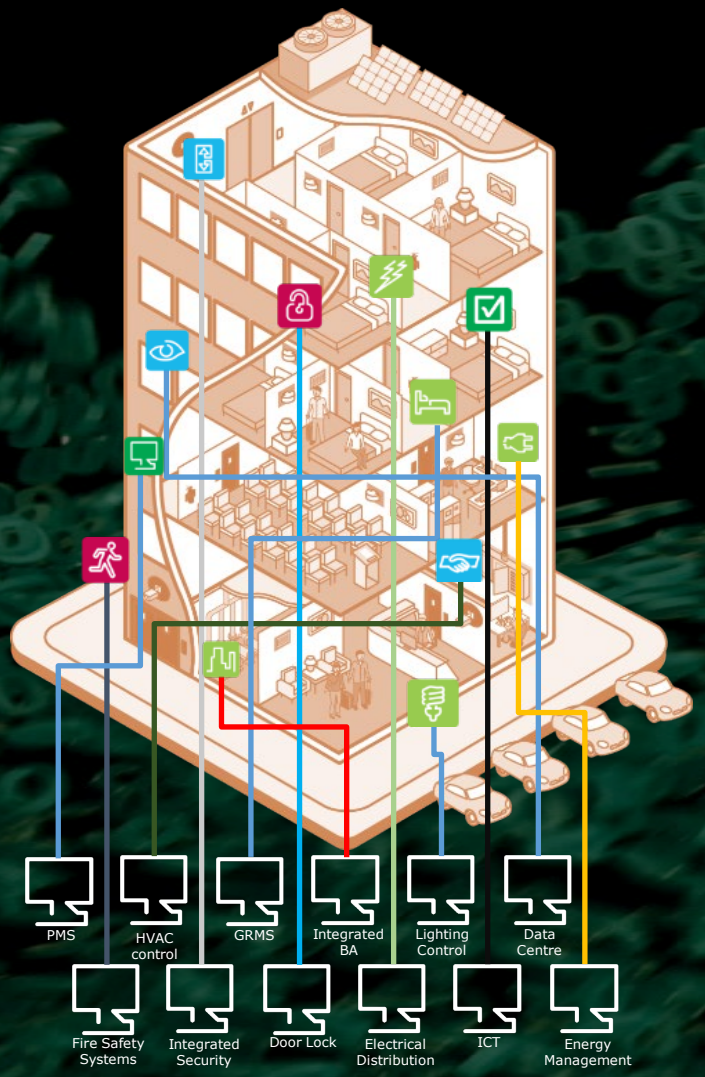
What is holding us back?



- NEW & Existing Systems implemented with little consideration to interoperability.
- Existing Data is illegible or locked down.

System Silos = Building Data Chaos

- Limited Skillsets to understand how interoperability is achieved therefore often removed from scope.
- Procurement Routes and Contracts rarely encourage collaboration.
- Design and Installations are seldom investing in long term performance of building and in turn make decisions on CAPEX only.
- Late engagement and poor costing/design forces value engineering and loss of value.

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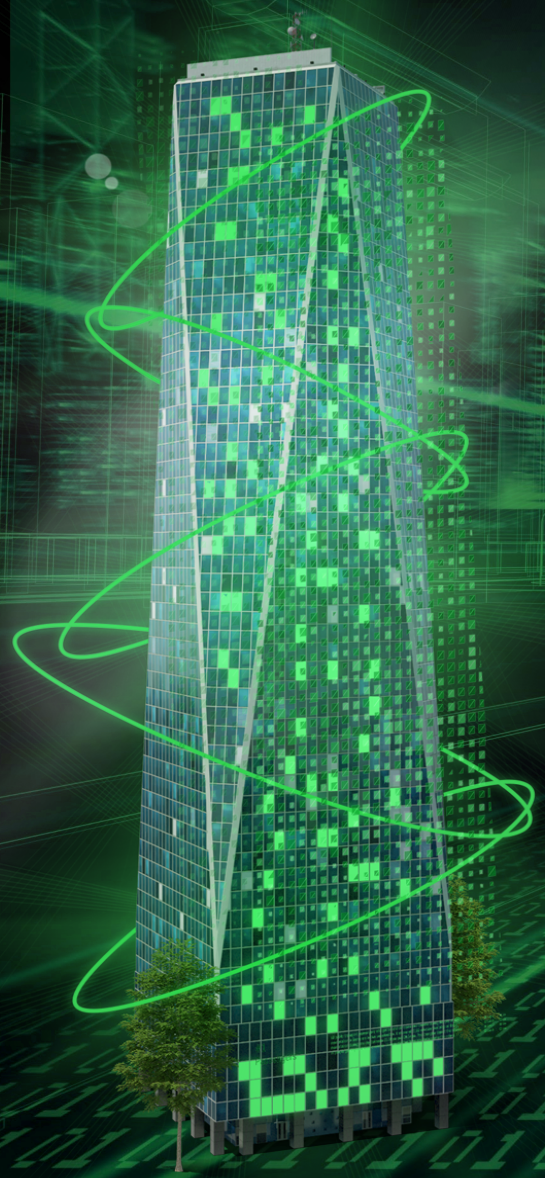
What do we need?



