



EU GREEN DEAL

**MAKE IT  
REAL**

**PARTNER EVENT  
#EUGREENWEEK  
30 MAY – 5 JUNE 2022**



# IMPROVING AIR QUALITY TOGETHER LIFE IP PrepAIR: project's achievements and main results

31<sup>st</sup> May 2022  
Emilia-Romagna Region  
Delegation to the EU

**NEXT  
GEN  
EU**





LIFE 15 IPE IT 013

# Goals of PREPAIR D3 Action



First subaction: sample survey on use of biomass for domestic heating in the Po Valley

- updating the estimates of woody biomasses consumed
- estimation of the number and typology of domestic systems installed
- information on the dissemination of good practices related to the use of these devices

Second subaction: develop a database of the energy consumption in the residential heating real estate and provide the input for the assessment of emissions (Action D2)

- energy consumption in the residential area has been estimated through the definition of the existing building stock
- energy balance of fuels for domestic heating in Po Valley



LIFE 15 IPE IT 013

# L'indagine campionaria

the aim was to updating to 2018 the estimates of biomass consumption exclusively in the domestic environment (heating, sanitary water, cooking food), relating to autonomous systems and single appliances.

**Report disponibile al link:**

[http://www.lifeprepare.eu/wp-content/uploads/2017/06/D3\\_Report-indagine-sul-consumo-domestico-di-biomasse-legnose-1.pdf](http://www.lifeprepare.eu/wp-content/uploads/2017/06/D3_Report-indagine-sul-consumo-domestico-di-biomasse-legnose-1.pdf)



## **ACTION D3. CONSUMO RESIDENZIALE DI BIOMASSE LEGNOSE NEL BACINO PADANO**

**REPORT SULL'INDAGINE PER STIMARE I CONSUMI  
DI BIOMASSE LEGNOSE NEL RESIDENZIALE**

01/02/2020





LIFE 15 IPE IT 013

## Il campione



The survey was carried out on a sample of about 20,000 families living in Po Valley (10,000 CATI - phone interviews and 10'000 CAWI - web interviews). To consolidate the estimates obtained in the first phase of the survey, the sample was extended, exclusively using the CATI technique, with an additional 3,000 interviews.

The sample was selected from households residing in the regions: **Valle d'Aosta, Piemonte, Lombardia, Veneto, Emilia Romagna, Friuli Venezia Giulia e nelle province autonome di Trento e Bolzano**

Starting from previous national and regional surveys, a different frequency of biomass users was expected on the basis of altitude and population density: for this reason the sample, extracted in each territorial area in proportion to the resident population, was stratified on the based on the altitude and population size of the municipality of residence.

