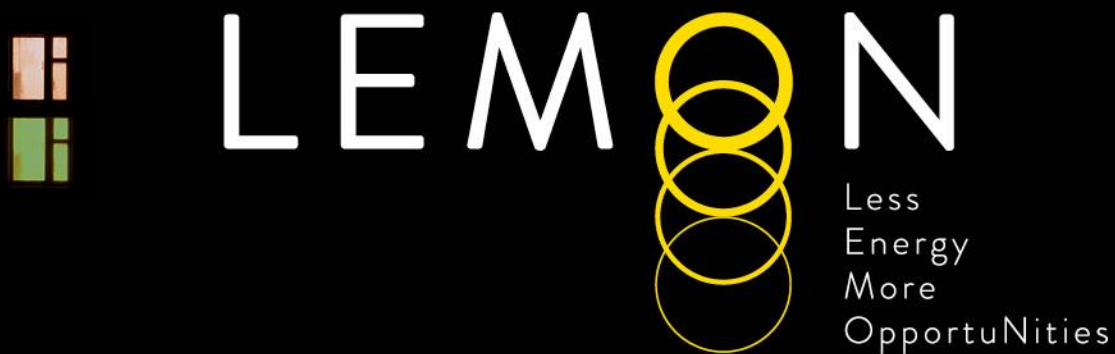


# *The LEMON project: boosting the retrofit in the Social Housing sector*

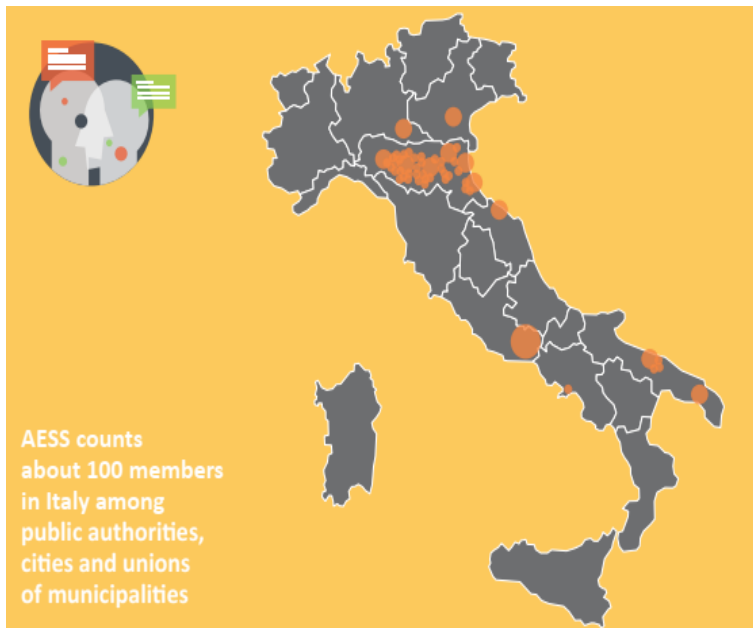


*Covenant of Mayors' Investment Forum – Energy Efficiency Finance Market Place in Brussels, 16 June 2021*  
Claudia Carani – LEMON project manager



agenzia per l'energia e  
lo sviluppo sostenibile

**"AESS is a non-profit association for the sustainable energy development of the territory."**



- ✓ AESS was established in 1999 as a territorial energy agency
- ✓ It is composed of 20 energy experts;
- ✓ 115 public bodies are members of the association;
- ✓ The main area of activity is the Emilia Romagna Region, but it also operates at national and international level;
- ✓ AESS provides technical assistance to its members to implement climate mitigation and adaptation investment programs.

# LEMON project

- LEMON is a project funded as part of the European Horizon 2020 program (call-EE-20-2015: Project development assistance for innovative bankable and aggregated sustainable energy investment schemes and projects)
- Project duration: 2016-2020
- Partners of the LEMON project are Agenzia per l'Energia e lo Sviluppo Sostenibile di Modena (**AESS**), the project coordinator, **ACER Reggio Emilia**, **ACER Parma** and **ARTER**, the Consortium for the Innovation and the technology transfer of the Emilia-Romagna Region.



# LEMON objectives

LEMON had the purpose of providing technical assistance to **accelerate the investment in the energy retrofitting of 626 social housing units, integrating different form of funding** available, including regional and national loans and incentives, and apply forms of contract to govern the relations between Local Authorities, dwelling owners, tenants, ACERs (Social Housing Companies), ESCOs (Energy Service Companies) and financing institutions as to ensure a return on investment within 15 years from the retrofitting.

