

# How to approach the environmental transition?

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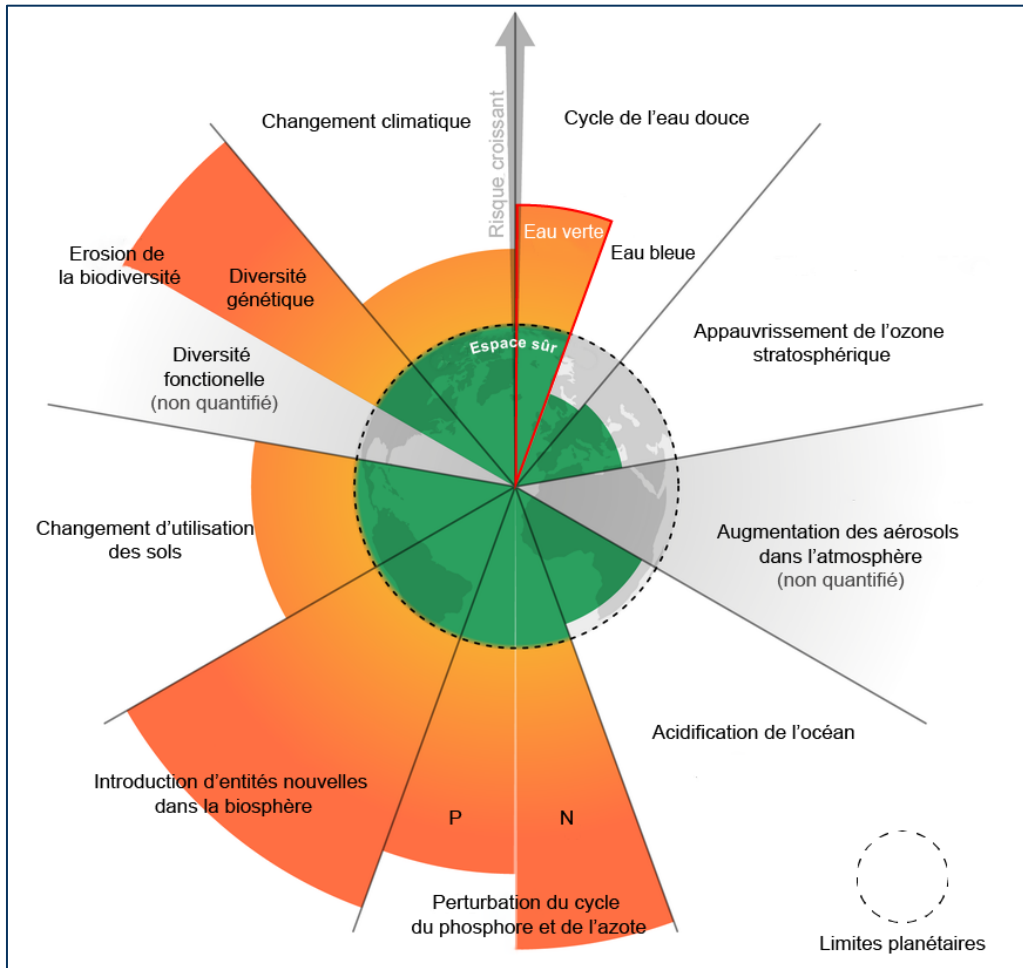
*Head of strategic consultancy, partner  
Bureau Deplasse&Associés*



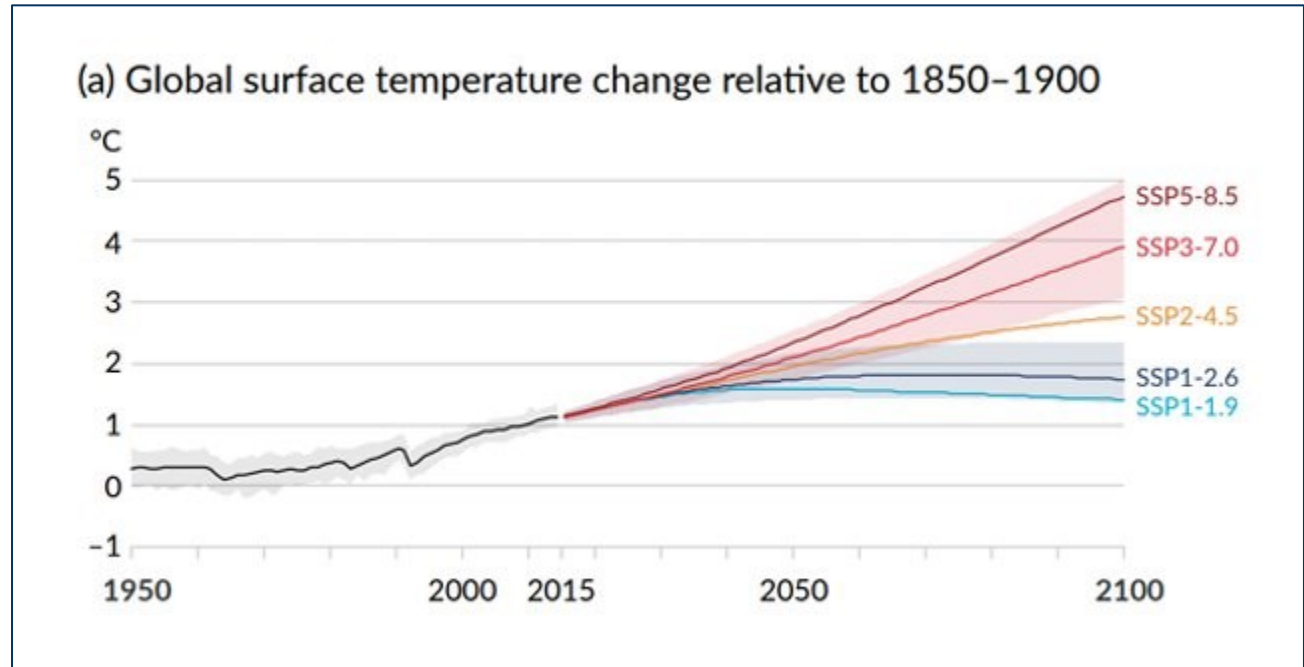


# Regulatory and environmental context

# 6/9 planetary limits are crossed



# Increase of global temperature



# Clear guidelines are defined by the EU and transposed at Member State level



2050 target : carbon neutrality

2030 target: 55% reduction in emissions



- Means of implementation :**
- ✓ Improving energy efficiency
  - ✓ Use of renewable energies
  - ✓ 0 emission and soft mobility
  - ✓ Waste and water management
    - ✓ Protecting biodiversity

# The EU taxonomy as a reference framework for non-financial reporting

Defines when a company is operating sustainably or is environmental friendly.



Aims to reward and promote environmentally friendly business practices and technologies



Mandatory for big companies.

- > 250 employees
- > 20 million euros in balance sheet
- > 40 million euros in turnover



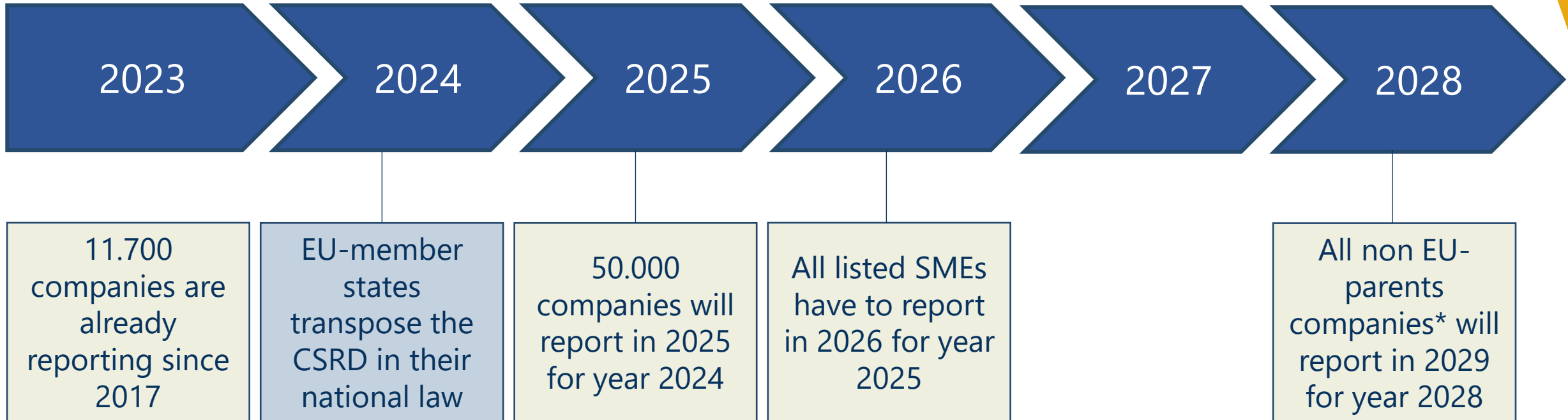
Evaluation through an EU taxonomy report



## Activities covered

- Construction of new buildings
- Renovation of existing buildings
- Acquisition and ownership of building
- ...

# More and more companies concerned



\*With combined group turnover in the EU of more than € 150 millions

# To comply with the EU taxonomy, the company must align with 3 ESG criteria



# The 2 first criteria are constructed around 6 environmental objectives

1. Climate change mitigation,

2. Climate change adaptation,

3. Sustainable use and protection of **water and marine resources**,

4. Transition to a **circular economy**,

5. **Pollution** prevention and control,

6. Protection and restoration of **biodiversity and ecosystems**.



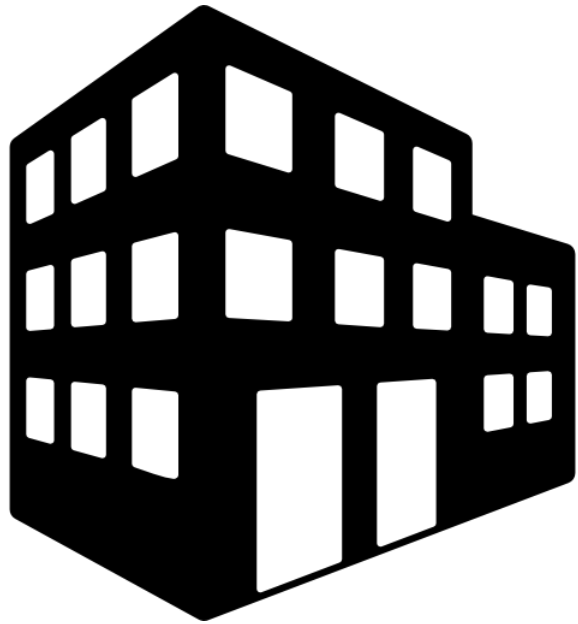
# EU Taxonomy

Sector	Activity	1. Climate mitigation	2. Climate adaptation	3. Water	4. Circular economy	5. Pollution prevention	6. Biodiversity
Construction & real estate	<b>Acquisition and ownership of buildings</b>						
	Installation, maintenance and repair of renewable energy technologies						
	Installation, maintenance and repair of charging stations for electric vehicles in buildings						
	Installation, maintenance and repair of instruments and devices for measuring, regulation [...]						
	Installation, maintenance and repair of energy efficiency equipment						
	<b>Renovation of existing buildings</b>						
	<b>Construction of new buildings</b>						

- › **Substantially contribute** to at least one of the six environmental objectives
- › **Do no significant harm** to any of the other five environmental objectives
- › Comply with **minimum safeguards** (social & governance)



# Example



- ✓ Office building
- ✓ Building built in the 90's in Brussels Capital region
- ✓ High consumption level (EPC E)
- ✓ No clear idea of how the building works

→ **Willingness to renovate the building (= activity covered by EU Taxonomy)**

→ **Possibility to adapt the rents in consequence**

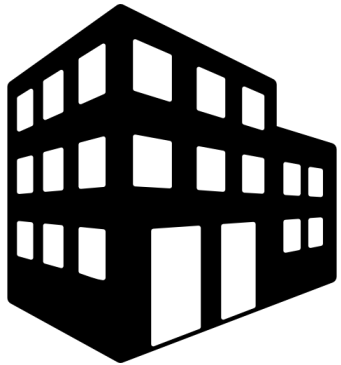
→ **Avoid financial pressure**

→ **Possible classification of the building in a "green" fund (article 7 etc.)**

→ **Asset more liquid (interested by institutional investors concerned by EU Taxonomy)**