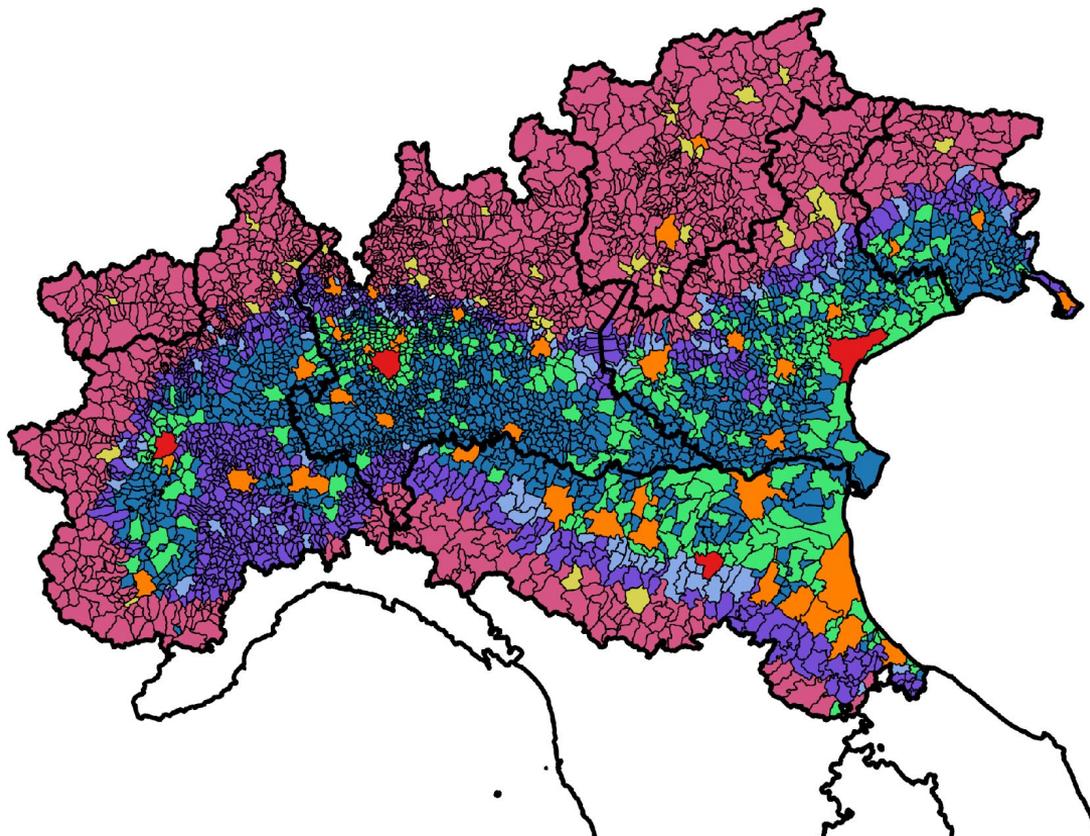


LIFE 15 IPE IT

# Sampling layers



The sampling cells consist of the intersection between the administrative limits and the municipal types



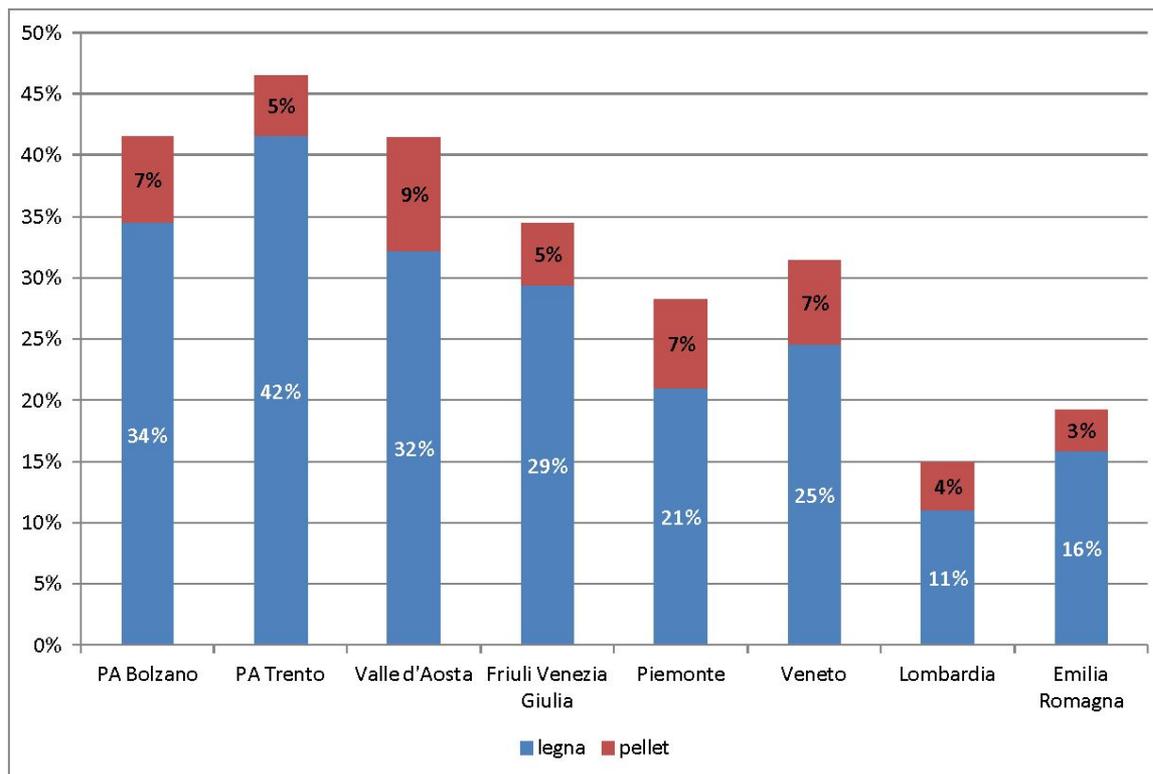
## Legenda

- Reg01012018\_g\_WGS84
- comune metrop.
- > 50000 ab.
- < 10000 ab. montagna
- 10000-50000 ab. montagna
- <10000 collina
- 10000-50000 collina
- <10000 pianura
- 10000-50000 pianura