# LEMON activities

The work performed in LEMON include:

- **Set up a large retrofit programme**, interesting for the banks and for the ESCO;
- **Engage** the regional **stakeholders**;
- **Design the energy performance guarantee scheme** to launch the investment;
- **Engage the Local Authorities** in the LEMON programme;
- Develop and publish a **EPC tender**;
- Develop and implement the **Energy Performance Tenancy Agreement (EPTA)**;
- **Screen and select the financing products available** for energy efficiency investment through a tender and a negotiation to select the bank for the loan;
- Organize **capacity building** events and implement a wide project **communication and dissemination**.

# LEMON outcomes

- The scouting of **innovative solutions** provided by local small enterprises to be implemented in the social housing retrofit;
- The **dwelling energy retrofit programme development** (energy audit, feasibility studies and the business plan of the energy investment) **for 850 dwellings**, engaging **27 Municipalities**;
- The development of the economic and financial plan and the **approval** of the retrofit programme by **16 City Councils** and **59 landlords**;
- The engagement of regional stakeholder in **4 meetings** to share the project outcome and the investment scheme, and to receive support to overcome the barriers and replicate the initiative in other contexts;
- The development of two different tenders: **18 works tenders** in buildings mostly with autonomous boilers managed by the ACER to achieve the energy performance objective and **2 EPC tenders** that include investment in buildings with mainly centralized heating system;

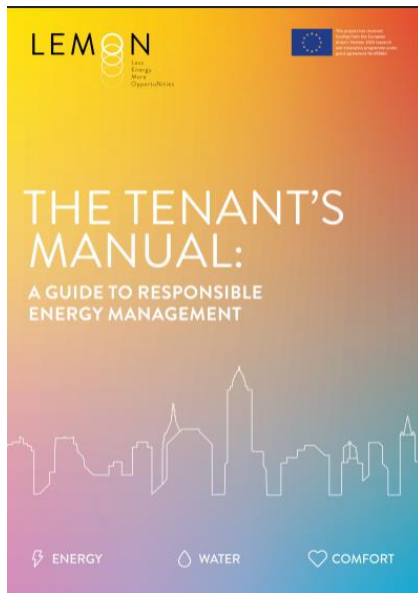
# LEMON outcomes

- The recognition of financial institutions interested in financing the ACERs LEMON project through a 'Competitive dialogue tender' and negotiation activities with **3 banks**;
- The introduction of the **Energy Performance Tenancy Agreement (EPTA)** as Regulation approved by the Municipalities of Parma and Reggio Emilia and by the Union of Tenants on July 14, 2017. With the formal approval the agreement has been transformed into a scheme for tenants that set out the energy efficiency sharing saving (70% ACER and 30% tenants) approach. This provides the possibility to increase the tenants renting fee in the retrofitted dwellings according with the EPTA fee identified in LEMON business plan.
- The organization of **2 capacity building** events national and regional **decision makers** and **3 capacity building** events for the social housing companies **tenants**, presenting the LEMON Dwelling Energy management Manual.

# LEMON outcomes

- The project communication and dissemination: the LEMON Dwelling Energy Management Manual is available in Italian ([https://drive.google.com/file/d/1MAMb9pp0uBr\\_0-ZwiFPOPGcneYAEvVv/view](https://drive.google.com/file/d/1MAMb9pp0uBr_0-ZwiFPOPGcneYAEvVv/view) ) and English (<https://drive.google.com/file/d/1NjnOGKyljttD1O4IMa2scuB5Ts9XUFq0/view> ) and other training material were developed to support the capacity building activities.

Media dissemination and participation of the partners at National and EU events.



# LEMON barriers

## Administrative barriers

Property ownership

Retrofit programme  
approval process

Social housing  
management contract

Social housing  
investment aggregation  
capacity

## Financial barriers

Integration of different  
financing and  
incentives available  
(deadlines and pre-  
financing)