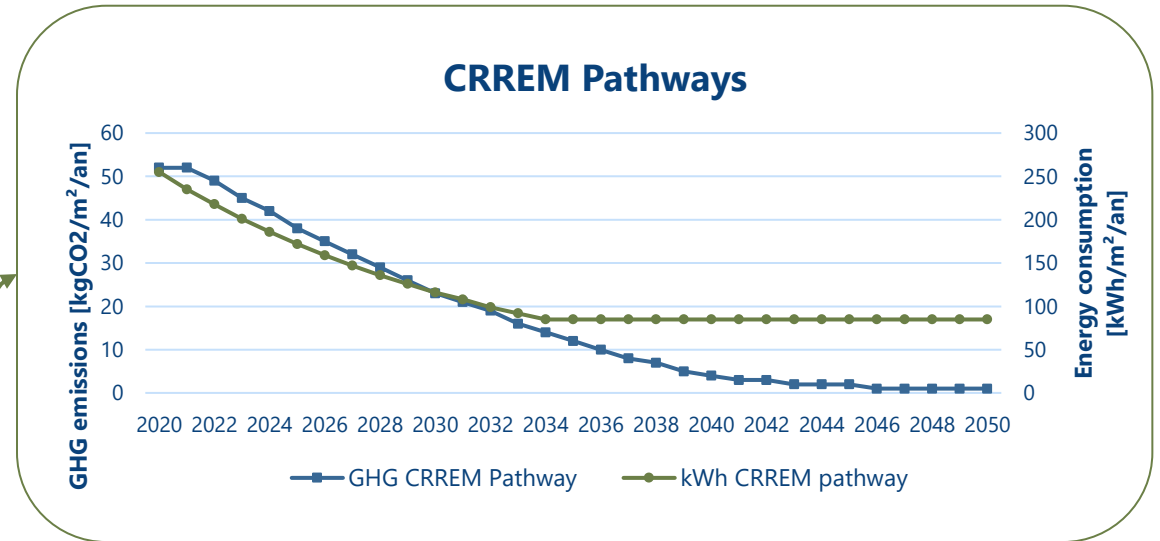
# 1. Substantial contribution to

Climate change mitigation



Performance monitoring and assessment  
EPC A or Top 15%

Opportunity to cope with CRREM pathway and act to limit global warming to 1,5°C

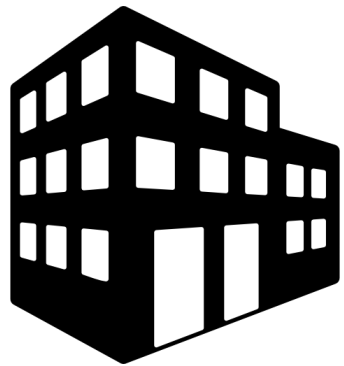


2050

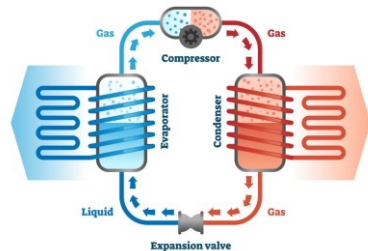
Target of consumption < **85kWh/m²/year**  
Target of GHG emission < **1kgCO2/m²/year**

# 1. Substantial contribution to

Climate change mitigation



→ Performance monitoring and assessment  
→ EPC A or Top 15%



- Implementation of **sub-metering**
- Corrective **maintenance**
- Real **performance** monitoring ...

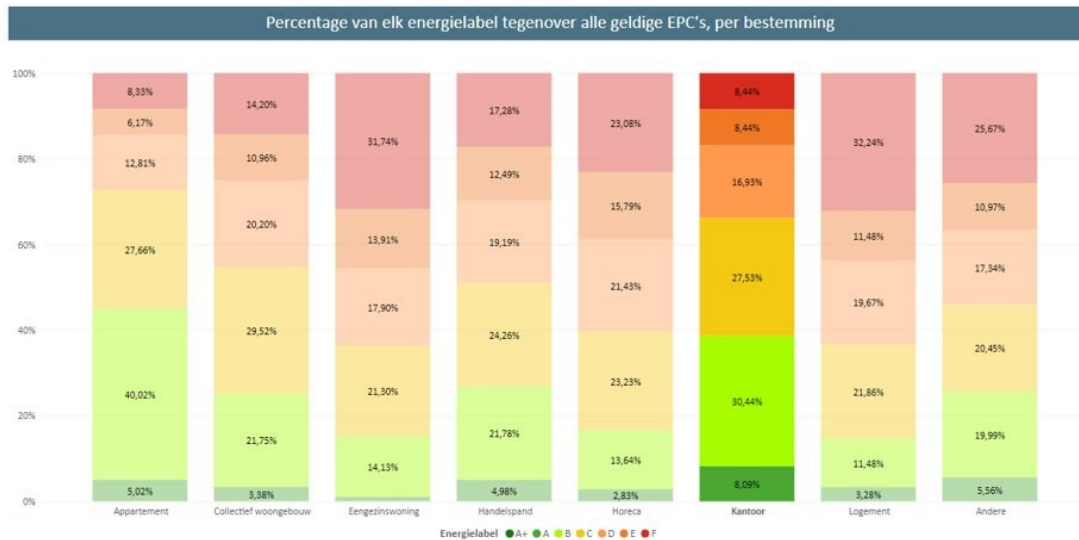
- **Renovation** of the techniques and the envelope
- Revision of the **environmental conditions**
- Modification of user **behavior** ...



**Before the  
technical  
project**

# 1. What is the consumption target?

EPC A or Top 15% ??? 2 Real different questions in Belgium

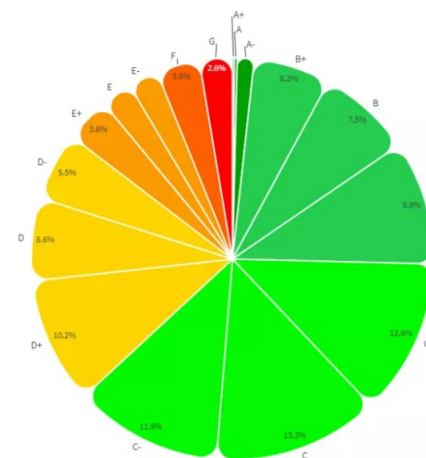


## Flanders

Top 15 %  
< 122,3  
kWh/sqm.  
Y

## Brussels

Top 15 %  
< 121  
kWh/sqm.  
Y



# Presentation of the 3 scenarios

## Methodology

Budgeting of the cost of renovating the techniques on the basis of three renovation scenarios.

### Scenario 1

**Complete technical renovation** in line with minimum energy performance regulations & compliance with the well-being code.

#### Objectives:

PEB C  
BREEAM VERY GOOD



### Scenario 2

#### 2030 Target

**Optimising the performance of techniques** for a reasonable extra cost and guaranteeing a low level of energy and maintenance costs.

#### Objectives:

PEB B  
BREEAM EXCELLENT

### Scenario 3

#### 2050 Target

**Elimination of local fossil fuels (gas) for 100% fossil fuel free operation**, maximising local **renewable energy** & electricity potential

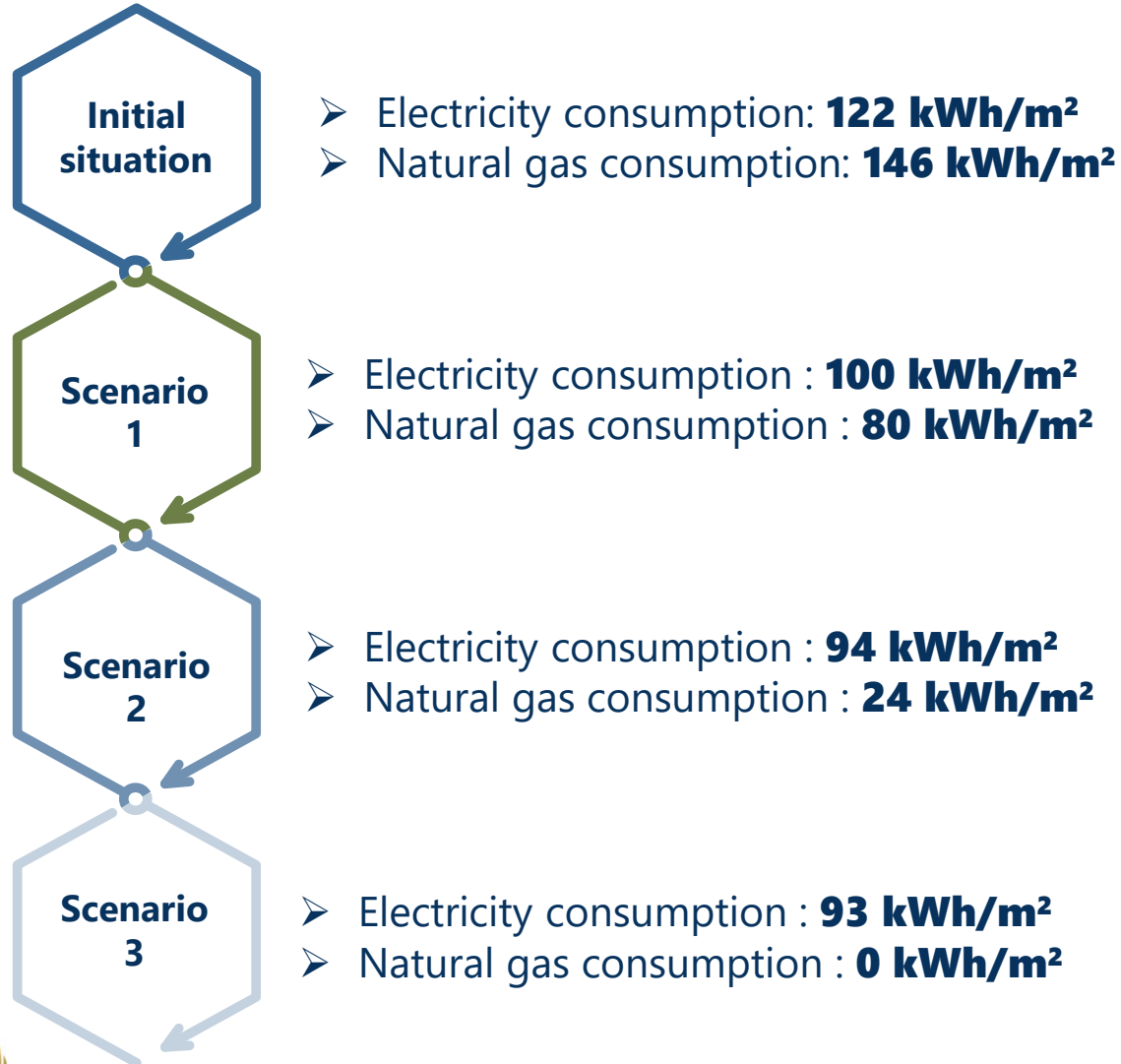
#### Objectives:

PEB A  
BREEAM EXCELLENT  
(OUTSTANDING)



