

Marche Region (Italy)

Public Policies for Access to Renewable Energy in Collective Housing

The case study of University student house 'Maria Montessori' in Macerata

Lorenzo Federiconi¹, Cinzia Colangelo¹, Gianluca Coccia², Feliciano Falcone²

¹Dipartimento Infrastrutture, Territorio e Protezione Civile, Regione Marche

²Dipartimento di Ingegneria Industriale e Scienze Matematiche, Università Politecnica delle Marche

**EXPRESS Project Partner Meeting, Study visit Guide in Paris
9th – 10th April 2024**



Who are we?

- > The Energy resources, Waste Management and quarries and mines Sector of Marche Region is in charge of the regional system of energy management and planning (**Regional Managing Authority**).

It manages local and international projects on climate change and energy, on renewable energy and energy efficiency. It approves the financing calls, defines the evaluation and priority criteria of the projects, defines the indicators for monitoring the impact of the implemented actions.

It set up own “**Regional Environmental Energy Management Plan**” (2016) that includes the “Regional energy strategy to 2020”.

Overseeing the interests of

PEOPLE
1,500,000
inhabitants



MUNICIPALITIES
made up of 239
municipalities



GREEN

Interreg
Europe



Co-funded by
the European Union

EXPRESS

European regions promoting energy self-sufficiency from renewable sources - ID 01C0136

The EXPRESS project aims to decrease the regions' dependency on energy imports and fossil energy and to increase their energy self-sufficiency and share of renewable energy by improving regional policies.

www.interregeurope.eu/EXPRESS

<https://www.regione.marche.it/Regione-Utile/Ambiente/Progetti-Europei#LC-Districts>

Our objectives in EXPRESS project

- > The promotion of renewable energy in self-consumption, the financial support for the energy efficiency of production processes and buildings, with attention to public buildings, are a major priority.
- > Marche Region aims to reach the objective that it has set itself in terms of energy self-sufficiency to reverse the trend of the energy deficit to pursuit the EU objectives of renewable sources.
- > And to increase the share of renewable energy on final consumption to 40%, focusing on self-consumption of renewable energy, supporting the development of renewable energy communities and technological innovation.

Outline

- The LC Districts Action Plan: a case study
- Policy Instruments
- ROP Axis 4
- Energy communities

- Introduction to ROP AXIS 8 and interventions
- University student house 'Maria Montessori'
- Energy and seismic diagnosis: suggested interventions
- Results of implemented interventions

The LC Districts Action Plan:

a case study of double application of the ITACA Protocol at building and at a urban scale to design and assess sustainable buildings in districts

The Marche Region's action plan is aimed at designing a Low Carbon District by applying in a combined way the ITACA Protocol (UNI PdR 13:2019 Practice) for buildings and at urban scale, which certifies the territorial area pertaining to the building

The Protocol is a tool for evaluating the design of urban transformation processes, supporting regional strategies on environmental sustainability.

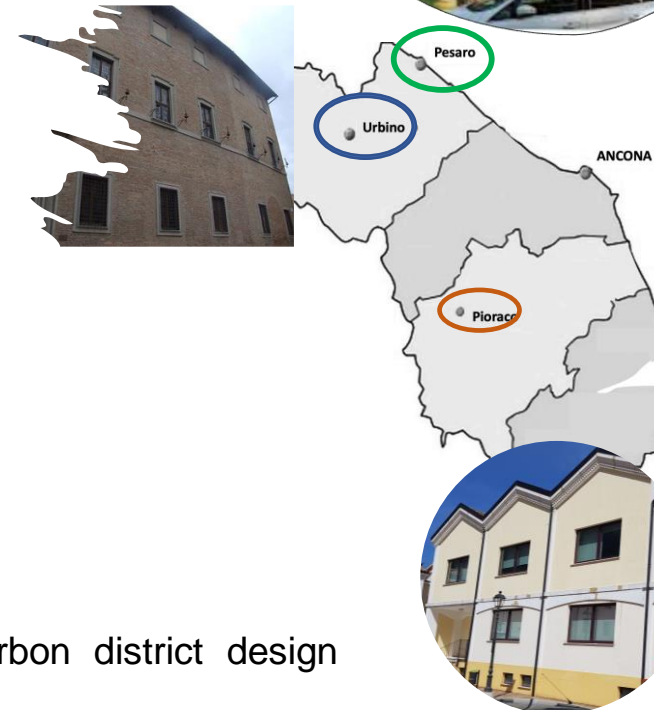
LOW CARBON DISTRICTS

The low-carbon city is a sustainable urbanization approach that focuses on reducing the anthropogenic carbon footprint by minimizing or abolishing the use of energy derived from fossil fuels.

Specifically, in **Action 1: CERTIDISTRICTS** - *Design and test a low-carbon district by applying an environmental certification tool on buildings and at the urban scale*, the characteristics of the low-carbon society and the low-carbon economy are combined.

MAIN STAKEHOLDERS

- Professional Associations in Marche Region
- Departments of the Marche Region
- Partners of the ITACA Protocol
- Municipalities within the new Covenant of Mayors initiative
- Regional Universities
- Local authorities



The low-carbon city is a sustainable urbanization approach focusing in the anthropogenic carbon footprint

Action 1: CERTIDISTRICTS - *Design and test a low-carbon district by applying an environmental certification tool on buildings and at the urban scale*

3 pilot territories of the Marche Region to implement a low-carbon district design methodology:

- A coastal, tourist and high-density urban municipality (**Municipality of Pesaro**);
- A valuable historical-cultural centre, UNESCO heritage site (**Municipality of Urbino**).
- A small mountain town in areas affected by the earthquake (**Municipality of Pioraco**);

HOW DO WE TRY TO REDUCE



ACTION OBJECTIVE



The Marche Region's action plan is aimed to design a Low Carbon District by applying in a combined way the ITACA Protocols (**UNI PdR 13:2019 Practice**) for buildings and at URBAN SCALE that certifies the territorial area pertaining to the building.

The purpose is to determine a monitoring indicator suitable for providing the prerequisites to measure **the energy-environmental benefits of the action** to assess how much a "**certified low-carbon district**," with demonstrated fully certified high-energy environmental performance, could contribute to a territorial low-carbon policy.

To support the choice of the best-performing performance index, the criterion of the **ITACA Protocol C.1.2.** will be considered, according to which the value of the annual equivalent CO₂ produced for the operation of the reference building (DM minimum requirements).

The calculation of CO₂ equivalent emissions will have to be done for all buildings where at least one of the cooling, heating and DHW production services are present.

