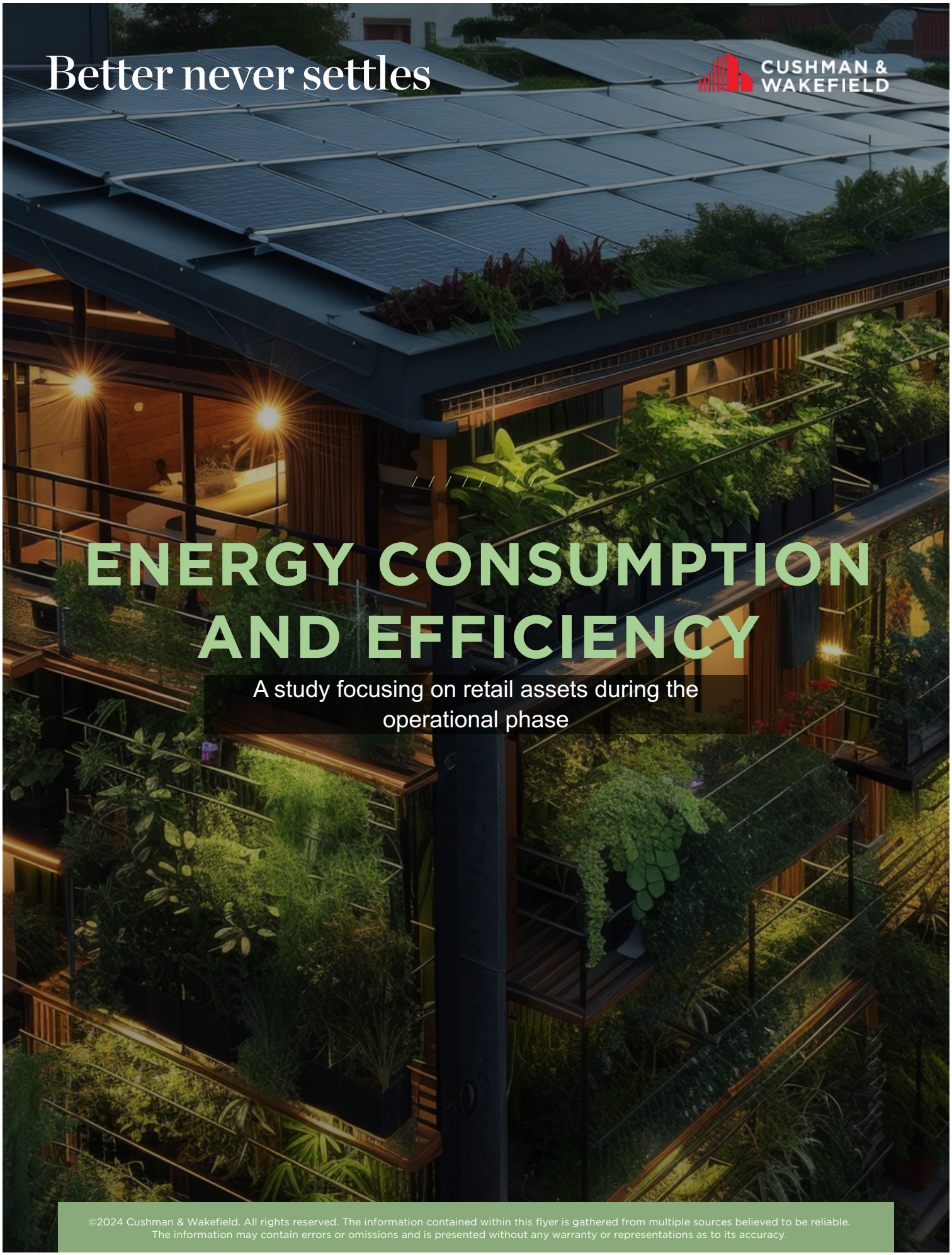
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CUSHMAN & WAKEFIELD



ENERGY CONSUMPTION AND EFFICIENCY

A study focusing on retail assets during the operational phase

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Retail Assets

ENERGY EFFICIENCY

The energy consumption of existing buildings is strongly correlated with both direct and indirect carbon emissions during the operational phase; these emissions subsequently impact the climate.