# CONSUMPTION LEVELS

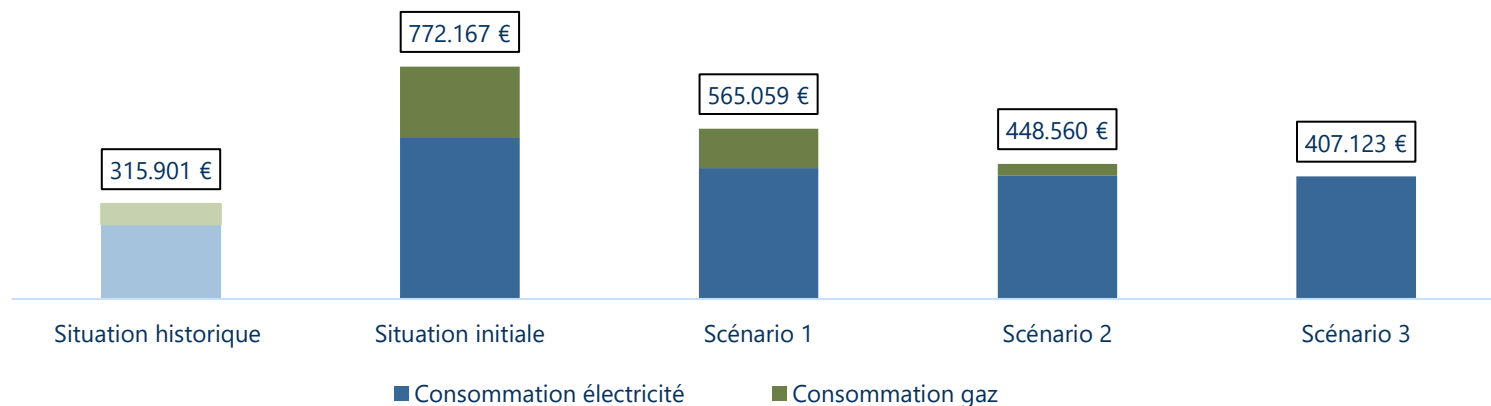
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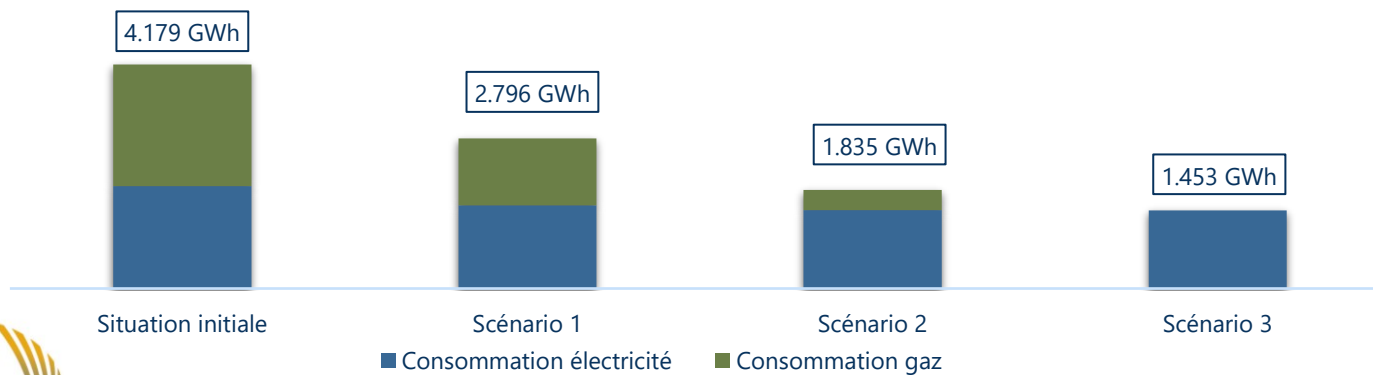


# CONSUMPTION LEVELS

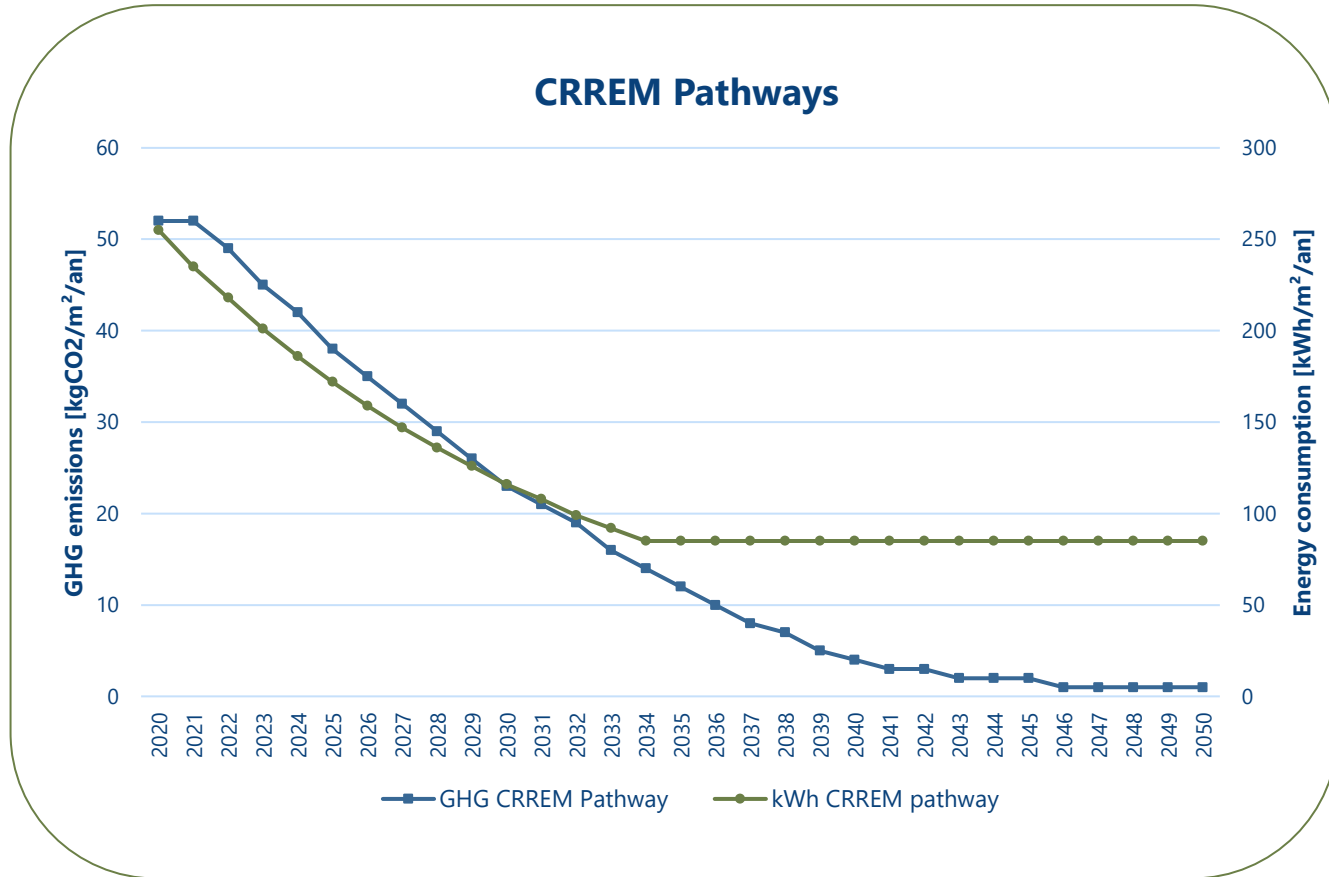
## Cost of energy carriers (€)



## Consumption of energy carriers (GWh)



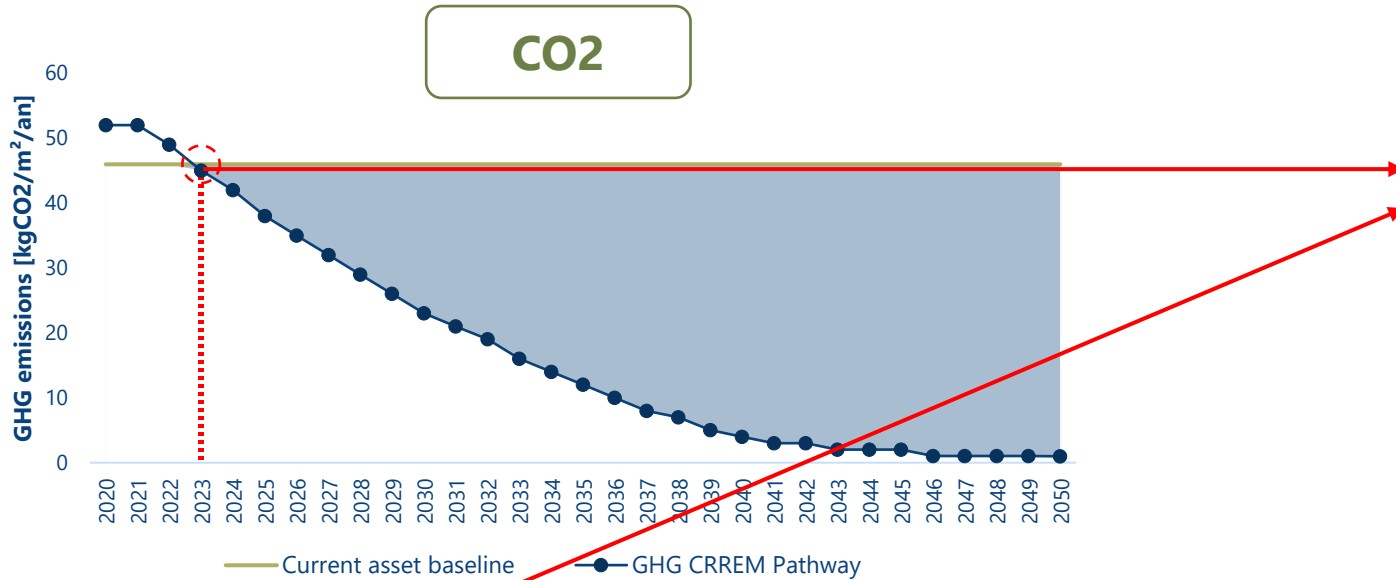
# ENVIRONMENTAL IMPACT



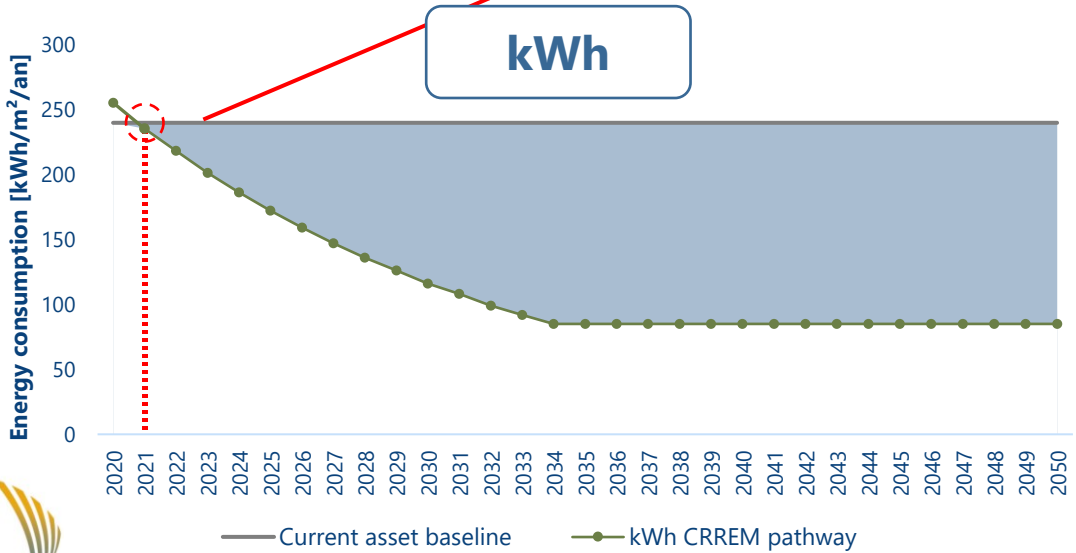
2050

Target of consumption < **85kWh/m<sup>2</sup>.year**  
 Target of GHG emission < **1kgCO<sub>2</sub>/m<sup>2</sup>.year**

# CRREM decarbonization pathway



**Stranding points**  
= year from which  
the asset no longer  
complies with the  
CRREM pathways



**Goal** = reduce energy  
consumption and GHG emissions  
to cope as long as possible with  
the pathways  
**How ? → Energy retrofit**



# The project: the importance of commissioning

# Commissioning ? What's this ?

**Commissioning (Cx)** ensures that a new building functions as the client originally intended, and that the building's occupants are able to operate and maintain it. This intensive quality assurance process begins at the design stage.