The ITACA Protocol, a tool for multi-criteria analysis of the level of energy and environmental sustainability of buildings. The current version of the Protocol is PDR UNI 13:2019. Several regions have adopted regional versions of the protocol.
<https://www.itaca.org/nuovosito/index.asp#h> <https://store.uni.com/uni-pdr-13-0-2019>

4 RATING SYSTEM – ITACA PROTOCOL

3 chapters, 5 evaluation, areas, 19 categories

Chapter 0
Methodology

Chapter 1
Residential Buildings

Chapter 2
Not Residential Buildings

Area A – Site quality

Cat. A.1 Site selection

Cat. A.2 Project infrastructure and services

Area B – Energy and resource consumption

Cat. B.1 Non renewable primary energy

Cat. B.3 Energy from renewables

Cat. B.4 Eco-friendly materials

Cat. B.5 Use of drinking water

Cat. B.6 Envelope performance

Area C – Environmental loadings

Cat. C.1 CO2 emissions

Cat. C.3 Solid waste

Cat. C.4 Wastewater

Cat. C.6 Impact on project site

Area D – Indoor environmental quality

Cat. D.2 Indoor air quality and Ventilation

Cat. D.3 Air temperature and relative humidity

Cat. D.4 Daylighting and illumination

Cat. D.5 Noise and acoustics

Cat. D.6 Electromagnetic emissions

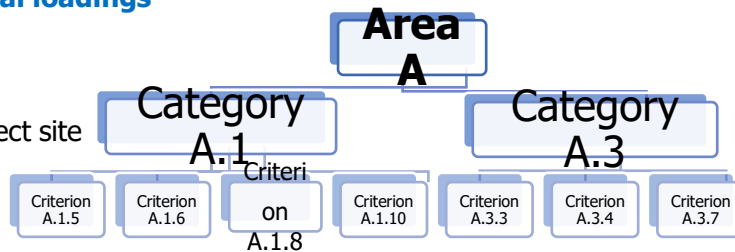
Area E – Service quality

Cat. E.2 Functionality and efficiency

Cat. E.3 Controllability

Cat. E.6 Maintenance of operating performance

Cat. E.7 Social aspects



SCHEDE

- 2.03 Conservazione del suolo
- 4.01 **Rilevanza dello spazio pubblico aperto**
- 5.01 Permeabilità del suolo
- 5.02 Intensità del trattamento delle acque
- 5.12 **comunità energetiche nelle aree urbane**
- 5.13 Emissioni di anidride carbonica
- 5.14 **Sequestro di CO2**
- 6.01 Verde naturalistico – incremento delle superfici naturali
- 6.02 Varietà di verde e strategie salva acqua - percentuale di verde delle diverse tipologie e n. di strategie utilizzate
- 7.02.03 Effetto isola di calore *Comfort termico delle aree esterne*
- 8.04 Accesso al trasporto pubblico
- 8.07 Accessibilità dei percorsi pedonali
- 8.10 Mobilità attiva
- 8,11.1 Sicurezza stradale - *monitoraggio ex ante, ex post*
- 8,11.2 Sicurezza stradale - *progetto*
- 9.01 **Prossimità ai servizi principali**

Protocollo ITACA a
scala urbana
SINTETICO

Metodologia e
strumento di verifica

PARENZA E LA
AMBIENTALE

ITACA

SINTETICO

VERSIONE 2.01
14.12.2020

LOW-CARBON DISTRICTS: CONCLUSIONS



It can be inferred that

- the scores for the building scale and the urban scale obtained connected optimally;
- the two variables go hand in hand, in the sense that when the value of one increases, the value of the other increases proportionally as well.
- This means that from the value of the independent variable can be derived approximately that of the dependent variable.
- Therefore, the values were weighted according to the performance scale of the ITACA protocol and the following satisfaction indicator was obtained for all the municipalities in question:

STATE OF FACT	Scala edificio	Scala urbana	AFTER EFFICIENCY (ENERGY AND ENVIROMENT)	Scala edificio	Scala urbana
Pesaro	4,73	0,97	Pesaro	4,98	1
Pioraco	4,44	0,96	Pioraco	4,83	0,98
Urbino	-1,00	0,63	Urbino	4,68	0,65

	PESARO	PIORACO	URBINO
STATE OF FACT	4	4	-1
AFTER EFFICIENCY (ENERGY AND ENVIROMENT)	5	5	3

the highest (from -1 up to 5) the highest energy and environmental quality



LOW-CARBON DISTRICTS: RESULTS

The application of energy-environmental certification is a guarantee of high quality of the proposed intervention: the higher the score (from -1 up to 5) that is determined by following the proposed criteria, the more effective the analyzed intervention will be in terms of energy and environmental quality. The choice of the monitoring indicator within the LC Districts project-Energy Savings: Target 2023 (GWh) CO34 GHG emissions reduction (Tons eq CO₂)- turns out to be crucial. Carbon dioxide equivalent emissions are determined by final energy consumption, energy production and local emission factors. To calculate the monitoring indicator, energy consumption of each category (buildings, facilities, public facilities, ...) and for each energy carrier was examined and evaluated in detail. To support the choice of the best-performing performance index, the criterion of **the Building Scale Protocol (UNI/Pdr 13:2019) C.1.2.** was taken into account, according to which the value of the annual equivalent CO₂ produced for the operation of the reference building (DM minimum requirements) is calculated by the following formula:

$$A = \frac{\sum (Q_{comb} * P.c.i. * K_{em,i}) + (Q_{el} * K_{em,i}) + (Q_{tel} * K_{em,i})}{S_u}$$

Dove:

- Q_{comb} : quantità annua di combustibile consumata in uso standard dall'edificio di riferimento [Sm³ o kg];
- Q_{el} : quantità annua di energia elettrica da rete consumata in uso standard dell'edificio di riferimento [kWh];
- Q_{tel} : quantità annua di energia elettrica prelevata da teleriscaldamento/tele raffreddamento dall'edificio di riferimento in uso standard [kWh];
- $P.c.i.$: potere calorifero inferiore del combustibile utilizzato dall'edificio di riferimento [kWh/Sm³], [kWh/kg];
- $K_{em,i}$: fattore di emissione di CO₂ dei combustibili/fonti energetiche dell'edificio di riferimento (DM requisiti minimi) [kgCO₂/kWh];
- S_u : superficie utile climatizzata [m²].



Di seguito si riporta il calcolo per i tre comuni di riferimento, nei casi relativi allo stato di fatto (dunque antecedente al miglioramento energetico) e dopo l'efficientamento.

Stato di fatto	Pesaro	Pioraco	Urbino
	kg (CO ₂)/kWh		
Edificio da valutare B:	18,95	8,81	100
Edificio di riferimento A:	7,98	3,97	100
Indicatore	42%	45%	100%
punteggio	5	5	-1

Dopo l'efficientamento	Pesaro	Pioraco	Urbino
	kg (CO ₂)/kWh		
Edificio da valutare B:	18,93	3,55	5,79
Edificio di riferimento A:	7,5	1,46	2,47
Indicatore	40%	41%	43%
punteggio	5	5	5



Di seguito si riporta il calcolo per i tre comuni di riferimento, nei casi relativi allo stato di fatto (dunque antecedente al miglioramento energetico) e dopo l'efficientamento.