Energy efficiency is therefore a crucial element for the mitigation of climate change effects, which are already perceivable today.

Retail assets have some specific in-use characteristics that influence both energy consumption and activities performed within:

EXTENDED OPENING HOURS

Retail assets are open to the public for longer periods compared to office assets

MIXED ACTIVITIES

Operators mix inside retail assets may vary, ranging from sales to dining and leisure

DIVERSE USERS' BASE

Retail assets serve a more heterogeneous user base compared to both office and logistics assets

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Retail Asset

ENERGY EFFICIENCY

From a construction perspective, retail buildings are often less compact structures, characterized by a high surface-to-volume ratio, which potentially makes them less efficient. Additionally, shopping malls and retail parks are typically located outside city centers, potentially exposing them to phenomena such as solar radiation.

Improving energy efficiency in retail buildings is therefore a challenge for the real estate sector.

In 2023, Cushman & Wakefield (C&W) conducted a study on several shopping centers with the following objectives:

The analysis is primarily focused on shopping centers rather than retail parks, and on common areas rather than operator's units.

Before summarizing the key points of the study, it's important to provide context regarding the sample selection.

The sample consists of 35 heterogeneous shopping centers when it comes to their year of construction.



UNDERSTANDING PRE- AND POST- PANDEMIC CONSUMPTION AND COST PATTERNS



STUDY AND DEFINE ENERGY CONSUMPTION BENCHMARKS



IDENTIFYING EFFICIENCY MEASURES AND BEST PRACTICES:

THE SAMPLE

54.3% of the considered assets are located in the north, **31.4%** in the central region, and **14.3%** in the south or on the islands.

53% of the assets rank in climatic zone E, **31%** in zone D, and **17%** in zone C.

60.6% of the assets rely solely on electricity as their energy source, while the remaining percentage uses a combination of electricity and gas.

The analyzed consumption data (on a monthly basis) spans from 2019 to 2022.

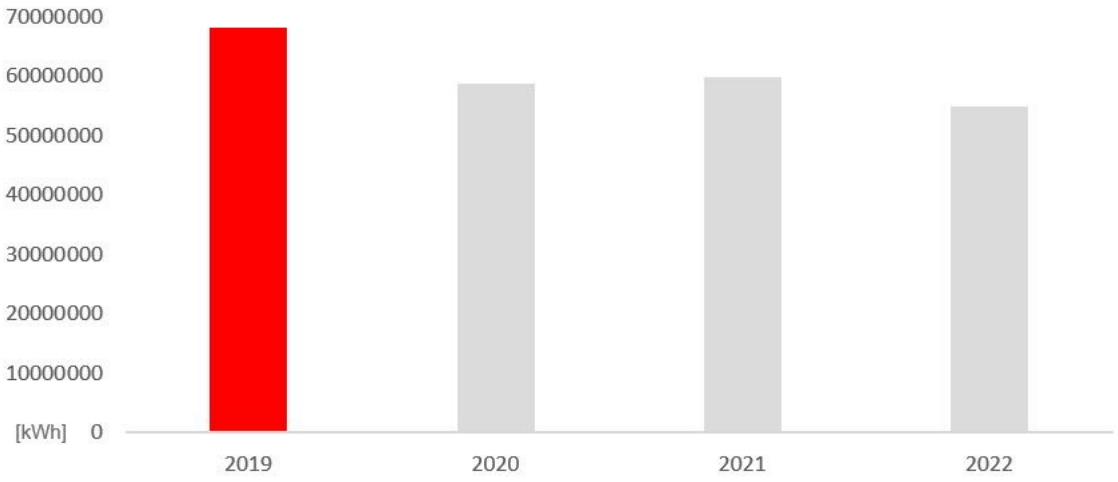
A detailed analysis was conducted on a narrower sample to correlate energy-saving measures with efficiency activities and to delve deeper into the consumption patterns of leased areas within the buildings.