**Monitoring** is one of the necessary tools for commissioning, involving the collection, reading and analysis of data. It enables energy performance to be certified and comfort to be optimised, particularly in connection with energy performance contracts.



**ASHRAE Guidelines**

American Society of Heating, Refrigerating and Air-Conditioning Engineers

# Importance of commissioning and fine-tuning installations

## Objectives :

Correct an anomaly

Reduce operating costs

Obtain certifications (breeam, lead, etc.)

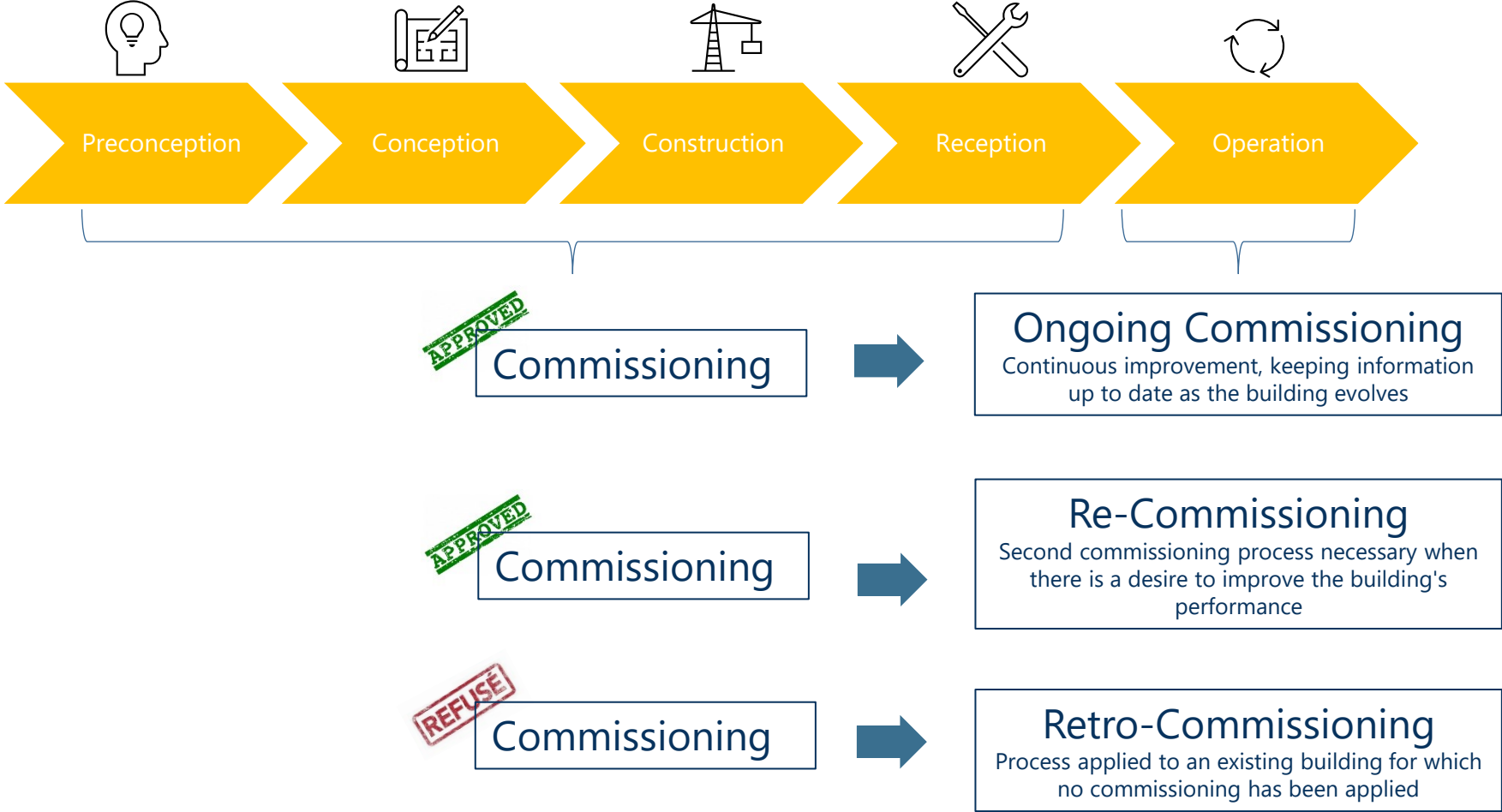
Extend life spans

Help maintenance

Maintain performance over time

**→ Direct impact of 10 to 50% on a building's energy efficiency**

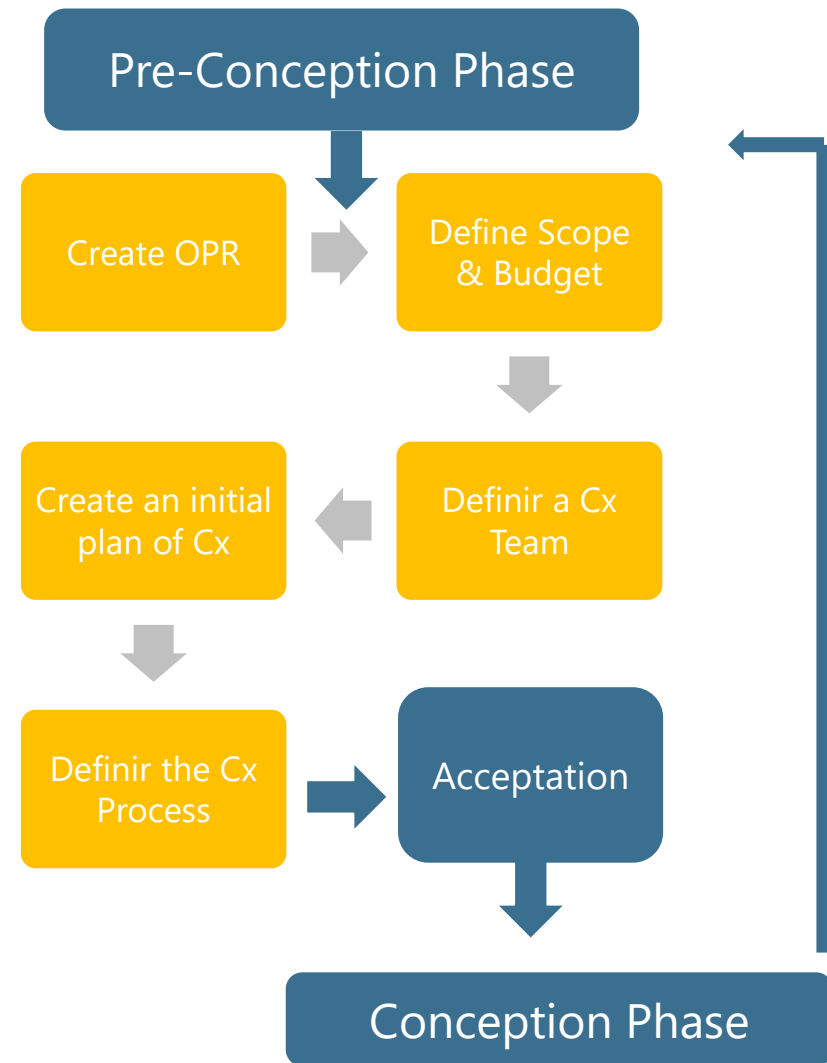
# Life-Cycle Building Commissioning (LCBCx)



# Phase 1: Pre-commissioning

## Step 1 : pre-conception & conception :

- Definition and development of objectives (OPR)
- Setting up and updating a commissioning plan
- Setting up and managing a problem log
- Kick-off meeting for the design phase
- Schedule commissioning activities
- Assessing the compliance of the basis of design (BOD)
- Definition of training requirements
- Integration of the approach into the consultation

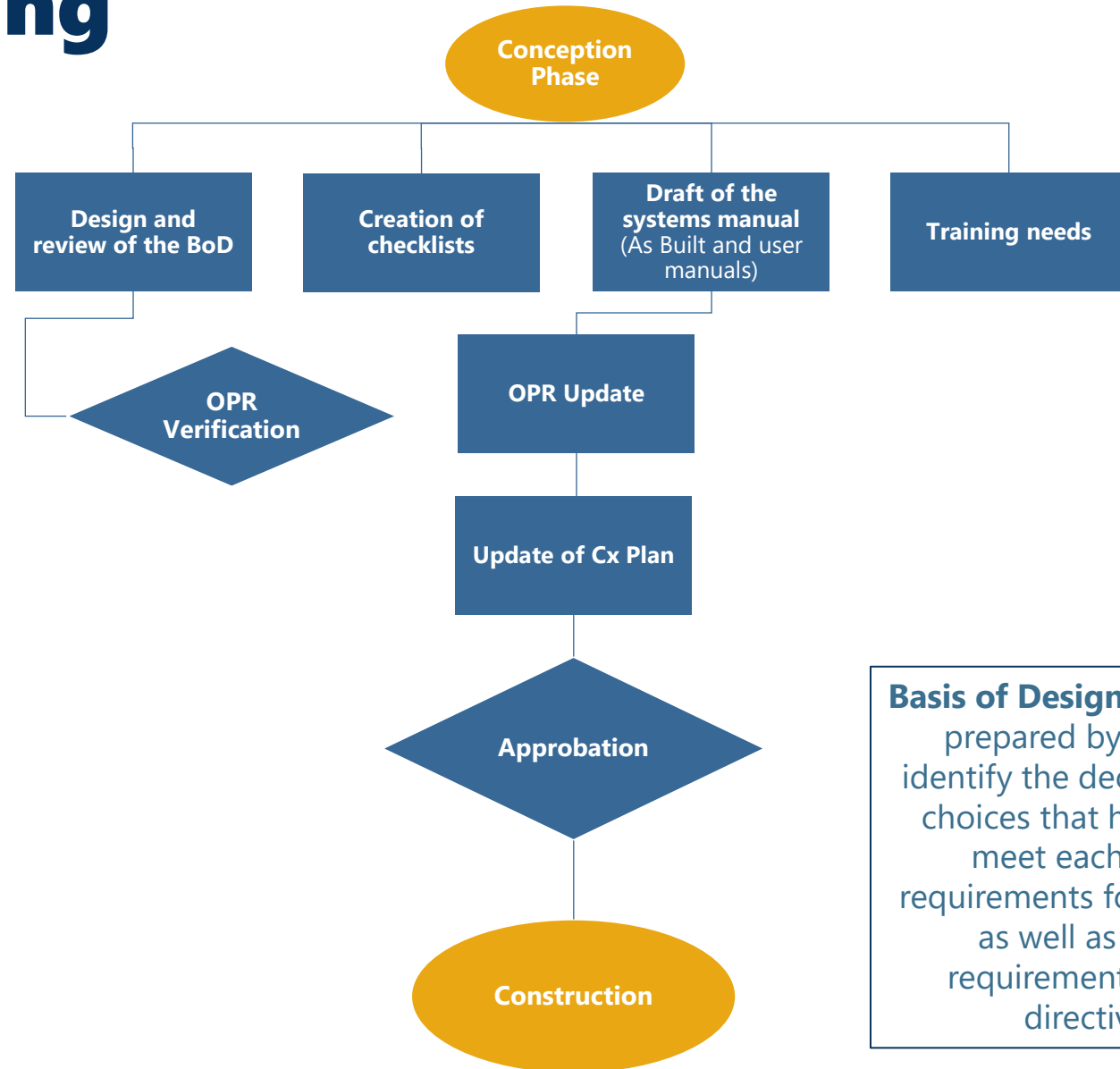




# Pre-commissioning

## Step 2 : realisation

- Kick-off meeting for the construction phase
- Prepare a work schedule
- Give an opinion on the plans
- Site observations
- Pre-functional tests Update EPR and commissioning plan
- Record problems and monitor their resolution

