PROSPECT+

INNOVATIVE FINANCING INSTRUMENTS: CASE STUDIES

ENERGY PERFORMANCE CONTRACTING (ESCO), SOFT LOANS, CITIZEN FINANCE, BLENDED FINANCE

AUSTRIA
Megan Gignac

SPAIN
Miguel Ángel Garcia-Fuentes

ITALY
Marco Costa

MODERATION: SYLWIA SLOMIAK, EUROCITIES

PROSPECT+

Energy Performance Contracting (EPC)

– Experience from over 300 projects in Upper Austria –

Megan Gignac
OÖ Energiesparverband (ESV)
megan.gignac@esv.or.at

OÖENERGIESPARVERBAND

The PROSPECTplus project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 101023271

upper austria

OÖ Energiesparverband (ESV): Regional Energy Agency of Upper Austria

Central institution in the field of sustainable energy in Upper Austria (founded in 1991)

Our work

energy transition
climate neutrality

energy efficiency
renewables
e-mobility

Services
for
households
companies
public sector

Advice
Information
Funding
Networking
Training
Research

OÖENERGIESPARVERBAND

upper austria

The region of Upper Austria - Oberösterreich

Capital: Linz
Population: 1.5 million
440 municipalities

Industrial & rural:
25% of Austrian industrial exports
50% live in small municipalities

OÖENERGIESPARVERBAND

upper austria

The EPC facilitation in Upper Austria

- The regional government started its first **programme for EPC market development** in 1998
- Two-fold approach:
  - **financial support** for contracting projects
  - **facilitation service** by the regional energy agency
- **300+ contracting projects** supported (about half in municipalities, half in companies & institutions)
- areas: street lighting, EPC in buildings and industry, renewable heat contracting
  -> **more than 100 million Euro investment triggered**
- **30+ ESCOs** offer services in the region
- the first years were challenging, the programme started slowly
- today, EPC has found its place in the portfolio of sustainable energy solutions in Upper Austria

OÖENERGIESPARVERBAND

What is Energy Performance Contracting?

- **a contractual arrangement between a client** (e.g. a municipality, a company) **and a service provider**, a so-called "Energy Service Company" (ESCO)
- Typically, the ESCO **finances and implements** energy investments. (However, a variety of different financing types exist.)
- **The ESCO guarantees the energy savings** in the **contract**.
- The investment and capital costs (or part of them) are covered by the annual costs savings.
- Typically, it is especially interesting for projects with high energy savings potentials and shorter payback times.
- **Contracting is a financing & operator model** (no pure financing model)

Types of energy contracting

There are two main **types** of energy contracting models :

"Energy performance contracting"

The ESCO implements energy saving measures (i.e. street lighting refurbishment or thermal insulation of a building) which lead to lower energy costs. The investment costs are refinanced through the savings achieved.

"Energy supply contracting"

The ESCO typically erects, finances and operates energy installations for the client. The ESCO then supplies the client with, for example, electricity or heat at a fixed price.

How is EPC different from other financial instruments?

1. **Contractually guaranteed savings**

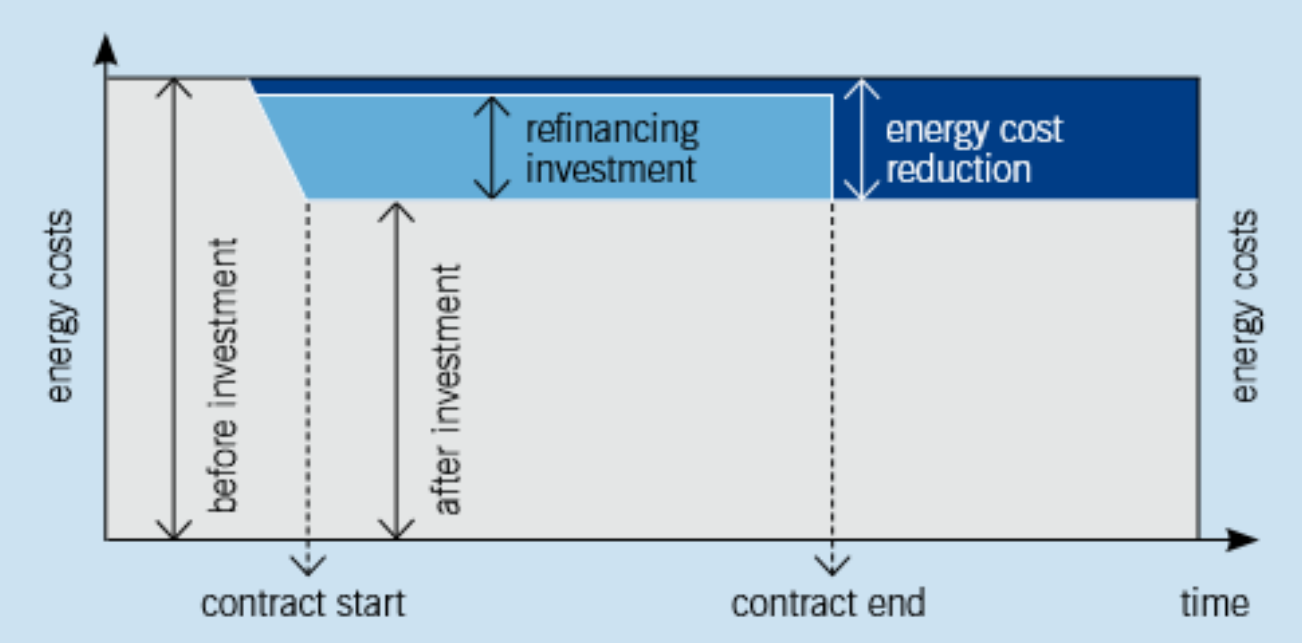
2. **Guarantee mechanism** (financial consequences if savings are not achieved), e.g.:
   - withholding/reducing payment to the ESCO
   - bank guarantee from ESCO which can be drawn by the client if savings are not achieved
   (- ESCO must adjust/replace the equipment until savings are achieved)

Other than that, EPC can take many forms
(depending on the legal, economic and social contexts of each region and project)

A variety of EPC models

- who finances
- who performs audit
- who designs system
- who does refurbishment work
- who does maintenance
- project size
- project completely or partly financed by EPC
- maintenance cost savings included in the contract or not
- calculation of ESCO fee & billing schedule
- how changes in energy prices are taken into account
- who benefits from "extra" energy savings
- duration of contract
- reporting requirements (ESCO to client)
- access during the contract, ownership and equipment condition after end of contract
- provisions in case of bankruptcy of ESCO or client
- etc.

How Energy Performance Contracting works



Steps of an energy contracting project

Step 1	**Internal preparation phase** Internal coordination, overview of data, first discussions with ESCOs
Step 2	**Rough analysis** 2-3 rough analyses (usually free of charge), possibly tender Decision in favour/against the project
Step 3	**Selection of the ESCO**
Step 4	**Detailed analysis** ESCO develops a detailed analysis (technical planning of project)
Step 5	**Contract preparation** Discussions about contract details, decisions of the contract content, signing of the contract
Step 6	**Implementation of the measures**
Step 7	**Contracting rate** Payment of contracting rate and annual billing

The ESCO's qualifications

A qualified ESCO….

- has all respective qualifications for the project at hand
- involves staff of the client (should you want that)
- prepares the project well
- develops a detailed analysis including energy efficiency measures and provides a clear cost-/benefits analysis
- proposes a clearly structured contract which also includes provisions for "difficult" situations (e.g. bankruptcy, changes of ownership)
- proposes a clear division of tasks and responsibilities between ESCO and client
- is able to provide proof of its financial standing/credit rating
- has a list of reference projects

Learnings from ESV facilitation service

Key success factors – CLIENT's side:

- Proper internal preparation
- Advice & support by third party which is independent from ESCO
- Exact definition of specifications & requirements (what exactly do you expect from the project, ex: quality standards, room temperature, involve own staff…)
- Compare ESCOs (more than one offer)
- Selection of the "right" ESCO
- Understand the contract, develop it in cooperation with the ESCO
  (no standard contract for all projects)
- Training, information & awareness raising of operators and users is very helpful

Examples of EPC projects

Street lighting refurbishment – Bad Schallerbach

- Well-known health resort, committed to climate protection
- Comprehensive refurbishment of the public lighting system (790 lighting points) to LED
- Reduction of the installed capacity from 55 kW to 23 kW
- **Investment:** 354,600 €
- **Annual savings:**
  - Electricity: 130,900 kWh (58 %)
  - Electricity costs: 19,500 €
  - Maintenance costs: 20,000 €
  - CO_2: 60 tons
- **Contract duration:** 10 years
- **ESCO:** Elektro Kliemstein (local electrician, first EPC project)

Building refurbishment – Red Cross in Wels

- Building in need of deep renovation, high energy costs
- Thermal insulation (exterior wall: 16 cm, basement ceiling: 10 cm, top floor ceiling: 30 cm), replacement of windows, installation of sun shading, connection to district heating
- **Investment:** 518,000 €
- **Annual savings:**
  - Electricity: 214,500 kWh
  - Electricity costs: 14,700 €
  - CO_2: 54 tons CO_2
- **Contract duration:** 15 years (2014 - 2029)
- **ESCO:** eww (local utility and energy provider)
- The building stayed operational during the entire project!

Public buildings of the regional government

- "Low-picking fruits" first, EPC second
- 15 EPC projects, refurbishment of 40 buildings (administrative buildings, road maintenance buildings, vocational schools, care facilities, museums, etc.)
- Mix of implemented measures, i.e. optimisation of heating systems, thermal insulation, conversion to renewable energy
- **Total investment:** approx. 4,850,000 € (60,000 to 1,100,000 €/project)
- **Annual savings:** (total of all 15 projects)
  - Electricity: 4,500,000 kWh
  - Electricity costs: 340,000 €
  - CO_2: 1,450 tons
- **ESCOs:** Cofely Gebäudetechnik, Siemens

Biomass heating for 2 cinema buildings in Steyr and Wels

- Biomass supply contracting
- 200 kW biomass heating systems for the Star Movie Cinemas
- Wood chips supplied by regional farmers
- **Investment:**
  Wels: around 120,000 €
  Steyr: around 100,000 €
- **Savings:**
  Wels: 47 tons CO_2/a
  Steyr: 45 tons CO_2/a
- **Contract duration:** 15 years
- **ESCO:** OÖ. Maschinenring-Service
- Permits heating with regional and CO_2-neutral bioenergy, hassle free!

Main take-aways

- EPC is just one of a range of possible financing models (and it’s not appropriate for all projects and situations)
- Contracting is a long-time partnership, trust between partners is essential
- EPC is flexible and can be adapted to your context/needs/requirements
- To get the most benefits from EPC, clients need to understand it well
- Investing the necessary time for proper project development pays off in the end
- "Small is (also) beautiful": few, smaller, but good quality projects can be a good place to start

PROSPECT+

Thank you!

Megan Gignac
OÖ Energiesparverband
megan.gignac@esv.or.at

OÖENERGIESPARVERBAND

The PROSPECTplus project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 101023271

upper austria

PROSPECT+ REPLICATION WORKSHOP

REMOURBAN PROJECT: VALLADOLID

Miguel Ángel García-Fuentes
Innovation consultant and Associate Professor

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 646511

contact@remourban.eu
www.remourban.eu
@Remourban_EU

REMOURBAN project

Total REMOURBAN budget: **32.5M€** (21,5M€ EU funded)
Total investment in REMOURBAN actions: **22.9M€** (80% public)
Energy savings: **6,858,735 MWh/yr**
CO_2 emissions avoided: **2,841 TnCO_2/yr**
Citizens directly involved in demos: **19,800**
Direct job creation: **187**
Consortium: **22** partners (5 municipalities, 3 RTD, 5 industries, 9 SMEs)
Nationalities: **7** (Spain, UK, Turkey, Belgium, Hungary, Germany, Italy)

Miguel Á. García-Fuentes | Innovation Consultant and Associate Professor


Source: Jason Hawkes. Valladolid: Cúpula del Milenio
the goal is providing a model to make cities
smarter
and more
sustainable

REMOURBAN key objective

- Develop and validate an **Urban Regeneration Model** – highly replicable and based on the joint transformation of:
  - Buildings/districts towards **Low Energy Districts**
  - City transportation towards a **Sustainable Urban Mobility**
  - Integrate existing city infrastructures through **ICTs**