CONNECT → COLLECT → ANALYSE → TAKE ACTION & CONTROL

Streamlined Data = Operational Efficiency

CLOSE THE LOOP

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EcoStruxure™
Innovation At Every Level

PEP ecoPASSPORT®

Green Premium™ Sustainable performance, by design

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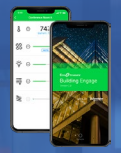
Data…Now what?

EcoStruxure™
Innovation At Every Level

Apps, Analytics, and Services

EcoStruxure
Workplace Advisor



EcoStruxure
Building Engage

EcoStruxure
Building Advisor

Edge Control

EcoStruxure
Building Operation

EcoStruxure
Power Monitoring Expert

EcoStruxure
Security Expert

Connected Products

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Buildings of the Future

Where digitisation can make immediate impact...

~45%

(1)Energy wasted by Building Systems

30–40%

(2)Workspace not utilised

~40%

(4)Unscheduled (Reactive) maintenance instances

1/3

(3)Of service workforce will retire by 2026

Sources:
(1) Saving Building Energy through Advanced Control Strategies
(2) Schneider Building Advisor engineering team estimates
(3) ECITB Research
(4) JLL Occupancy Planning Benchmarking Report 2017

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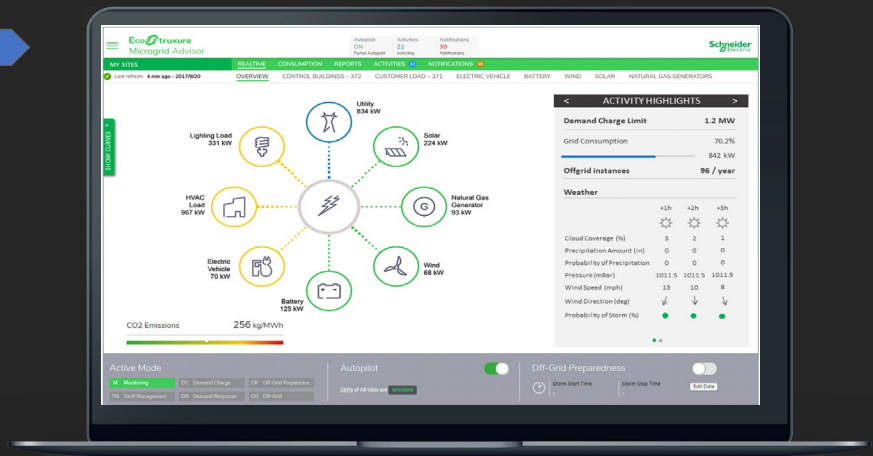
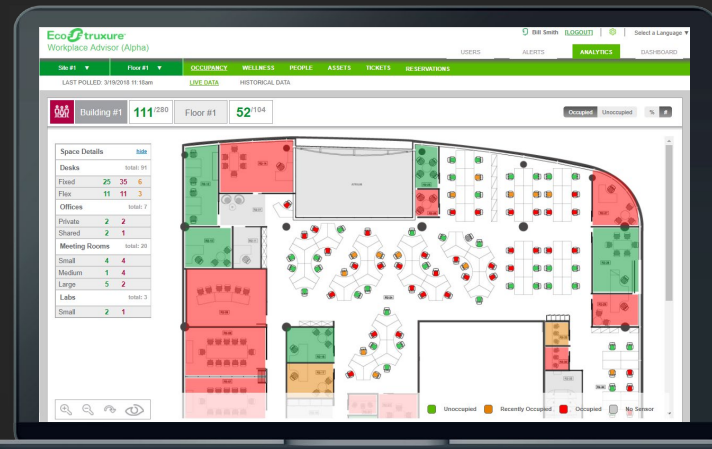
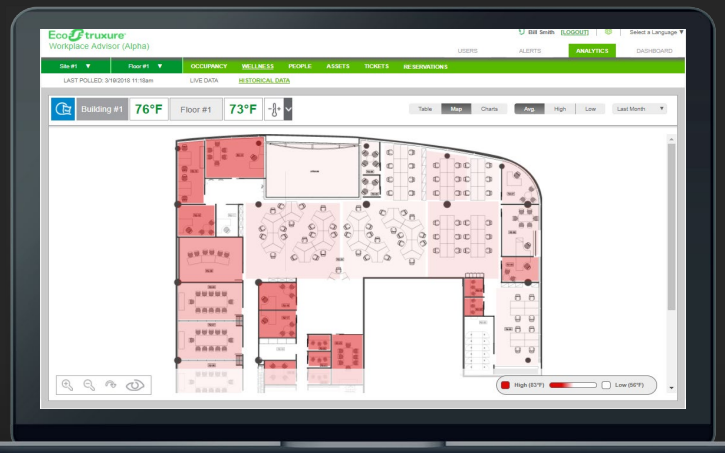
Performance:
Apps & Analytics