Stato di fatto	Pesaro	Pioraco	Urbino
	kg (CO ₂)/kWh		
Edificio da valutare B:	18,95	8,81	100
Edificio di riferimento A:	7,98	3,97	100
Indicatore	42%	45%	100%
punteggio	5	5	-1

Dopo l'efficientamento	Pesaro	Pioraco	Urbino
	kg (CO ₂)/kWh		
Edificio da valutare B:	18,93	3,55	5,79
Edificio di riferimento A:	7,5	1,46	2,47
Indicatore	40%	41%	43%
punteggio	5	5	5

THE POLICY INSTRUMENT(S)

1. The **PEAR, Regional Environmental Energy Plan (2016)**.
2. The **Regional Energy and Climate Plan (PREC 2030)** “new PEAR” will affect the next Regional Operational Program **POR-FESR 2021/2027**.
3. Marche Region (Council Decree n. 25 of 13/12/2021) has promoted the **REGIONAL STRATEGY OF SUSTAINABLE DEVELOPMENT (SRSvS)** - *declination UN 2030 agenda*.
4. **Marche Region is finalizing the process for a law proposal** that governs the planning and interventions of the Region and local authorities in the field of energy.
5. The **Regional Plan for Adaptation to Climate Change** was adopted in April 2023 (DGR n. 322/2023)
6. the **Regional Council Resolution DGR n.8 16/01/2023**: Annex 3: "criteria and procedures for the disbursement of contributions and the adoption of incentives“ add the condition of graduating grants to those projects with high ITACA certification score or participating in urban scale projects.
7. **Regional Operational Program funded by the European Regional Development Fund (ERDF) 2021-2027 - Priority 2**: Specific objective 2.1 - ACTION 2.1.2 it's stated that “Circular economy principles will be applied in construction by providing for the optimization and utilization of resources throughout the life cycle and the application of the ITACA protocol”.

The **PEAR, Regional Environmental Energy Plan**, is the regional environmental energy management program of the Marche Region and represents the sectoral operational program in which the Marche Region has identified the strategies, actions and tools to pursue climate and energy objectives and support the regional energy transition.

The **updating process** of this plan officially started in 2022 with the Regional Decree DDS n. 141 of 16/05/2022. With DDS n.348 of 22/11/2022 the Polytecnic University of Marche Region was encharged as technical specialist support to draft the **Regional Energy and Climate Plan (PREC 2030)** – new name of the updating PEAR. The contract is signed (repertorio REG_INT: 2033 del 16/gen/2023) and the **main outputs produced with LC Districts (Action Plan, Regional Diagnosis, Policy Briefs, Good Practices and the Action Plan Report)** are annexed to the **protocol of work start**.

The new PEAR will be influenced by the results reached with the implementation of the action and the 3 sub-actions of the action plan and the results of the regional diagnosis will be the basis for further Technical insights needed to complete the plan.

Moreover Marche Region approved the **Regional Council Resolution DGR n.8 16/01/2023**: Articles 9 and 10 of Regional Law No. 14/2008 "standards for sustainable construction" Amendment of DGR 1689 of 19/12/2011 Annex 3: "criteria and procedures for the disbursement of contributions and the adoption of incentives". The modification of Annex 3 of DGR 1689 **is a change needed to add the condition of graduating grants to those projects with high ITACA certification score or participating in urban scale projects.**

In the Policy instrument **MARCHE REGION ESIF REGIONAL OPERATIONAL PROGRAMME 2021-2027** we can find the **Priority 2:** Energy, climate and risks, water resources and biodiversity (A resilient, greener, low-carbon region in transition to a zero-carbon economy), Specific objective 2.1 - Promote energy efficiency and reduce emissions of greenhouse gases ACTION 2.1.2 PROMOTE ECO-EFFICIENCY AND REDUCE PRIMARY ENERGY CONSUMPTION IN PUBLIC BUILDINGS AND STRUCTURES and it's stated that "Circular economy principles will be applied in construction by providing for the optimization and utilization of resources throughout the life cycle and the application of the ITACA protocol".

With our action plan we demonstrated in 3 pilot cases the way to reduce the CO2 emissions creating low carbon districts through the double combined application of the ITACA protocol at building and urban scale. The head of our Sector was a member of the technical group that drafted the new POR and proposed what mentioned above.

With regard to the table two “A greener Europe” our structure (responsible for sustainable construction and energy policies) brought the experience gained from the implementation of the LC Districts project in order to identify more effective measures for the promotion of measures aimed at energy efficiency of buildings to a lower production of CO2 emissions.

The main objective is that -after the approval of the regional operational program- projects with environmental energy certification both building scale and urban scale will get higher score, as they will contribute to effectively achieve environmental energy objectives (structural change).
The results of the development of the Action Plan will be then useful to understand how much following a specific methodology will reach better environmental energy performance than using virtuous technologies only.

In addition, the results of the action plan will be also the capitalization of the experience in other European contexts (Horizon Europe, I3 Interregional innovation Investments, other Interreg Transnational and cross-border programmes, i.e ETC EUROMED, ADRION 2021-27, IT-HR 2021-2027).

Regional Law No. 14/2008 "Standards for sustainable construction" incentivizes energy-environmental sustainability in the construction of public and private building works. By **DGR No. 1689 of Dec. 19, 2011**, pursuant to Article 14, All.3 "Criteria and modalities for the disbursement of contributions and the adoption of incentives" were approved. In light of the new regulations above on sustainable construction, the Regional Council with DGR No. 713 of June 7, 2021 adopted the operational tool for the energy-environmental assessment of buildings called Practice UNI/PdR 13:2019. The use of the environmental energy certification system for buildings is a condition for access to regional contributions or other incentives; these contributions or incentives must be proportionate to the level of environmental energy sustainability achieved and certified. It is, however, a voluntary certification.

Therefore Marche Region approved the Regional Council Resolution **DGR n.8 16/01/2023**: Articles 9 and 10 of Regional Law No. 14/2008 "standards for sustainable construction" Amendment of DGR 1689 of 19/12/2011 Annex 3: "criteria and procedures for the disbursement of contributions and the adoption of incentives".

The modification of Annex 3 of DGR 1689 is a change needed to add the condition of graduating grants to those projects with high ITACA certification score or participating in urban scale projects

In this action, energy efficiency interventions will be promoted in the most energy-intensive public buildings, aimed at saving both electrical and thermal energy through the priority use of renewable sources, including geothermal energy.