LIFE 15 IPE IT 013

# Biomass users in Po Valley

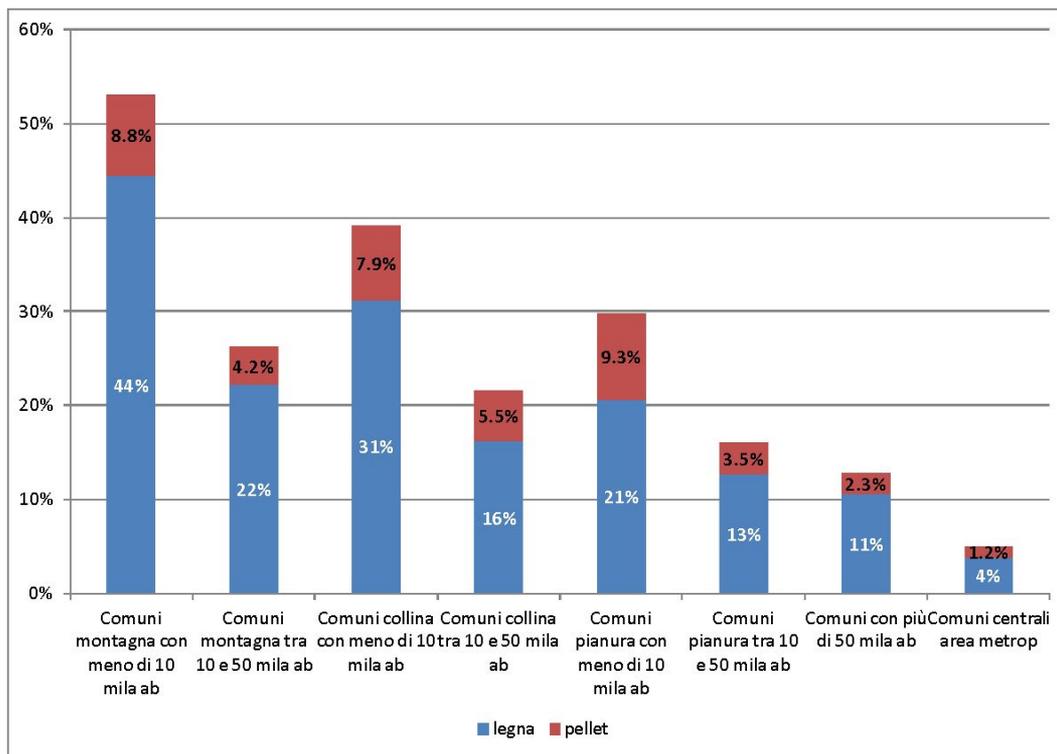


One every 5 of families living in Po Valley habitually uses wood and / or pellets for domestic heating and cooking