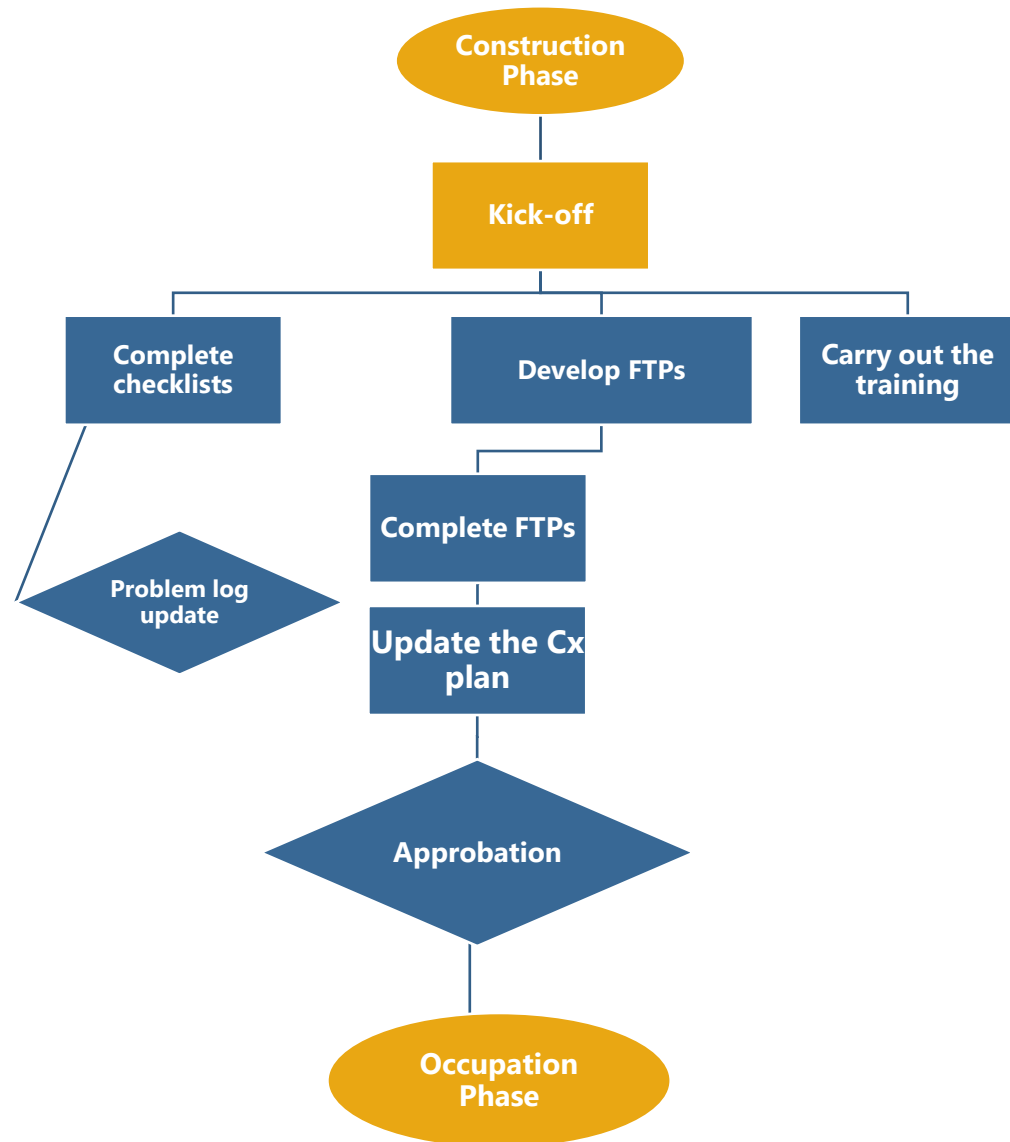


**Basis of Design (BOD)** = Document prepared by the designers to identify the decisions, systems and choices that have been made to meet each of the owner's requirements for the project (OPR), as well as the regulatory requirements, standards and directives in force.

# Commissioning in Construction Phase

## Step 3 : reception

- Report on tests, verification of settings and balancing
- Functional tests
- Training
- Updating ERP, problem log and commissioning plan
- Problem log and resolution
- Final commissioning report



# Monitoring et Commissioning Training @ATIC

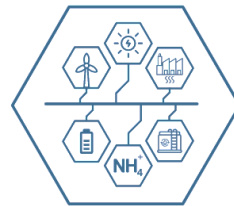
Bastien Mercenier - Greisch & Julien de Rongé - Deplasse

## Julien De Rongé

- Industrial Engineer @ ECAM
- Maintenance Sector Manager @ Tem/Engie Solutions
- Project Manager HVAC @ Deplasse & Associés
  - Certification Building commissioning @ AEE (Association of Energy Engineers)
  - Strategic upgrading of technical installations with a focus on energy savings



Expertise technique



Acteur de la transition énergétique



Engagement sur le résultat



Vision transversale de la gestion patrimoniale

# Nestlé : Case study

## Building

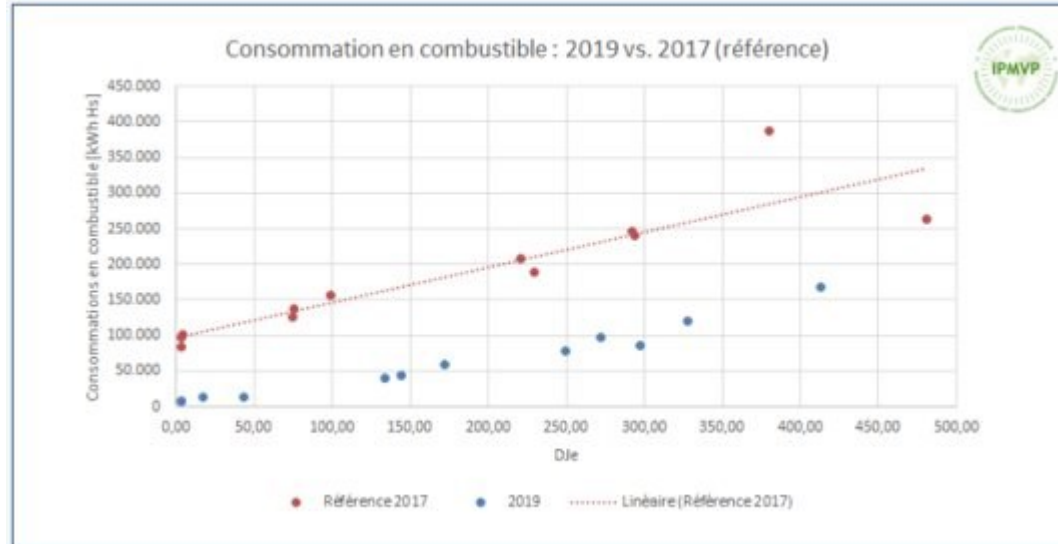
- Affectation : Offices
- Surface Area : 10.617 m<sup>2</sup>

## Actors

- Client : Nestlé
- Design Office: Deplasse & Associés
- Technical Operator: Comantec

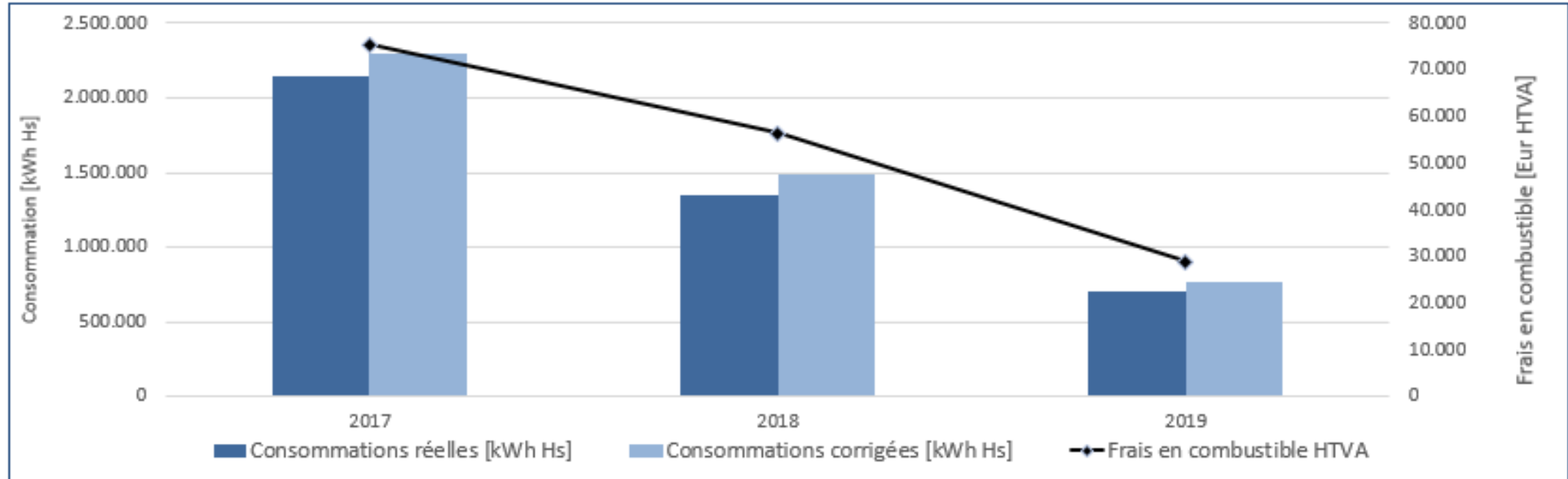
## Mission

- Energy audits for large companies
- Support in implementing the mandatory action plan
- Optimisation of regulation (air renewal, timetables, set points, humidifier operation, etc.)
- Implementation of a "No Cure No Pay" EPC
- Monthly energy monitoring in compliance with IPMVP
- Maintenance control



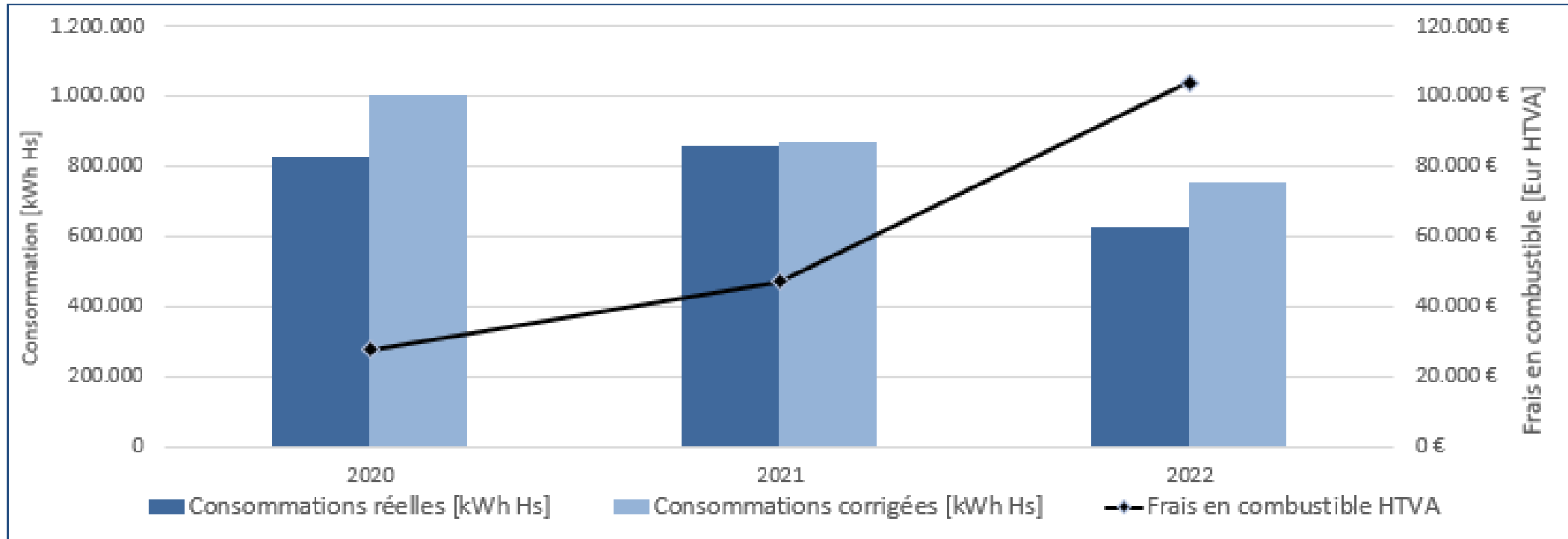
**-60% of fuel**  
**-45% of electricity**  
**> 100.000€**  
**HTVA/year**