Interventions will be financed on buildings whose projects will have to ensure levels of energy savings higher than those required by current legal obligations and that provide for the optimization and use of resources throughout the life cycle and the application of the ITACA protocol. Renovations to public buildings will comply with the energy efficiency criteria set forth in EU Reg. 1060/2021.

In all cases, the priority objective of the intervention is to reduce energy consumption. The use of renewable sources will have to have a purpose of self-consumption. Interventions will have to include the adoption of building energy demand management systems.

Priority will be given to operations that also include interventions to increase the capacity to resist seismic events (action 2.4.4) and/or the promotion of renewable energy (action 2.2.1).

Regional Plan for
Adaptation to Climate
Change was adopted in
April 2023 (DGR n.
322/2023)

test the **ITACA Protocol at Urban Scale** for investigating the resilience to climate change of urban district

Fattore/risorsa	Obiettivo/Vetture	Linea Azione	Misura	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
				2.03	4.01	5.01	5.02	5.12	5.13	5.14	5.15	6.01	6.02	7.02	8.04	8.07	8.10	8.11.1	8.11.2	9.01	10.05	
Urbanistica	Ridurre consumo di suolo e mantenere capacità di adattamento	Limitazione del consumo di suolo con attenzione alle aree adiacenti alla costa Aumentare la resilienza degli insediamenti urbanistici	Piattaforma telematica per consumo di suolo																			
			Norme riduzione consumo di suolo																			
Agricoltura	Rendere l'agricoltura resiliente ai cambiamenti climatici	Adeguate le tecniche di coltivazione ai cambiamenti climatici	Supporto scelte colturali in funzione alle tendenze climatiche																			
	Rendere l'agricoltura uno strumento di adattamento	Prevenire l'erosione del suolo irregolare attraverso le pratiche agricole	Incentivi colture resilienti Incentivi sistemi per prevenire erosione Incentivi per gestione che migliorano la capacità idrologica																			
Energia	Adeguate produzione e distribuzione di energia rinnovabile per cambiamenti climatici	Intervenire per prevenire o mitigare la riduzione di produzione di energia rinnovabile per cambiamenti climatici	Compensare carattere intermittente																			
			Valutazione economica e ambientale della produzione di energia rinnovabile																			
	Aumentare la resilienza delle infrastrutture energetiche	Aumentare sicurezza delle infrastrutture energetiche Decentralizzazione del sistema di produzione																				
	Ridurre la domanda di energia nei periodi di picco	Aumentare l'efficienza energetica nei sistemi di riscaldamento e raffreddamento	Interventi sul patrimonio edilizio																			

Marche Region has been appointed **vice-chair of the Climate Working Group of the CPMR - Conference of Peripheral Maritime Regions**.

The CPMR brings together more than 150 Regions from 24 States from the European Union and beyond.

Actions for energy efficiency under the 2014-2020 ERDF ROP- Axis 4 (source: INTERREG Europe LC Districts Regional Diagnosis)

ROP 2014/2020 Calls activated - Description.	Financial allocation	no. projects funded	Committed contribution	Eligible investment (euro)
Action 12.1 Intervention 12.1.1 "Energy efficiency and development of the use of renewables in enterprises and production areas."	9.399.144,00	68	5.874.620,80	8.943.477,70
		36		4.768.014,03
AAction 13.1 Intervention 13.1.1A - "Energy efficiency interventions in healthcare facilities." The grant was earmarked for the efficiency upgrading of 5 healthcare facilities: the hospitals of Urbino, Pergola and San Benedetto del Tronto and the Polyclinics/RSAs of Petritoli and Sant'Elpidio a Mare.	9.000.000,00	5	4.379.000,00	10.563.097,71
Action 13.1 Intervention 13.1.2A "Energy efficiency interventions in public buildings."	4.200.000,00	18	4.200.000,00	6.431.283,86
Action 13.1 Intervention 13.1.2B "Energy efficiency interventions in public buildings used for sports activities."	1.095.000,00	7	1.095.000,00	2.190.251,63
Action 13.2 Intervention 13.2.1 "Energy efficiency interventions and use of renewable sources in public lighting."	1.385.006,40	5	1.385.006,40	3.150.428,99
TOTAL PARTIAL	25.079.150,40	139	16.933.627,20	36.046.553,92
ADDITIONAL REGIONAL RESOURCES FOR ENERGY EFFICIENCY INTERVENTIONS IN PUBLIC BUILDINGS AND PUBLIC LIGHTING	10.587.527,00	11	3.387.527,62	5.259.258,43
EFFICIENCY OF MUNICIPAL PROPERTY BUILDINGS (CLOSED MEASURE TABLE C BUDGET 2020-2022)	1.400.000,00	9		1.400.000,00
TOTAL	37.066.677,40	159	20.321.154,82	42.705.812,35

Results

POR 2014/2020 Axis 4 - Calls activated - Description.	EFFICIENT SQUARE METERS	EFFICIENT LIGHTING POINTS	ENERGY SAVINGS	FER POWER INSTALLED	FER INSTALLED ENERGY PRODUCTION
UNITA' DI MISURA	N.	N.	kWh/year	kWp	kWh/year
Action 12.1 Intervention 12.1.1 "Energy efficiency and development of the use of renewables in enterprises and production areas."	-	-	47.554.540,00	8.776,39	11.409.307,00
Action 13.1 Intervention 13.1.1A - "Energy efficiency interventions in healthcare facilities".	n.d	-	-	n.d	n.d
Action 13.1 Intervention 13.1.2A "Energy efficiency interventions in public buildings."	16.197,87	-	4.772.316,91	187,61	243.893,00
Action 13.1 Intervention 13.1.2B "Energy efficiency interventions in public buildings used for sports activities."	15.835,86	-	1.457.393,81	-	-
Action 13.2 Intervention 13.2.1 "Energy efficiency interventions and use of renewable sources in public lighting."	-	5760	759.475,78	-	-
TOTAL	32.033,73	5760	54.543.726,50	8.964,00	11.653.200,00

STRATEGIC OBJECTIVE 2 A GREENER EUROPE – MAPO DGR 203/2023

SPECIFIC OBJECTIVE	Azione	DOTAZIONE
1 - Promoting energy efficiency	2.1.1 Reduction of energy consumption of enterprises including installation of renewable energy production systems for self-consumption, giving priority to high-efficiency technologies	24.500.000,00 €
	2.1.2 Promotion of eco-efficiency and reduction of primary energy consumption in public buildings and facilities	20.000.000,00 €
	2.1.3 Adoption of technological solutions to reduce energy consumption of public lighting networks	5.000.000,00 €
	TOTAL	49.500.000,00 €
- Promote renewable energy in accordance with the Renewable Energy Directive	2.2.1.1 Incentivizing projects that contribute to the Clean Energy Package: Installation of photovoltaic systems on publicly owned parking lots	3.000.000,00 €
	2.2.1.2 - Incentivizing projects that contribute to the achievement of the Clean Energy Package: Renewable energy plants	6.000.000,00 €
	TOTAL	9.000.000,00 €
TOTAL		58.500.000,00 €

regional law on energy communities L.R. 10/2021;

An important law with which the Marche Region was among the first regions in Italy to implement the European Directive and the experimentation initiated by the Milleproroghe decree.