EPTA implementation

Social housing  
guarantee for banks

High risk for local banks

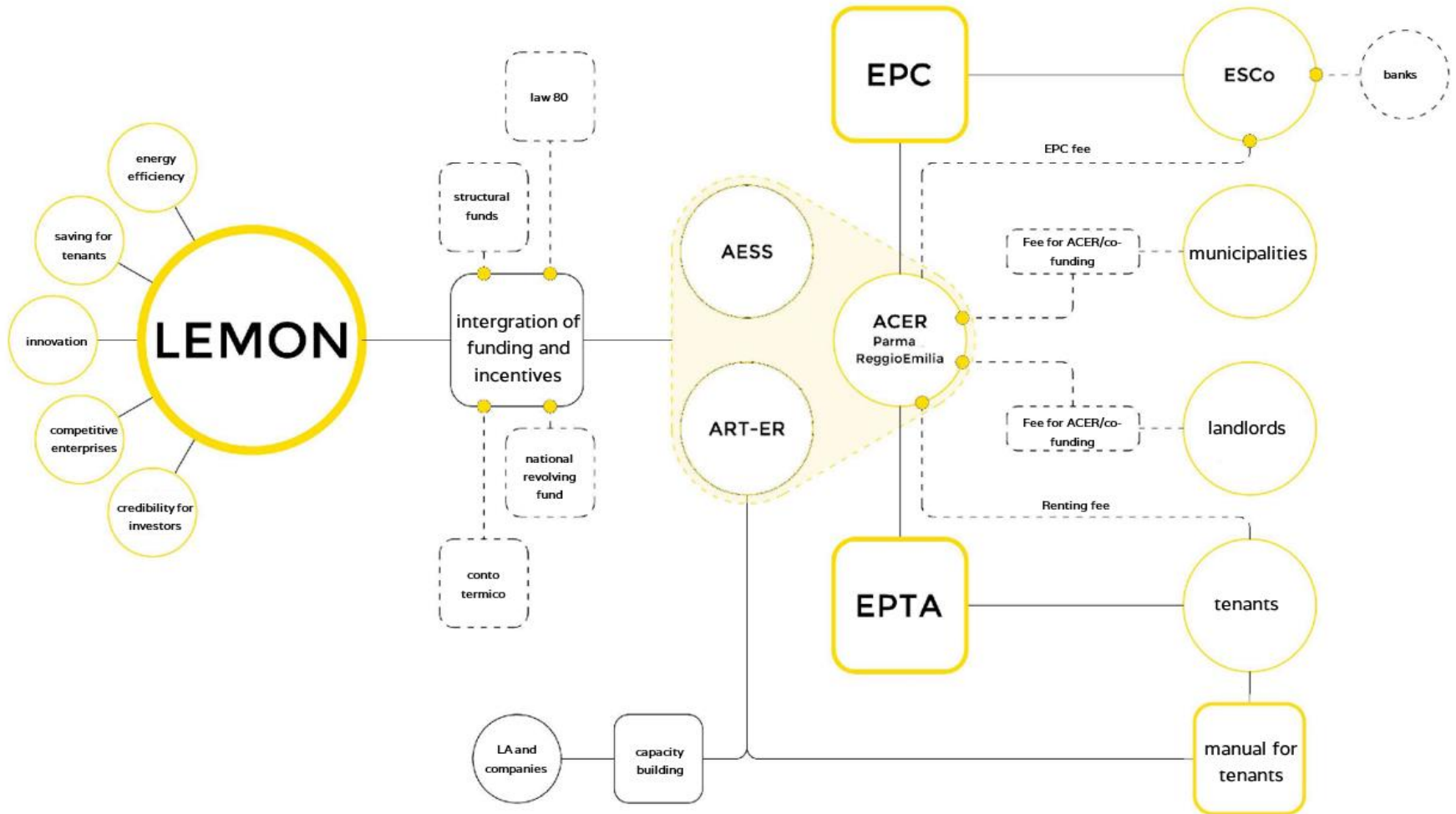
## ESCOs barriers

Subcontract 90% of the  
buildings retrofit for the  
envelop

Do not consider incentives a  
secure budget entry

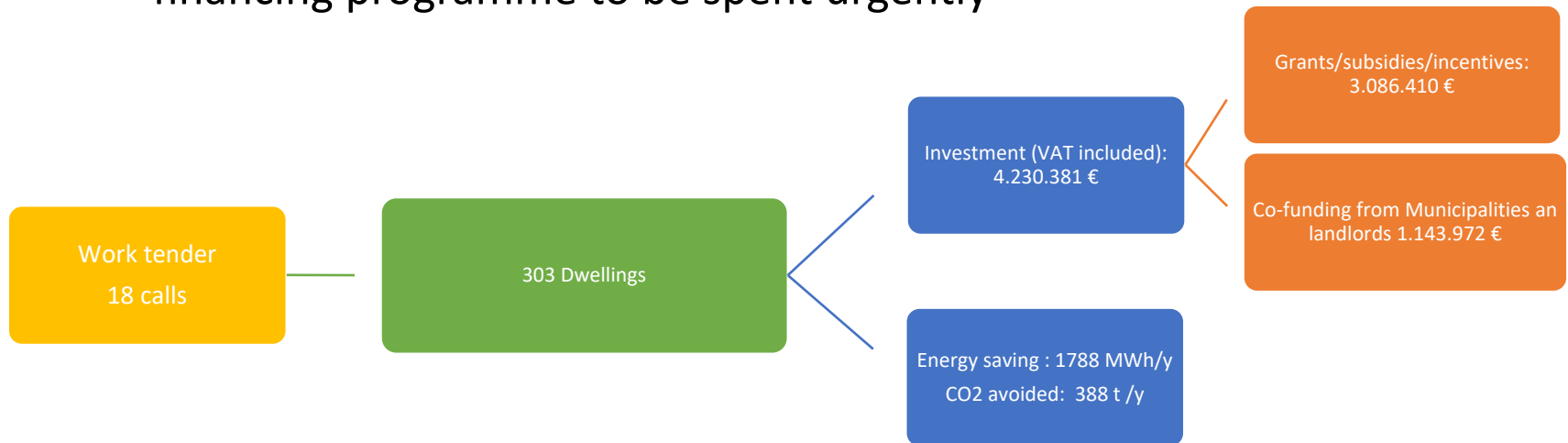
Consider landlords (9%) a risk

# LEMON concept



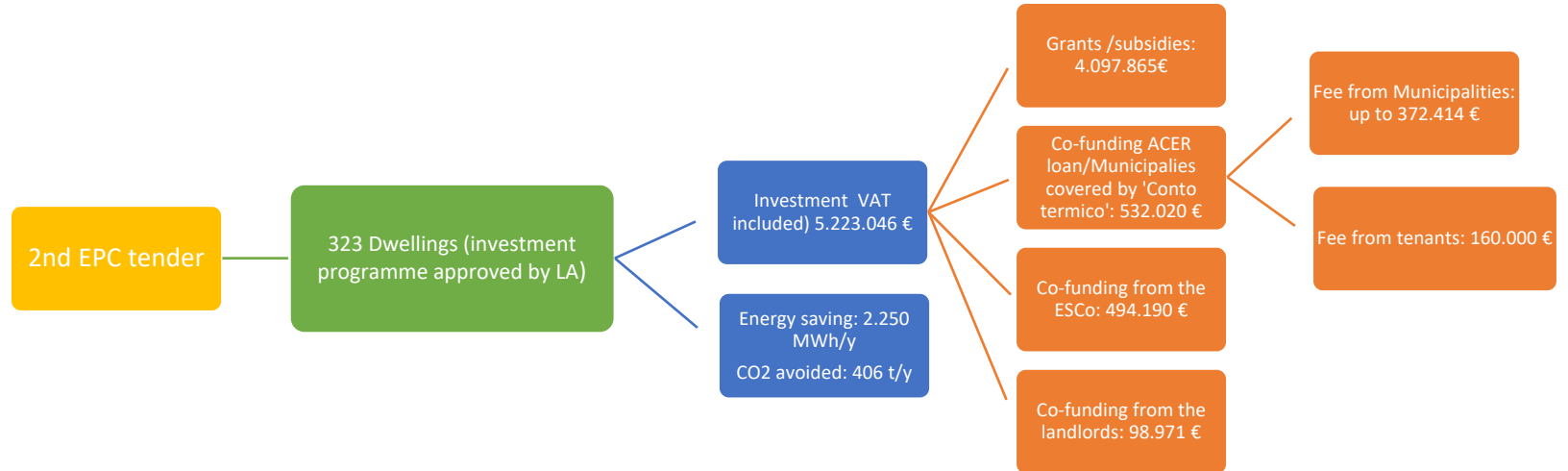
# LEMON activities

- The development of two different tenders:
  - **18 works tenders** in buildings mostly with autonomous boilers managed by the ACER to achieve the energy performance objective (303 Dwellings) that received grants from structural funds or national financing programme to be spent urgently



# LEMON activities

- The development of two different tenders:
  - **1 EPC tender** that include investment in buildings with mainly centralized heating system. Through the EPC tender the ACERs are therefore selecting an ESCO that support them in co-finance and achieve the energy saving included in the energy saving programme agreed between the Local Authorities, dwelling owners and the ACERs.