Source: PETER PARKS/AFP/Getty Images


Source: theskyisbig.blogspot.com


Source: Stephen Thomas-Patel

Urban Regeneration Model

IMPLEMENTATION – LIGHTHOUSE CITIES

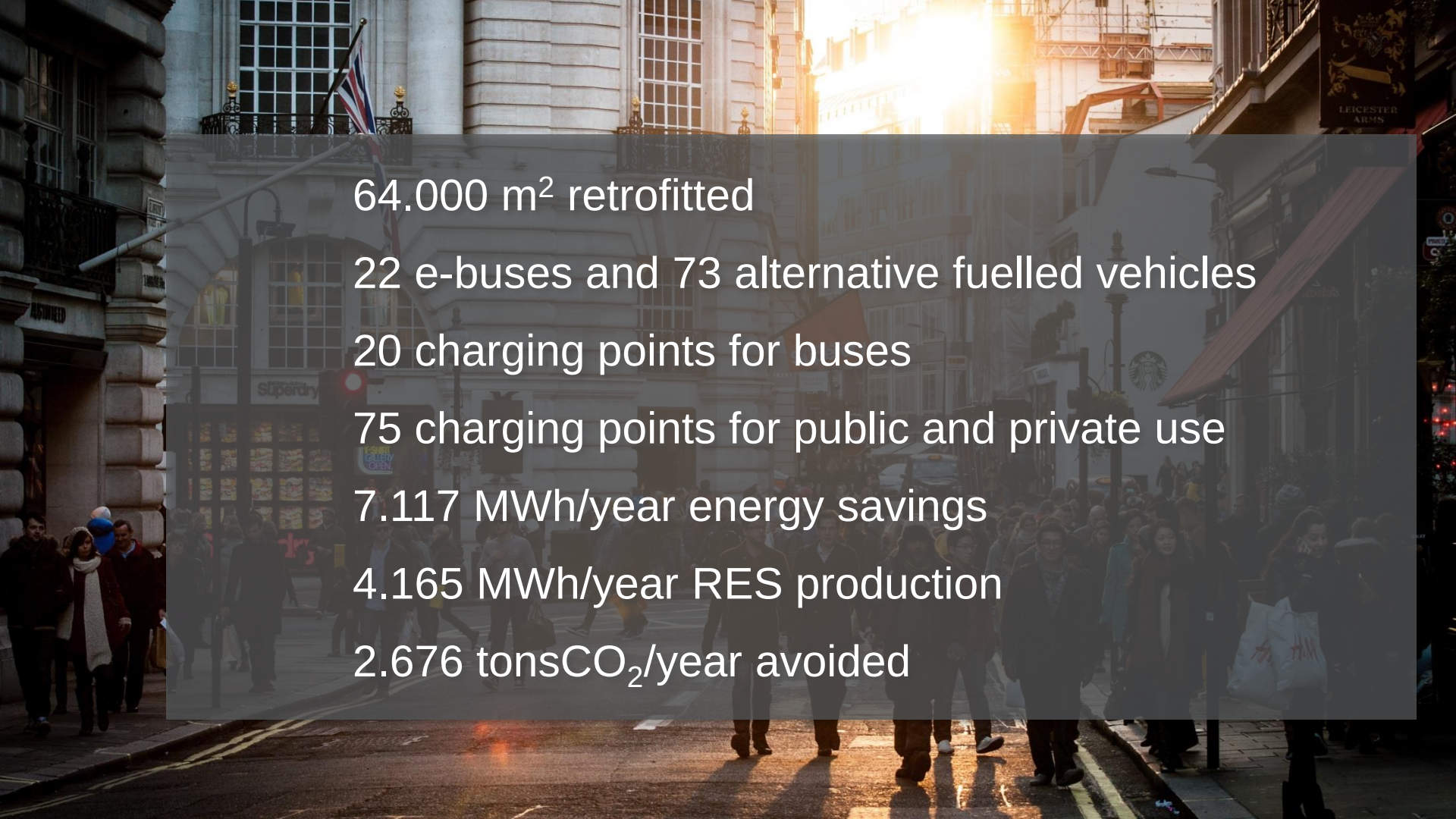

Nottingham
City Homes
Working togeth


eco eléctrico
7 ESCLEROS


BUS
26 BU 543

Urban Regeneration Model

REPLICATILITY – FOLLOWER CITIES



64.000 m^2 retrofitted

22 e-buses and 73 alternative fuelled vehicles

20 charging points for buses

75 charging points for public and private use

7.117 MWh/year energy savings

4.165 MWh/year RES production

2.676 tonsCO_2/year avoided

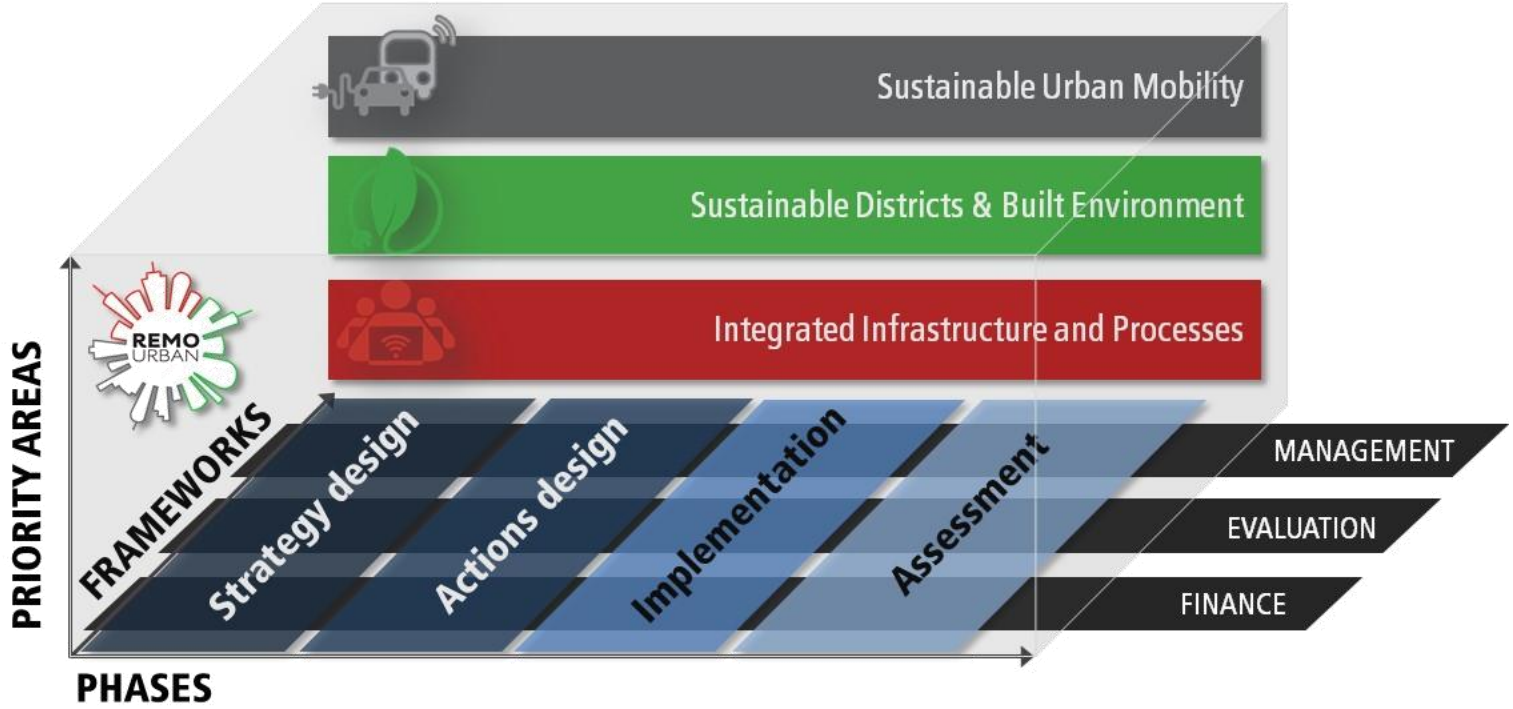
20.000 citizens directly involved in our actions

Relevant contribution to scientific dissemination

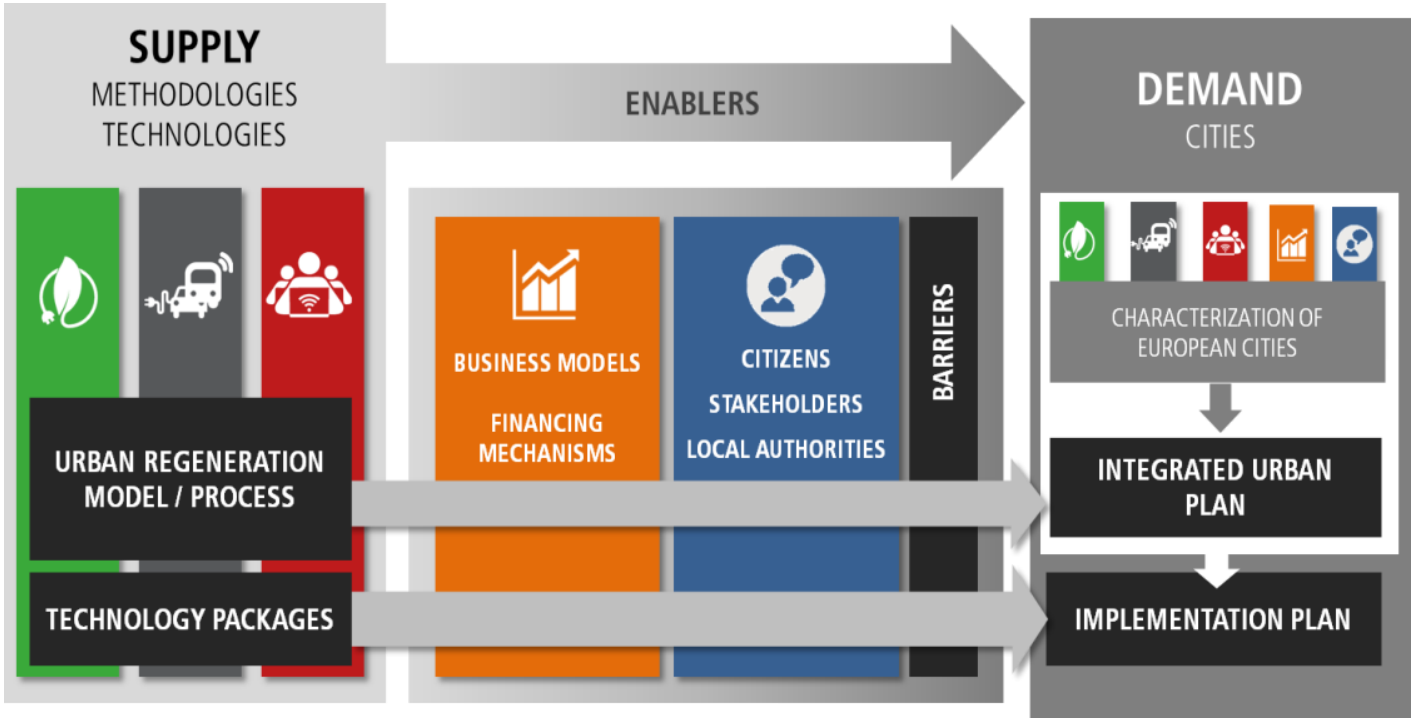
Strong contribution and cooperation to existing initiatives (CITYKeys, EIP-SCC, SCIS, etc.)

Contributed to the creation and sustainment of the Lighthouse Projects Collaboration