The related implementing acts were then approved

- Outline of Memorandum of Understanding
- regional coordination table
- homogeneous criteria for funding
- that allowed to create a favorable environment for the promotion of energy communities in our territory thanks to the commitment of all the actors involved in the process.

DELIBERAZIONE DELLA GIUNTA REGIONALE

n. 178 del 20 febbraio 2023

Oggetto: Attuazione l.r. 10/2021 “Interventi regionali di promozione e sostegno dell’istituzione dei gruppi di autoconsumo collettivo da fonti rinnovabili e delle comunità energetiche rinnovabili” ai sensi degli artt. 6 e 7.

a call for funding in 2021 for innovative energy efficiency interventions and use of renewable energy also in energy communities for businesses, allocating 3 million euros of funds from the regional budget; the funds have all been committed to No. 27 businesses.

OS 2.2 – Promoting renewable energy

INT. 2.2.1.2	Energy Communities for the production/consumption of energy from renewable sources that also include smart grid systems and the application of innovative and/or otherwise high-efficiency technologies. The action aims to promote, throughout the region, the creation of Energy Communities for the production/consumption of energy from renewable sources.
BENEFICIARIES	Energy Communities
ADVANTAGES	Contributo in c/capitale max 50% - Reg. UE 651/2014 - Art. 38, 39 e 41- Reg. UE 1407/2013 «De minimis»

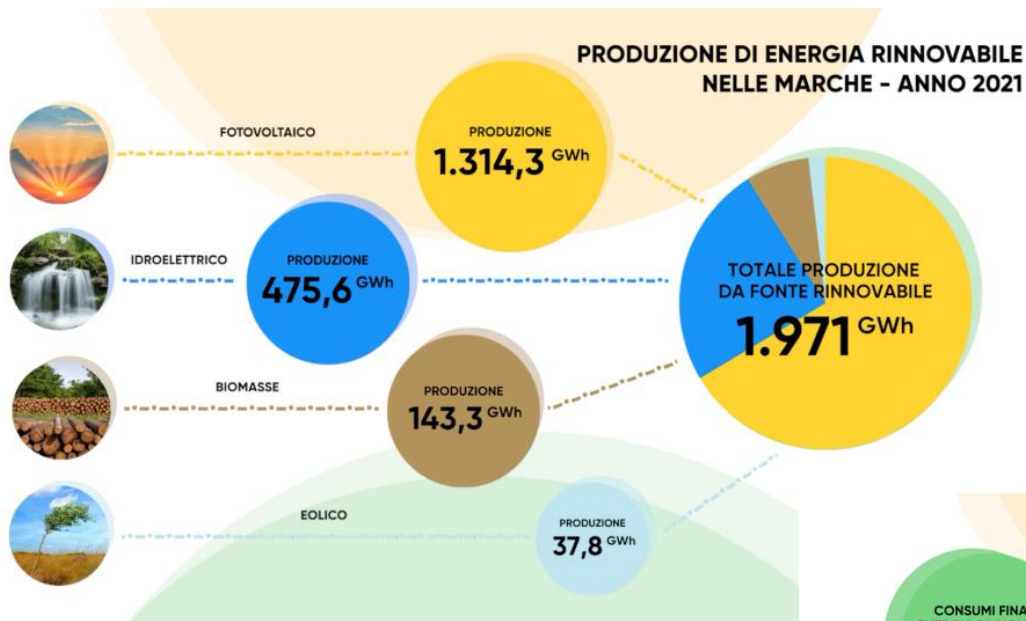
6 Meuro

Specific evaluation criteria:

Specific eligibility criteria:

- Ownership or full availability of the building and/or area
- Presence in the project of ways to use the renewable energy produced for self-consumption or for the provision of utilities such as street lighting or electric vehicle charging
- Energy management and monitoring systems
- Self-consumption of renewable energy
- Storage systems

- Degree of constructability and feasibility of the project
- Level of integration of the submitted project
- Installation of innovative and/or high-efficiency technologies
- Level of efficiency and durability of the installed system Ratio of renewable energy production potential to eligible investment and/or requested contribution;
- Percentage of funding by the beneficiary;
- Number of entities that are members of the Energy Community.
- Performance of the intervention in terms of reducing energy consumption from fossil sources and increasing the share of consumption from renewable sources



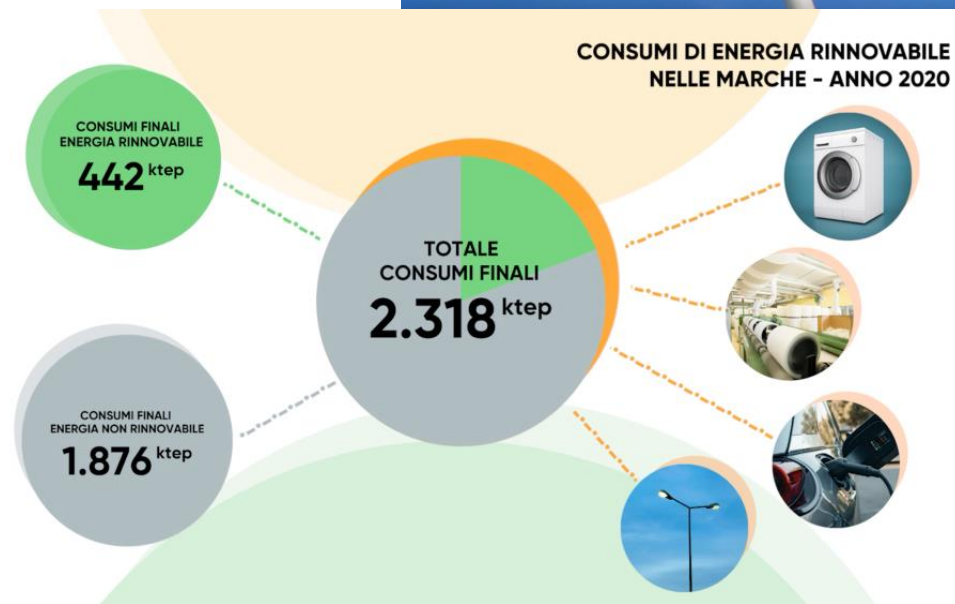
INFORMATI SU
REGIONE.MARCHE.IT/REGIONE-UTILE/ENERGIA/COMUNITA-ENERGETICHE

OGGI SONO 33.570 GLI IMPIANTI DA FONTI RINNOVABILI DISTRIBUITI IN TUTTI I COMUNI DELLA REGIONE MARCHE

SOSTENERE IL RISPARMIO ENERGETICO NELLE IMPRESE E NELL'EDILIZIA PUBBLICA E PRIVATA

PRODURRE PIÙ ENERGIA RINNOVABILE

AUMENTARE IL CONSUMO COLLETTIVO DI ENERGIA RINNOVABILE





BEST PRACTICES

The good practice "ITACA protocol at URBAN SCALE" has also been included in the the Interreg Europe policy learning platform for its innovative character.