# LEMON EPC tender

LEMON EPC contract is a mixed contract for services and works, according with the art. 28 of Legislative Decree 50/2016 and, in particular, are required the supply of energy, the annual consumption control, the maintenance and operation of heating systems, and hot water production in order to maintain the comfort conditions in the buildings in compliance with the current regulations related to the rational use of energy, safety and environmental protection.

Fuel supply service fee (Qen)	€ 280,129.05
Management-maintenance service fee (Qman)	€ 166,719.26
Total cost for initial operations (Qriqu)	€ 4,555,209.33
Safety costs on operation-maintenance (not subject to auction discounts) (sman)	€ 5.001,58
Security costs on initial interventions (not subject to auction discounts) (s)	€ 204,832.23
TOTAL	€ 5,211,891.45
VAT	€ 642,995.66
TOTAL, VAT included	€ 5,854,887

# LEMON EPC contract



## BUILDING IDENTIFICATION

<b>Municipality owner</b>	Reggio Emilia 2
<b>Address</b>	Via G.Bergonzi 6 8 10   2 4, Via Fenulli 7 9   1 3 5 - Reggio Emilia (RE)
<b>Managing subject of the intervention</b>	ACER_Reggio Emilia
<b>n. dwellings TOTAL</b>	176
<b>n. dwellings social housing</b>	150
<b>year of construction</b>	1980
<b>Number of floors</b>	5 + cellar floor + attic floor
<b>Construction features</b>	Masonry structure, Latero-cement floor slab , Wooden frames with single glass
<b>Intervention</b>	<ul style="list-style-type: none"> <li>- Insulation of perimeter walls;</li> <li>- Insulation of the first floor;</li> <li>- Attic floor insulation;</li> <li>- Boilers substitution</li> <li>- Windows substitutions</li> </ul>
<b>Total EE investment (VAT included)</b>	2.909.488 €
<b>Funding- National L.80</b>	2.661.866 €
<b>Funding- Regional POR FESR</b>	0
<b>Incentive – Conto Termico</b>	185.000 €
<b>Energy saving</b>	39%



# LEMON EPC contract

## BUILDING IDENTIFICATION

Municipality owner	Casalgrande
Address	Via Europa 3
Managing subject of the intervention	ACER_Reggio Emilia
n. dwellings TOTAL	9
n. dwellings social housing	5
year of construction	1975
Number of floors	3+ cellar floor + attic floor
Construction features	CEMENT structure with reinforced concrete with buffering, Clay cement roofing, Wooden frames with single glass

Intervention	<ul style="list-style-type: none"> <li>- replacement of existing oil-fired generator with gas-fired boiler</li> <li>- Removal of "autonomous" electric boilers and construction of a centralized production plant of the hot water;</li> <li>- Installation of a separate heat metering system (with "centralised" data collection)</li> <li>- Installation of an automatic management and control system of the plants (thermostatic heads and central management unit)</li> <li>- First floor insulation;</li> <li>- Attic floor insulation towards attic;</li> <li>- Replacement of windows in public dwellings</li> </ul>
Total EE investment (VAT included)	75.134 €
Funding- National L.80	38.265 €
Funding- Regional POR FESR	0
Incentive – Conto Termico	15.000 €
Landlord co-funding	21.869 €
Energy saving	20%

SCo  
0% Public funding  
69%

Landlords  
31%

# LEMON impacts

Indicator	Final dwellings database (refurbished or entrusted)
- energy consumption ex-ante (Mwh/y)	9.726
- energy consumption ex-post (Mwh/y)	5.687
- annual energy savings (MWh/y)	4.039
- annual energy savings (kWh/m2y)	104,5
- energy saving (%)	41%
- total CO2 saving (tCO2)	15.880
- annual CO2 saving (tCO2/y)	794
- annual energy costs savings (€/y)	221.373 €
- total volume of investment/credit	9.453.428,5 €
- leverage factor	14,98
- jobs created	77
- number of total retrofitted dwellings	626
- optimal cost for retrofit intervention	15.094 €
- percentage of autonomous boilers	84%