LIFE 15 IPE IT 013

# Biomass users in Po Valley

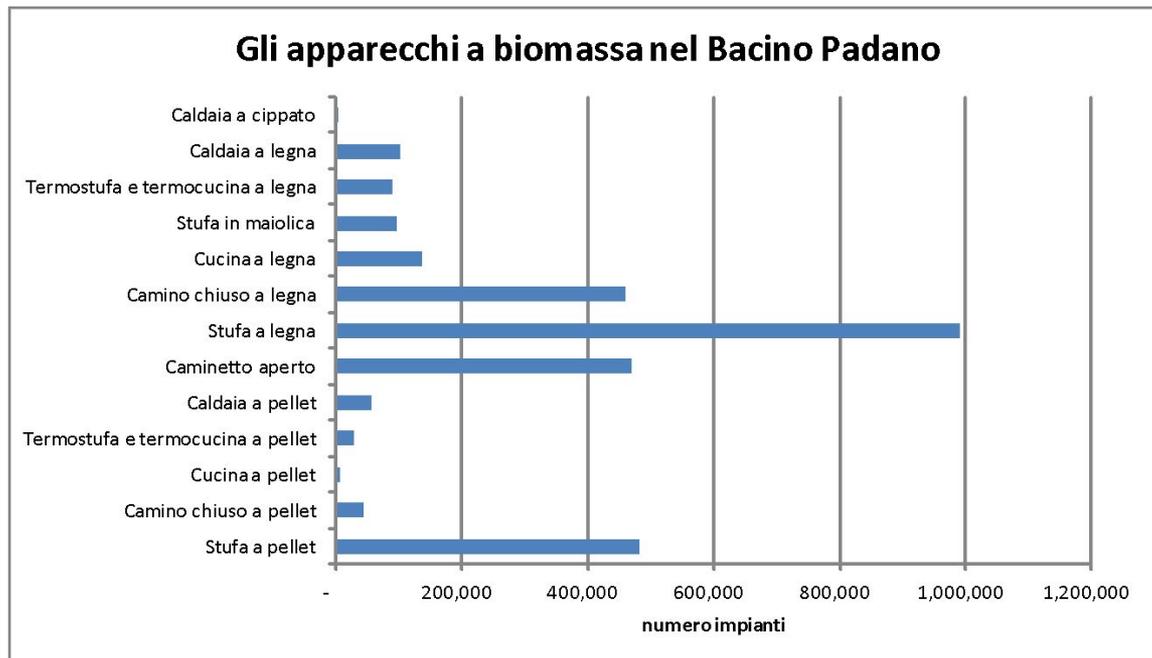


The survey shows a greater frequency of use in mountainous and low-density municipalities



LIFE 15 IPE IT 013

# The devices powered by woody biomasses



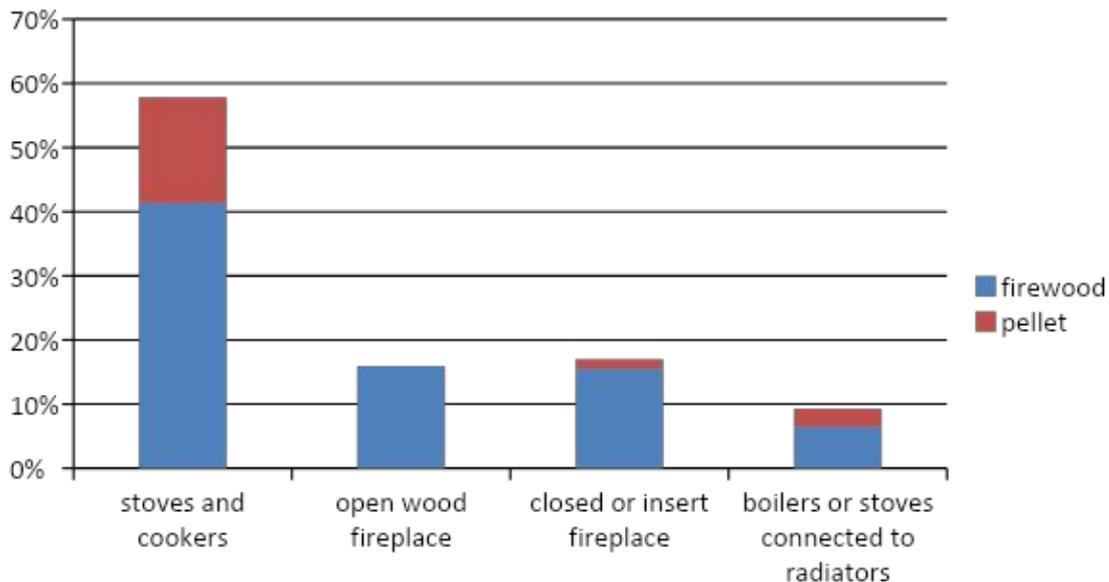
In the Po Valley about 480'000 pellet stoves, 470'000 open fireplaces and 460'000 closed wood-burning fireplaces, as well as 990'000 traditional wood-burning stoves were estimated. As concerns stand-alone biomass boilers, the survey found about 150'000, where about one-third of them were fired by pellets

A small part of these systems are installed in second homes (from 2 to 10% depending on the type)