 **ITACA Protocol Urban Scale** 31/05/2021
ITACA Protocol Urban Scale is a multi-criteria assessment system for the evaluation of environmental sustainability of an urban context.
Location: Lazio, Italy (Italia) **Project:** LC Districts 

district

GOOD PRACTICE

"CERossini," Montelabbate's energy community. The first operational energy community in the Marche region

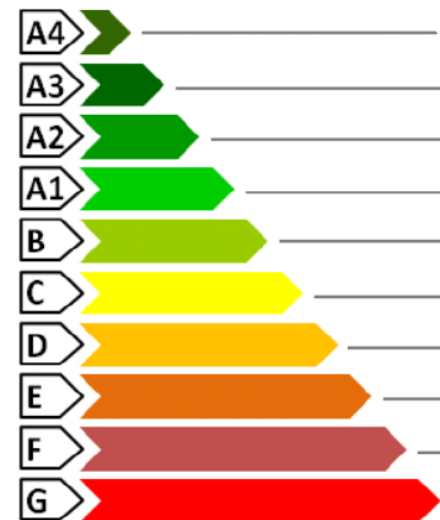
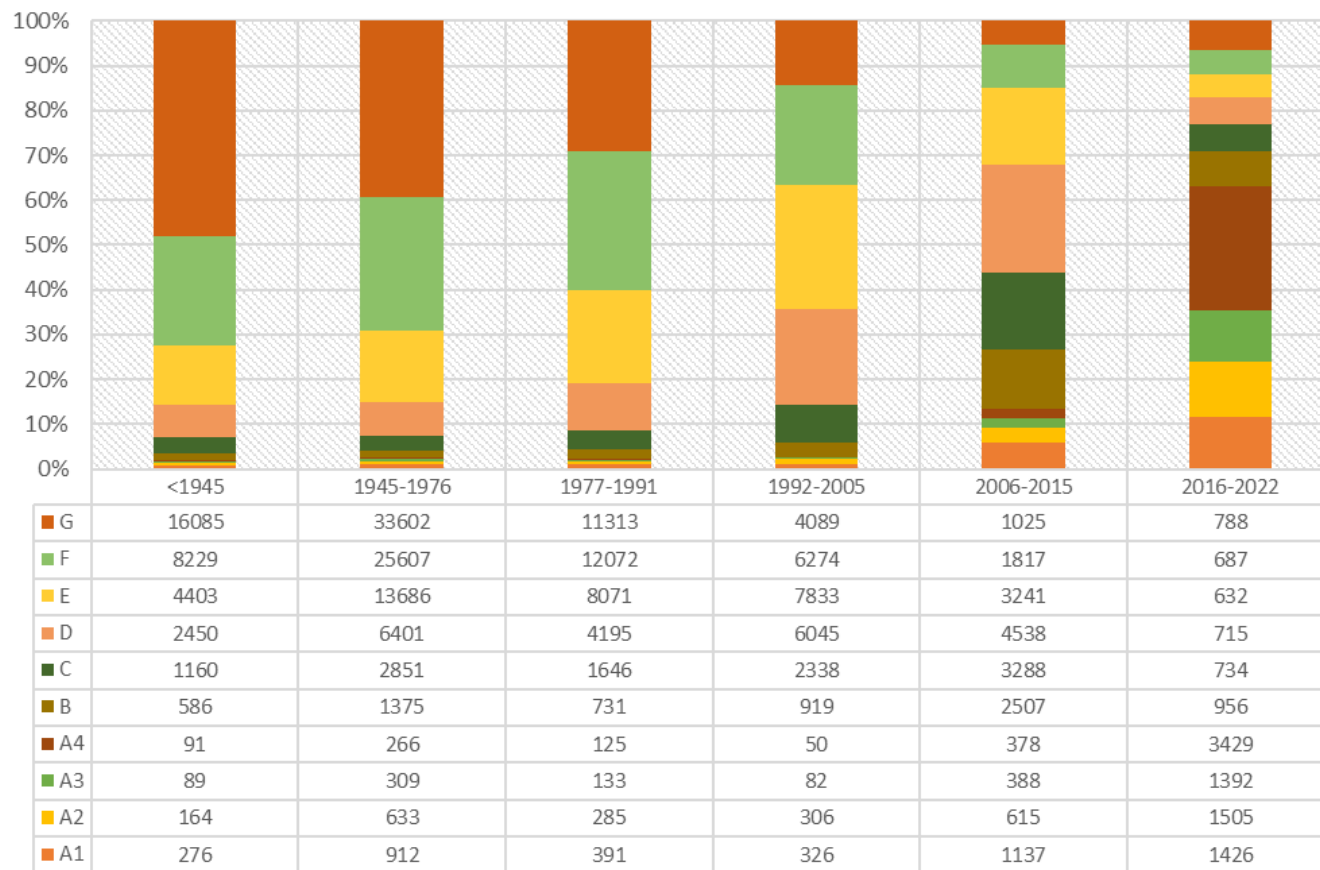


January 2022 marked the birth of "CERossini," the first Renewable Energy Community in the Marche Region. Promoter of the initiative was the Administration of Montelabbate, a municipality of about **7,000 inhabitants** in the province of Pesaro and Urbino, which presented the project to citizens during the summer of 2021 with the aim of creating a coalition of users united by the purpose of self-producing, consuming and managing energy. At the same time, the deed of incorporation of the energy community was made and filed with the Internal Revenue Service.

Technically speaking, the "CERossini" is powered by a 15 kW photovoltaic system located in the roof of the "G. Rossini" School Institute, which, therefore, within **the energy community plays the role of prosumer member**, that is, the one **who produces and self-consumes renewable energy**. The plant, in addition to supplying energy to the **school**, will power the utilities of **6 residential homes and 3 commercial businesses** that fall under the same secondary energy transformation cabin. The CERossini, in fact, was initiated in the context of the Milleproroghe Decree that imposed this geographical limitation. With the full transposition of the EU REDII Directive and the consequent enlargement of the perimeter to the primary cabin, the Municipal Administration is already considering the activation of other Energy Communities with the same modality as CERossini, thus the installation of one or more photovoltaic systems on owned school buildings that will allow the sharing of the energy produced with families and activities falling within the territory

- Regional Operational Programme ERDF Marche 2014-2020 is structured into several Axis
- Axis 8 was introduced after the earthquake experienced by Marche territory in August 2016, was aimed to "Seismic prevention and support for economic recovery in the areas affected by the earthquake"
- Additional resources were allocated , about 237 million Euro;
- The Axis is structured into actions: 25.1 Eco energy efficiency and 28.1 Seismic safety.
- In this framework, the Department was in charge of interventions for University buildings and student houses and canteenes, granted them about 39 million Euros.