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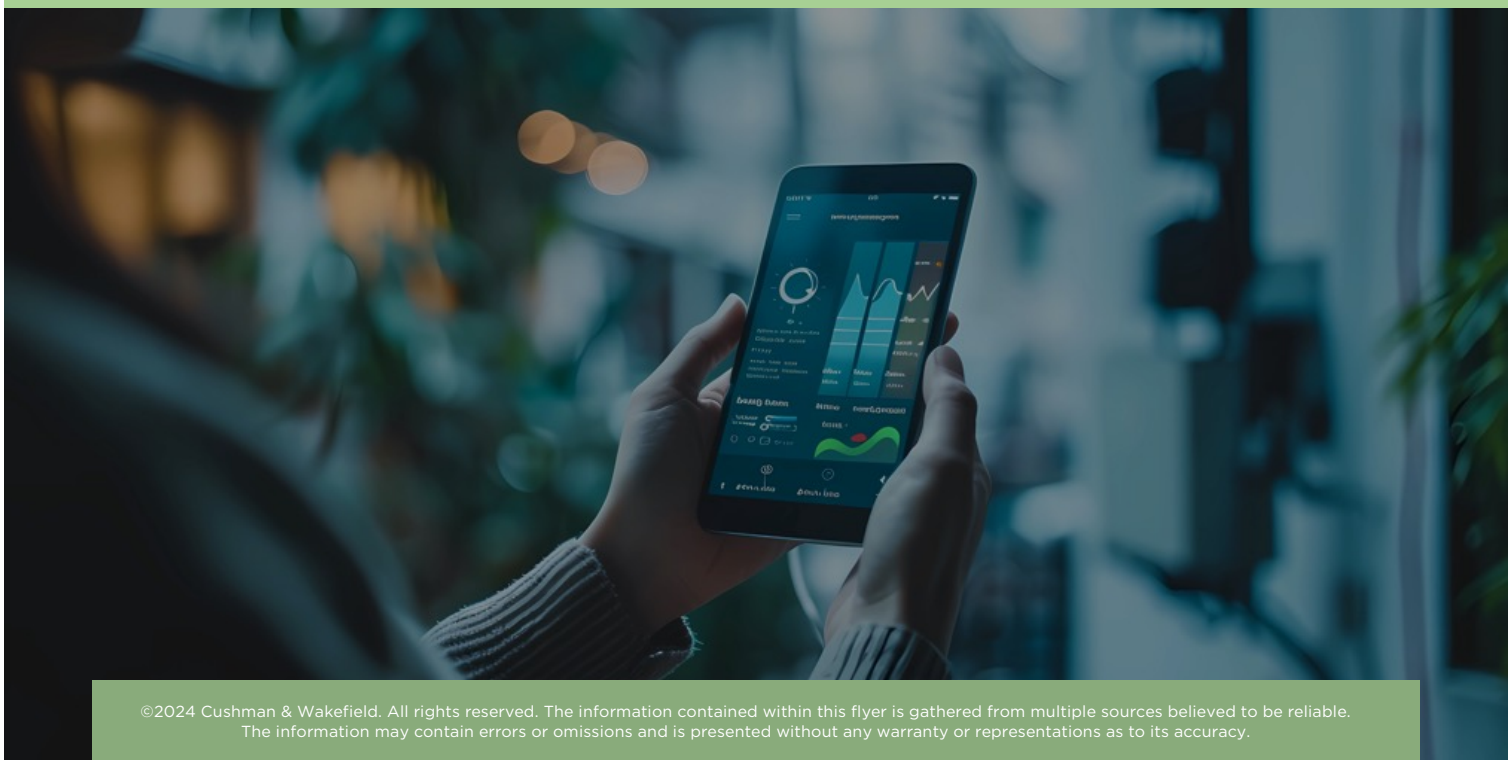
TRENDS IN CONSUMPTION AND COSTS

BEFORE AND AFTER COVID AND THE ENERGY CRISIS

Considering 2019 as the baseline year, we observed the consumption trends over the subsequent three years. The pandemic, with its closures and reduced operating hours, significantly impacted absolute energy consumption. Despite a predictable increase in consumption in 2021 compared to 2020, there is still a trend of overall consumption decrease against the reference year.



This trend further intensified in 2022, a year where energy costs exponentially rose due to the unstable international geopolitical context.



