

[CENTRO  
TECNOLÓGICO]

**CARTIF**



Junta de  
Castilla y León



**EREN**

ENTE REGIONAL DE LA ENERGÍA  
DE CASTILLA Y LEÓN



Partnership of  
European Regions  
SUSTAINABLE  
**BUILDINGS**

Partnership of European Regions on Energy  
Efficiency in Buildings

Interregional Pilot project Development and Interactive Discussion  
for next year

**Bilbao, 28th november 2018**

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## **ENERGIS PILOT:** ENERGY PERFORMANCE CERTIFICATES TO SUPPORT BUILDING STOCK ENERGY RENOVATIONS PLANNING AT DIFFERENT SCALES

## **ENERGIS:** TOOL FOR DEMAND CHARACTERISATION IN URBAN SETTINGS TO SUPPORT ENERGY PLANNING AT DIFFERENT SCALES

ALFREDO CADORNIGA – ENTE REGIONAL ENERGIA CASTILLA Y LEON  
CÉSAR VALMASEDA – FUNDACIÓN CARTIF

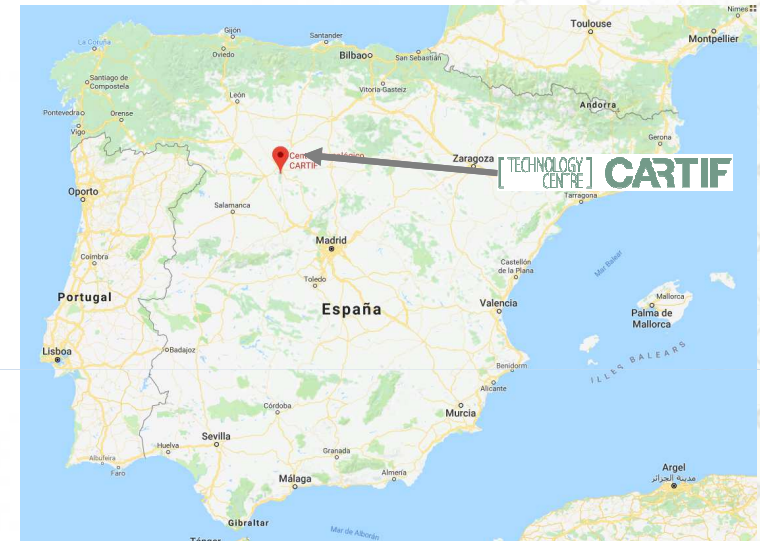


→ **Research Centre**

**Generate technological knowledge to be transferred to companies / businesses to improve their competitiveness**

→ **Foundation**

Nonprofit private organisation with a final goal: **innovation**



**Centro Tecnológico CARTIF**

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SPAIN

<http://www.cartif.com/>

- ① **Agroalimentation and processes**
- ② **Energy Division**
  - Energy Policies
  - Smart Cities
  - Energy Efficiency
  - Renewable energy
  - Smart Grids
- ③ **Digital and industrial systems**

- 1. Introduction:** Energy planning context in Europe and platform need
- 2. Proposed Pilot**
- 3. A support Tool to Energy Planning**
- 4. Conclusions and future work**

# 1. Introduction: Energy planning context in Europe and platform need

## CLIMATE CHANGE

GROWING CO2 EMISSIONS

Source of emissions: fossil fuels (H&C)

Cities, especially residential sector

COP21: Paris Agreement

European Energy Directives

National Energy Directives

WE NEED

# ENERGY PLANS

However...  
NO adequate analysis

←.....→ No tools

# 1. Introduction: Energy planning context in Europe and platform need

## European Energy Directives

1. Energy Performance of Buildings Directive (2018/844/EU)
2. Energy Efficiency Directive (2012/27/EU)
3. Renewable Energy Directive (2009/28/EC)

**Nearly Zero Energy Buildings**, etc.

### Energy Performance Certificate (EPC)

Provides energy information and the energy label (A, B, etc)



## 2. Building Stock (E) Renovation Plans: An *Energy Performance Certificates* Pilot

WE NEED

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However...  
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analysis