Introduction to AXIS 8 and interventions



AXIS 8 context: energy rating of buildings in the Marche Region

- Buildings built before 2005 have low energy rating (most is < D)
- nZEBs (nearly-Zero Energy Buildings, \geq A4) are more common after 2010, when the Directive 2010/31/EU (Energy Performance of Buildings Directive “Recast”) is implemented by Italy

Introduction to AXIS 8 and interventions

SUEE: Seismic Upgrading and Energy Efficiency **EE:** Energy Efficiency

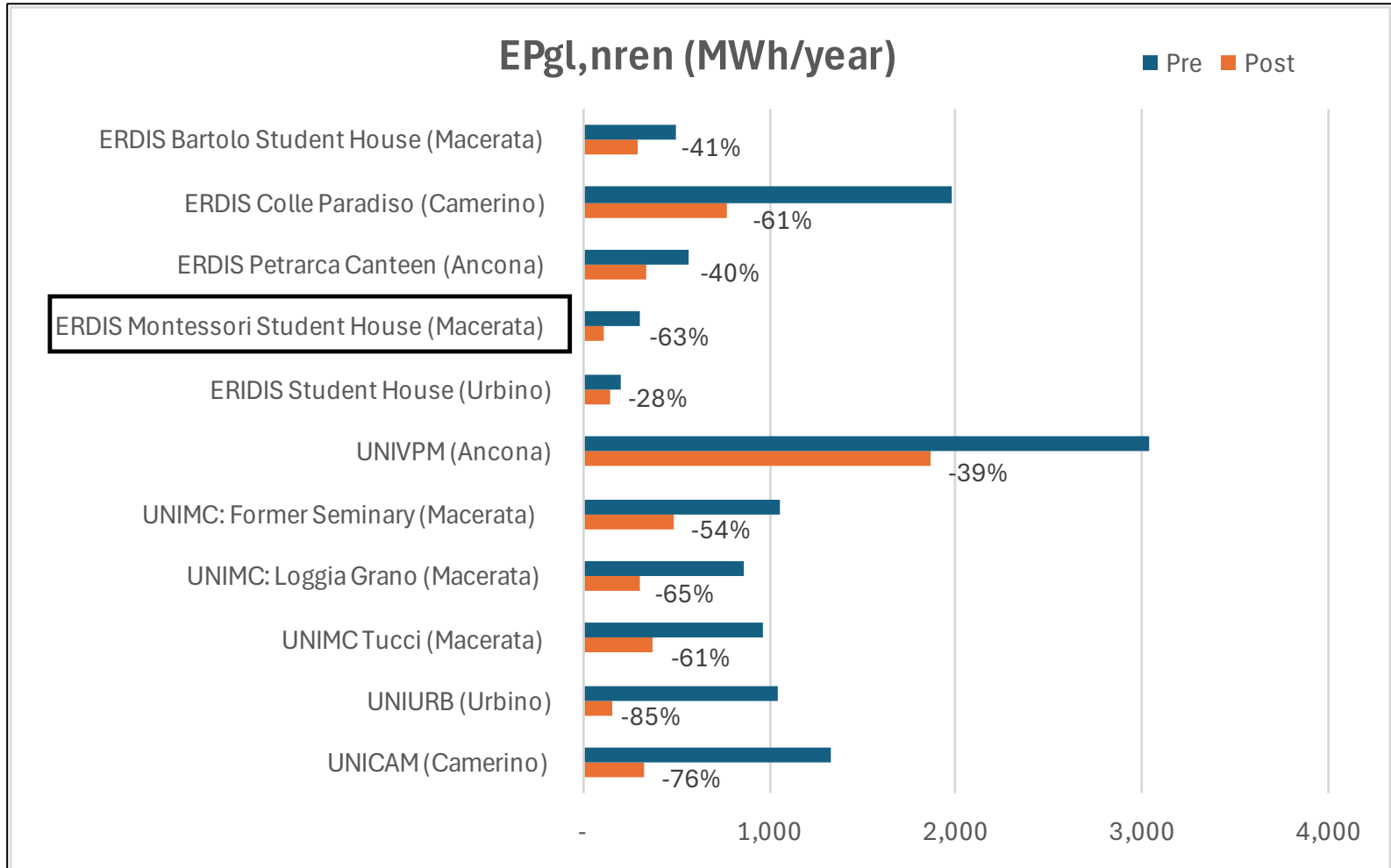
ERDF: European Regional Development Fund

The ERDF contribution covers both energy and seismic interventions¹

Intervention	Type	Total Cost of Intervention (dgr 977/2021, dgr 1296/2023 and dgr 2026/2023)	Total ERDF Contribution ¹ (int.25.1 and 28.1)	Percentage covered by ERDF	Decrease in annual primary energy consumption (kWh/year)	Cost of primary energy saved (EUR/kWh)
UNICAM: Department of Chemical Sciences (Camerino)	SUEE	11,800,000.00	11,500,000.00	97.46%	1,007,414.69	5.56
UNIURB: E. Mattei Scientific Campus (Urbino)	SUEE	16,609,199.15	5,500,000.00	33.11%	888,238.85	3.10
UNIMC: Palazzina Tucci (Macerata)	SUEE	2,160,737.22	1,789,908.88	82.84%	600,036.16	1.61
UNIMC: Loggia del Grano (Macerata)	SUEE	4,858,332.00	3,794,711.91	78.11%	556,672.33	3.36
UNIMC: Former Seminary (Macerata)	SUEE	2,143,883.86	1,415,379.21	66.02%	571,620.37	1.16
UNIVPM: Trifogli-Montedago University Pole (Ancona)	SUEE	6,268,150.16	5,000,000.00	79.77%	1,015,957.18	2.46
ERDIS: URBINO - 'Student House'	SUEE	893,835.23	690,000.00	77.20%	64,603.06	4.64
ERDIS: URBINO - 'Tridente' Student House	EE	1,400,000.00	550,000.00	39.29%	301,340.02	1.83
ERDIS: MACERATA Montessori Student House	SUEE	2,609,475.71	2,330,000.00	89.29%	189,133.60	6.61
ERDIS: ANCONA - 'Petrarca' Canteen	SUEE	1,650,000.00	1,080,000.00	65.45%	227,969.96	1.75
ERDIS: CAMERINO - Building D Colle Paradiso	SUEE	4,228,612.54	3,550,000.00	83.95%	1,183,310.54	1.35
ERDIS: MACERATA - Bartolo da Sassoferrato Student House	SUEE	3,819,337.38	2,030,270.20	53.16%	206,718.30	7.93
Total		58,441,563.25	39,230,270.20	67.13%	6,813,015.06	2.95