LIFE 15 IPE IT 013

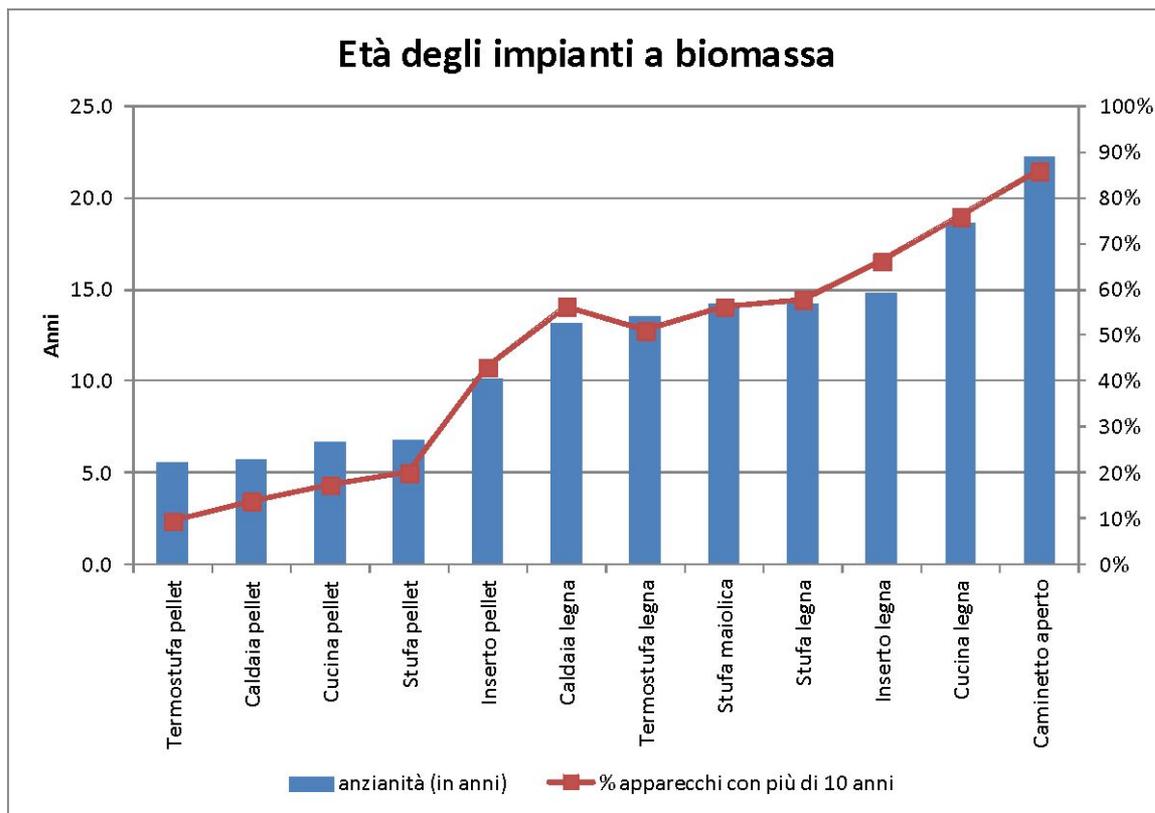
# Gli impianti



Traditional wood stoves and cookers represent the most common types of systems; wood is more prevalent than pellets