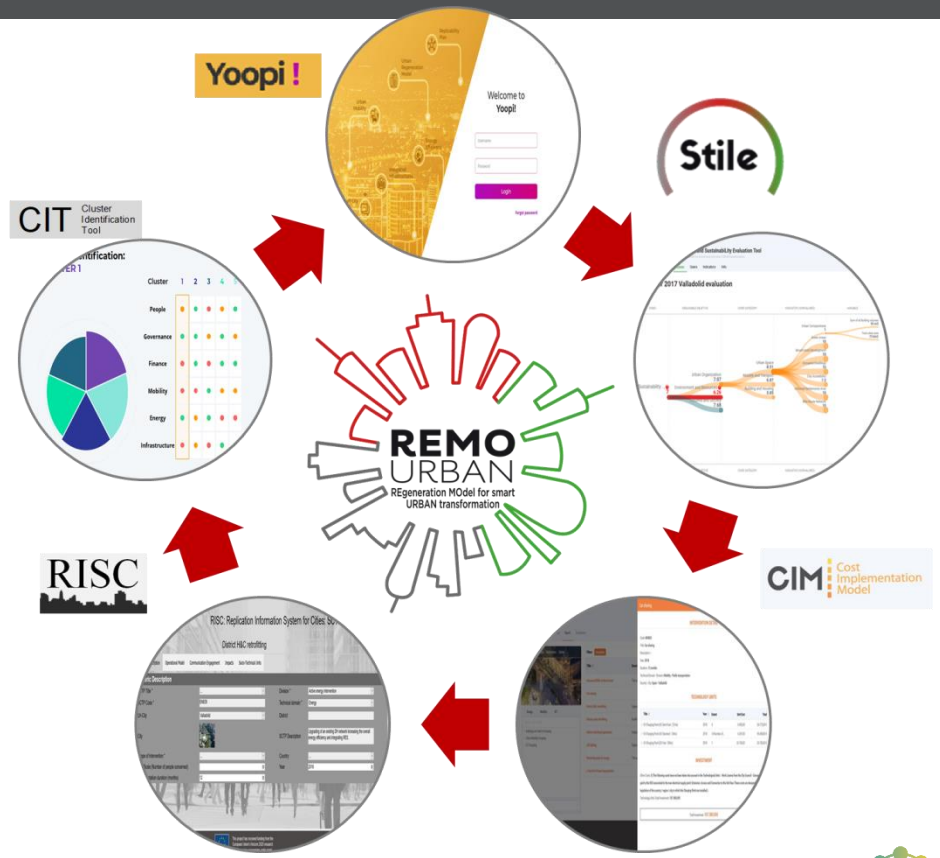
Urban Regeneration Model



Our objective: replication

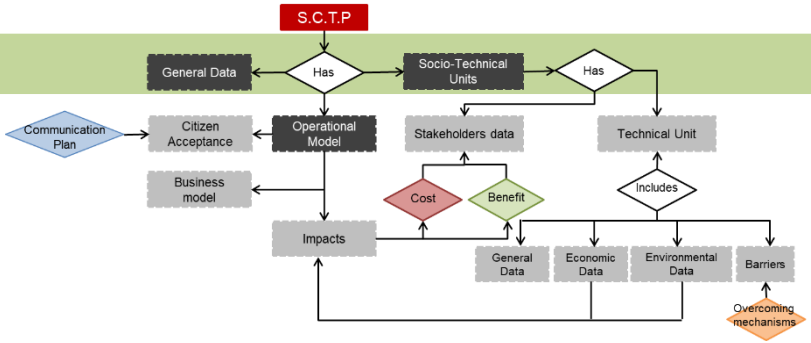


Supporting tools

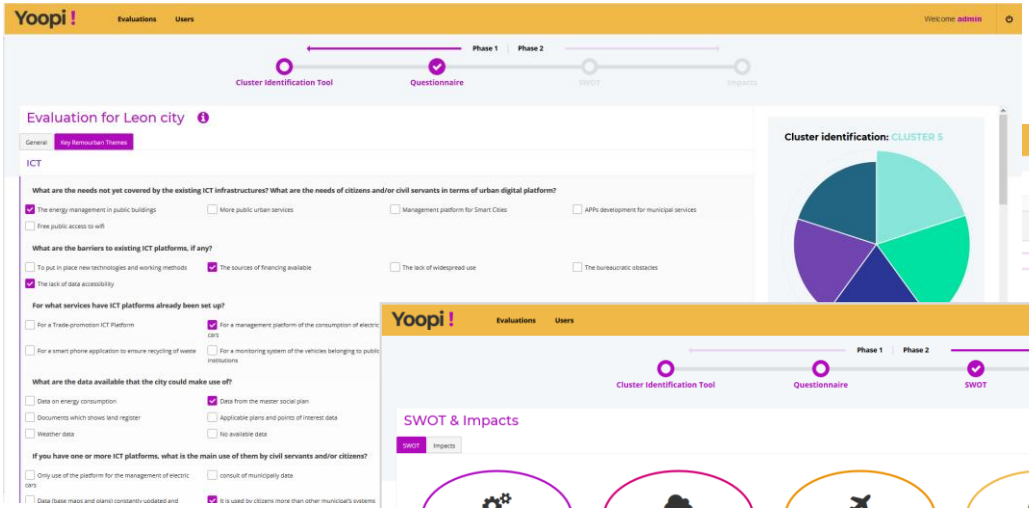


Supporting tools: RISC

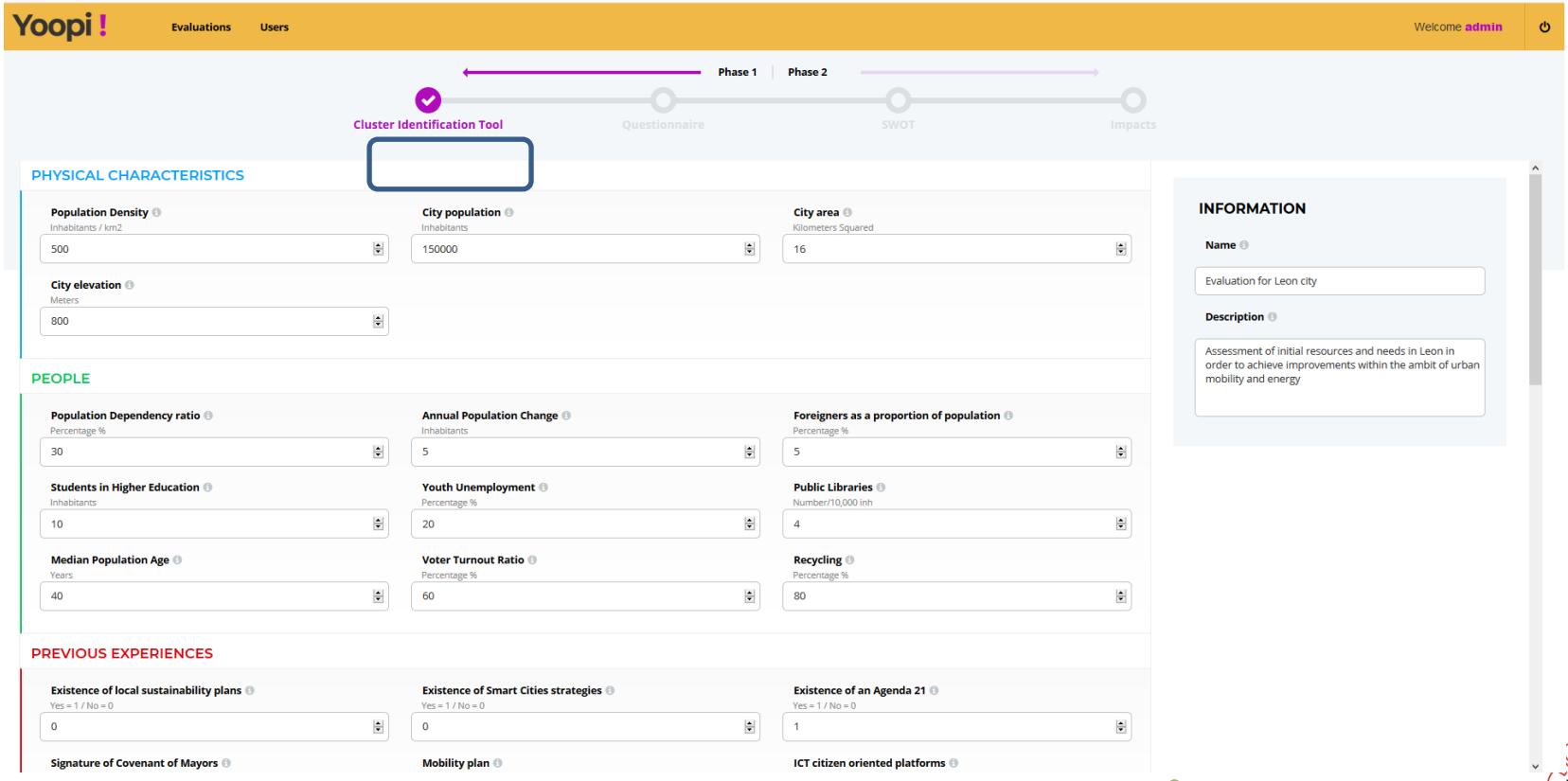
RISC



Supporting tools: Yoopi! and CIT

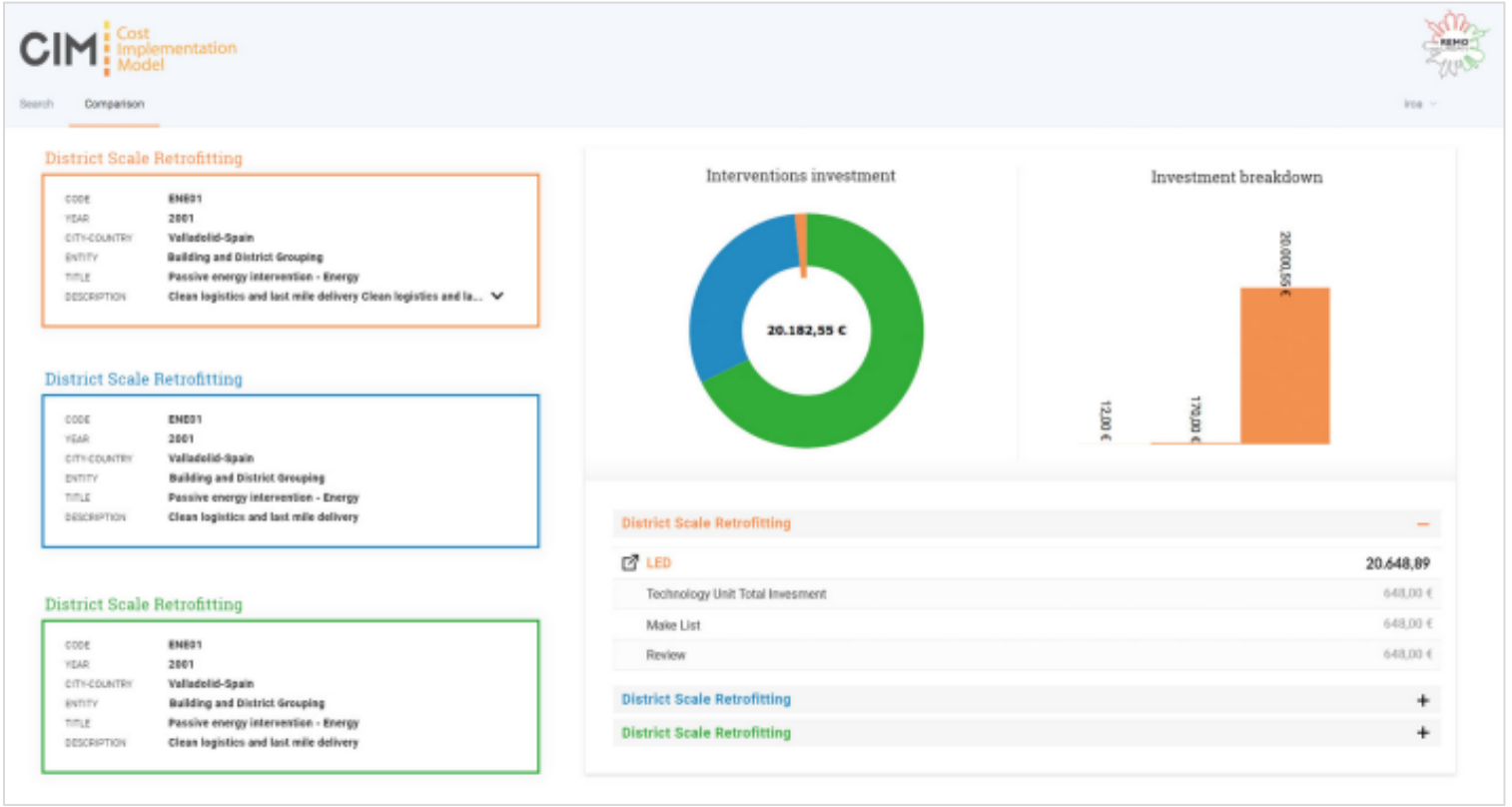


Supporting tools: Yoopi! and CIT

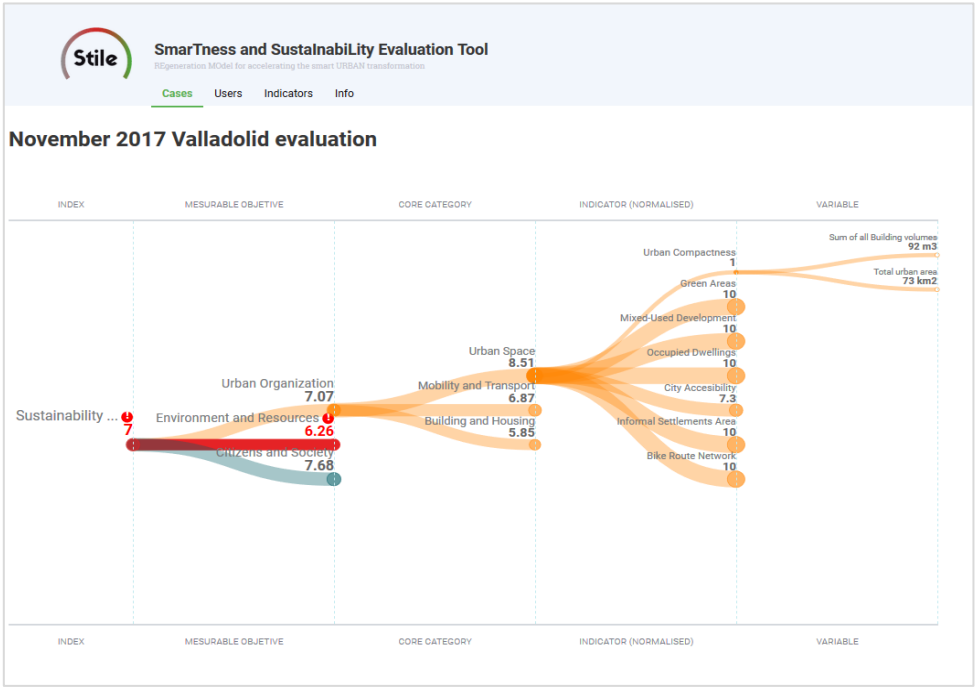


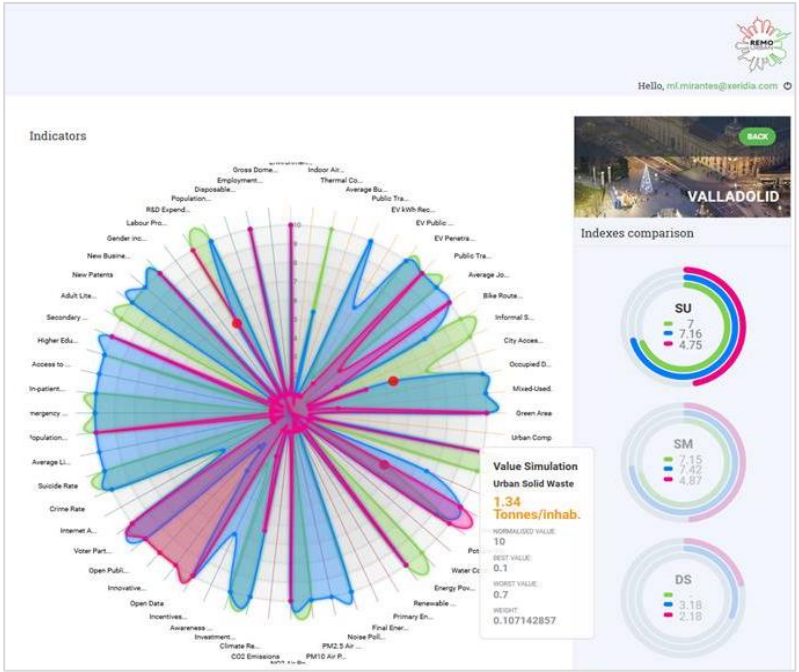
Miguel Á. García-Fuentes | Innovation Consultant and Associate Professor

Supporting tools: CIM



Supporting tools: STILE





Infopacks

Info-package 2

Urban Regeneration Model

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 646511

Info-package 2

Energiesprong 2050 Project

Energy

Info-package 2

Building-integrated photovoltaics (BIPV), energy storage and smart grid management

Energy

Info-package 2

Optimisation of existing District Heating and Cooling

Energy

Info-package 2

District retrofitting

Energy

Info-package 2

Management device for optimisation of local charging

Mobility

Info-package 2

Enterprise Electric Car Club

Mobility

Info-package 2

Clean logistics and last mile delivery

Mobility

Info-package 2

City Information Platform

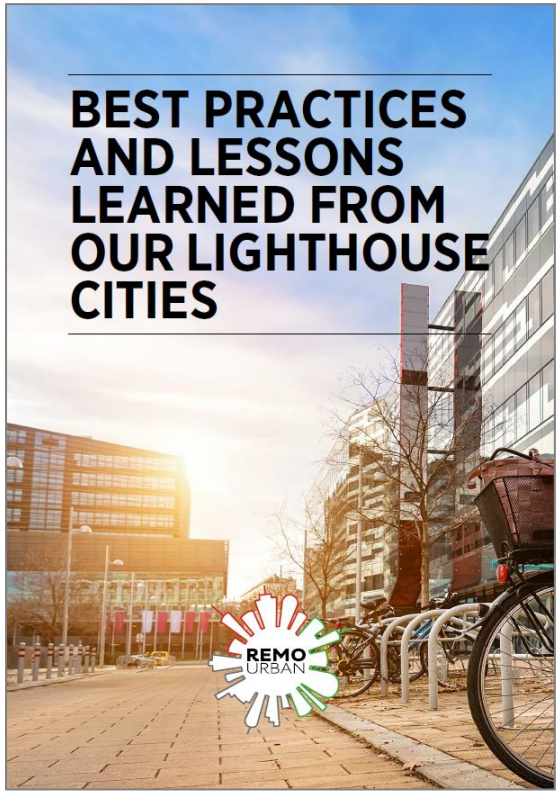
ICTs

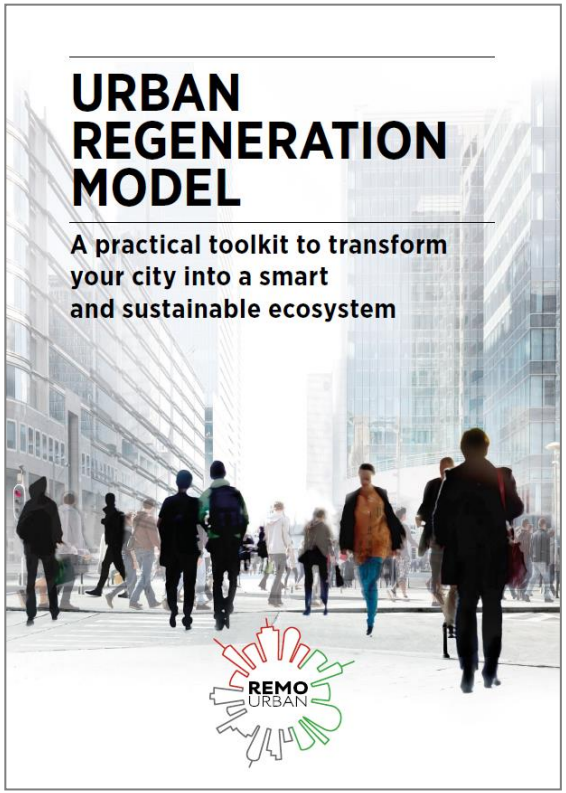
Info-package 2

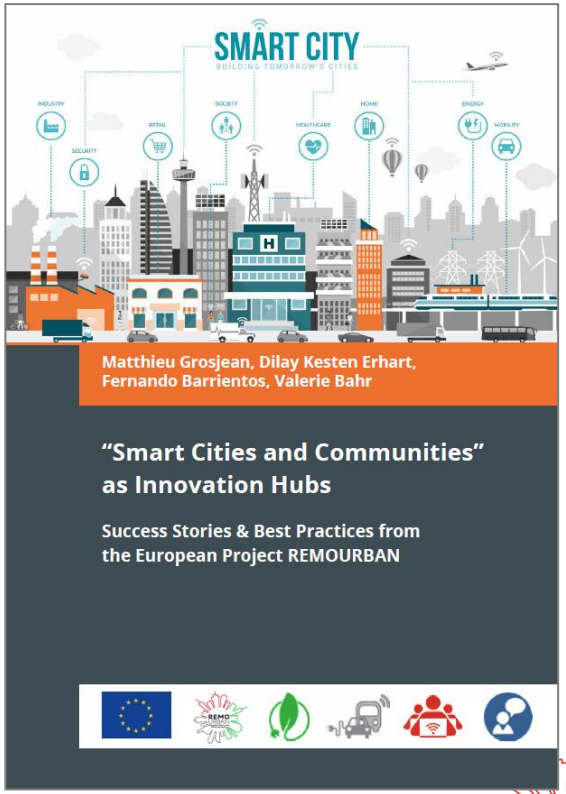
Energy maps in real-time for citizens

ICTs

Best Practices Books

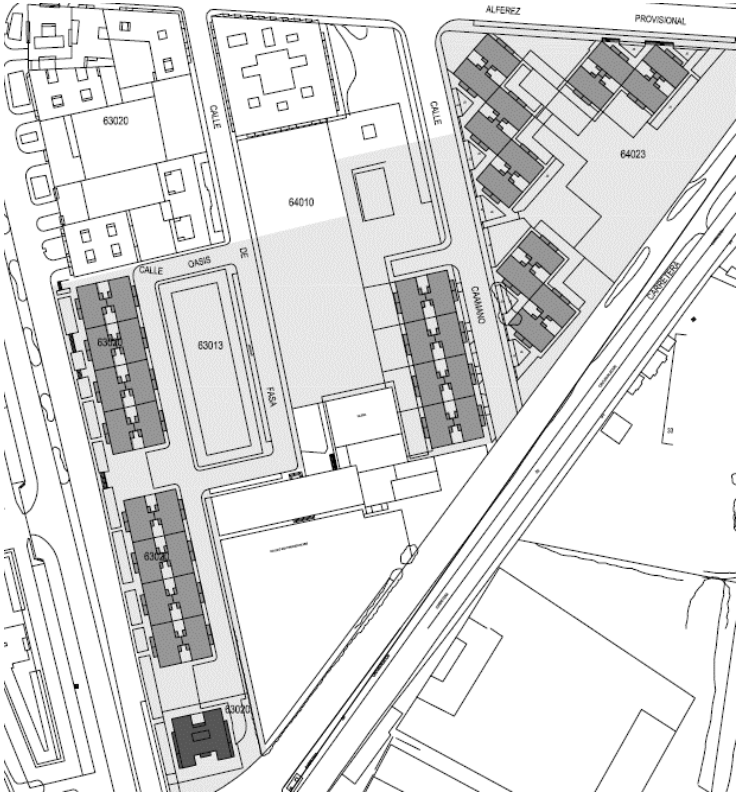






Valladolid lighthouse city

Energy retrofitting – FASA residential district



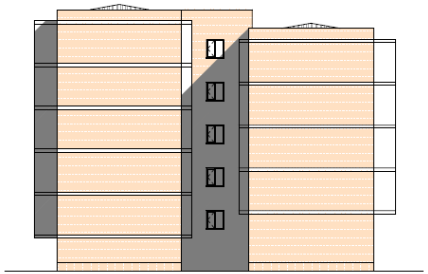
- Built in the '60s
- 24,700 m2 of conditioned area
- 398 dwellings
- 1181 residents
- 19 blocks (342 dwellings) + 1 tower (56 dwellings)

Miguel Á. García-Fuentes | Innovation Consultant and Associate Professor

Energy retrofitting – FASA residential district

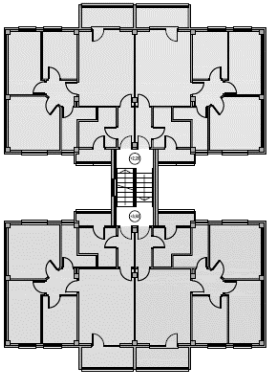
Blocks (5 + 1 floors, 18 dwellings, 1090 m2)

Alzado sur

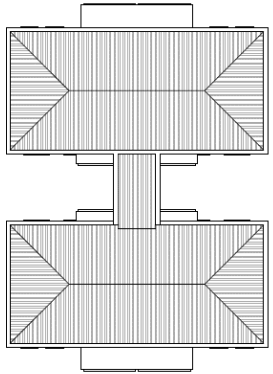


Alzado oeste

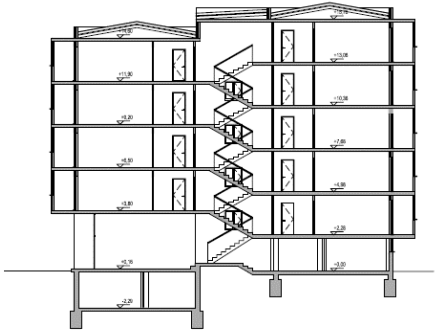
Sección transversal



Planta tipo



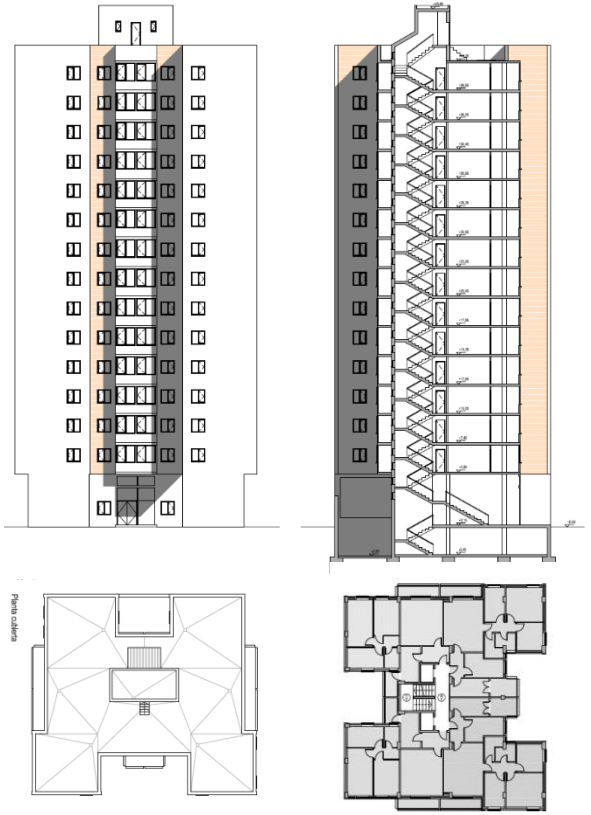
Planta cubierta



Sección longitudinal

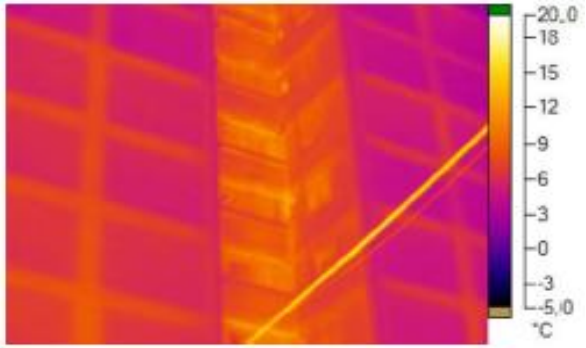
Energy retrofitting – FASA residential district