# Nestlé : Case study



Annual fuel consumption	2017	2018	2019	2020	2021	2022
Real consumption [kWh Hs]	2.236.952	1.446.193	735.417	826.264	860.612	627.801
Real consumption [kWh Hi]	2.013.257	1.301.574	661.875	743.638	774.551	565.021

# Nestlé : Continuous improvement



Annual fuel consumption	2017	2018	2019	2020	2021	2022
Real consumption [kWh Hs]	2.236.952	1.446.193	735.417	826.264	860.612	627.801
Real consumption [kWh Hi]	2.013.257	1.301.574	661.875	743.638	774.551	565.021



# Performance tracking and monitoring

# Importance of continuous monitoring of installations



1. To boost performance



2. To extend the life of installations



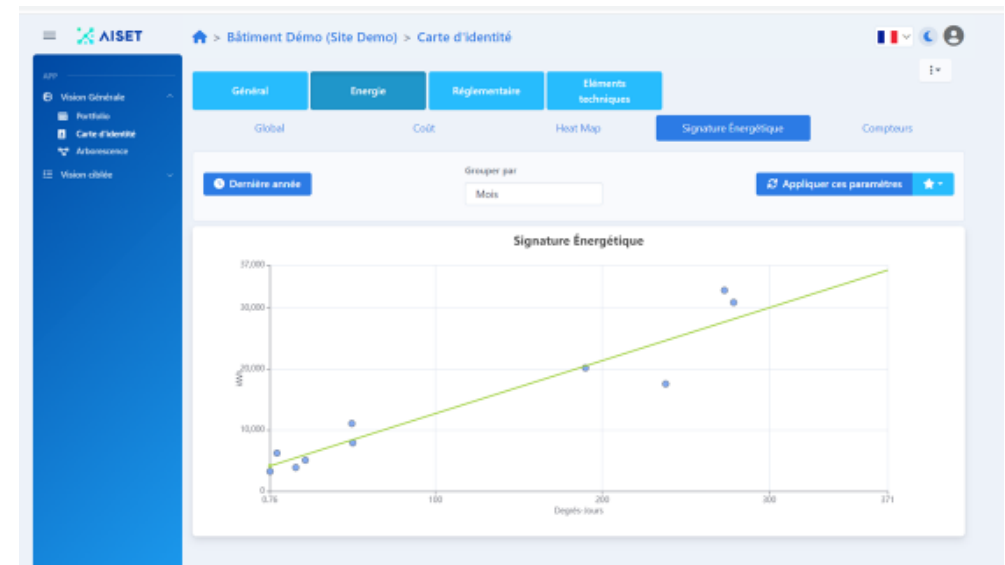
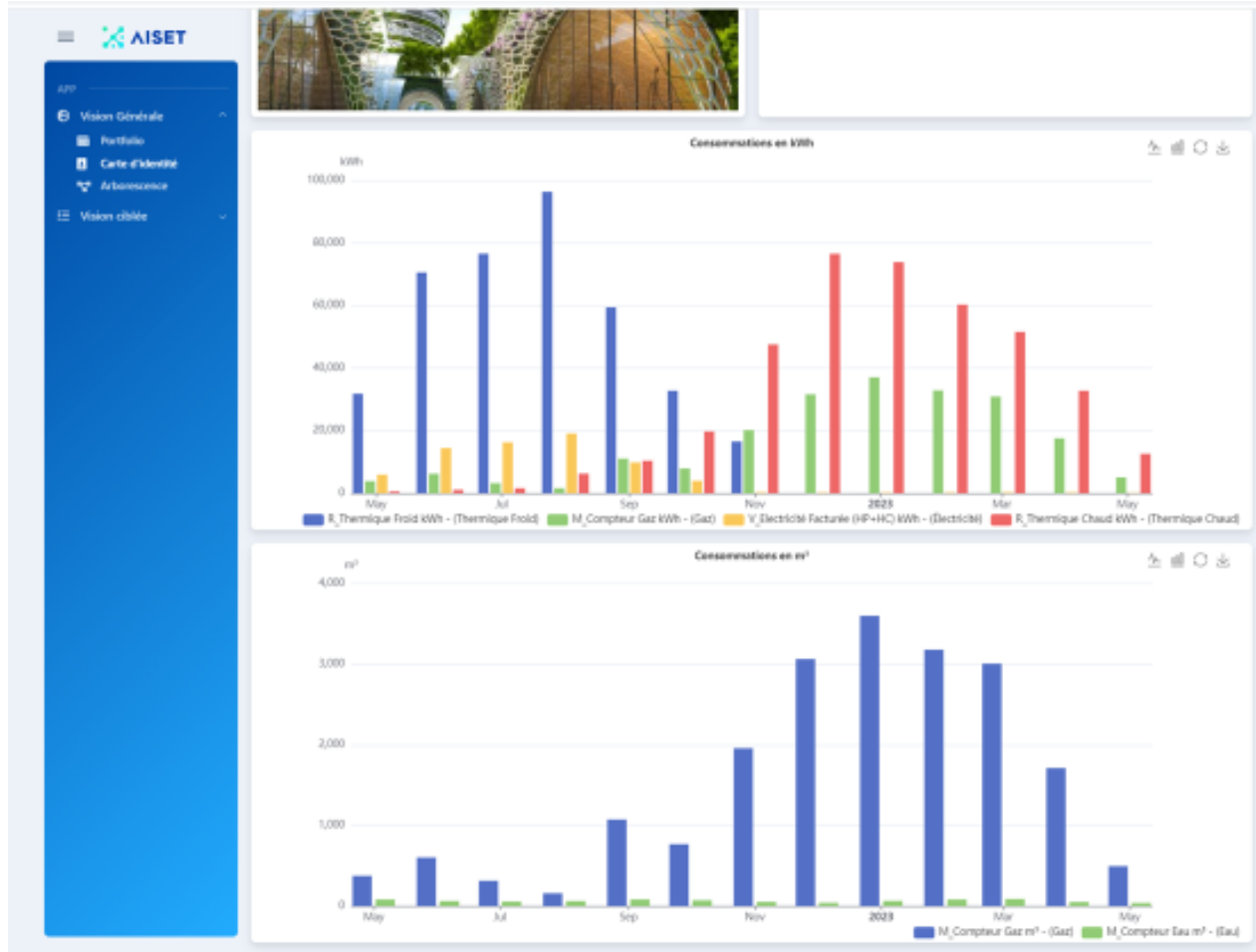
3. To guarantee optimum comfort for occupants (and above all to comply with legal requirements)



# Tools for engineers and experience sharing

1. Audit and dashboarding tools for auditors/engineers  
AISET etc.
2. AI-driven automatic BMS control tools (Brainbox, Delta Q,  
etc.)

# Overconsumption detection



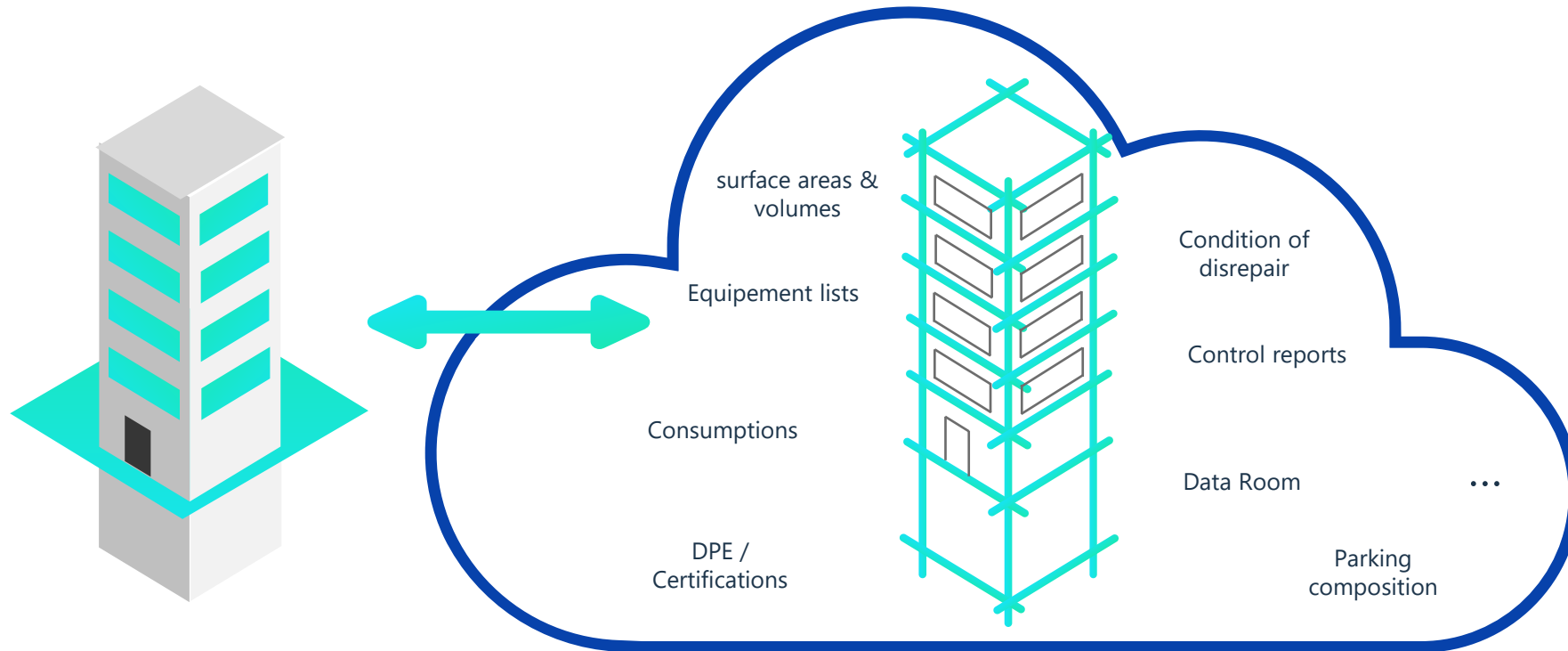
# 1. Audit and dashboarding tools for auditors/engineers



**Example :**



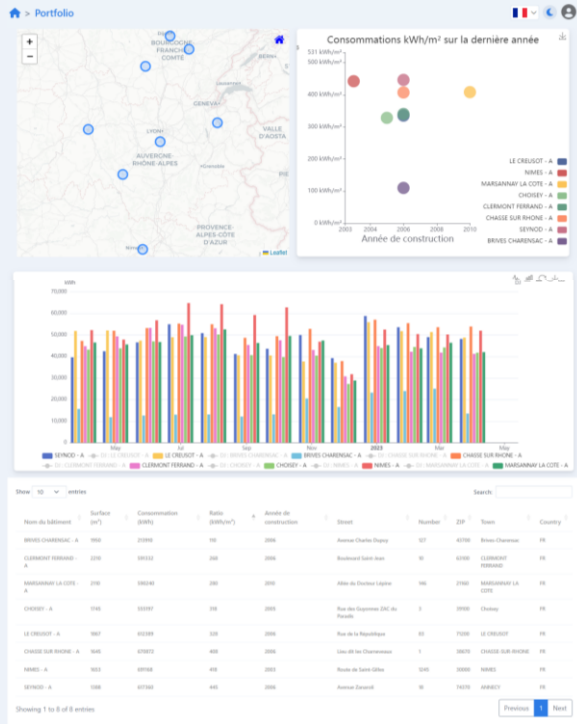
AISET builds the digital twin of buildings



AISET ensures that all data is stored in one secure location.