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Retail Asset

ENERGY INTENSITY

(COMMON AREAS AND RETAIL UNITS)

One of the analysis objectives is to try establishing a benchmark.

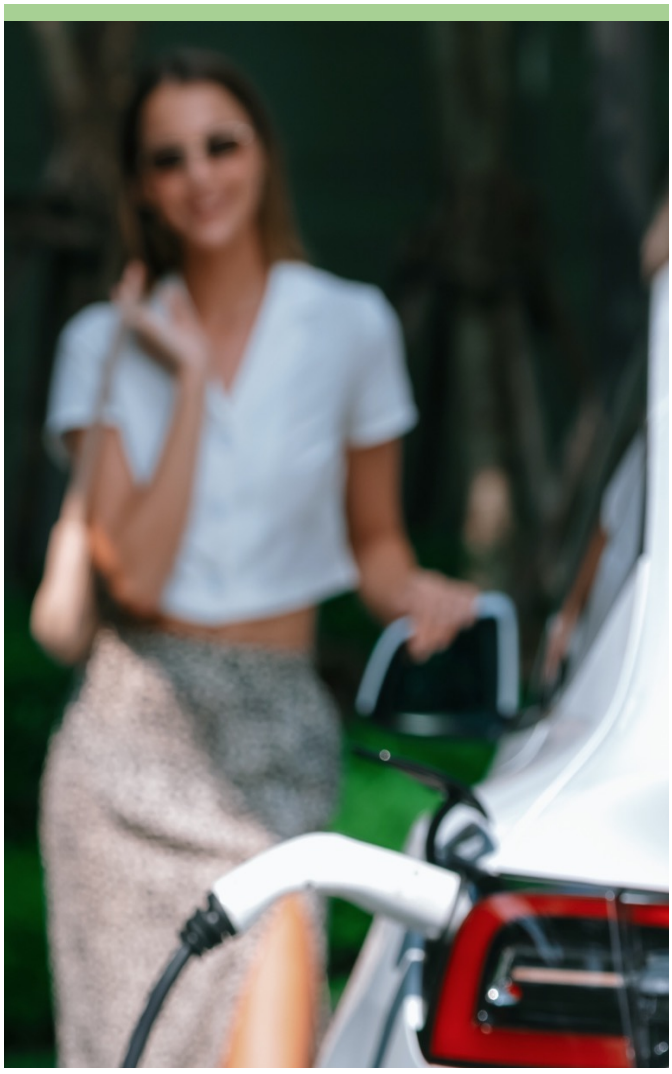
It's essential to note that in a shopping center, the following utilities coexist:

- Common Area Utilities (Electricity and Gas): These utilities not only provide energy to walkways, outdoor areas, parking lots, and technical rooms but also contribute to heating, cooling, and ventilation systems that serve both operators and visitors;
- Retail Units Utilities (Primarily Electricity): These utilities supply energy to retail shops/restaurants primarily for lighting and potential integration with HVAC systems powered by the common area utilities.

Clearly, the greater availability of data from common area utilities makes a consumption benchmark per square meter more reliable for common area.

However, this would not accurately represent the consumption per surface unit area of the entire property.

To obtain a benchmark that also includes the consumption per square meter of the retail units we considered the average consumption per square meter for various types of shops and services (obtained from the narrower sample) in the year 2021.



The benchmark obtained is around 200 kWh/ sqm per annum and although the selected sample represents only a portion of retail properties nationwide, it's noteworthy that the obtained result is comparable to publicly available sector benchmarks for the same asset class.

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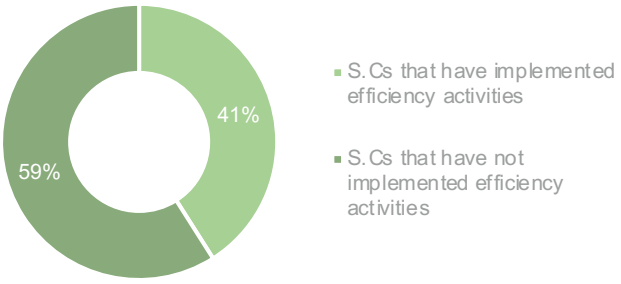
Retail Asset