Tower (14+1 floors, 56 dwellings, 3900 m²)



Energy retrofitting – FASA residential district

- Low energy efficiency (construction characteristics)
- High heating demand
- Thermal losses through thermal bridges (thermographs)



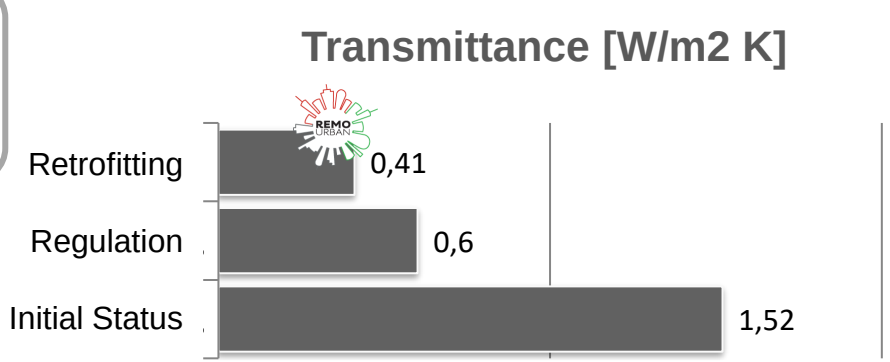
Energy retrofitting – FASA residential district

↓ REDUCTION OF ENERGY DEMAND	↓REDUCTION OF ENERGY CONSUMPTION	RENEWABLE ENERGY CONTRIBUTION
Building envelope insulation: • Façades • Balconies • Roofs	• District heating renovation • Reduction of lighting consumption	• Biomass • Solar energy

Energy retrofitting – FASA residential district

↓ REDUCTION OF ENERGY DEMAND

Façades and Balconies Insulation

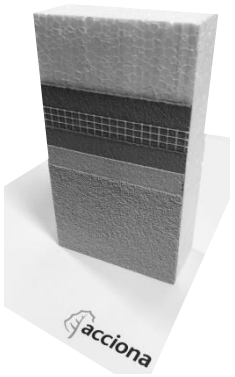


Objectives

- Improve the thermal performance of the building envelope
- Elimination of thermal bridges
- Improve thermal comfort

Technical Solution Implemented

- Façade: Exterior Thermal Insulation System (60mm EPS)
- Balconies: Sandwich panel (60mm EPS)



Energy retrofitting – FASA residential district

↓ REDUCTION OF ENERGY DEMAND

Façades and Balconies Insulation

Energy retrofitting – FASA residential district

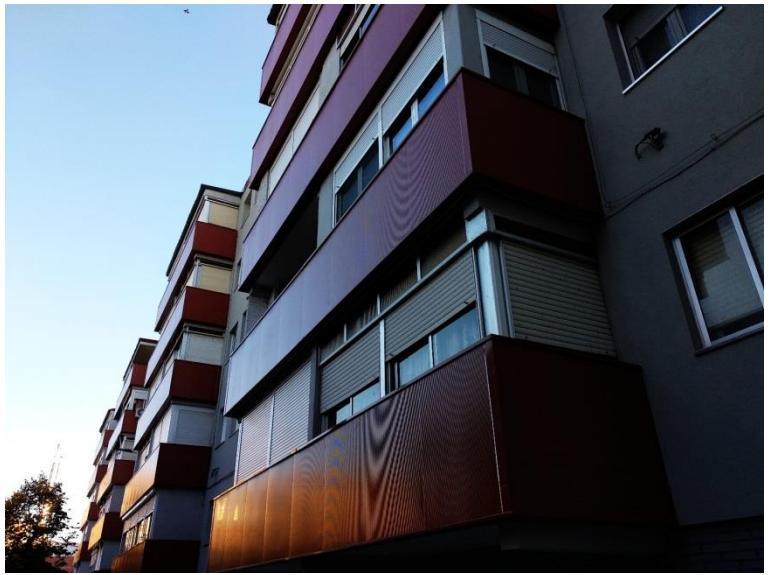
↓ REDUCTION OF ENERGY DEMAND

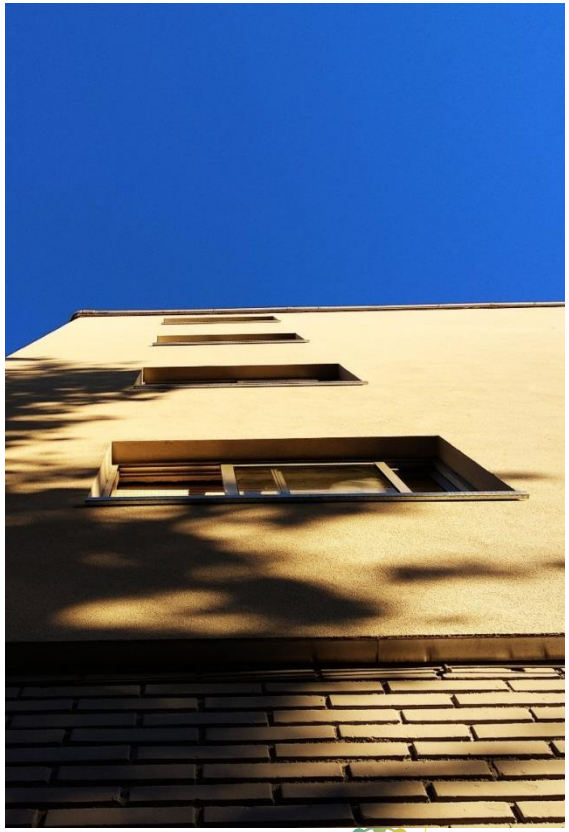
Façades and Balconies Insulation

Energy retrofitting – FASA residential district

↓ REDUCTION OF ENERGY DEMAND

Façades and Balconies Insulation

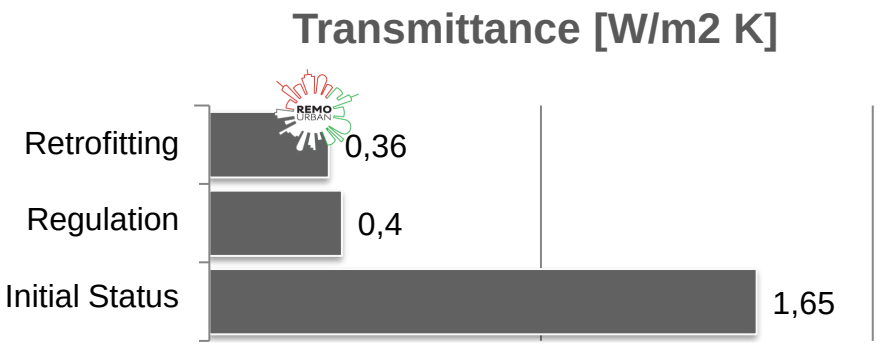




Energy retrofitting – FASA residential district

↓ REDUCTION OF ENERGY DEMAND

Roof Insulation Blocks

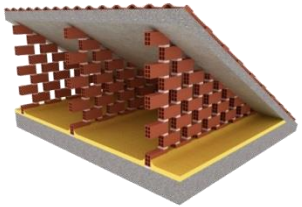


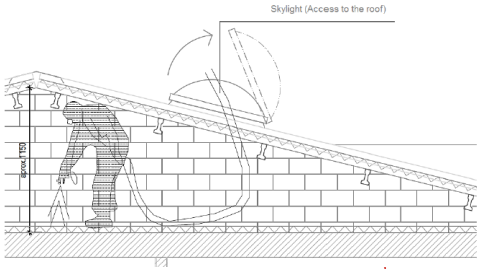
Objectives

- Improve the thermal performance of the building envelope
- Elimination of thermal bridges
- Improve thermal comfort

Technical Solution Implemented

- Pitched roof (blocks): polyurethane foam (60mm)





Energy retrofitting – FASA residential district

↓ REDUCTION OF ENERGY DEMAND

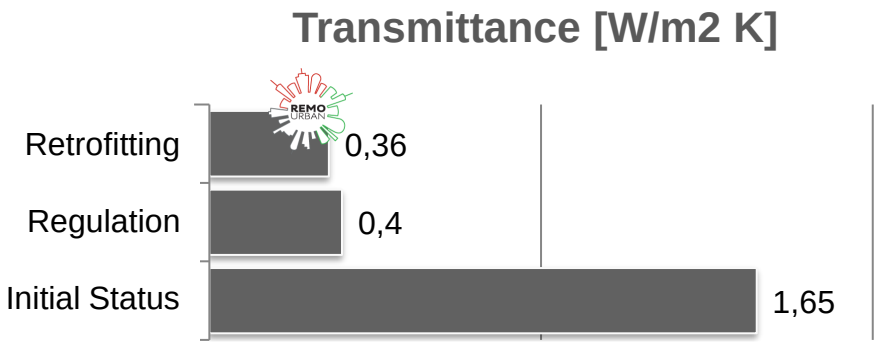
Roof Insulation Tower

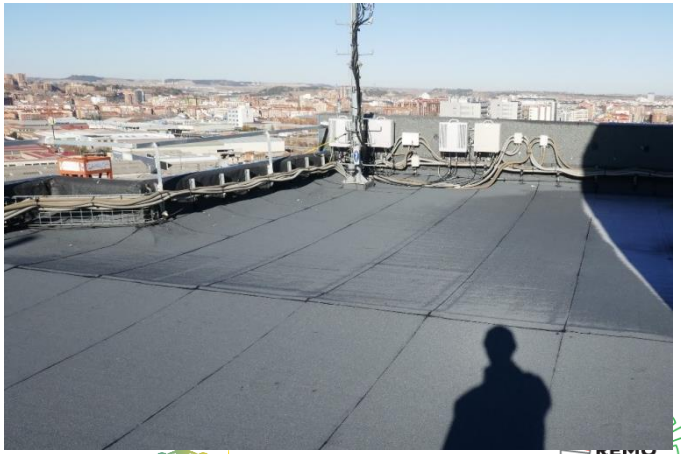
Objectives

- Improve the thermal performance of the building envelope
- Elimination of thermal bridges
- Improve thermal comfort

Technical Solution Implemented

- Flat roof (tower): rock wool (2x40mm) + waterproofing

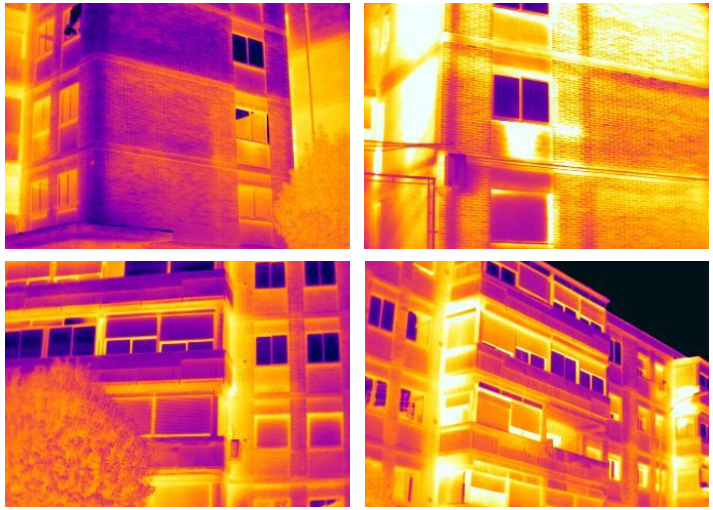




Energy retrofitting – FASA residential district

↓ REDUCTION OF ENERGY DEMAND

Elimination of thermal bridges thanks to the thermal insulation



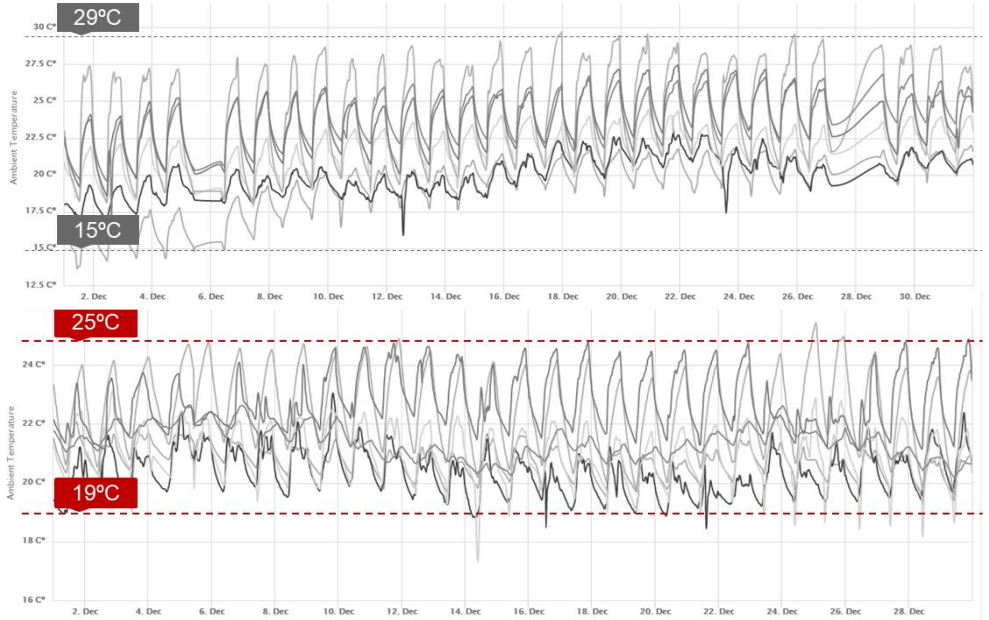
Energy retrofitting – FASA residential district

↓ REDUCTION OF ENERGY DEMAND

Comfort
Temperature Range Improvement

Before

After



Miguel Á. García-Fuentes | Innovation Consultant and Associate Professor

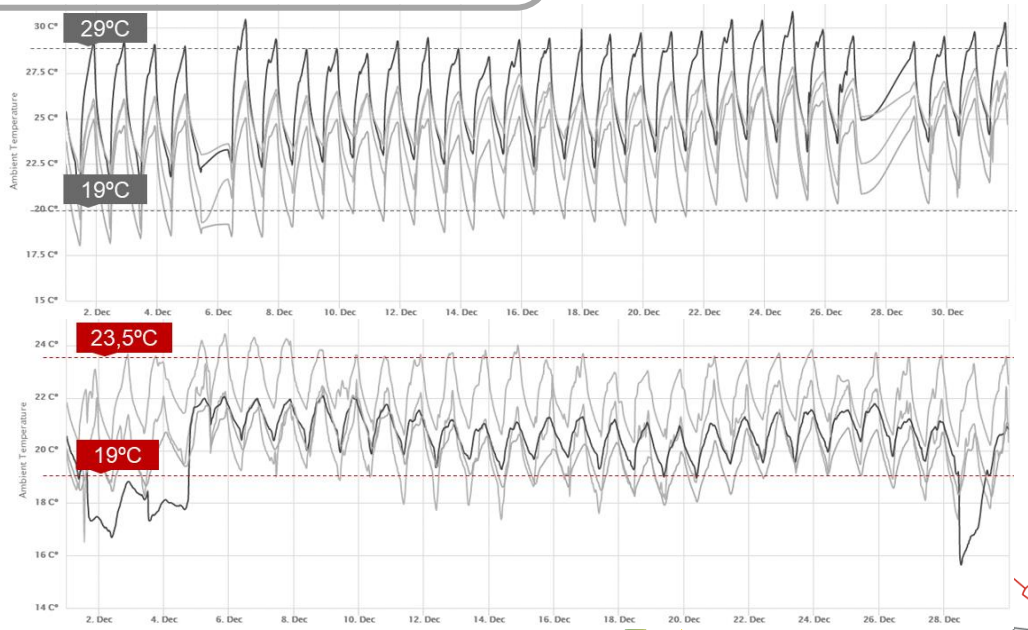
Energy retrofitting – FASA residential district

