

Efficacy - Energy efficiency for a sustainable city



- **Introduction**
- **Institutional section**
- **Research and training section**

Introduction

Origin and genesis

- Investissements d'Avenir « ITE » (Institute for Energy Transition)
- The project's ambition
 - Reinforce public / private partnerships' thanks to the set up of a long-term company
 - Gather on a same place public and private researchers
 - Reach a critical size of high level R&D staff to rapidly promote Efficacy as a national and international reference
- R&D theme : improve city energy yield thanks to the development of forefront innovations in different urban contexts

- **Context :**

- Urban areas represent 2/3 of energy consumptions and 50% of greenhouse gases emissions



- **Stakes :**

- Take on board specific extent of the City: complexity, long time, governance
- Think city as the key actor for energy transition

- **Goal: change energy efficiency of the city and allow local authorities reaching target objectives:**
 - By a overall approach of urban territories (infrastructures, buildings and networks)
 - By a focus on energy flows and transportation systems (70% of stakes)
 - By joining city dwellers to induce behavioral changes
- **Main objectives:**
 - From 2020, - 10 % on cities' energy consumptions
 - Outcome for French large cities : € 3Bn of economies per annum

- 28 key actors of energy efficiency in France:

- 6 industrial companies



- 7 engineering companies

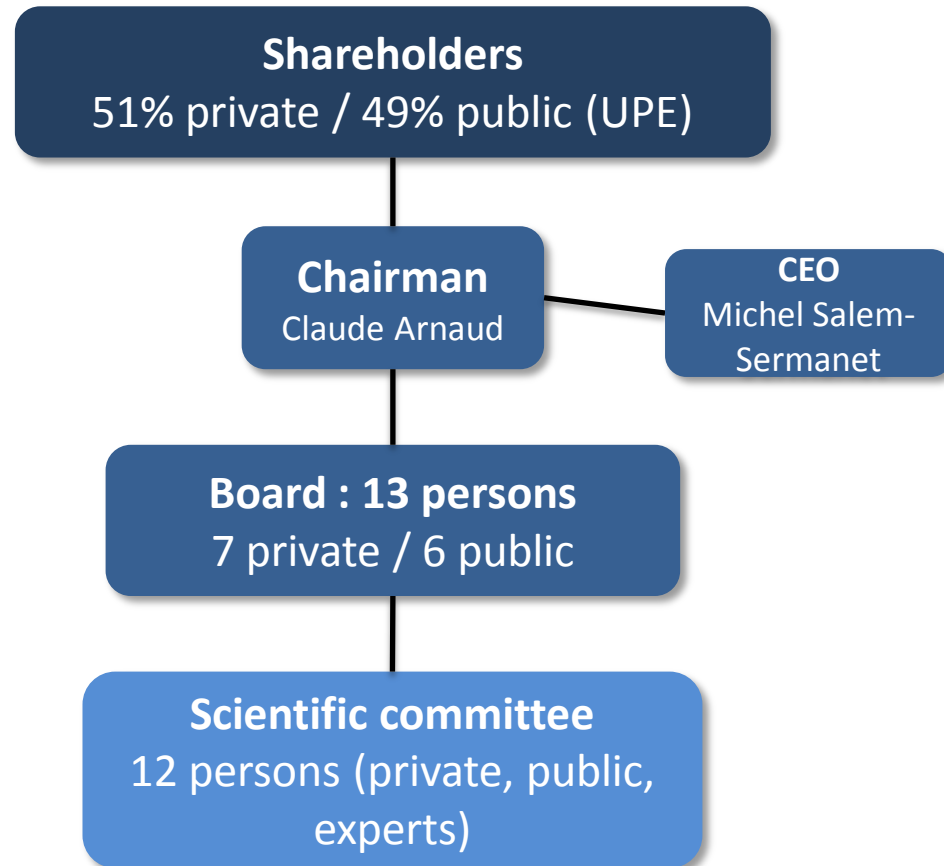


- 15 public partners, federated by PRES Paris Est



Institutional section

- A private company (SAS - joint stock company) with a shared governance between private and public shareholders
- A chairman elected by shareholders, Claude Arnaud, Veolia Group



