

The energy transition of buildings

/ Planning and managing optimal investment trajectories or how to improve the energy performance of buildings



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Our support





EDITORIAL

The energy transition in buildings has become a strategic imperative for all building owners, whether public or private. 44% of the energy consumed in France today is related to buildings. It represents the most energy-intensive sector of activity, ahead of transportation. In detail, commercial buildings account for a third of this consumption, and the remainder is allocated to residential buildings. In a context of inflation and regulatory obligations in the fight against climate change, public bodies and businesses are therefore aware of their roles and obligations in this area. But many of them find themselves at a loss as to how to achieve these energy consumption reduction targets, reduce their expenses, preserve their assets, and manage an effective energy strategy over time. At Oxand, we support asset managers in their decision-making decision-making to plan and manage optimal investment trajectories. We implement a unique predictive approach, combining optimization of maintenance plans and energy performance improvement plans to generate sustainable gains. In this white paper, we explain how, thanks to our SaaS solution and our consulting expertise, based on 20 years of experience, we can identify improvement projects and project the associated potential energy gains. Our approach can reduce owners' investments by 20% to achieve these objectives. We hope you will find recommendations and methodologies here to help you initiate your process and implement your trajectory for improving the energy performance of your buildings.

Ferdinand Rey
Directeur Conseil, Oxand

1. The energy transition: reconcile regulatory, budgetary and ecological imperatives



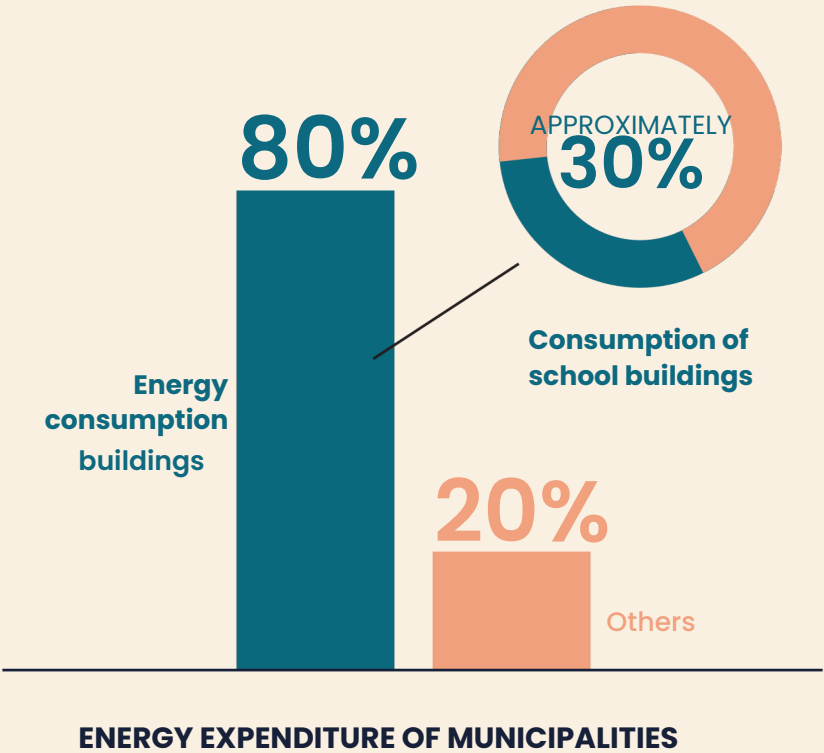
According to the Interministerial Coordination of the Energy Renovation Plan for Buildings, Nearly half of the buildings in France were constructed before 1975. **Their average consumption is approximately 240 kWh of primary energy per m²/year, while current requirements are around 50 WhEP/m²/year.** Furthermore, the construction sector currently generates 23% of French greenhouse gas (GHG) emissions. The National Low-Carbon Strategy sets out an ambitious trajectory for reducing emissions in this sector, **with a target of a 49% reduction in emissions by 2030 compared to 2015, and the achievement of complete decarbonization of energy consumed in buildings by 2050.** With the sharp rise in energy prices, which could continue through 2030, real estate asset managers must imperatively implement an energy strategy to reduce their bills and minimize their carbon footprint, preserve their assets, and finally adopt an eco-responsible approach to improve user comfort and thus preserve their brand image.

The decree of July 2019, known as the Tertiary Decree, requires achieving a reduction in energy consumption for each building or land unit subject to the obligation, of at least 40% in 2030, 50% in 2040 and 60% in 2050, compared to a reference year, chosen between 2010 and 2019.



Focus on communities

Local authorities invest 8 billion euros per year in school buildings (primary, secondary and high schools). Half of this budget is allocated to energy improvement expenditure. would reduce consumption by 40% by 2030.