**UC1:** Harmonization of existing Energy Performance Certificate datasets and creation of a web application

**UC2:** Benchmark of different Energy Performance Labelling of buildings

**UC3:** Assessing the Energy Performance of buildings with dynamic measured data

**UC4:** Supporting Energy Efficiency driven renovation planning of the building stock at local level

**UC5:** Supporting integrated energy planning and monitoring at urban/local level (SECAP BEI/MEI)

**UC6:** Supporting the design and implementation of a regional energy strategy

**UC7:** One Stop Shop for Building Stock Renovation

1. Context

2. EPC Pilot

3. Use Case 1

4. ES case study

5. Conclusions

## 2. Building Stock (E) Renovation Plans: An *Energy Performance Certificates* Pilot

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### Stages of energy planning

1. Diagnosis of scenarios (building, districts, municipalities, regions)
2. Definition of energy actions
3. Evaluation of different scenarios
4. Monitoring the results of energy actions

1. Context

2. EPC Pilot

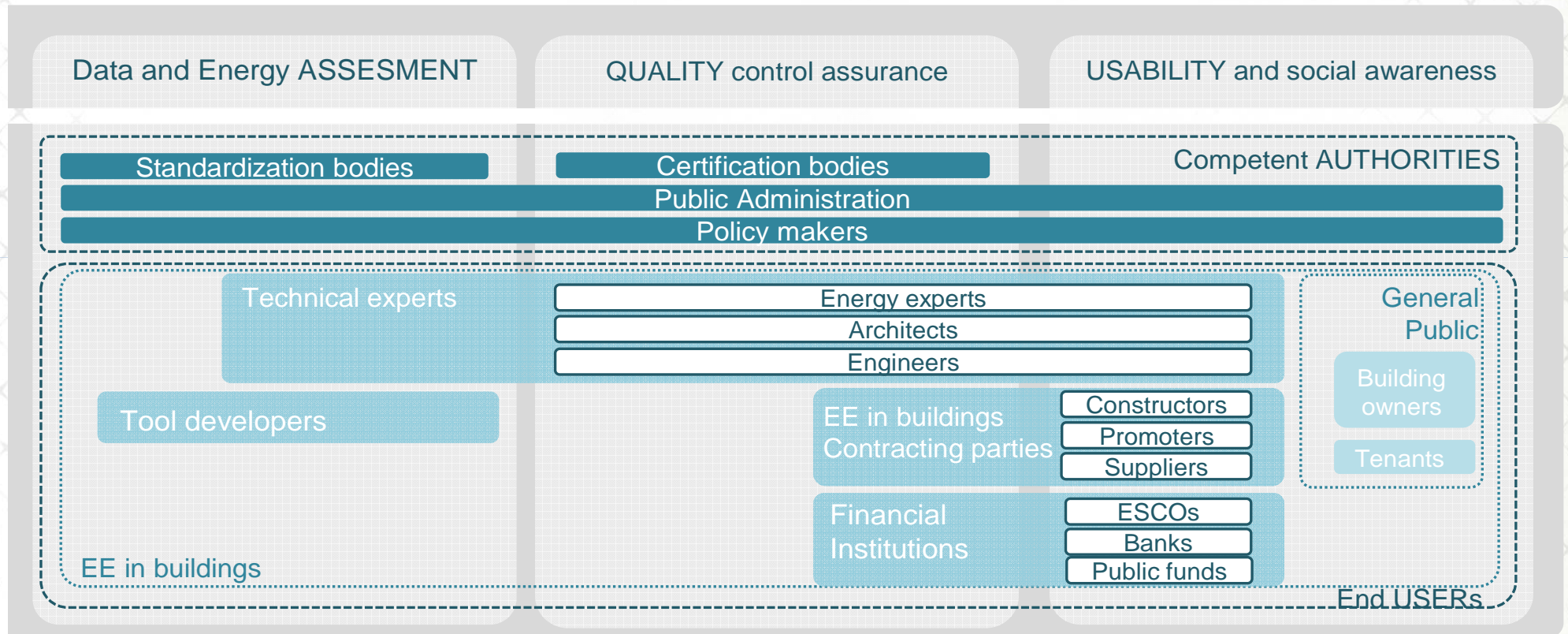
3. Use Case 1

4. ES case study

5. Conclusions



## 2. Stakeholders aimed to be involved



1. Context

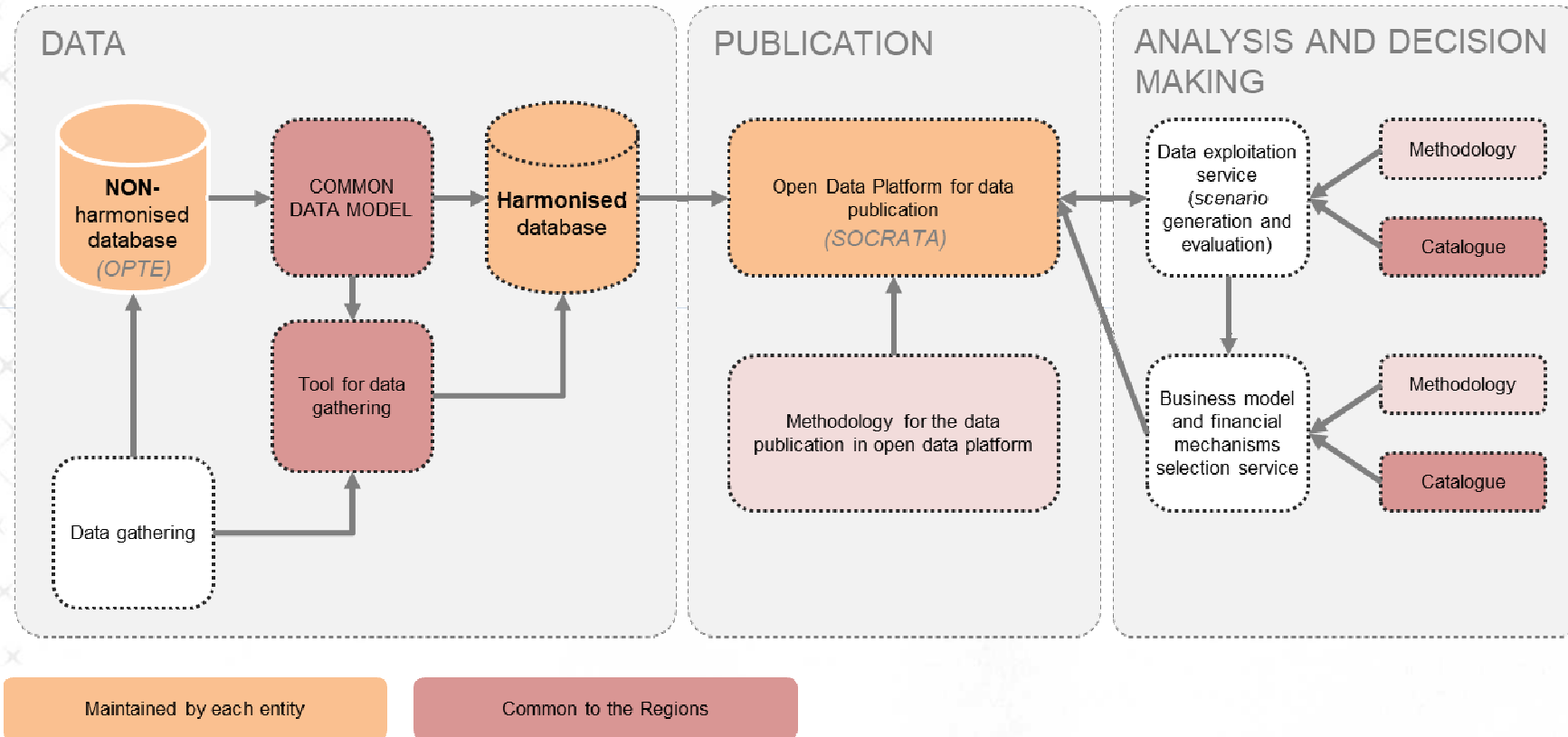
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5. Conclusions