Power & Energy (MicroGrid)

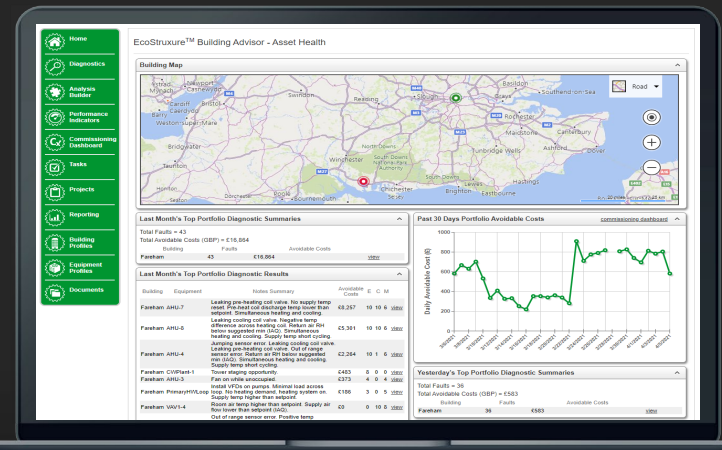


Space Management



Occupant Experience

Well-Being Analytics



System & Asset Health

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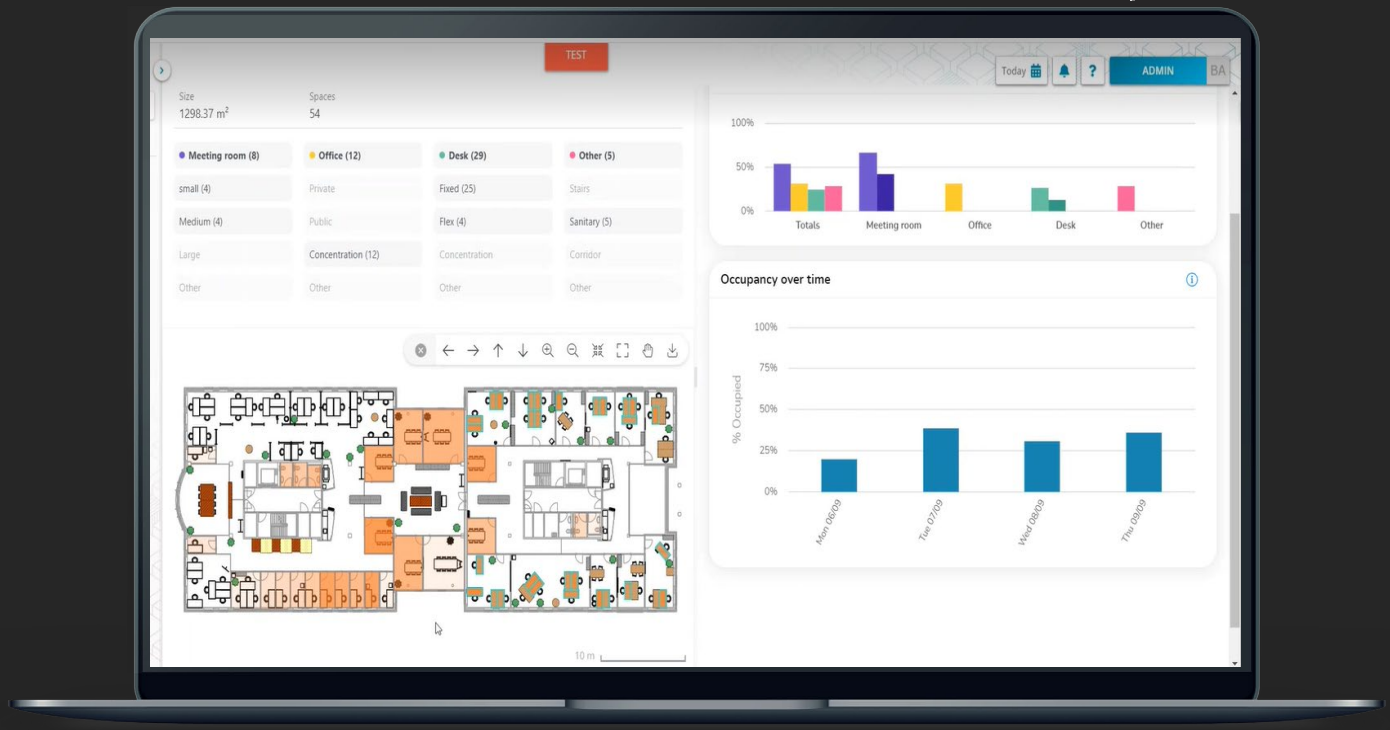
PLANON