# Example : AASET

## Global View



## Dashboards



## Heat maps



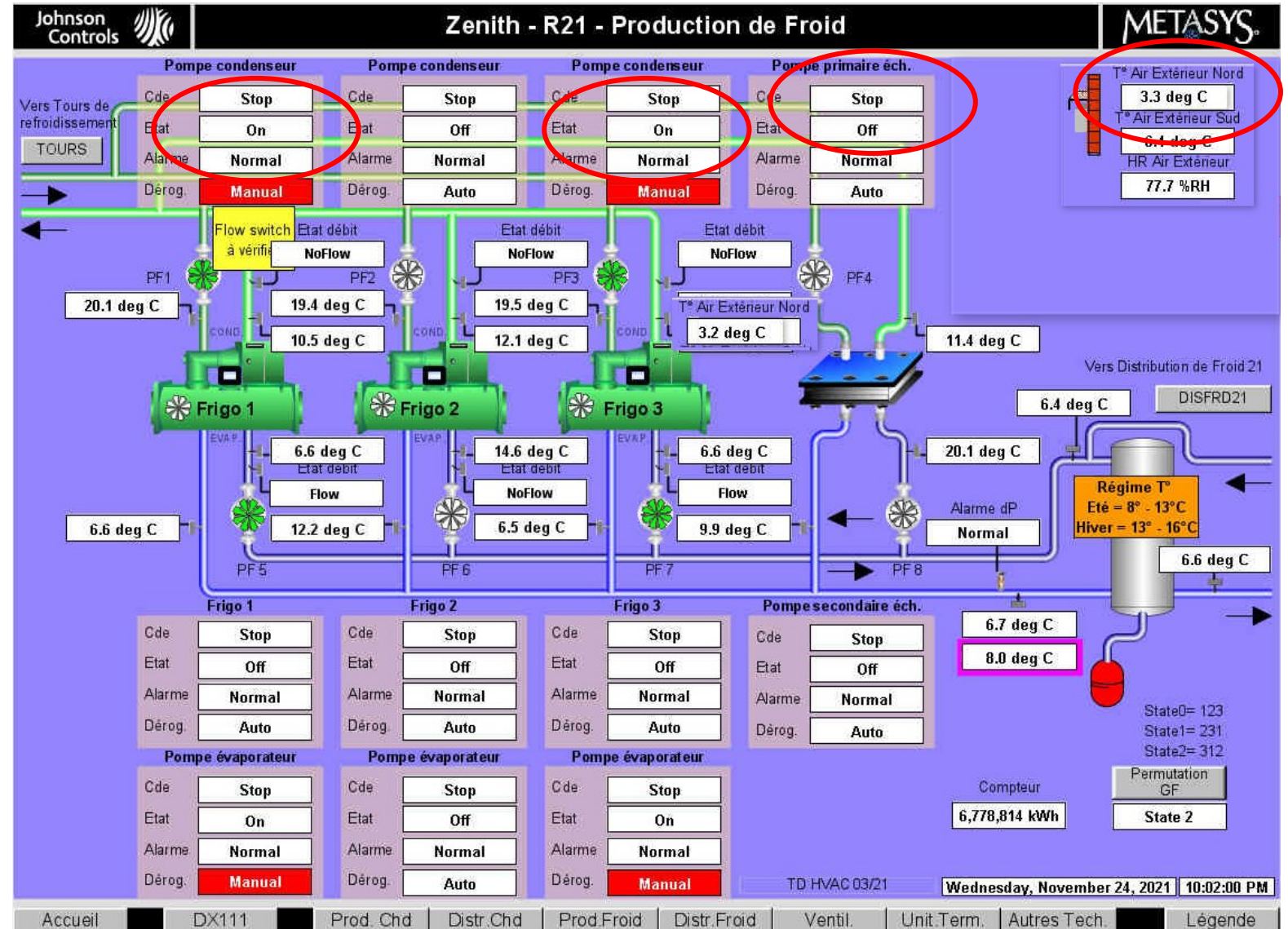
# The BMS, the key of succes

It is 3,3°C outside

The drycooling doesn't work.

Two fridges are free.

The load seems extra.



## 2. AI-driven tools for automatic BMS control



AI takes parameters into account and controls the BMS.

Ex: The AI realizes that the air-conditioning will start at 11 am but that the outside temperature will drop (weather forecast) -> The AI will prevent the machine from starting.

- Can cause problems if technicians don't understand how AI works: they can't understand why the heating is off.
- In practice, savings on a well-tuned BMS are quite low
- Still useful for getting every possible kWh, but requires specialized partners



# Savings validation

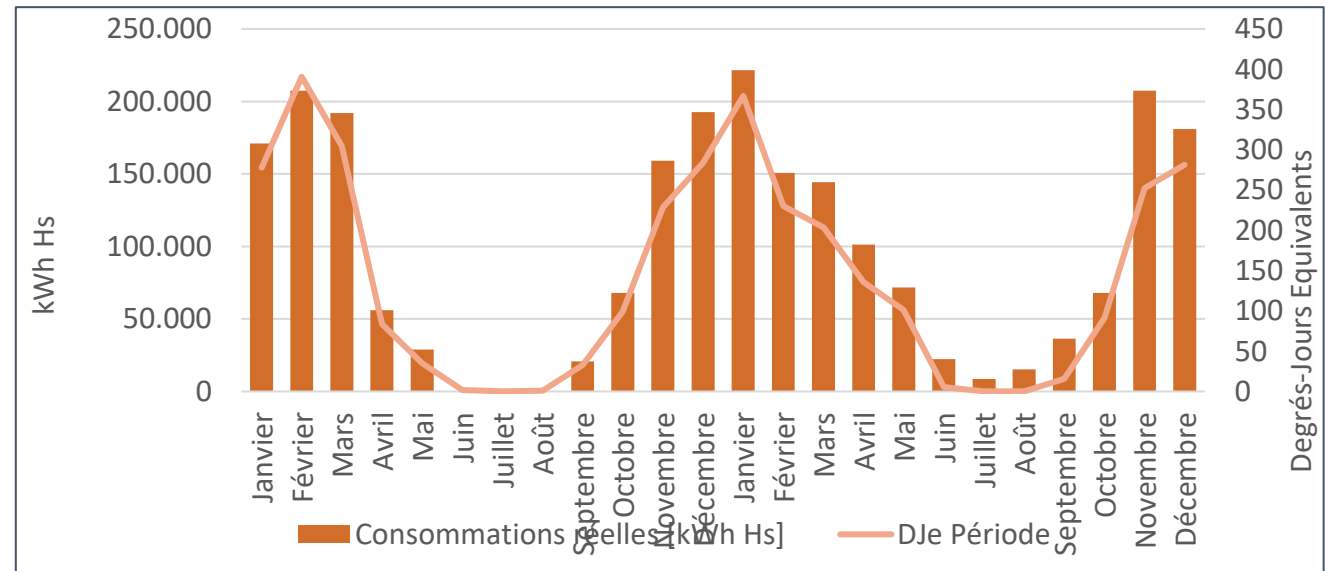
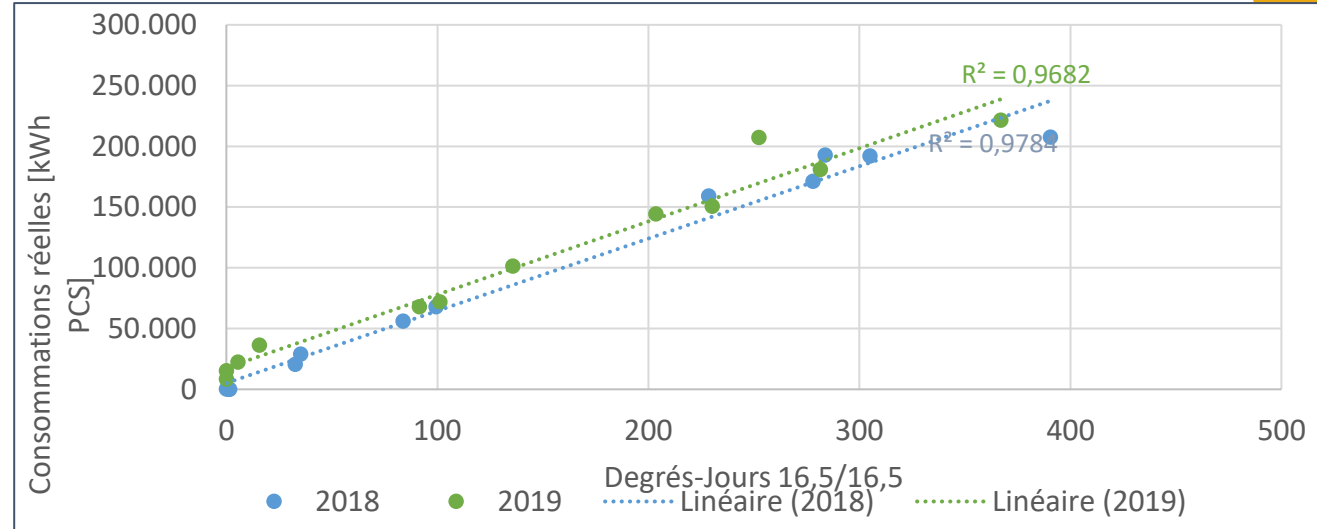