## 2. Stakeholders aimed to be involved



1. Context

2. EPC Pilot

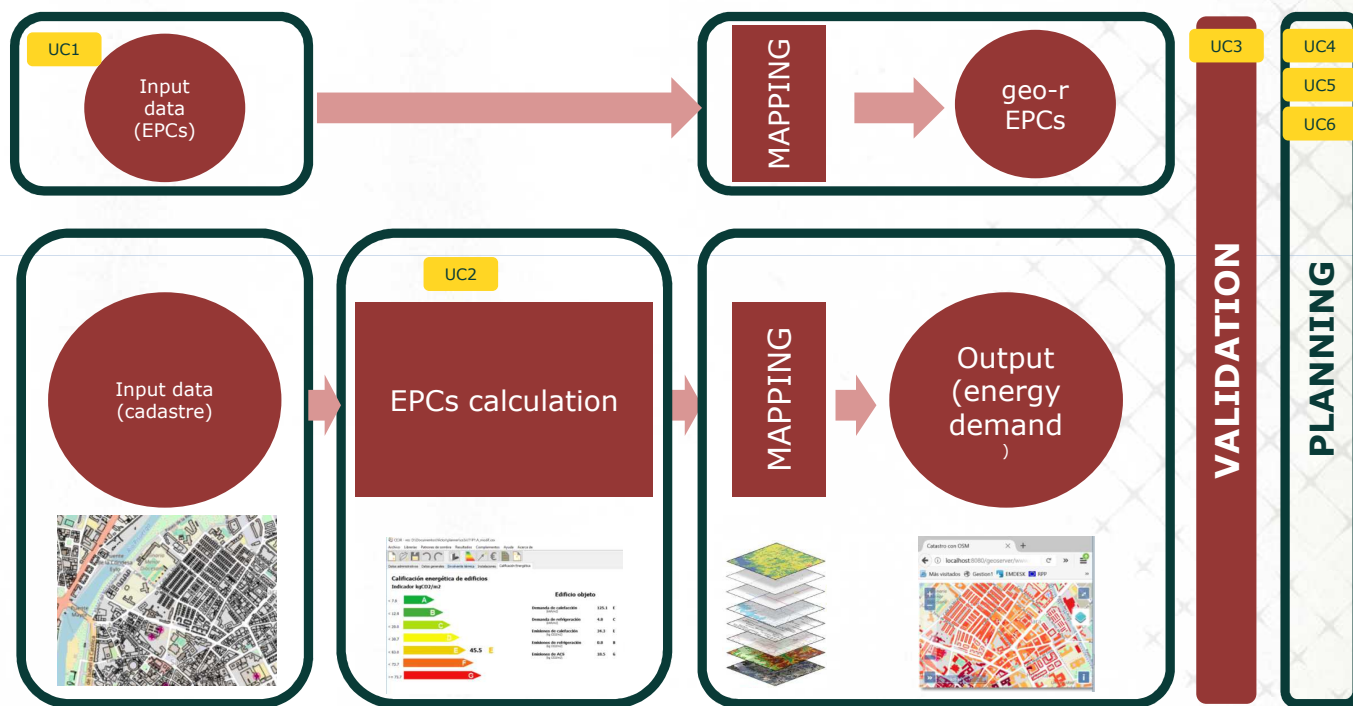
3. Use Case 1

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5. Conclusions

**2. Building Stock (E) Renovation Plans: An (E?) Sustainability Performance Certificates Pilot**

**ENERGY PLANing**  
*Support Tool:*



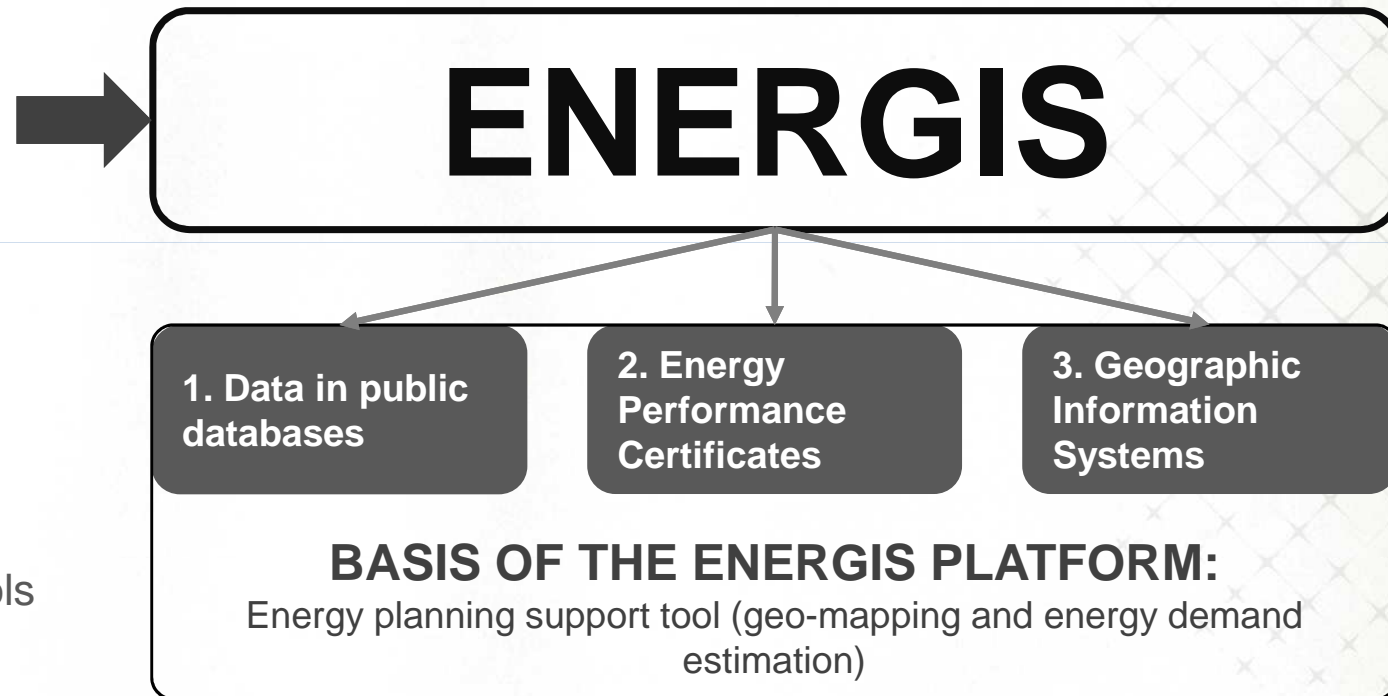
Source: PLANNER project, CARTIF, 2017

## 2. Building Stock Energy Renovation Plans: An Energy Performance Certificates Pilot

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1. Context

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3. Use Case 1

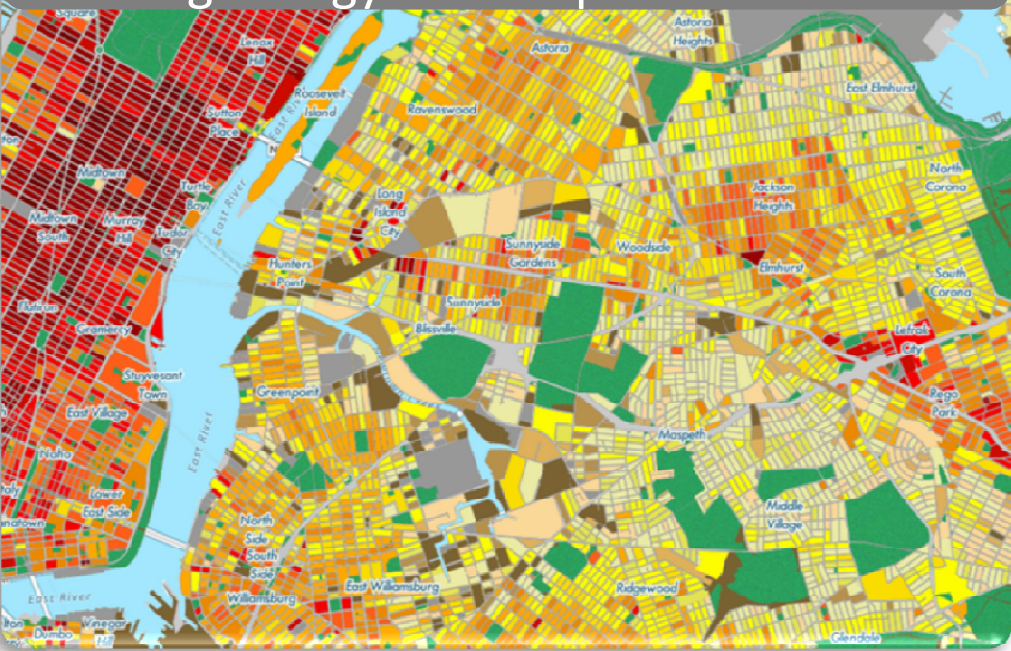
4. ES case study

5. Conclusions

**ENERGIS:** Tool for demand characterization in urban settings to support energy planning at different scales

**2. Some approaches in the energy planning field**

**New York: estimated total annual building energy consumption**



**The Netherlands: Energy Label Atlas, energy label estimation**



1. Introduction

**2. EPC Pilot**

3. ENERGIS platform

4. Lessons learned

5. Conclusions

## 2. Some approaches in the energy planning field

### New York: estimated total annual building energy consumption

- **Approach:** estimated energy consumption
- **Area:** New York City
- **Aggregation of the data:** building and building lot