Performance:
Integrated Workplace Management



Site to Site ➔ Integrated Company Management

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Some Benefit Stats

Maximise Efficiency of Buildings

- 30+% increase in Energy Savings
- 25+% less Unscheduled Maintenance
- 20+% improved Space Utilisation
- 30+% more Engineering Efficiency
- Achieve EPC Certification
- Enable Net Zero Journey through Measurement and creating actionable insights.
- and more…

More Comfort & Productivity for Occupants

- 33% fewer Complaints
- 35% reduced Sick Leave
- 15% less Productivity Leakage
- 11% increase in Hotel Guest Loyalty
- Improved Talent Acquisition & Retention
- and more…

Increase Value of Buildings

- 6% additional Rental Value
- 15% premiums in Building Price
- Maintaining Building Performance Certifications BREEAM, LEED, NABERS
- and more…

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Summary

More governments are making commitments

88

Countries with net-zero pledges[2]

89%

of global CO_2 emissions

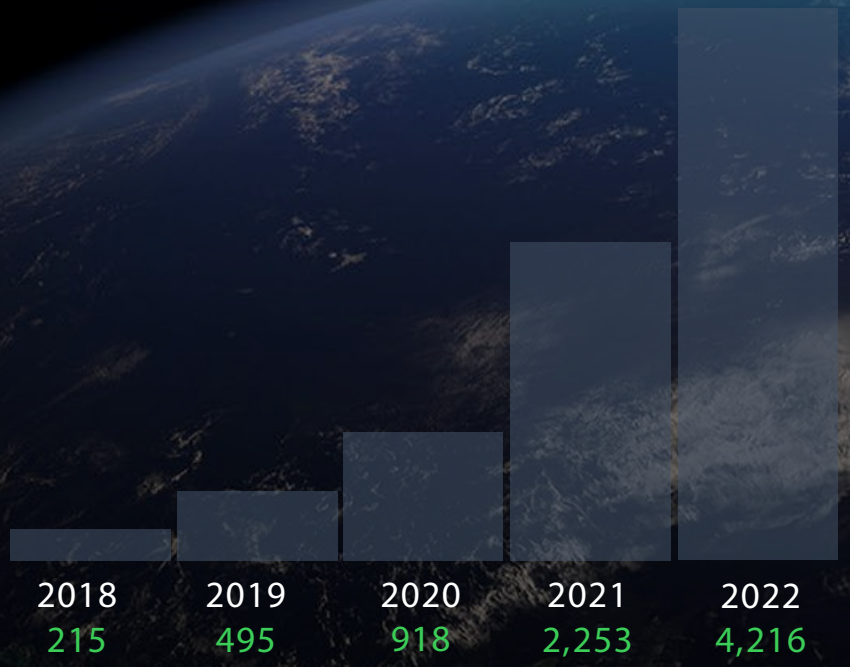
$1.8tn

Green stimulus[1]