- **3 kinds of staff management**
 - **Employees** : direction, administration, commercial
 - **Private researchers** : made available by companies into Efficacity
 - **Public researchers** : made available and invoiced by UPE and its establishments

- **Ressources**

Key figures	2014	2023
Forested staff	53 FTE : <ul style="list-style-type: none"> • 19 private researchers • 30 public researchers • 4 employees 	96 FTE : <ul style="list-style-type: none"> • 31 private researchers • 55 public researchers • 10 employees
Budget	€ 7M	€ 13M

- Efficacity is set-up in Marne-la-Vallée, in « **Bienvenüe** » building, at the heart of Cité Descartes.



Research and training section

- **The ambition: become a leading player in the field of urban energy efficiency:**
 - **Develop and / or evaluate the performance of technological, organizational and services innovations'** in different urban contexts
 - **Provide tools:** referentials, models, softwares, decision aids adjusted to each context
 - **Establish the components of a "label"** to certify the energy performance of all urban scales: **"Efficacity insight"**
- **The working method:**
 - **A systemic multi-scale approach of the City** (building, block, neighborhood)
 - **A research-action method** to experiment and analyze solutions in real conditions, and to identify patterns

- **Three research programs and six research projects on 3 years:**
 - **1/ New design of the main components of an urban system:**
 - 1.1. : Station
 - 1.2. : Urban block (« Bâtiville »)
 - **2/ Technological couplings for an urban optimized energy mix, in an urban context to be renovated:**
 - 2.1. : Recovery of fatal energy
 - 2.2. : Decentralized production of energy
 - **3/ Impacts' measuring :**
 - 3.1. : Life cycle assessment at urban scale
 - 3.2. : Monetization of energy efficiency

Program 1 « Urban components »

Project 1.1. « Station »					
Themes	<ul style="list-style-type: none">• Smart grid (optimization of energy exchanges, EV charging stations)• Multiservice approach (design combined cargo / passenger, multi-services station)• Referential and tools for change (measure of behavior change, governance model)				
Researchers	~9	Budget	€ 3,8M	Leader	RATP

Project 1.2. « Bâtiville »					
Themes	<ul style="list-style-type: none">• Definition of the best coordination between functional diversity, social diversity to ensure energy independence of a new urban block• Experimentation Cité Descartes				
Researchers	~8,5	Budget	€ 3,5M	Leader	VINCI

Program 2 « Technological couplings »

Project 2.1. « Recovery of fatal energy »

Themes	<ul style="list-style-type: none">• Heat recovery from cold by heat pump• Creation of micro-networks or loops of warm water• Heat recovery from urban air and gray water by heat pump• Positioning in an existing urban context				
Researchers	~6	Budget	€ 2,5M	Leader	EDF

Project 2.2. « Decentralized production of energy »

Themes	<ul style="list-style-type: none">• Micro-CHP fuel cell• Conditions of registration in an existing urban context				
Researchers	~5	Budget	€ 2,1M	Leader	GDF-SUEZ

Program 3 « Impacts' measuring »

Projet 3.1. « Life cycle assessment at urban scale »

Themes	<ul style="list-style-type: none"> • Development of a tool for decision support (methodology and measuring instrument) to assess the overall impact of a technical choice on the functioning of the studied system (environmental, economic and social impacts). 				
Researchers	~12	Budget	€ 5,1M	Leader	Eng. & IBM

Projet 3.2. « Monetization of energy efficiency »

Themes	<ul style="list-style-type: none"> • Development of the methodology and tool to monetize technical choices related to energy efficiency • Allow the transfer of value from one actor to another one 				
Researchers	~8,5	Budget	€ 3,5M	Leader	Eng. & VEOLIA

- **Efficacy may advantageously participate in the matching between offer and needs of skills:**
 - **Contribute to the definition of new standards for different skill levels**
 - **Introduce the energy dimension in high-level training**

Thanks