- About **67%** of total costs **covered with ERDF**
- **6,813,015.06 kWh/year** saved through these interventions
- **Cost of primary energy saved** (the ratio between the ERDF-subsidised energy contribution and the decrease in annual primary energy consumption): **2.95 EUR/kWh**

Introduction to AXIS 8 and interventions



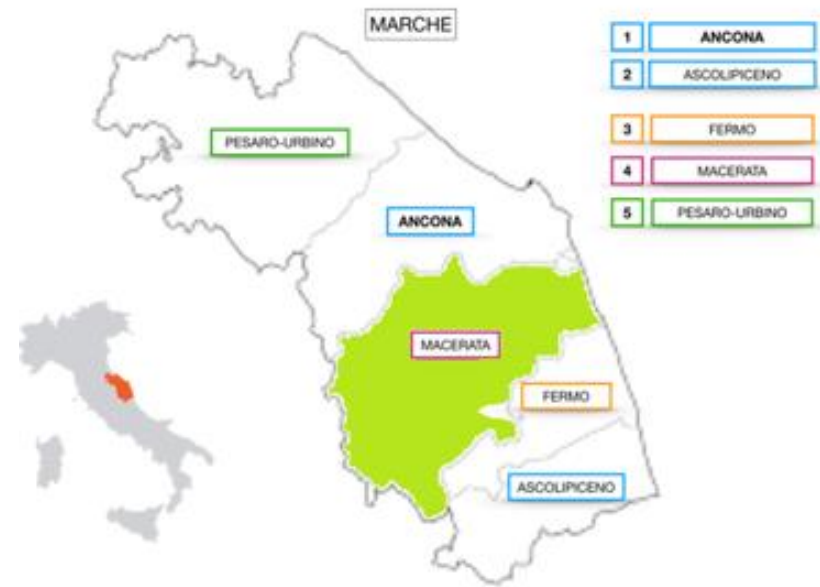
University student house 'Maria Montessori'

The University student house 'Maria Montessori' is located in **Macerata**, an Italian municipality with a population of **40,568**.

Macerata is the **capital of the province** of the same name in the Marche Region and is renowned for **its artistic and cultural heritage**, including historical monuments and museum.

Additionally, it is home to the **Sferisterio** opera festival, one of the most significant open-air opera festivals in the country, and the **University of Macerata**.

(<https://www.macerataturismo.it/>)



The Sferisterio of Macerata is an open-air theatre situated in the historic center of Macerata, near the city walls.

University student house 'Maria Montessori'

- Year of construction: **1968**
- Reopening after renovation: **6 October 2021**
- Total number of students accommodated: **71**
- The student residence has a **large kitchen** with a **dining room**, a **study room** and a **recreation room**. There is also a **laundry room**
- Cost of works: **2,609,475.71 EUR**
- Energy savings achieved: **189,133.60 kWh/year**
- Cost of primary energy saved: **6.61 EUR/kWh**



*'Maria Montessori' University Student House
after renovations*

Energy and seismic diagnosis: suggested interventions

Energy services available

Winter air conditioning
Domestic hot water production, Lighting

Energy performance of the building

Winter: **low**
Summer: **medium**

Overall energy performance

C

$E_{pgl,ren}$

163.08 kWh/(m² year)

$E_{pgl,ren}$

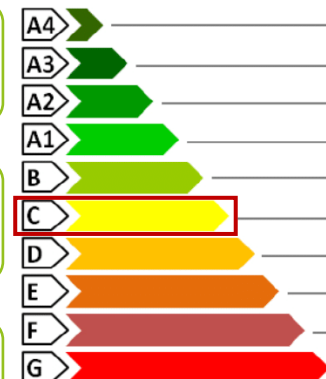
3.71 kWh/(m² year)

CO₂ emissions

33 kg/(m² year)

Seismic safety

Low level of seismic resistance (openings in load-bearing walls)



Energy and seismic diagnosis: suggested interventions

Envelope

- Interior and External coating
- Insufflation
- Horizontal roof insulation
- Windows replacement

HVAC system and renewable sources

- Replacement of emission terminals
- Installation of thermoregulation and metering systems
- Installation of solar collectors and PV modules

Seismic safety

- Static and Seismic Consolidation of Floor Slabs
- Filling of niches or old openings
- Realisation of reinforced plaster
- Installation of chains and tie rods

Energy and seismic diagnosis: suggested interventions

Envelope

- Interior and External coating
- Insufflation
- Horizontal roof insulation
- Windows replacement



Thermal transmittance reduction ($W/m^2 K$)

HVAC system and renewable sources

- Replacement of emission terminals
- Installation of thermoregulation and metering systems
- Installation of solar collectors and PV modules



- **Increase** in **emission and regulation efficiencies**
- **Reduction** in **average system temperature**
- **Improving generation efficiency** and increasing the renewable share
- **Reduction** of **electricity withdrawal from the grid**

Seismic safety

- Static and Seismic Consolidation of Floor Slabs
- Filling of niches or old openings
- Realisation of reinforced plaster
- Installation of chains and tie rods



High level of seismic safety achieved



Satellite photo of the photovoltaic field and solar collectors

Photovoltaic system

- PV nominal power: **300 W**
- Number of modules: **52**
- PV field power: **15.6 kW**
- Annual energy from PV: **19'500 kWh**



Solar collectors for DHW production

- Number of collectors: **20**
- Overall aperture area: **46.20 m²**
- DHW covered by solar collectors: **65.1 %**



Home automation systems

a)



- All rooms are equipped with **sensors** to:
- a) detect the **opening and closing of windows**
 - b) detect the **presence of people** inside the room

b)



The **control unit regulates**, based on sensor information, the **thermostat**



The thermostat sets an internal temperature (T_{set}) of 20 °C if the windows are closed and people are in the room at the same time

This solution ensures **thermo-hygrometric comfort** and **reduces consumption**

Results of implemented interventions

	Baseline	After interventions
Energy performance of the building	Low	High
Overall energy performance	C	A3
E _{pgl,nren} kWh/(m ² year)	163.08	60.29 ↓
E _{pgl,ren} kWh/(m ² year)	3.71	21.53 ↑
CO2 emissions	33	12.06 ↓
Seismic requirements	Not satisfied	Broadly satisfied



Results of implemented interventions



Thanks for your attention!