Life Is On | Schneider Electric

More companies are making commitments

Number of companies committed to setting science-based targets[1]



2x

Commitments to SBTi targets YoY[1]

2023 YTD ~ 4500

Life Is On Schneider Electric

The reality

Few are delivering on their targets

12%

Climate Impact Partners, Reality Check: Climate Action & Commitments of the Fortune Global 500, September 2022 Report

Life Is On | Schneider Electric

"Ease is a greater threat to progress than hardship"

The moment is NOW

"Individually we are one drop, Collectively we are an Ocean"

Life Is On | Schneider Electric

SCAN ME

Matt Wallace *IEng MIET*

Marketing Director - UK&I Digital Energy
Schneider Electric

Life Is On Schneider Electric

Coffee Break & Networking

Keynote: Emma Howard Boyd CBE

THE LONDON CLIMATE RESILIENCE REVIEW

Call for written evidence ends 2 September
Report published at COP28 in December

Contact Jo and George at LondonClimateResilienceReview@london.gov.uk

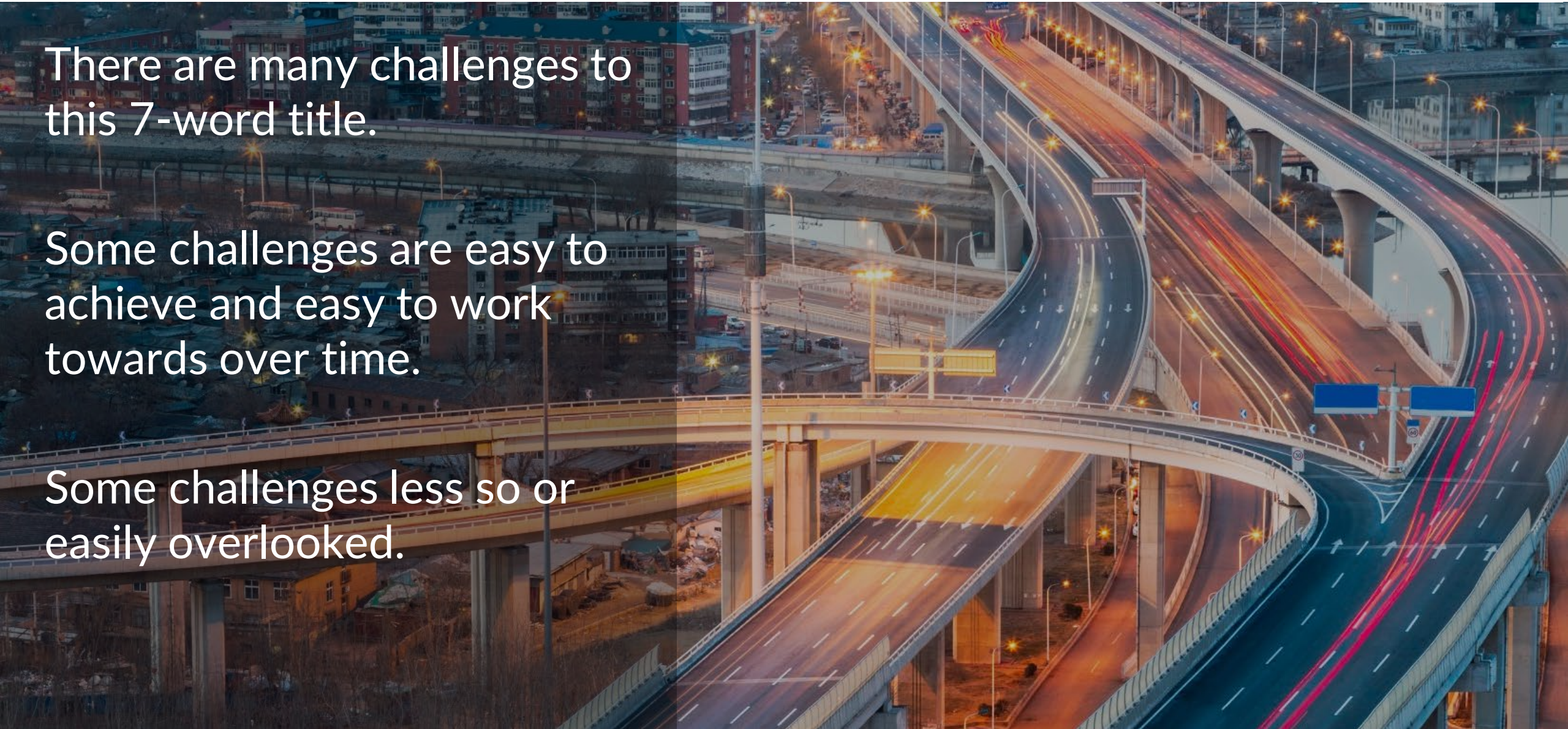
Breakout Workstreams #2

1. Transport in Cities of the Future

Andy Miles, AS Miles

Transport in the Cities of the Future

AS MILES CONSULTING LTD
SAFE · COMPLIANT · PROFITABLE®

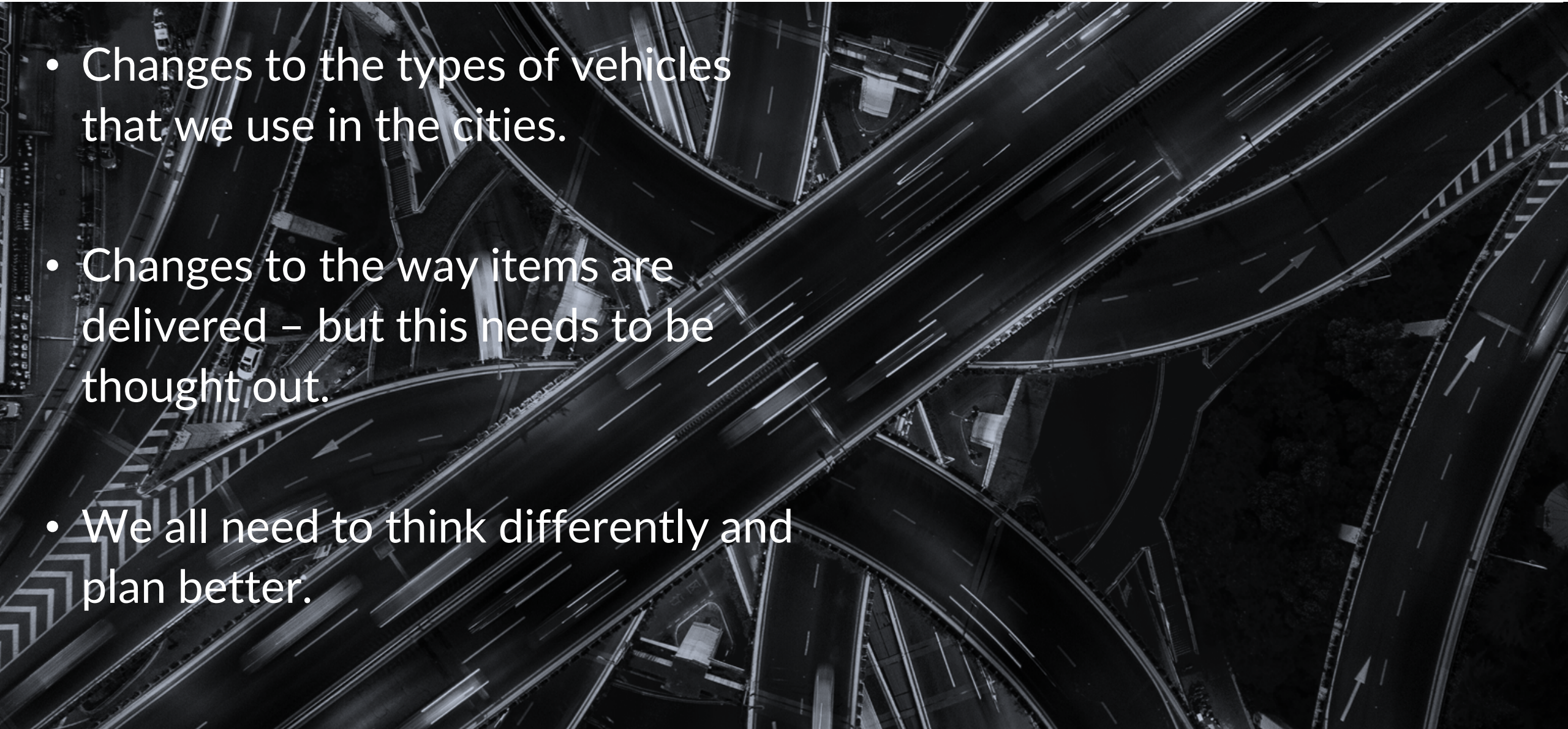


There are many challenges to this 7-word title.