NEXT TO 5% Share of energy in operating costs (2nd item after personnel costs.)

Source : Oxand

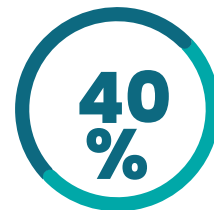
2.

The levers of action for improve the energy performance of its buildings



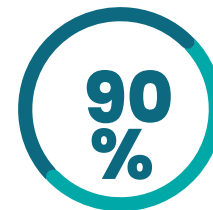
New buildings are now constructed using eco-design approaches, in accordance with the RE2020 environmental regulations.

Since 2010, an average of 2 to 3% of buildings have been renovated each year. Eighty percent of the building stock is still dilapidated, and several action points can improve their energy performance.



In local authorities,
40% of the average investment budget on

the built heritage is dedicated to energy improvement.



90% of consumption is linked to heating and air treatment

2.1 Renovate your equipment for reduce energy consumption

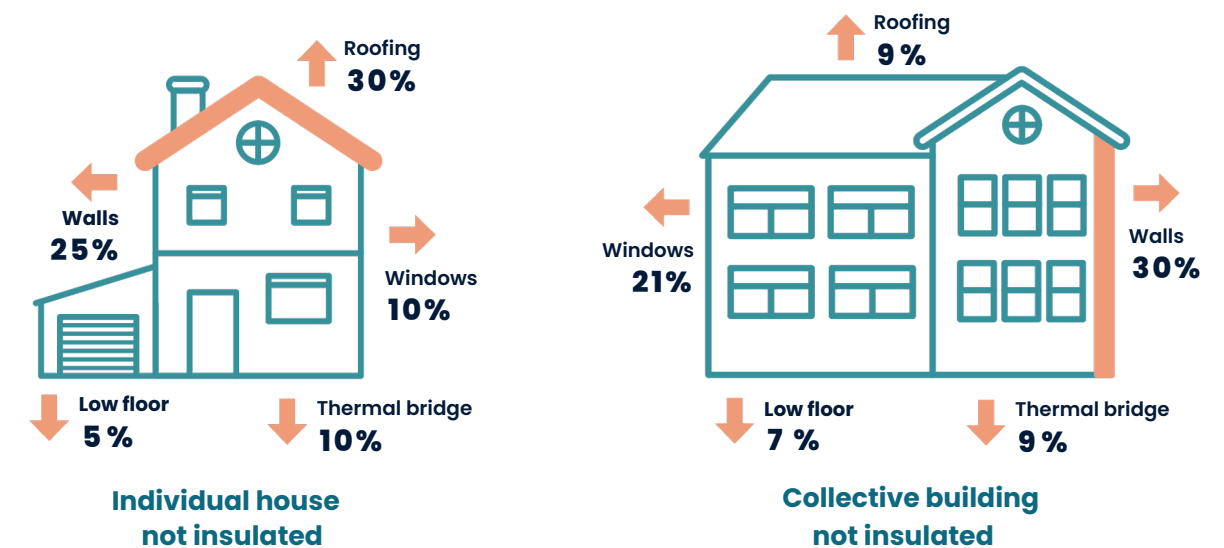


Word expert

Ferdinand Rey
Directeur Conseil, Oxand

"70% of potential energy savings are linked to renovation and replacement investments (insulation of facades, roofs, lower floors, joinery, heating and ventilation systems, lighting, etc.). The remaining 30% is achieved through measures related to building operations (regulation, user awareness, and best practices). Often, operational actions have already been implemented. Asset managers then focus on improving the building and replacing technical equipment. Oxand allows the definition and prioritization of investment actions by combining them with work related to obsolescence, in a process of consolidation and streamlining to obtain the best return on investment. The implementation of these action plans achieves an average reduction of 51% in energy consumption."

main sources of heat loss



Energy renovation of buildings

Energy renovation work or maintenance plans involve interventions on the building's exterior and exterior walls to significantly reduce heat loss. These works also provide an opportunity to rethink the building's functionality and implement safety and accessibility compliance measures.

Insulation: according to Ademe, insulation work can help to save 10% to 20% on energy consumption related to heating.

Renewal of technical equipment

One of the goals of the energy transition is decarbonization, and replacing fossil fuels with renewable energy is one of the levers for action. Fleet managers must also consider their energy mix, i.e., the different energy sources used, and identify opportunities for connecting to district heating networks or installing photovoltaic systems, for example.

These opportunities to change energy sources are also opportunities to carry out energy improvement work on technical equipment in order to **improve its energy performance (heating system, domestic hot water production, etc.)**.