↓ REDUCTION OF ENERGY DEMAND

Comfort
Temperature Range Improvement

Before

After



Energy retrofitting – FASA residential district

↓REDUCTION OF ENERGY CONSUMPTION

Reduction of lighting consumption

Objectives

- Reduction of lighting consumption in common areas

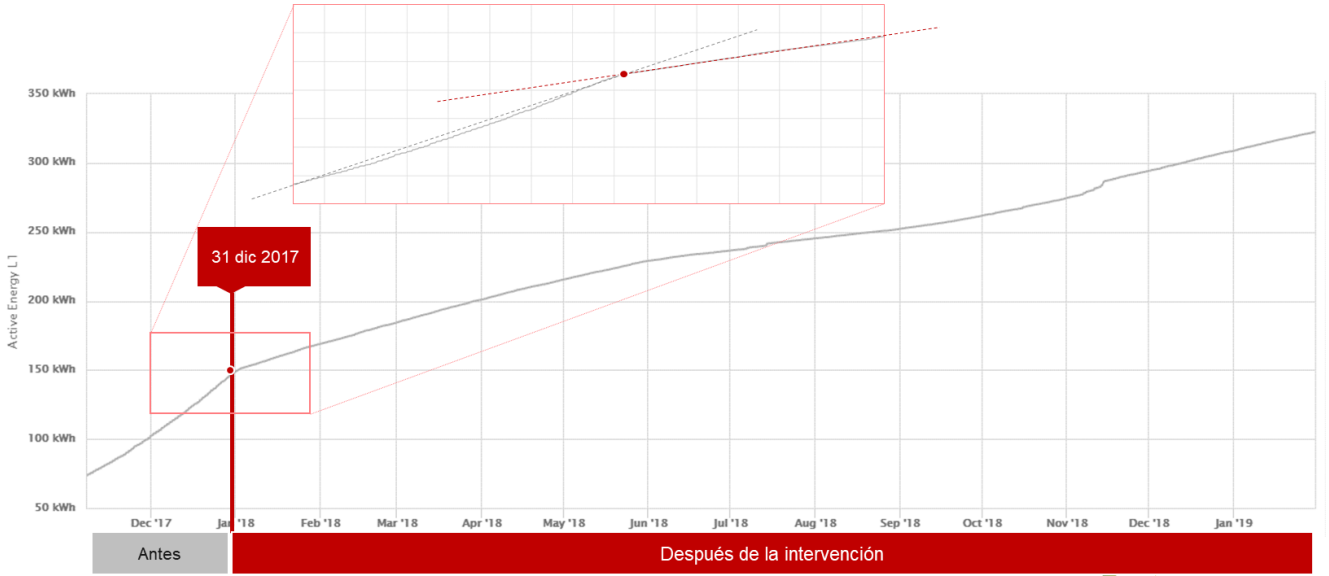
Technical solution implemented

- LEDs in common areas
- Presence detector (tower)

Retrofitting of FASA residential district

↓REDUCTION OF ENERGY CONSUMPTION

Consumption reduction: More than 50%



Miguel Á. García-Fuentes | Innovation Consultant and Associate Professor

Retrofitting of FASA residential district

↓REDUCTION OF ENERGY CONSUMPTION

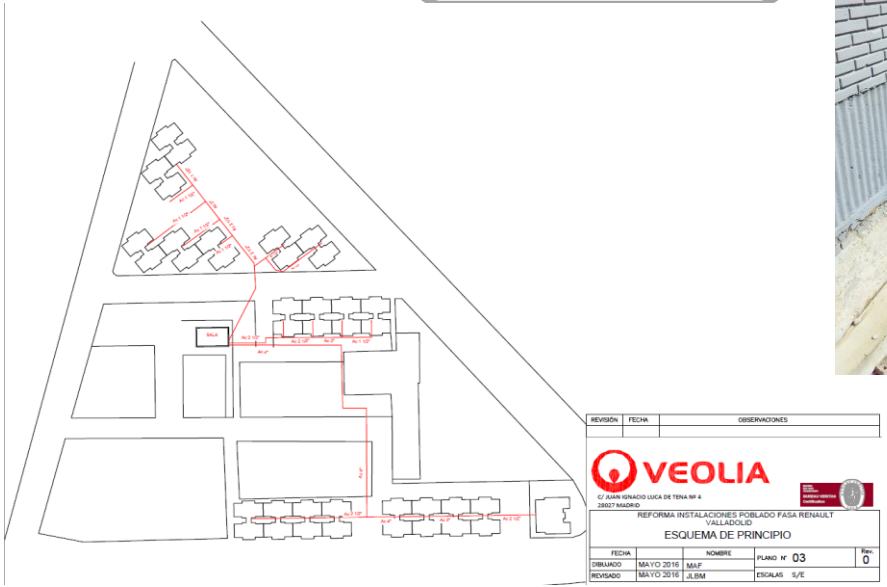
Renovated boilers room

Miguel Á. García-Fuentes | Innovation Consultant and Associate Professor

Retrofitting of FASA residential district

↓REDUCTION OF ENERGY CONSUMPTION

New district heating network



Retrofitting of FASA residential district

↓REDUCTION OF ENERGY CONSUMPTION

Centralized DHW

Retrofitting of FASA residential district

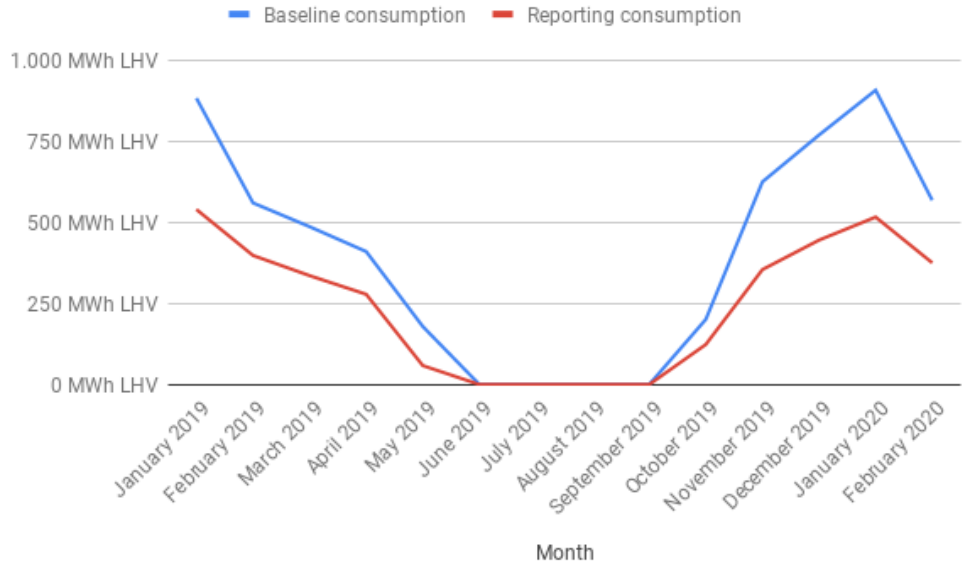
↓REDUCTION OF ENERGY CONSUMPTION

Energy monitoring

Retrofitting of FASA residential district

↓REDUCTION OF ENERGY CONSUMPTION

Heating savings



Baseline

5,592 MWh LHV

Reporting

3,426 MWh LHV

Heating savings

39 %

Miguel Á. García-Fuentes | Innovation Consultant and Associate Professor

Retrofitting of FASA residential district

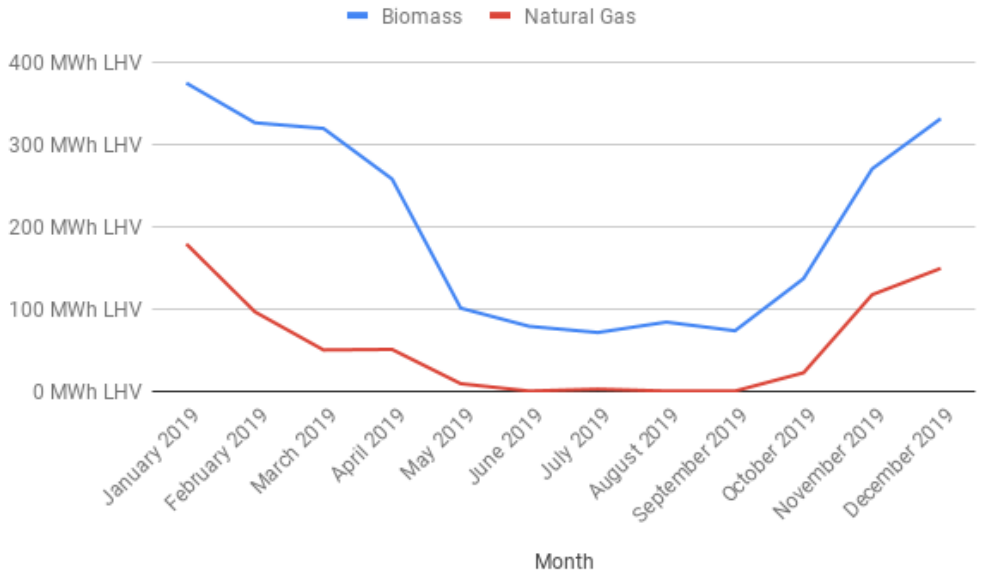
RENEWABLE ENERGY CONTRIBUTION

Biomass

Retrofitting of FASA residential district

RENEWABLE ENERGY CONTRIBUTION

Biomass



Biomass

2,425 MWh LHV

Natural Gas

676 MWh LHV

RES contribution

78 %

Miguel Á. García-Fuentes | Innovation Consultant and Associate Professor

Retrofitting of FASA residential district

RENEWABLE ENERGY CONTRIBUTION

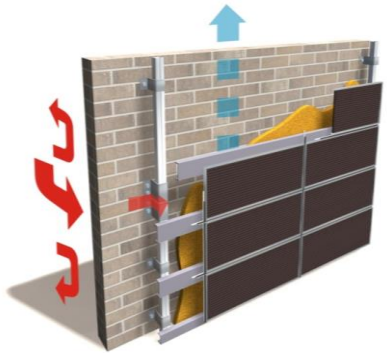
Solar Energy

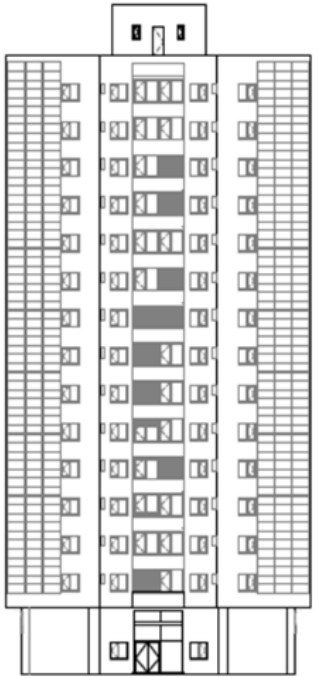
Objectives

- Production of renewable energy

Technical solution implemented

- Ventilated facade system (60mm rock wool)
- Isolated photovoltaics system
- Energy contribution to the district heating (heating and DHW)
- 354 CdTe modules (255 m2)
- Installed power 27.43 KWp
- Production 24,800 kWh per year