Some challenges are easy to achieve and easy to work towards over time.

Some challenges less so or easily overlooked.

The Easy Stuff



- Changes to the types of vehicles that we use in the cities.
- Changes to the way items are delivered – but this needs to be thought out.
- We all need to think differently and plan better.

Good intent – making it worse

- A large authority banned employees from having items delivered to work offices in the belief that it would reduce the environmental impact.

- The 5 largest parcel delivery companies all reported on average an **8% increase** in delivery miles & **15% increase in failed deliveries** that required redelivery attempts.

- The out-of-town deliveries were made by diesel truck not electric van increasing the output of NOx etc.

Better planning and being prepared

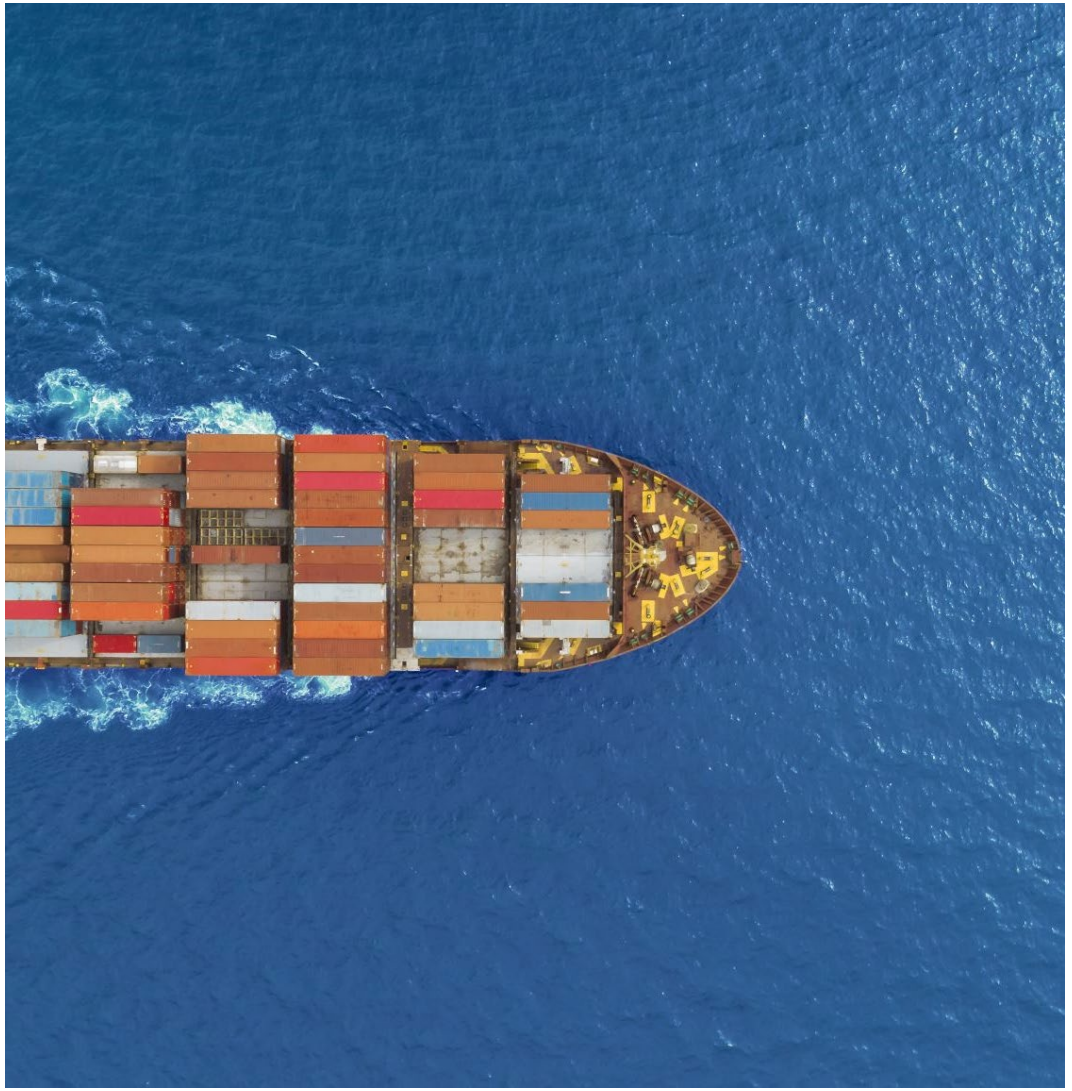
- How many times do we really need things NOW ?
- Business planning of stock inventory and delivery.
- Stock Management.
- Consolidated deliveries – on a named day