2.2 Manage your equipment and act on consumption habits

More and more **businesses and communities are adopting building management systems (BMS)** to control their equipment. These systems rely on smart sensors to track equipment consumption and optimize its use, for example by centrally regulating heating temperatures or scheduling time slots. These devices improve thermal comfort for users, but can also play a role in adjusting and automating the intensity of lighting systems.

The BACS (Building Automation and Control Systems) decree requires the installation of automation and control systems in all new and existing commercial buildings by January 1, 2025.



Raising awareness of good practices

According to Cerema, in **commercial buildings, eco-friendly actions (involving occupants)** can generate average savings of 5 to 10% per year. These eco-friendly actions include reducing and adapting the temperature level to the presence of users, etc.

3.

5 key steps innovative for plan and manage optimal investment trajectories



The Oxand methodology allows you to project the evolution of a park, and to simulate the impact of decisions investment in energy performance and the state of disrepair of the fleet. This allows you to streamline your decisions, **optimize your plans and manage your transition,** by continuously integrating your issues related to risks, performance and costs.

An auditable approach, based on artificial intelligence which allows:



Predict the winnings



Identify the best returns on investment



Continuously optimize

3.1 MAPPING the energy performance and condition of its building stock

The approach involves having a single repository to collect, centralize, structure, and use all available energy data for each building, as well as the obsolescence and energy performance of each building component. The mapping is carried out by exploiting the entire



Knowledge already formalized: existing asset database, technical and energy audits, history of work carried out, latest major maintenance and renewal (MER) planning, etc. As for missing information, it must be collected as close to the field as possible: work managers or operations managers, site managers, users, etc. This mapping makes it possible **to obtain**

360° knowledge and visibility of its asset base, to identify components that have an impact in terms of energy consumption, because they are energy-intensive or wasteful, and to project the natural evolution of components based on their aging.

3.2 EVALUATE the potential of actions energy improvement by component

When it comes to reducing the energy consumption of buildings, it is important to properly assess **the condition of the main components** in order to improve their efficiency, by examining them using:

Analysis of the thermal insulation level of the various parts of the building and the entire building envelope: facades, roofing, exterior joinery (doors and windows), lower floors, etc.

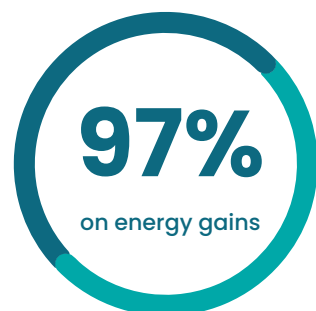
An audit of the performance of all technical equipment:

heating and domestic hot water production systems, ventilation, air conditioning, and building management systems. It will therefore be possible to assess the potential for reducing consumption when undertaking actions aimed at improving the energy efficiency of a component composant.



3.3 PROJECT costs and gains energy related to work plans

Before making investment decisions, it is important to take into account takes into account the potential savings linked to work projects, and the costs of these projects.



One way to objectively assess renovation decisions is to compare different investment scenarios and project the associated energy trajectory. **At Oxand, we have developed models based on artificial intelligence with 97% accuracy, allowing us to anticipate energy savings.** Energy efficiency certificate (CEE) grants and incentives, as well as potential synergies,

Along with maintenance work related to obsolescence, these are factors to consider when estimating the full cost of each project. This way, decision-makers can compare **the cost-effectiveness of different options, visualize the impact of their decisions, and choose the best course of action.**

3.4 BUILD and ARBITRATE a plan multi-year investment adapted to your challenges

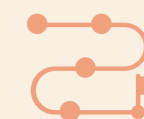
The strength of Oxand Simeo lies in its ability to simulate decisions investment, to measure their impact on a portfolio over 3, 10, or 50 years or more. The impact study then makes it possible to align investments with the chosen strategy. Through simulations, **the objective is to define the optimal scenario based on strategic** issues and established constraints: budgetary constraints, energy consumption reduction targets, regulatory and safety compliance, business continuity, etc.

Several factors must be taken into account, including energy consumption, usage intensity, geographic location, and, of course, the cost of the work. Finding **the optimum balance offers the best compromise between cost and performance**, in order to achieve the fastest possible return on investment (ROI).

The advantages



Prioritize work
on the most energy-
consuming buildings
with the best ROI



**Define plans
of action**
to achieve
regulatory
objectives



**Group the
works** For
cadence
optimization
renovations

3.5 MANAGE your action plan

Achieving performance objectives requires monitoring progress by compared to initial projections. Long-term management allows for focus on the objective to ensure its achievement. **Through agile management, changes in the portfolio (entry and exit of assets) as well as changes in constraints (performance objectives, budget, etc.) are integrated.** Investment plans are thus continuously optimized to ensure that objectives are achieved. This management also allows for **the explanation and communication of corporate social responsibility (CSR)** strategies, making them concrete and verifiable over time.