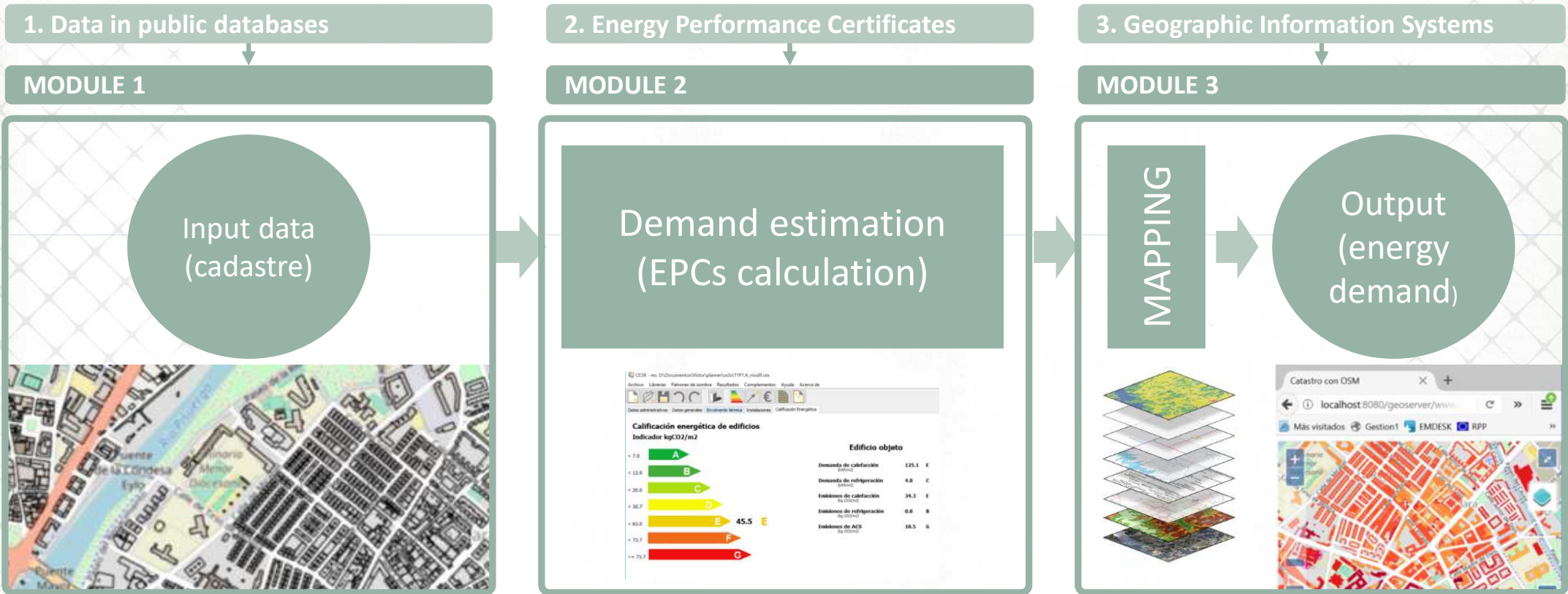
<http://qsel.columbia.edu/nycenergy/>

### The Netherlands: Energy Label Atlas, energy label estimation

- **Approach:** estimated energy labels
- **Area:** The Netherlands
- **Aggregation of the data:** building

<http://energielabelatlas.nl/#>

### 3. Where we are: ENERGIS platform



## 4. Lessons learned / main difficulties in the process

1

Relevant geometric data lacking in public databases

Thermal bridges, openings, etc → an estimated approach was required

2

Thermal characteristics of building elements

No data on public databases → work with typologies, based on building age and climatic zone

3

Calculation methodologies and Energy Performance Certificate tools

Different levels of complexity, file formats and exchange mechanisms, simulation times, etc

4

Scaling up: estimating demand city-wide

Problems when querying public sources, simulation time, interruption of the process, etc



## 5. Pilot Idea

THEMES	Description
1. Reference theme	1) Eco-construction, bioclimatism and insulation of buildings, 2) Renewable energy integration in buildings, 3) Systems of maximum energy efficiency in buildings and cities
2. Action line	Boosting Building Stock Renovations by EPCs
3. Name of offer of collaboration	Energy Performance Certificates to Support Building Stock Energy Renovations Plans at different scales
4. Entity that presents the offer	CARTIF
5. Member of the Partnership that supports the offer	All of you are really invited
Annex. Including data of the entity.	

1. Introduction

2. EPC Pilot

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platform

4. Lessons learned

5. Pilot Idea

## 5. Pilot Idea

### 1 SCOPE - Brief history of the project

*The scope of the project, briefly describing its main characteristics, the phase it is currently in and the opportunities for collaboration that it wants to take advantage of will be presented.*

- Previous Slides,