ENERGY EFFICIENCY

MEASURES AND BEST PRACTICES

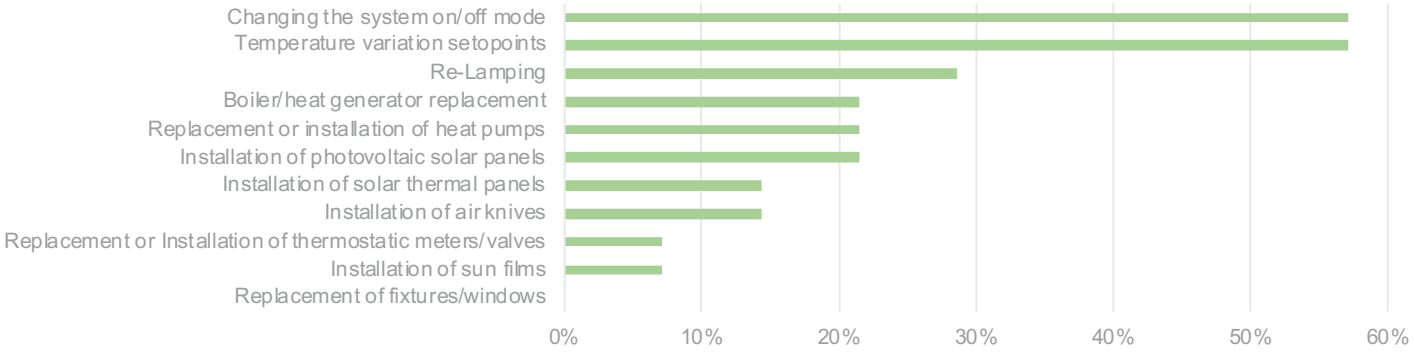
The research reveals that approximately 41% of the sample have implemented energy efficiency measures. This demonstrates that, despite significant progress, there are still numerous opportunities to enhance efficiency within the sector.

Through the analysis of the narrower sample, the study demonstrates that the implementation of energy efficiency measures can reduce consumption by up to 20%, and consequently, potentially reduce costs.





In most cases, the implemented measures focus on low-cost or no-cost operational practices, such as optimizing system operation (e.g., turning off equipment or adjusting setpoint temperatures). Among the investment-based measures, relamping with more efficient technologies is the most widely implemented, followed by the replacement of heating/cooling systems and the installation of photovoltaic systems.



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CONCLUSIONS

FROM THE STUDY

The study highlighted challenges in efficiently and consistently obtaining data due to both structural and management reasons Data availability, accessibility and quality is crucial for the energy efficiency process thus the implementation of technological solutions for data collection, sharing, and representation for both systems' operators and users emerges as an essential catalyst to unlock subsequent energy-saving initiatives .

Continuous updates and the sharing of benchmarks and best practices, along with access to reliable and up-to-date consumption data, allow for the ongoing identification of inefficiencies and opportunities to enhance energy performance.

In conclusion, this research has emphasized critical aspects to the understanding of energy consumption in retail assets:



PARAMETER, KPI AND BOUNDARIES DEFINITIONS FOR ANALYSIS



DATA AVAILABILITY AND COLLECTION METHODS



STRUCTURAL DIFFERENCES BETWEEN SHOPPING CENTERS AND RETAIL PARKS, LEADING TO VARIOUS CONSUMPTION PATTERNS.

While assumptions and estimations allows us to draft conclusions, it is crucial for all stakeholders (managers, asset managers, and consultants) to be aware of these factors and verify data alignment with their needs and expectations.

This study has also highlighted the key energy efficiency measures that have already been implemented, confirming that the commitment to efficiency is already in place. Now, that commitment should be taken to the next level with up-to-date, in-depth, and specific analyses , relying on the introduction of technological solutions.

Energy efficiency in retail assets remains a challenge for the real estate sector, but it certainly represents a significant opportunity to enhance the results achieved so far.

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Francesca Altamura
Sustainability Lead
Asset Services
francesca.altamura@eur.cushwake.com

Simone Screti
ESG Analyst - Intern
Asset Services
simone.screti@cushwake.com

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