4.

Key success factors

Before embarking on an energy transition strategy,
It is essential to consider
seven key success factors to ensure its effectiveness.



4.1 Have panoramic vision et long terme

Energy renovation is a subject that requires a comprehensive approach, with a vision that goes beyond simple energy consumption and the simple consideration of the energy consumption levels of buildings. The work identified according to the state of disrepair and energy performance of each component must then be considered as a whole so as not to alter the potential for energy savings.

Ademe thus underlines that "work on high-performance renovation demonstrates that it is crucial to favor complete renovations to the detriment of carrying out uncoordinated, single-action energy renovation work."

Energy renovation must be ambitious, part of a virtuous, evolving and dynamic territorial or corporate policy.

4.2 Reasoning by combining obsolescence and energy

Companies and public bodies tend to have an action plan to manage the obsolescence of their often very expensive components, and a separate team dedicated to energy management. **By combining these two challenges, it is possible to optimize the cost of work by up to 20%. Therefore, before defining the investments to be made, it is important to project the evolution of the assets over time.** Modeling this evolution makes it possible to anticipate the investments to be made, taking into account the natural evolution of the components of each asset and the energy reduction targets to be achieved.

4.3 Objectifying the elements with indicators and formalize

A good strategy is based on reliable, consistent and verified information. It is essential to have a single reference framework presenting the condition of your buildings, the risks, and their energy performance. **This framework allows you to establish realistic scenarios, plan for the future, and measure the energy savings achieved each year.** Having a dashboard with monitoring indicators also allows each stakeholder to understand the project's objectives and the results achieved. **This dashboard makes the objectives understandable and communicable, particularly for senior management.**

4.4 Prioritize operations

An energy investment plan includes short-, medium-, and long-term actions. **Priority should be given to the most energy-intensive buildings and those on which renovations will have the greatest impact across the portfolio.** Decisions must also be made considering the cost-benefit ratio and the available human and financial resources.

This approach allows for rapid results with a favorable return on investment. Generally speaking, insulation work is considered a priority over any other type of intervention. Indeed, this type of work generates the greatest energy savings, and it is also a prerequisite for avoiding heat loss or improperly sizing the heating system.

4.5 Massify the work

To optimize your energy transition, it's advisable to take a comprehensive approach and pool your work, for example, by issuing a single call for tenders for several renovation projects. **This consolidation also allows you to obtain better price offers for the work.** For example:

/// Increase the
production capacity
per person by 40%

(operations manager)

/// Increase from
€600,000 per full-
time equivalent
(FTE) per year to
€1 million

4.6 Establish an organization virtuous

It is essential to establish an organization and governance structure dedicated to the energy transition, with ambition and resources. A cross-functional working group can be established, with all the departments that have a role to play in the project. **Support from senior management is also crucial, particularly to advocate for and secure the necessary funding.**

4.7 Supporting change

The energy transition must also involve all stakeholders and stakeholders linked to the building: decision-makers, agents, employees, users, service providers, etc. **This approach makes it possible to align expectations, provide information on the role of each person, and create a collective dynamic around change.**



/ Oxand supports you

The energy transition is today a financial necessity, A regulatory obligation and an ecological imperative, but it's also an **opportunity**. For businesses and public bodies, it offers the opportunity to rethink their buildings and improve their energy performance and user comfort, while adopting a positive approach. By adopting more virtuous practices, businesses and communities can also gain resilience, consistency, and legitimacy. At Oxand, we support our clients in their energy transition **process, helping them implement the necessary organization, map their assets with a comprehensive vision, and determine the best investment paths**. This is achieved thanks to our decision-making software and our 20 years of consulting expertise. Our approach integrates the dimensions of challenges, risks, and costs to generate sustainable gains and extend the lifespan of assets.

What if we met to discuss your challenges and specificities?



Why Oxand?

- **More than 20 years of expertise** in the management of real estate assets and infrastructure
- **A proven SaaS solution** with a wide reference base
- **A methodology** delivered by an expert and responsive project team
- **In-depth knowledge of energy** performance optimization plans
- **Global expertise** offering solutions and advice

20
ans

d'expertise

3 500

10 000

modèles prédictifs

75

data scientists

What if we met to discuss your challenges and energy transition objectives?

Contact@oxand.com

1. RECONCILE IMPERATIVES



oxand

accelerate decisions
realize ambitions

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