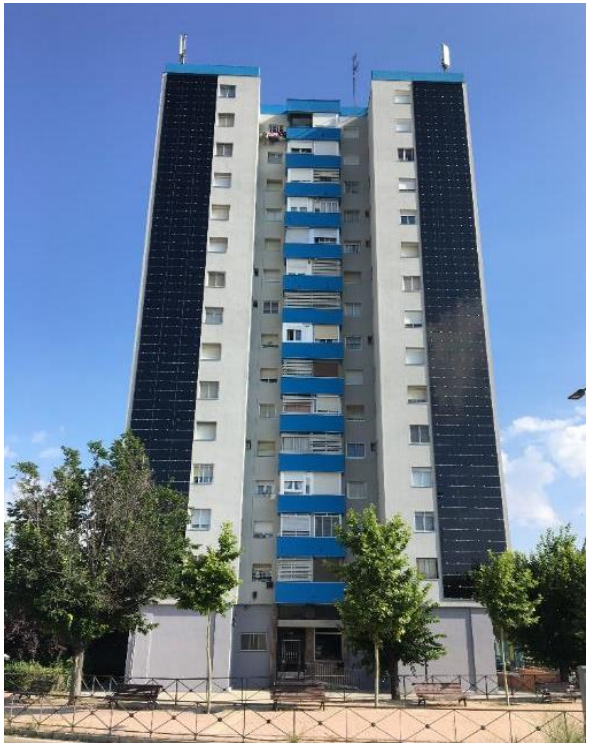




Retrofitting of FASA residential district

RENEWABLE ENERGY CONTRIBUTION

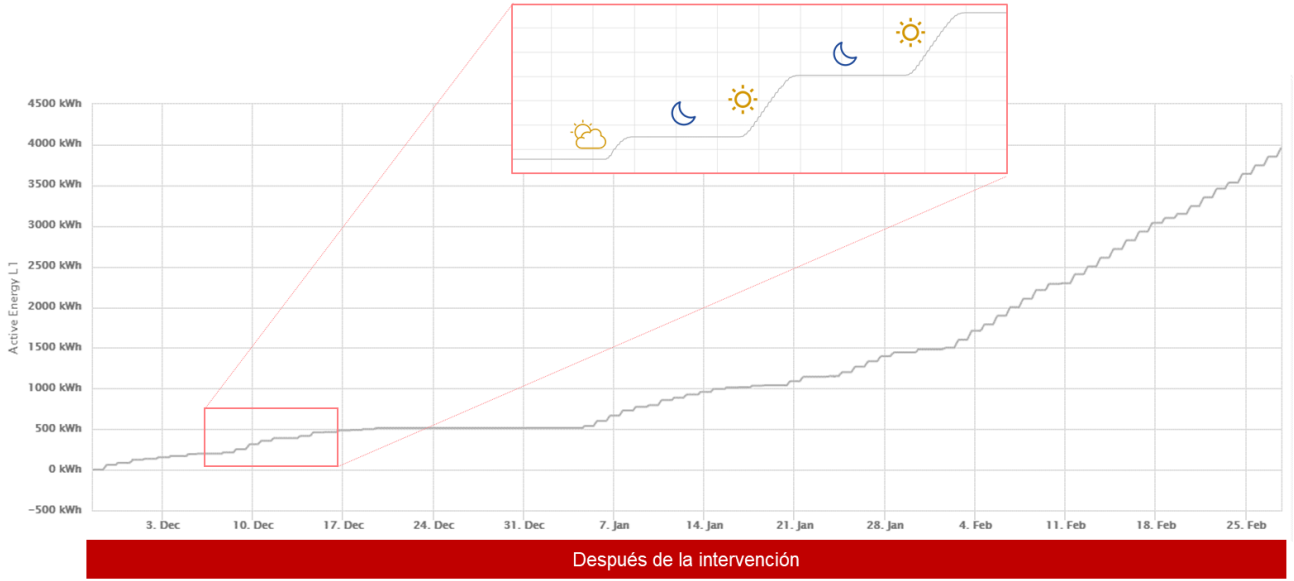
Solar Energy



Retrofitting of FASA residential district

RENEWABLE ENERGY CONTRIBUTION

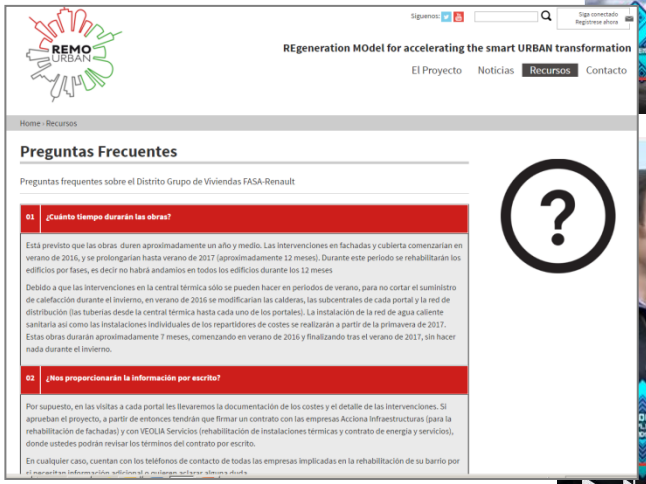
PV Production



Retrofitting of FASA residential district

Retrofitting of FASA residential district

Leaflet



Spanish Web /FAQ

Local TV

Retrofitting of FASA residential district

Consulting Office in the district

More than 50 meetings

Multiple doubts resolved

Follow-up Commission

Periodic communications

Miguel Á. García-Fuentes | Innovation Consultant and Associate Professor

Retrofitting of FASA residential district

ENERGY PERFORMANCE

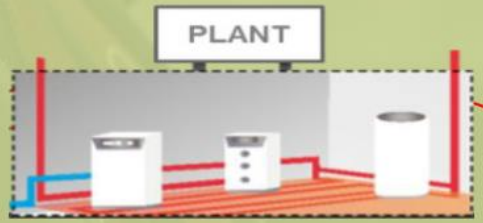
Commitments on energy savings

SECURE ENERGY SUPPLY

Commitments on **plant efficiency**

RELIABLE ENERGY O&M

Commitments on **availability, quality** and **costs**

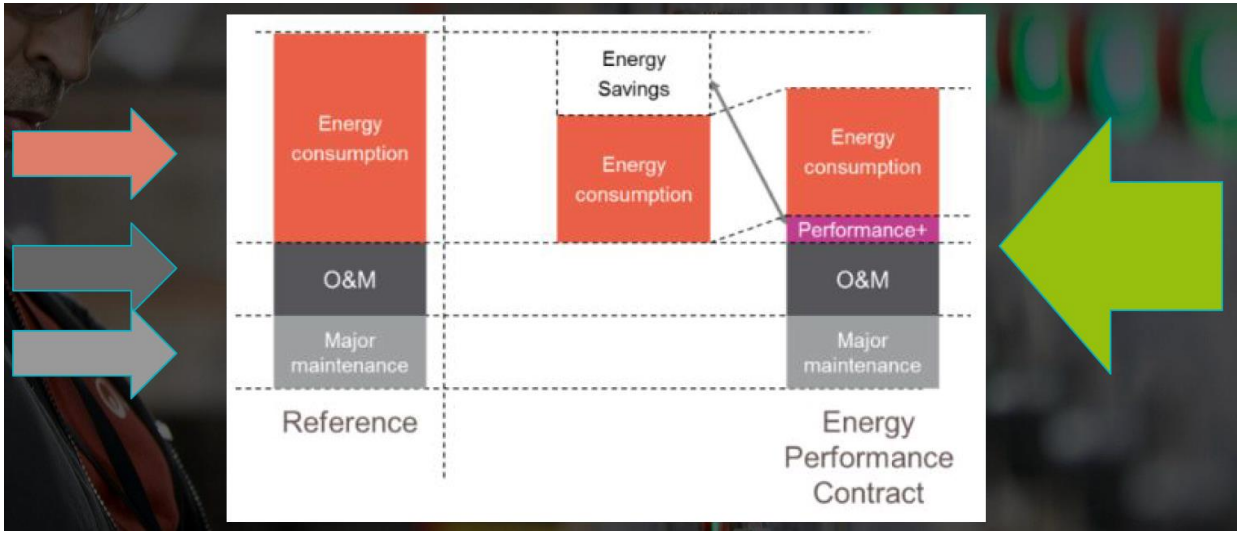


Services

- Energy supply
  - Performance
  - RES
- Operations and Maintenance
- Total Guarantee (Corrective Maintenance)
- Financial (ECM)

Retrofitting of FASA residential district

- The key factor in EPC is ***Risk Assumption***: technical, operational and financial.



Retrofitting of FASA residential district

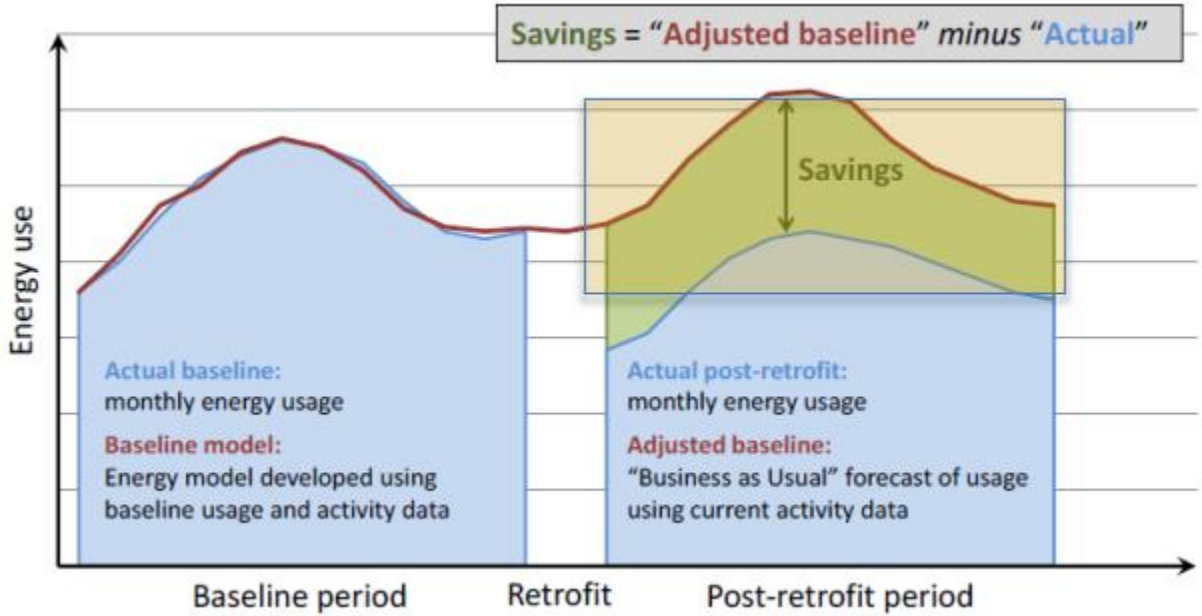
How does it work?

The contract is guaranteed by energy performance:

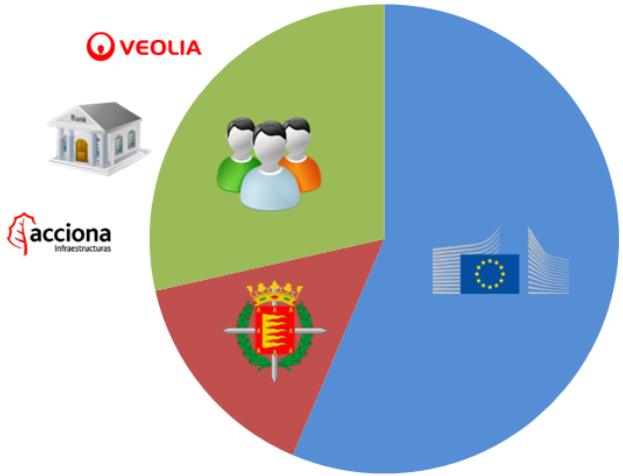
- the ESCo must guarantee effective energy savings.
- The earnings depend on the savings.
- The ESCo can use internal or external resources, in order to fulfil its role in the contract.
- ESCo can finance the initiative with equity and debt (TPF).

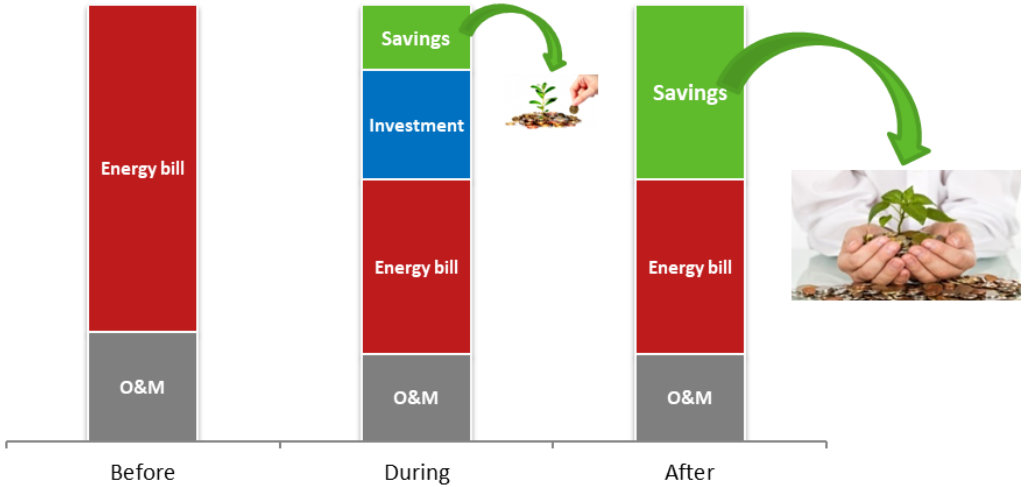
Retrofitting of FASA residential district

- IPMVP:
  - Provides reliability
  - Need for accurate data



Retrofitting of FASA residential district





- **Combining Instruments:** The success of the program is largely due to its combination of grants, EPC and soft loan, which make it accessible to households that may not have been able to afford renovations otherwise.
- **Community Involvement:** The municipality, the ESCO and the construction company worked closely with the neighbourhood association to ensure broad participation and engagement.

Stay tunned:
remourban.eu

REMO URBAN

Regenerate your city with
REMOURBAN!

Follow and **engage** with
REMOURBAN on Twitter
@Remourban_EU
follow us!

Thank you for your attention!

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 646511

contact@remourban.eu
www.remourban.eu
@Remourban_EU

PROSPECT+

5 DECEMBER 2024, 10:00-12:00 CET

INNOVATIVE FINANCING INSTRUMENTS: CASE STUDIES

ENERGY PERFORMANCE CONTRACTING (ESCO), SOFT LOANS, CITIZEN FINANCE, BLENDED FINANCE

Setting-up Renewable Energy Communities: the case of San Lazzaro di Savena

Sharing experiences in supporting public institutions in the energy transition in Italy

AESS

Marco Costa
Energy Engineer and
Renewable Energy Communities Team Lead

EU Legislation and transposition path for Italy

DEC-2018	Renewable Energy Directive (RED II) and Electricity Market Directive	• Strengthening the role of renewables self-consumers • Possibility to establish Renewable Energy Communities
DEC-2019 FEB-2020	**D.L. n. 162/2019** **Law n. 8/2020** Kick start of the trial phase	Partial transposition of RED II directive allowing for: • Collective self-consumers • Renewable Energy Communities
DEC-2021	**D.L. n.199/2021** Full transposition of RED II Directive	Expansion of REC perimeter and installed capacity allowance
FEB- 2024	Legislative Decree and Technical regulation by GSE	Full regulation of RECs and registration portal activation from 8° of April

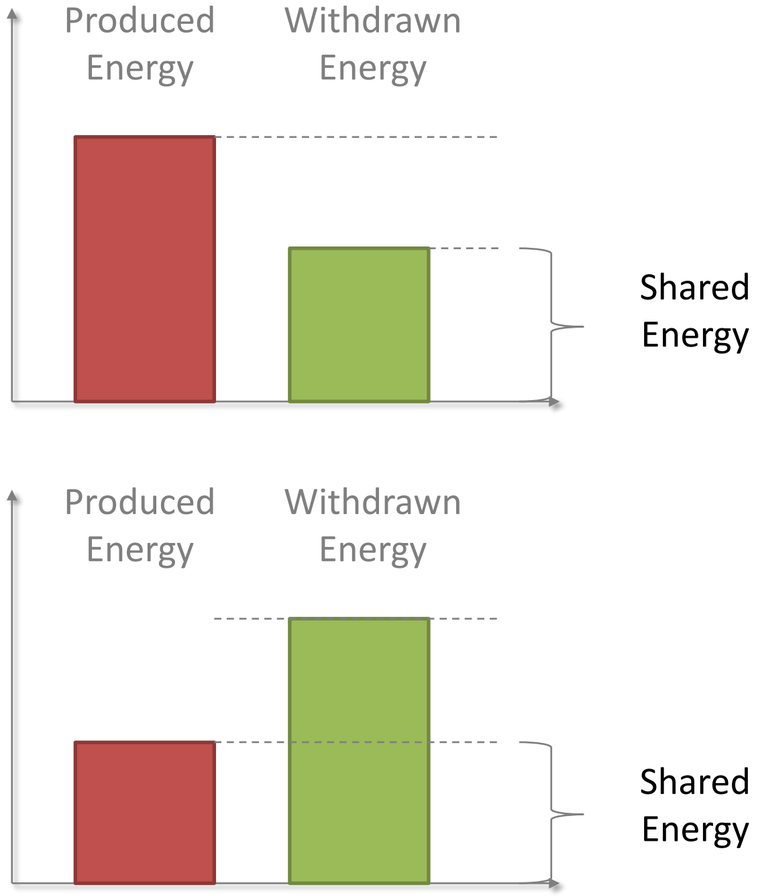
What's an Energy Community in Italy?

A group of energy prosumers that collectively «share» energy locally produced and consumed

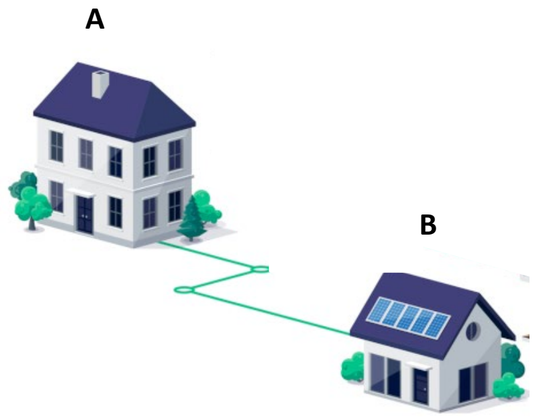
Shared Energy definition

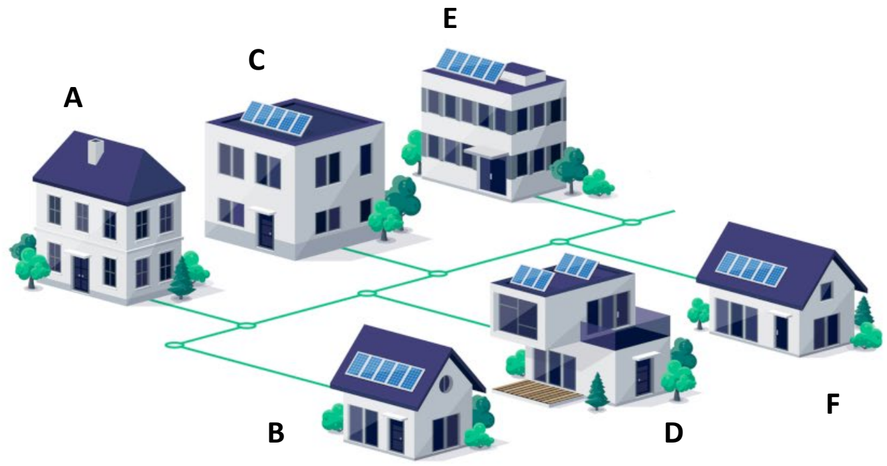
Shared Energy
=
The minimum, in a given time frame, of:
Renewable energy produced
AND
Energy withdrawn from the grid

It’s a virtual concept, not a direct sharing of energy among members



Shared Energy definition





Within the same hour:

- User A withdraw 10 kWh from the grid
- Prosumer B feed 3 KWh to the grid

Shared : 3 kWh

Within the same hour:

- User A withdraw 10 kWh from the grid
- Prosumer B feed 20 KWh to the grid

Shared : 10 kWh

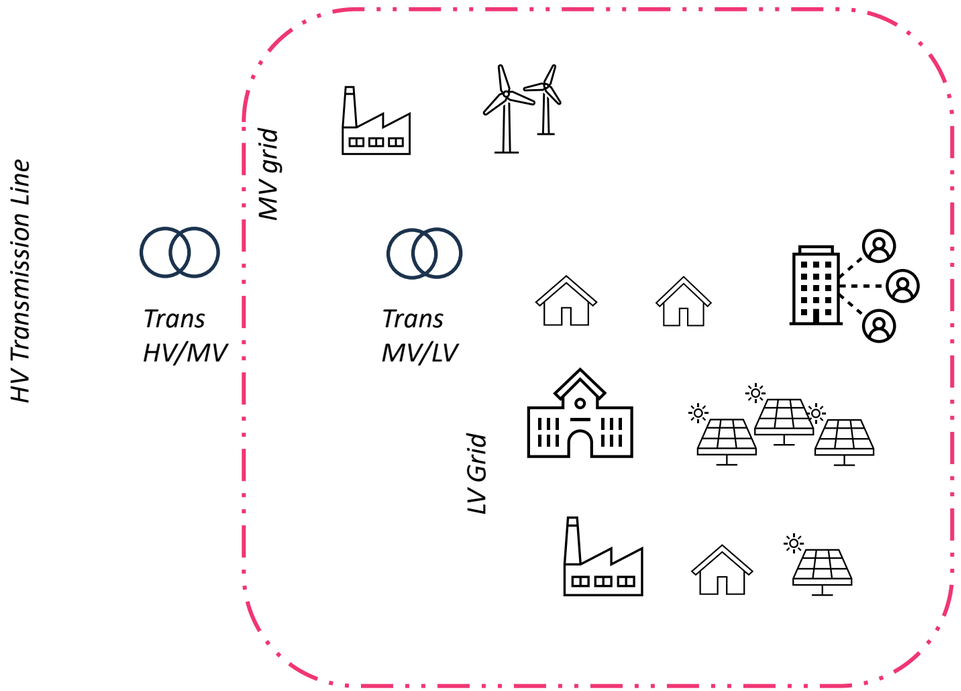
Energy Community basics

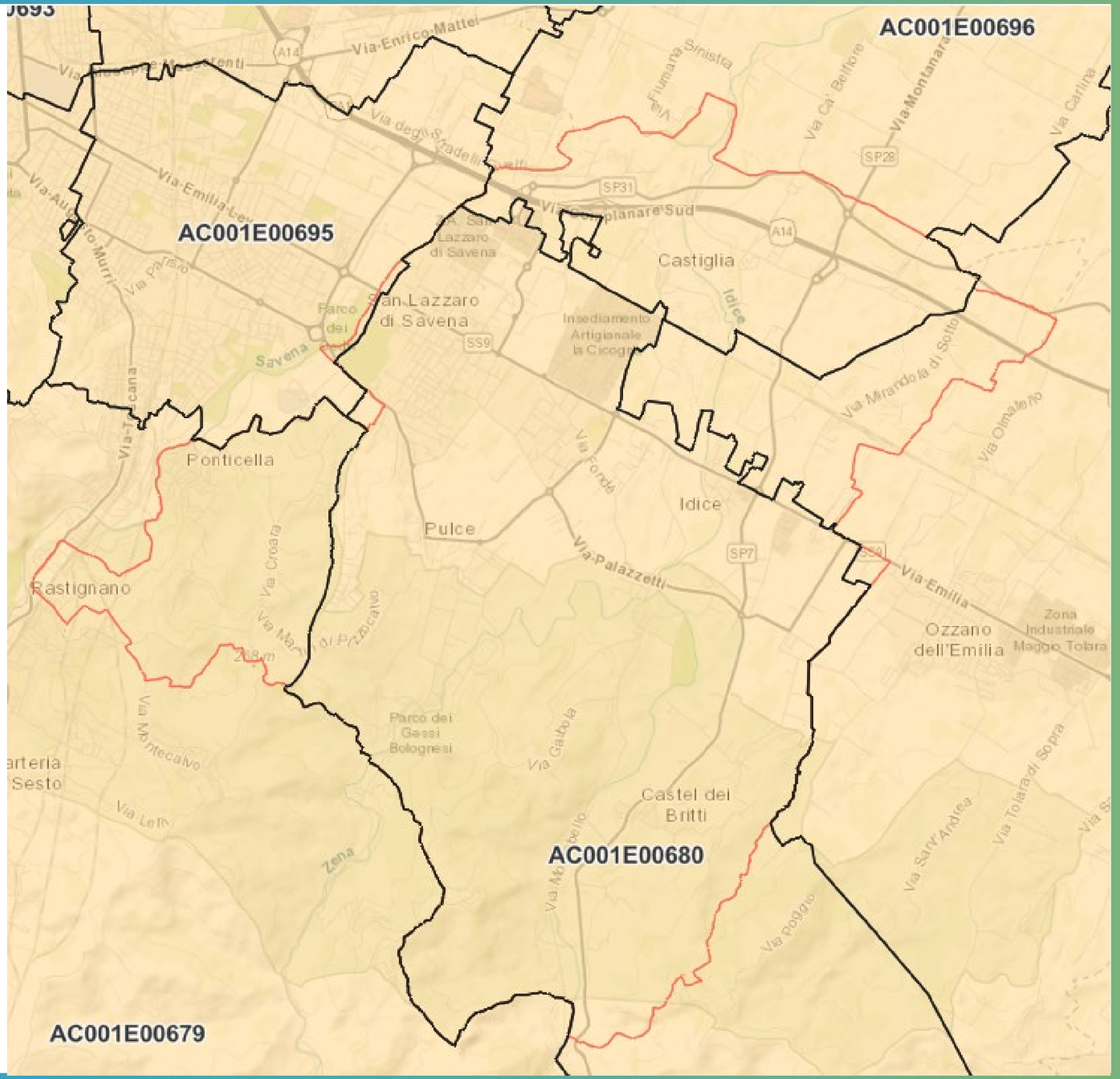
Main goal: “to provide environmental, economic or social community benefits for its shareholders and members or for the local areas where it operates, rather than financial profits”

Need for a dedicated legal entity:

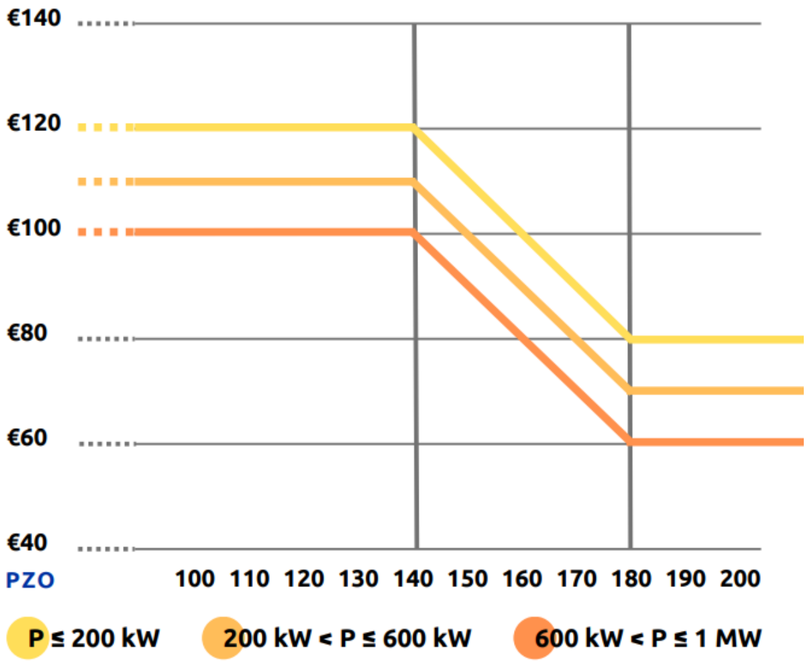
- *Criteria based approach: any legal form allowed in the EU*
- *Allowed stakeholders: citizens, NGO, SME, ESCo, cooperatives, public entities,etc.*
- *Not allowed: Energy related companies and REC management cannot be the primary business activity for an enterprise*
- Any stakeholder can join and withdraw from the REC freely any time

The MV/HV conventional perimeters





REC's incentive scheme

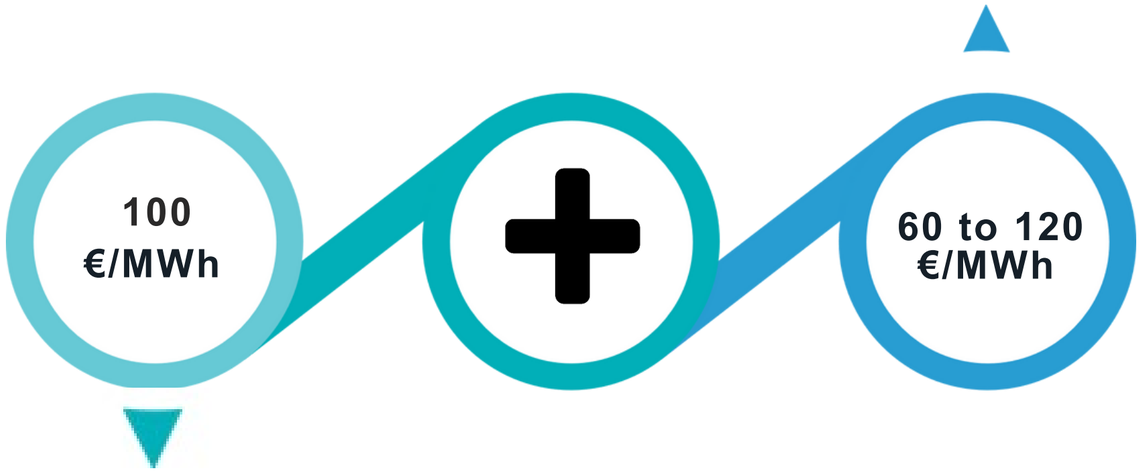


FOR THE ENERGY SHARED

Incentive scheme depends on:

- Renewable Energy System size
- Zonal energy price

+ ARERA CONTRIBUTION: 10€/MWh

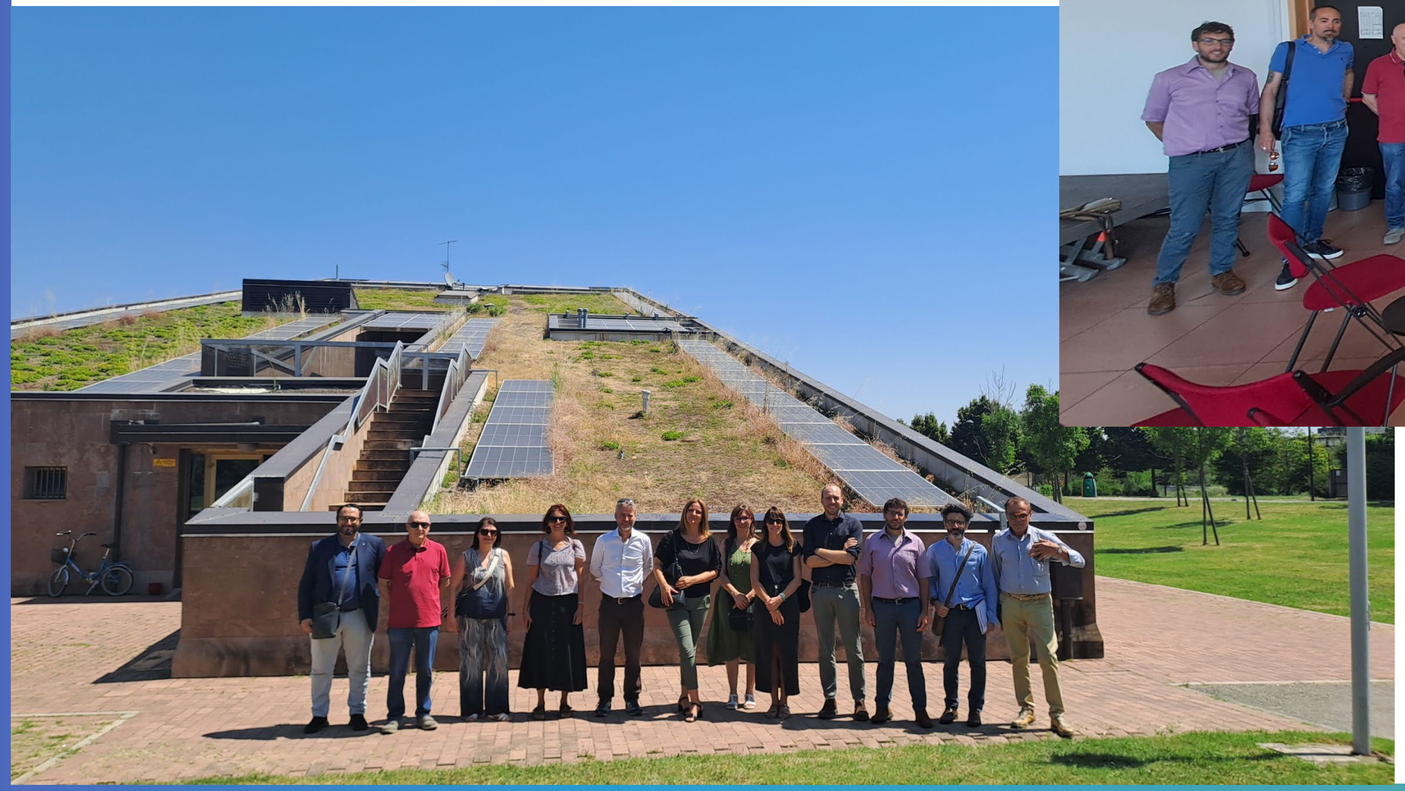


Feed in tariff: currently 100 €/MWh

FOR THE ENERGY FED INTO THE GRID

THE CASE OF SAN LAZZARO DI SAVENA (BO)

8 funding members:
municipality, social associations and other institutional partners



Chosen legal entity:
Accredited Association

THE CASE OF SAN LAZZARO DI SAVENA (BO)

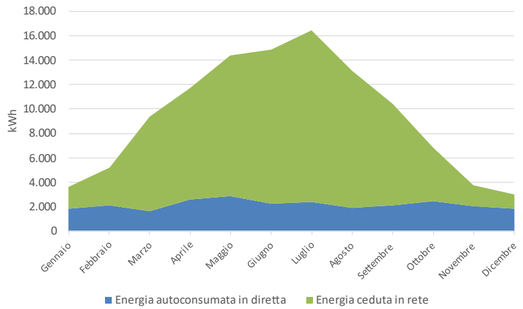
FEASIBILITY STUDY

Sites inspection and 3D modelling of the 11 buildings under analysis, for almost 530 kWp

Indice Di Performance

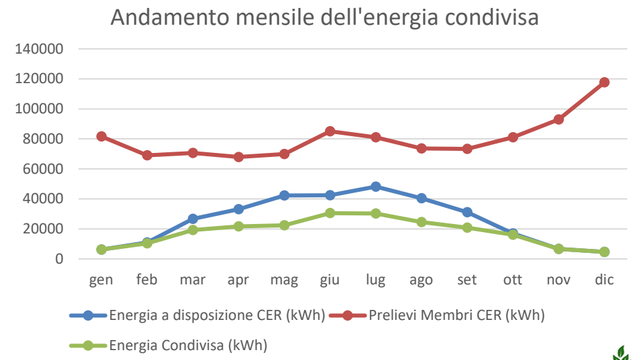
1.282 kWh/kWp

Consumption analysis from utility bills



Mese	Consumi Elettrici mensili [kWh]		
	Fascia F1	Fascia F2	Fascia F3
Gennaio	1.995	936	1.722
Febbraio	2.105	857	1.365
Marzo	1.208	837	1.442
Aprile	1.903	819	1.479
Maggio			

Analysis of self-consumed energy and fed into the grid

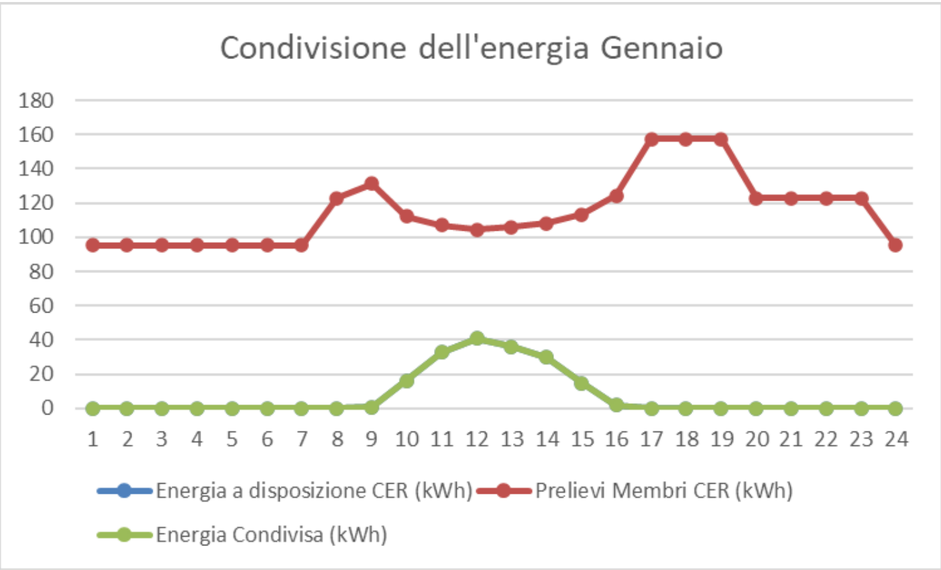


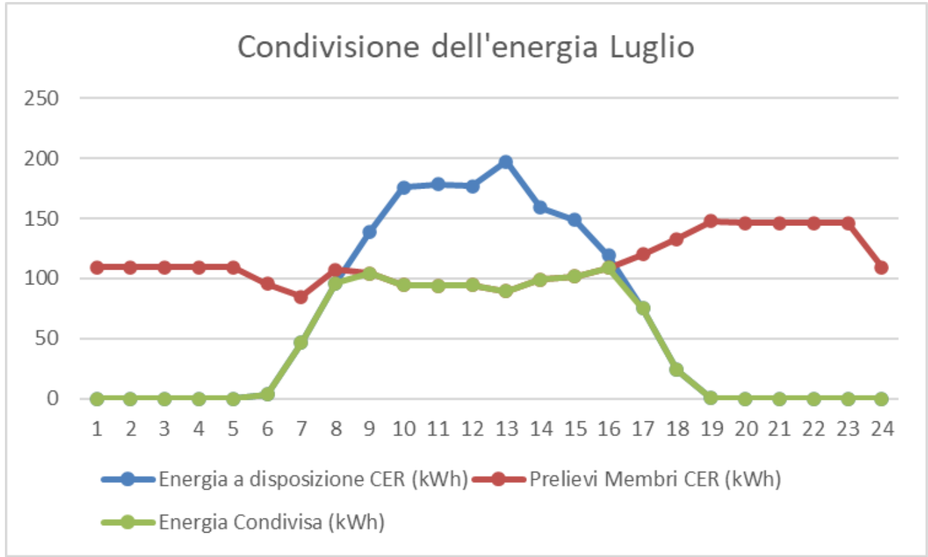
SHARED ENERGY

The total estimated energy produced is 606,310 kWh per year, of which 39 % is self-consumed live.
The energy made available to the grid is 371,727 kWh.