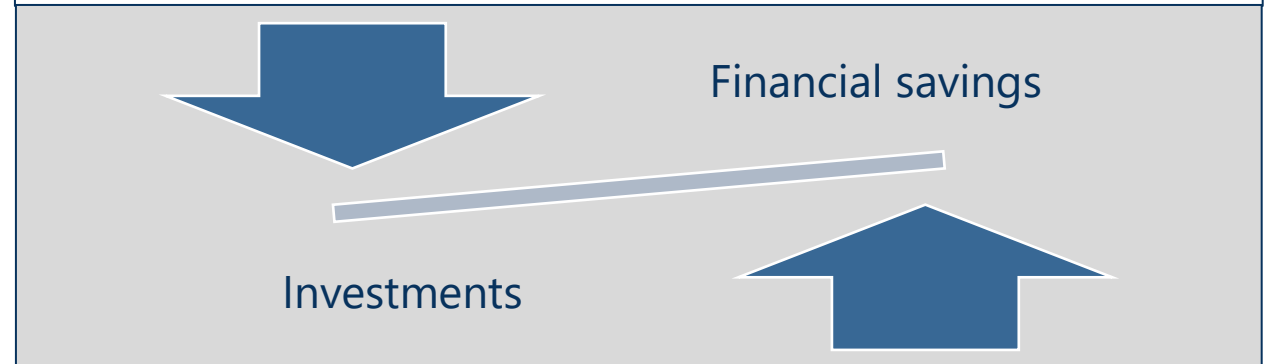
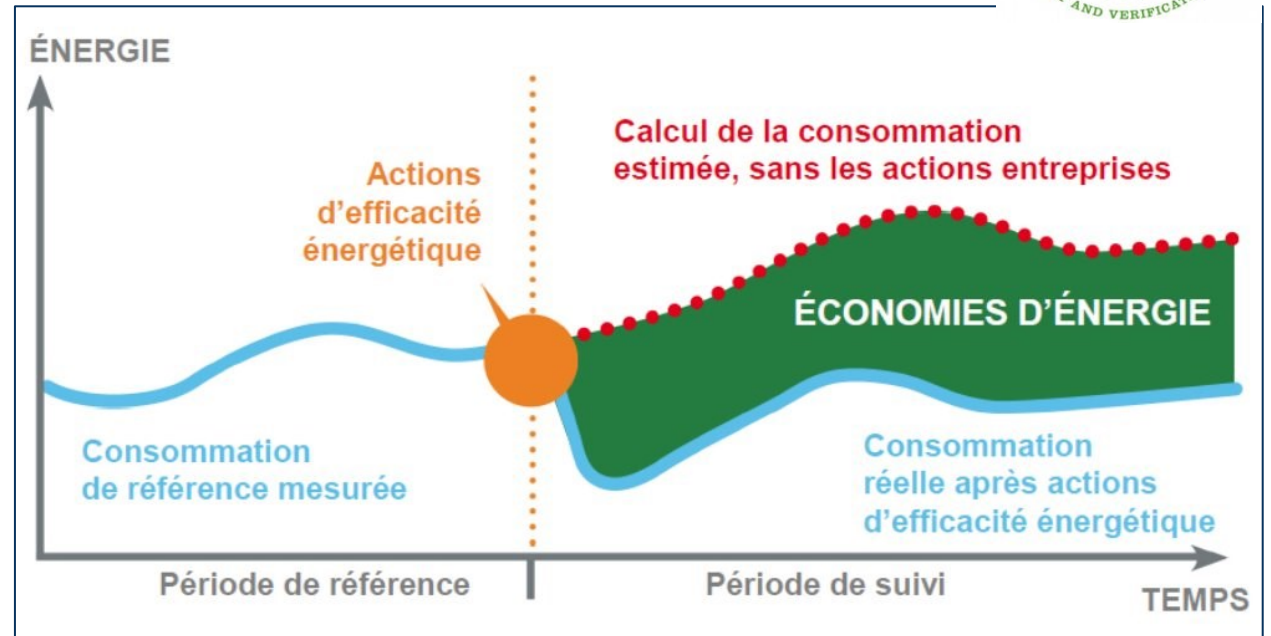
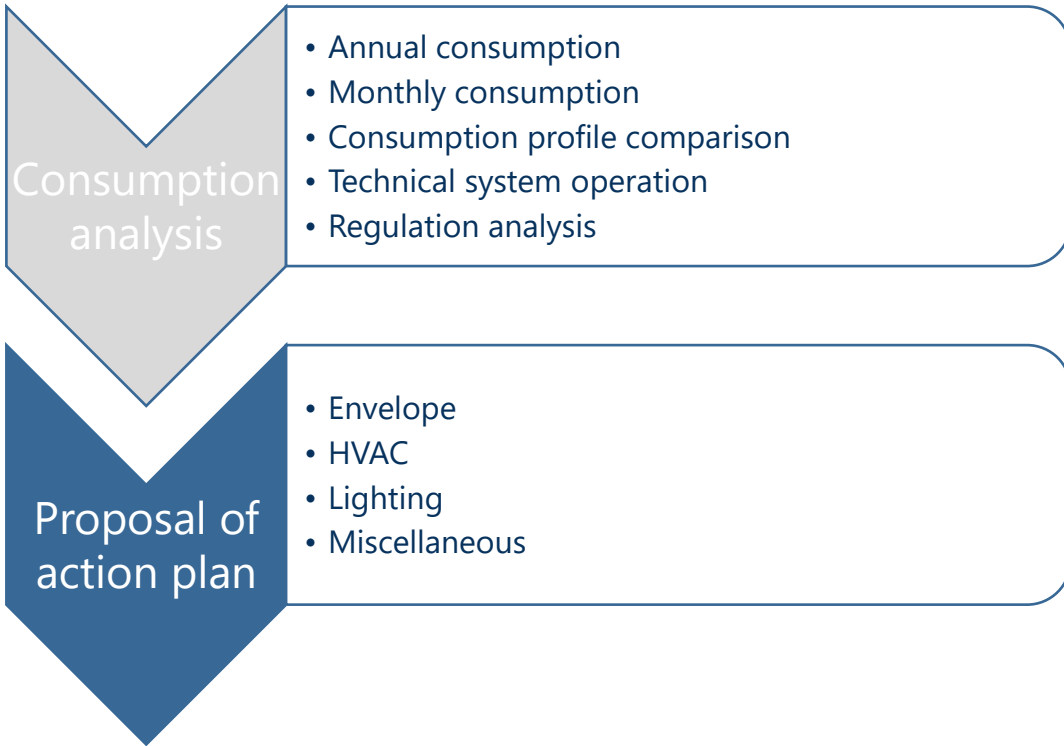
# Several steps are essential

## Consumption analysis

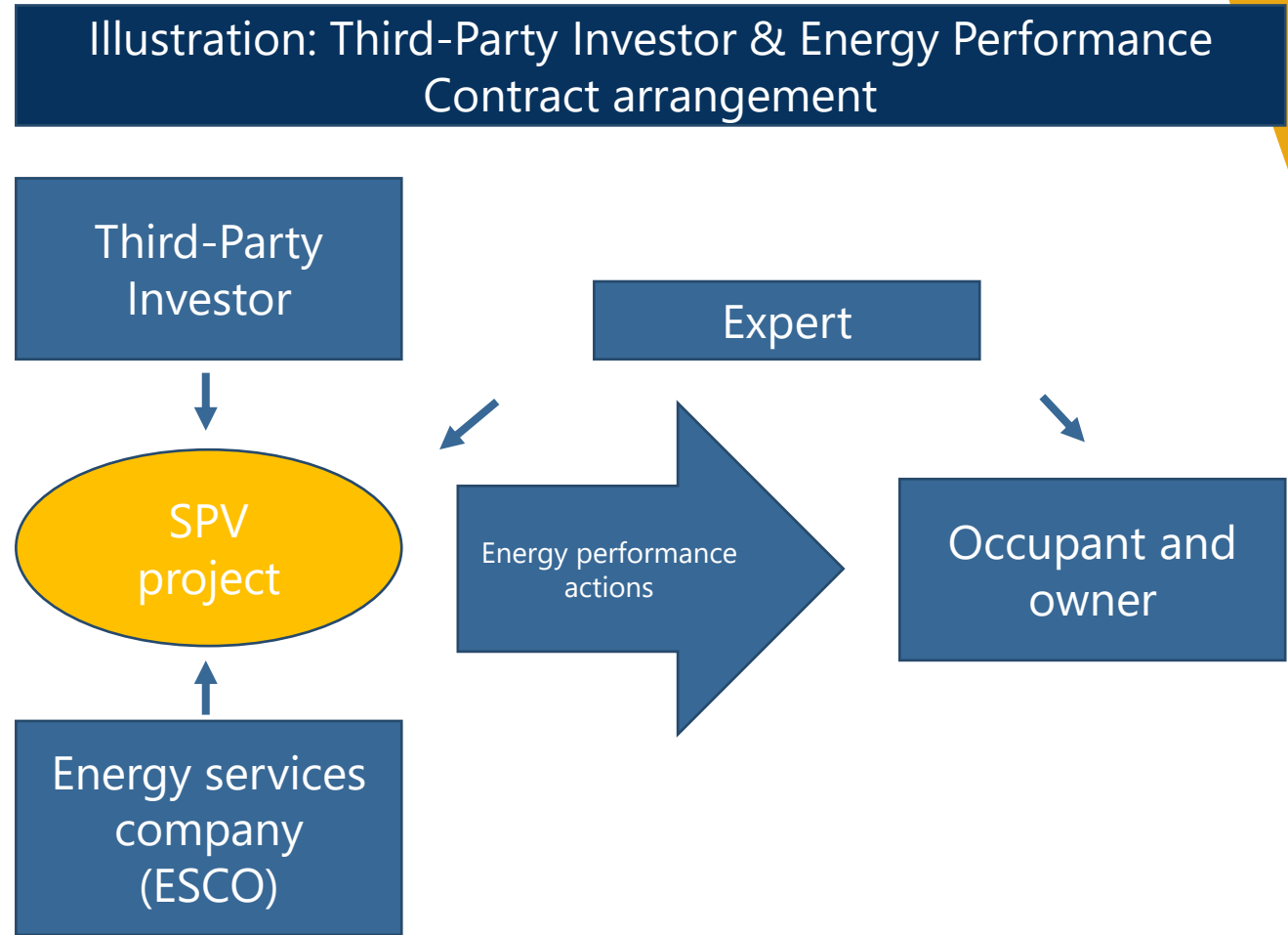
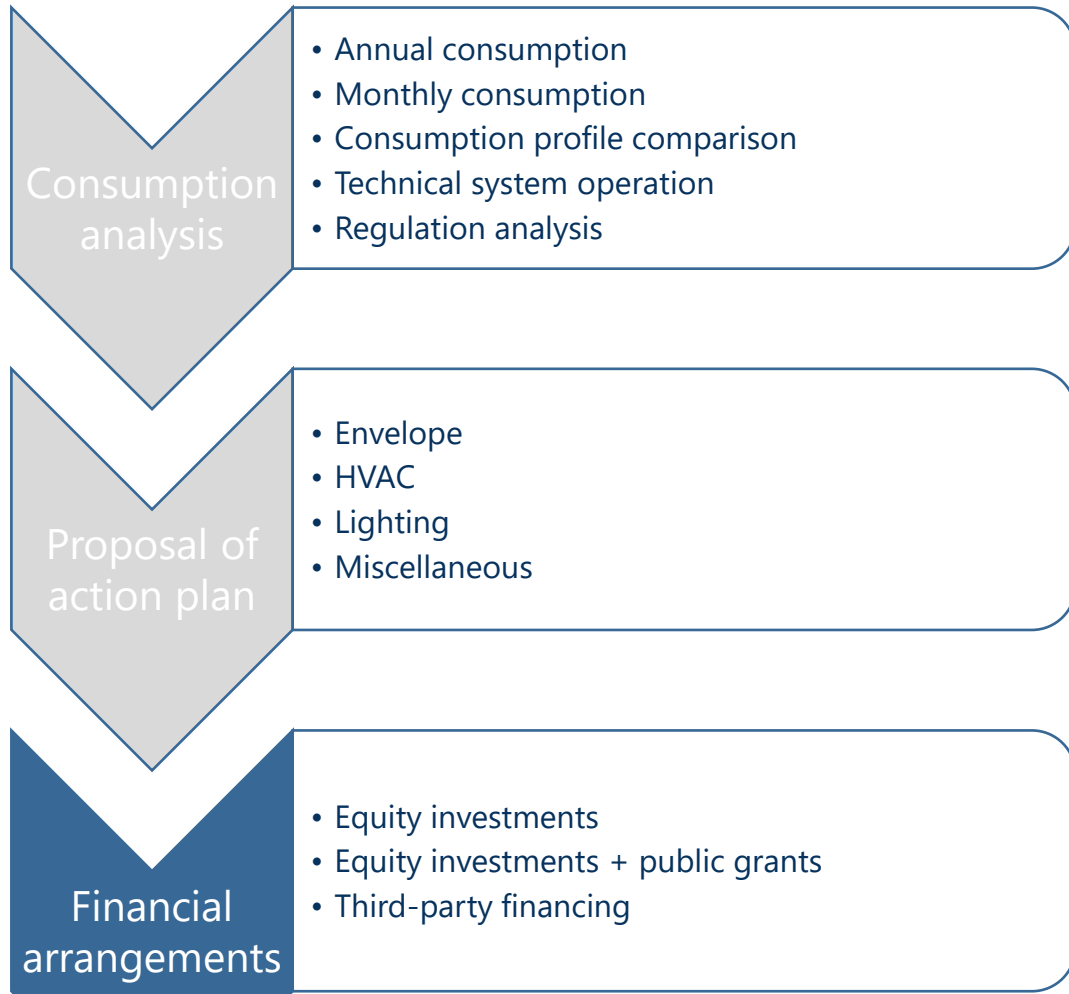
- Annual consumption
- Monthly consumption
- Consumption profile comparison
- Technical system operation
- Regulation analysis



# Several steps are essential



# Several steps are essential





# Main messages

# In conclusion

## Context

- The european legal concept help us to reach decarbonization goal
- All big owners or promoters are concerned
- There is no need to destroy completely the shell of a building to reach top 15% and to respect Paris Agreement -> preserve our ressources
- Switching gas to Electricity heating is an obviousness

## Commissioning

- Take time to make a commissioning helps maintenance to warranty the economy on a long period
- Fine tuning of a BMS helps equipments to exceed their theoretical lifetime (short cycles etc.) and helps to preserve resource
- Exploitant technique : Comantec

## Monitoring

- Monitoring on a long period helps to reach each year a beter result
- AI tools could helps but after fine tuning

# We remain at your disposal for any information

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