### 2 CURRENT MARKET AND POTENTIAL

*Description of the size and characteristics of the market associated with the products or services that are developed as object of the project, of its current state as well as the expected state.*

- The objective is increase the renovation rates, so the potential market would be the whole energy renovation sector, Renovation companies, ESCOs, Technology Providers,

## 5. Pilot Idea

### 3

#### ADDED VALUE SOUGHT BY THE COLLABORATION

*The added value of the products or services achieved as a result of the interregional collaborations (whether technological, social, regulatory, etc.) will be described in comparison to their current market situation.*

- Interregional Collaboration:
- to align the Energy performance assesement and Certification procedures, increasing the confidence in the EPCs and their recomended renovations
- To encompass the inclusion of changes in EPCs
- To Share lesson learns,

### 4

#### ACTORS OF THE VALUE CHAIN

*The actors of the value chain required for the implementation of the collaborative project (design, manufacturers, distributors, execution of works, energy services, recycling, raw materials, etc.) will be defined.*

- Regional authorities with competences on Energy Planing or building stock renovations
- National body
- Local authorities
- Energy Service Companies
- Renovation sector (cluster?)

1. Introduction

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5. Pilot Idea

## 5. Pilot Idea

### 5 REPLICABILITY

*It will be indicated if the solutions developed in the framework of the project could be implemented in other European regions.*

- All european regions

### 6 OFFER OF REGIONAL SUPPORT (and in the case of their national or European entities):

*The existing or foreseen regional, national or European support instruments in relation to the development of the collaboration project will be described.*

- Horizon Europe, H2020, Intereg, LIFE, ESIF?

# THANKS FOR YOUR ATTENTION!

## *Do you like to join us?*

Cesar Valmaseda - Fundación CARTIF

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ENERGIS platform