Evaluating for each hourly interval the minimum between energy produced and energy self-consumed, considering only the sites under analysis, the energy shared is equal to:

- TR HV/MV AC001E00679: 500 kWh (0.8 % of total available)
- TR HV/MV AC001E00680: 213,694 kWh (68.9 % of the total available)





MORE PV SYSTEMS AVAILABLE SOON...

The municipality has already installed or is planning to install approximately 647 kWp of photovoltaic systems on municipal buildings. They will increase the shareable energy by 251,197 kWh/year. These newly installed systems* will be part of the Energy Community.

... AND MORE CONSUMERS

Some of these buildings have very high consumption, so at certain times of the day they will act as consumers. In addition, the municipality or other local associations will be able to use their PODs as consumers (e.g. La Terrazza social centre)

*** Ai sensi del d.lgs. 414 12/2023**

How does a small REC works?

REC incentive scheme

Investment
1.141.091 €

11 PV systems for a total of 575,57 kWp

Municipal buildings
Rooftop PV

Installed capacity: 575,57 kWp
Renewable Energy: 706,3 MWh/y

Other Municipal PV systems available

Capacity: 518 kWp
Energy fed to the grid: 300 MWh/y

Consumers and Socio-environmental goals: 40%
20.891 €

Self consumption
48%
336.000 kWh/y

Energy fed to grid: 52%
370.000 kWh/y

Shared Energy:
56%
378.000 kWh/y

Shared Energy incentive:
52.228€

REC
- Citizen - Consumer
- Citizen - Prosumer
- Local Association – consumer
- SME - Prosumer
- SME - Consumer
- Social centers

Direct savings
67,183 €

Feed in contribution
44.445 €

Prosumers
50%
26.114 €

REC management cost quota: 10%
5.223 €

Return on investment (PB 15 y)

REC instrumental to the SECAP implementation

As indicated in the SECAP*, as of 2017, total electricity consumption in the municipal area was 107.75 GWh.

ENERGIA ELETTRICA [MWh]								
ANNO	Edifici comunali e attrezzature	Edifici terziari e attrezzature	Edifici residenziali	IP	Agricoltura	Industria	Trasporti (totali)	TOTALE
2017	1.791,65	44.480,72	36.422,11	2.381,64	2.129,76	19.516,14	1.031,70	**107.753,71**

Considering only municipal and residential building consumption, the total energy withdrawn is approximately 38.00 GWh, with 12.50 of this estimated during the production hours of the photovoltaic systems.

The minimum power to be installed in order to saturate this value is 10.4 MWp

* https://www.comune.sanlazzaro.bo.it/novita/notizie/approvato-il-piano-d2019azione-per-l2019energia-sostenibile-e-il-clima-paesc

How does a small REC works?

REC incentive scheme

Investment (40% co-financed)
283.942 €

5 PV systems for a total of 126 kWp

Municipal buildings
Rooftop PV

Installed capacity: 126,0 kWp
Renewable Energy: 151,3 MWh/y

Self consumption
14%
21.721 kWh/y

Energy fed to grid:
86%
129.527 kWh/y

Shared Energy:
60%
77.716 kWh/y

Shared Energy incentive:
9.501 €

Redistribution
75% 8.076 €

Consumer
20%
1.615 €

REC
- Citizen - Consumer
- Citizen - Prosumer
- Local Association – consumer
- SME - Prosumer
- SME - Consumer
- Parish

Direct savings
4.779 €

Feed in contribution
12.953 €

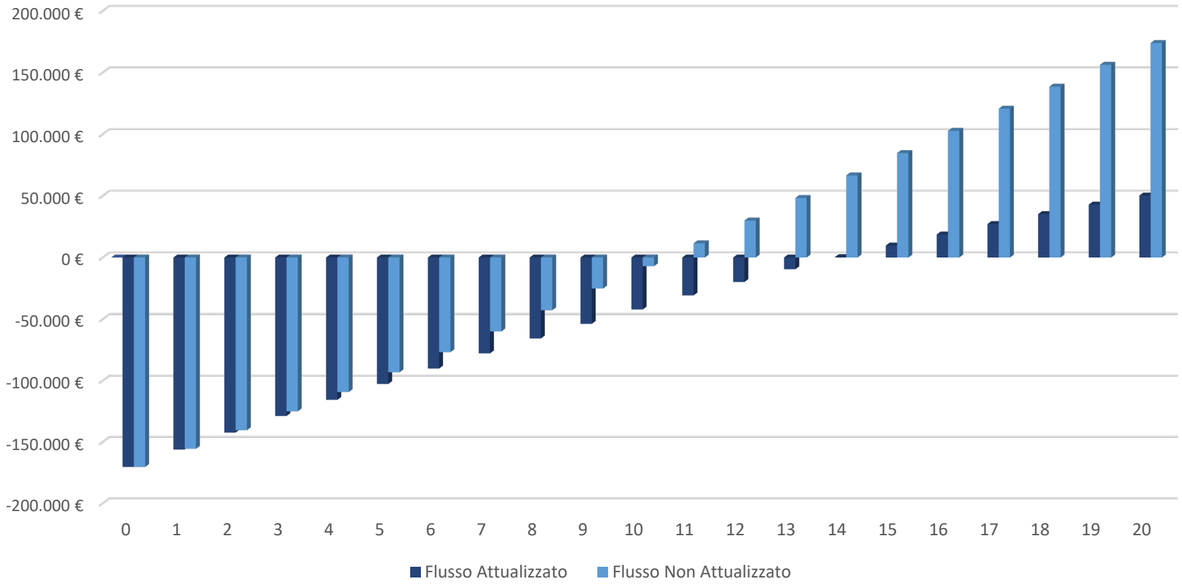
Prosumer
80%
6.461 €

Quota for social and environmental goals 15%
1.425 €

Return on investment (PB 11 y)

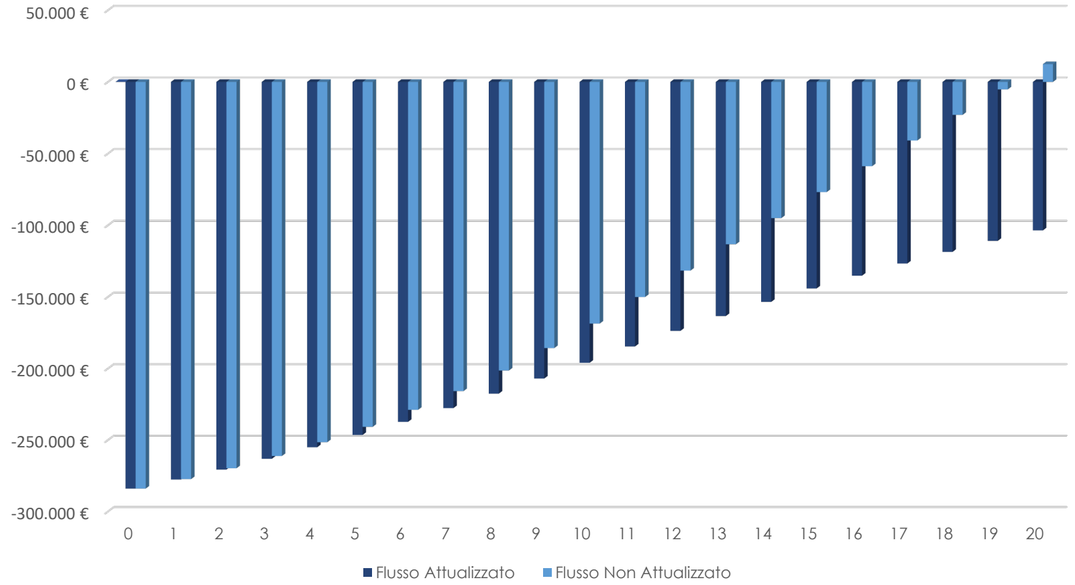
Economic results

40% co-financing support



Financials	
IRR @20y	7,55%
NPV @20y	50.221 €
SPB [y]	11
PB [y]	14

100% self funded



Financials	
IRR @20y	0,36%
NPV @20y	-103.563 €
SPB [y]	20
PB [y]	>20

How does a big REC works?

REC incentive scheme

ESCO Investment
6.535.930 €

48 PV systems for a total of 4,1 MWp

Municipal buildings
Rooftop PV

Installed capacity: 4,1 MWp
Renewable Energy: 4,9 MWh/y

Self consumption
33%
1.605.964 kWh/y

Energy fed to grid:
67%
3.292.076 kWh/y

Shared Energy:
60%
1.975.246 kWh/y

Shared Energy incentive:
248.075 €

Redistribution
85% 210.864 €

Consumer
20%
42.173 €

REC
- Citizens - Consumer
- Citizens - Prosumer
- Local Association – consumers
- SME - Prosumers
- SME Consumers
- Parish

Direct savings:
353.312€ of which 90% dedicated to ESCO
317.981 €

Feed in contribution
493.811 €

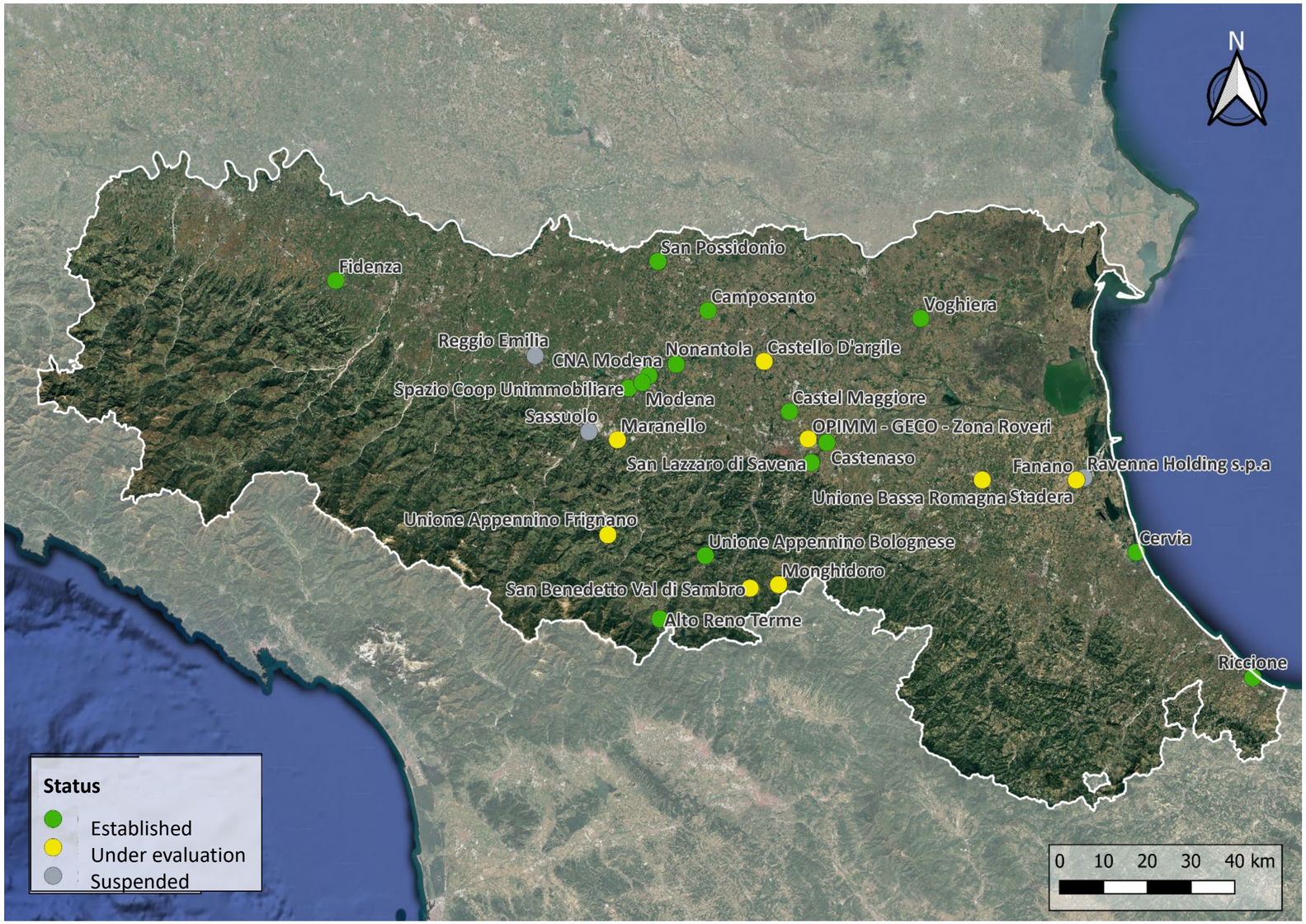
Prosumer
80%
168.691 €

Quota for social and environmental goals 15%
37.211 €

Municipality benefit, 10% of energy savings
35.331 €

Return on investment (PB 10 y)

REC Grant Emilia-Romagna Region - Results



- **26 Applications** supported by AESS in 2023:
- By now:
  - 15 established Renewable Energy Communities
  - 8 projects under development
  - 3 suspended projects

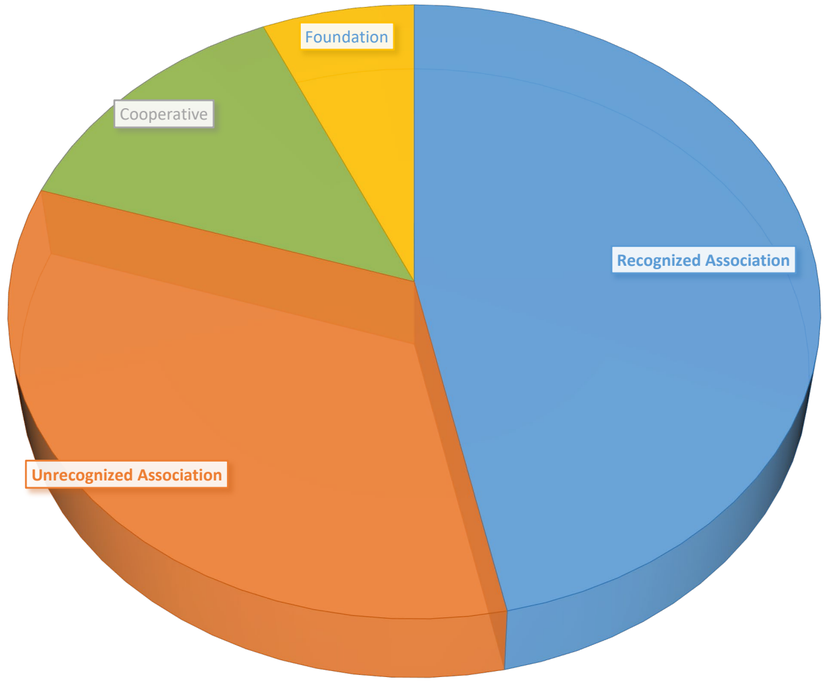
AGENZIA PER L'ENERGIA E LO SVILUPPO SOSTENIBILE
AESS

REC Call Emilia-Romagna Region : chosen legal forms

Considering the 15 established RECs, the chosen legal entities are distributed as follows:

- **Accredited Association**: 7
- **Simple Association**: 5
- **Cooperative**: 2
- **Foundation**: 1

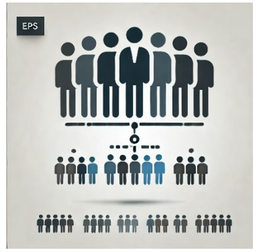
Excluding the 2 cooperatives, all other RECS are lead by or include municipalities



AGENZIA PER L'ENERGIA E LO SVILUPPO SOSTENIBILE
AESS

REC Call Emilia-Romagna Region : statistical results

Summarizing the data of the configurations submitted for the regional REC grant:



a total of 84 founding members were involved

9,11 MW were analyzed….

…allowing for a production of 11,3 GWh/y of renewable energy

An average total shared energy rate of 49% is estimated

Approximately 2.960 tCO_2eq/year will be prevented from being emitted into the atmosphere

Technical analyses have estimated an average total self-consumption rate of 23%

A total REC incentive of € 409.763 is estimated in the first year

AGENZIA PER L'ENERGIA E LO SVILUPPO SOSTENIBILE
AESS

Challenges when setting up a REC in Italy

- Members participation
  - Buy-in
  - Long term engagement
- Legal entitiy specifics:
  - Incentive redistribution
  - Governance
  - Set up costs
- Business Plan
  - REC management costs
  - Financial stability
  - Access to credit
- Direct Investment vs Third party investment
- Installation authorization and timing
- Administrative challenges for public entities

Thank you for your attention

PROSPECT+

5 DECEMBER 2024, 10:00-12:00 CET

INNOVATIVE FINANCING INSTRUMENTS: CASE STUDIES

ENERGY PERFORMANCE CONTRACTING (ESCO), SOFT LOANS, CITIZEN FINANCE, BLENDED FINANCE

Marco Costa
marco.costa@aessenergy.it
cer@aessenergy.it
www.aessenergy.it