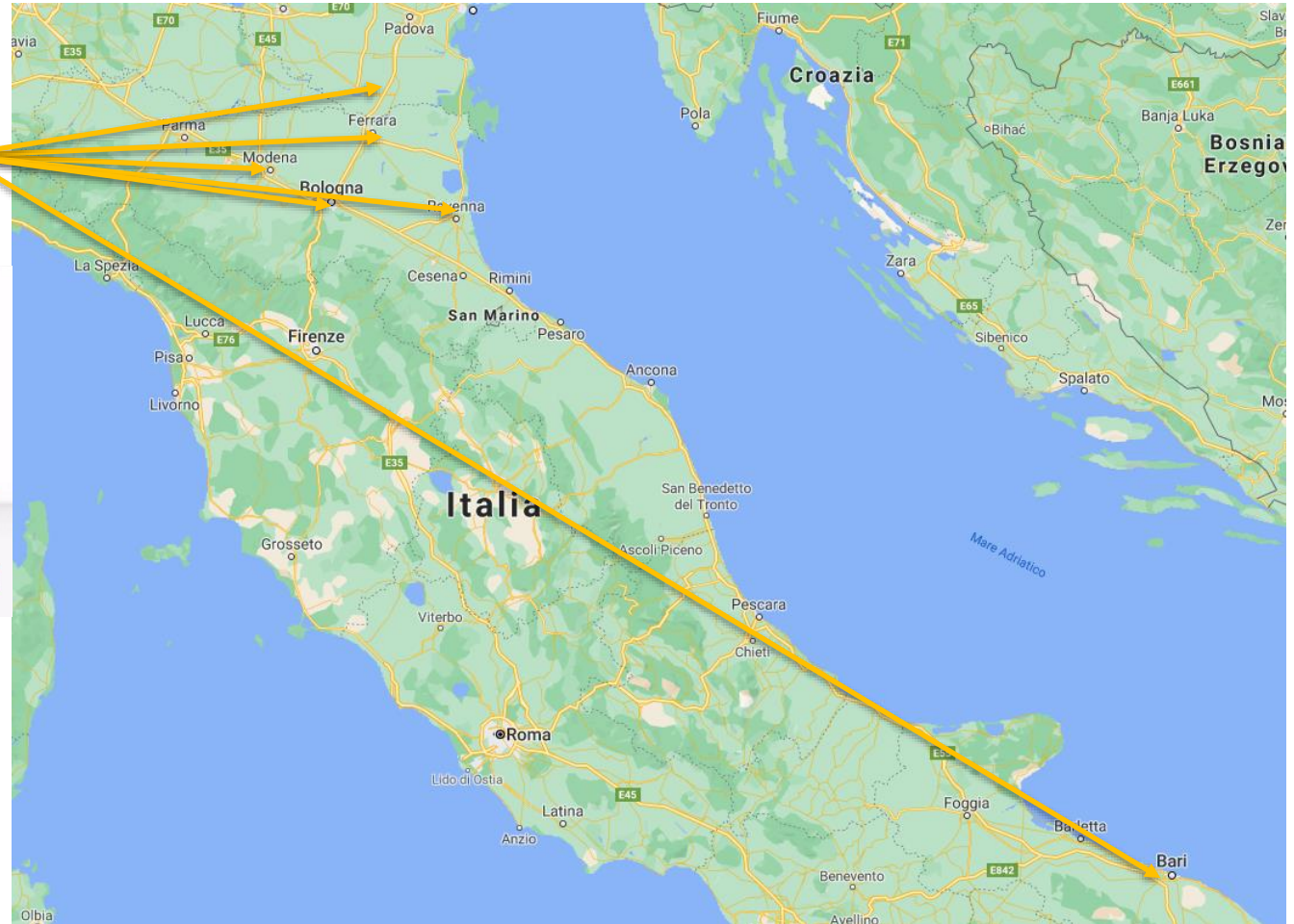
# Lesson learned and replication

- Buildings that provide high profit for the ESCO should be included in the business plan in order to reduce the risk for the ESCOs;
- Feasibility studies for building deep retrofit, in some cases, are not sufficient. Project design of the intervention define better the investment costs for the building retrofit and reduce the general costs that could not be quantified with the feasibility studies;
- Incentives as 'Conto termico' should be moved from the ESCo to the Social Housing company, reducing the risk for the ESCO to be not successful in the incentive request;
- To reduce the risk of the landlord co-funding, a social fund provided by the Social Housing company could be set-up to co-fund the retrofit investment.
- Since loans are not available for large investment programmes, it is necessary to set-up a mechanism in the EPC tender to anticipate the investment to the Social Housing companies. In this way the ACER can pay invoice to the ESCO and apply for incentives reimbursement.

LEMON

# Lesson learned and replication

LEMON  
Less Energy  
More Opportunities





# LEMON



Less  
Energy  
More  
OpportuNities