Delivery days & consolidation – nothing new

- Who remembers these? – Milk, Corona Pop, Bread, Fruit & Veg van etc.
- Are we going ‘back’ or are we returning to what was already environmentally responsible and made sense?
- A supermarket home delivery vehicle saves approx. 20 car journeys for each delivery round it makes.

Consolidation of loads

- Multiple products to a site on a named day or time.
- More local ‘Micro fulfilment centres' to consolidate deliveries and returns.
- Security & Terrorism – Growbags and Custard



So, what will it look like?

- We already have, such as the DPD photo smaller alternatively fuelled vehicles being used to make deliveries.
- The smaller electric cycles and quadricycles seen in Bergen for example last week.
- Increase in part time workers – DHL and not a paper round for older children but a parcel round after school.

So, what will it look like?

- Repurposing of existing buildings and sites for Micro fulfilment locations.
- Repurposing of office block car parks as an MFC.
- Reduces the impact on the environment of new buildings and use of resources and energy unnecessarily.

Other modes of transport

- Use of waterways, rivers and canals.
- Quiet and can move large loads.
- Pedal power and on foot – only human energy needed.
- Intermodal – rail, tram, water, foot cycle.

Conclusions

- We all need to plan better.
- We need to accept change to the status quo and be proactive or it will be imposed on us.
- Collaborative working – with other businesses in our office block or area.
- We need to be part of the solution not the problem

For any advice and support with alternative Transport solutions.
Ways to work with your own supply chains.
A S Miles Consulting 01455 389053 email: info@asmilesconsulting.com

2. Food Sustainability & Healthy Eating Peter Gladwin, Local & Wild

LIVERY CLIMATE ACTION GROUP

Food Sustainability and Healthy Eating

Peter Gladwin

Local & Wild

My Background

- Cooking, Catering, Restaurants
- Writing
- Growing Farming & Winemaking

Local & Wild

The Livery World

- Fraternity, Community and Charity
- Forward thinking
- Sustainability in our hospitality

Local & Wild

Climate and Food

- Over 25% of Global Emissions are from Food Production
- Regenerative Farming
- Healthy Eating

Local & Wild



The true value of Seasonality

- Simply tastes better
- Harvest to table - avoid air miles
- Know where food comes from and support UK farmers and growers
- Good stewardship of the land - Biodiversity

Local & Wild

Plants at the Heart of Every Meal

- Challenge Chefs
- Celebrate variety – eat the rainbow
- Hero ingredients and superfoods

There are over 20,000 edible plants known to man!

Local & Wild



Eat What You Like

- Everything in moderation
- Balanced
- Fibre, Protein, Vitamins
- Feel good about what you eat

Local & Wild

Where does Wine fit in?

- Global movement for sustainable wine production
- Climate Positive viticulture
- Carbon Reduction in wine production
- The English Wine Industry

Local & Wild

What can we do?

- Plan menus based on the season
- Demand fresh, local produce from sustainable sources
- Challenge diners
- Spread the word

Local & Wild

What can we do?

- Avoid excess packaging
- Buy direct from producers
- Demand a recycling programme

Local & Wild

What can we do?

- Reduce food Waste
- Gift surplus food to those who need it

NB 40% of all food in the UK is wasted

Local & Wild

Celebrate Our Planet

…and protect it for generations to come

Local & Wild

Plenary: Bridging the gap between knowledge and action

Maggie Berry, Plenary Chair, Heart of the City

Close & Summary

Upcoming Event

Sustainable Investment for a Better World: Putting the environment first

Tuesday 12th September 2023

CCLA Investment Management

1 Angel Lane, London EC4R 3AB

LIVERY CLIMATE ACTION GROUP

Networking Drinks & Canapes