LIFE 15 IPE IT 013

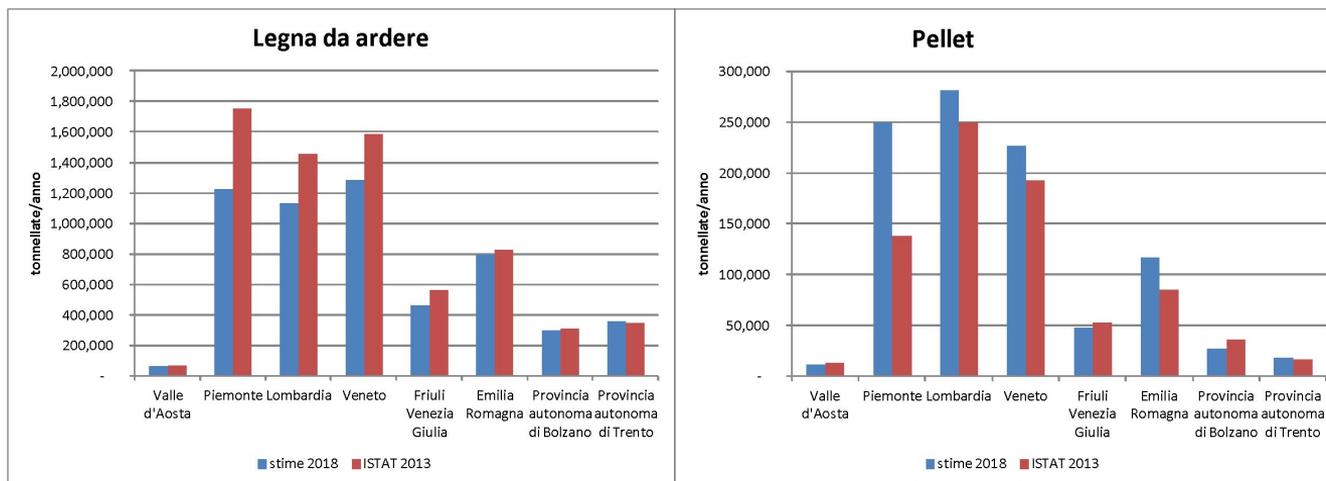


Pellet appliances are on average much more recent than wood-burning systems, most of which have an installation age of over 10 years



LIFE 15 IPE IT 013

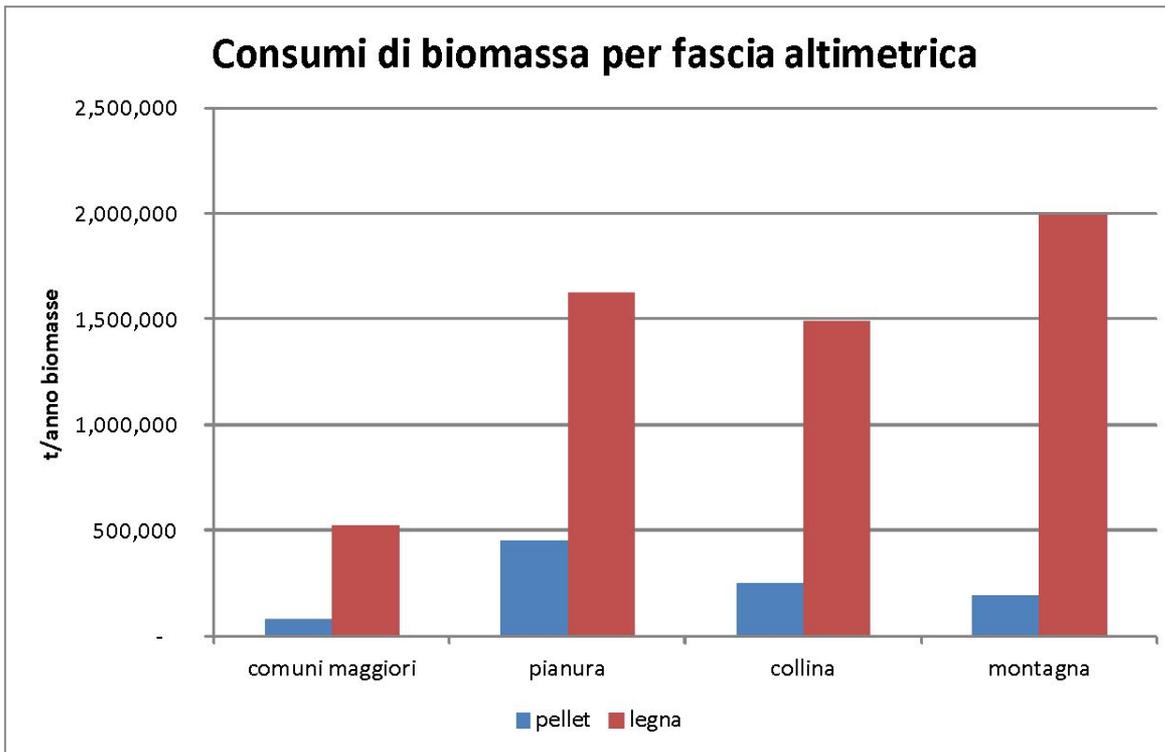
# Biomass wood consumption in Po Valley



The survey estimates a total consumption for the year 2018 of approximately **980,000 tons of pellets and 5.6 million tons of firewood**. These values are comparable with the results of a previous national survey on household energy consumption (by Italian National Institute of Statistics) referring to 2013 in which approximately 800,000 tons of pellets and nearly 7 million tons of firewood were estimated for Nord Italy.

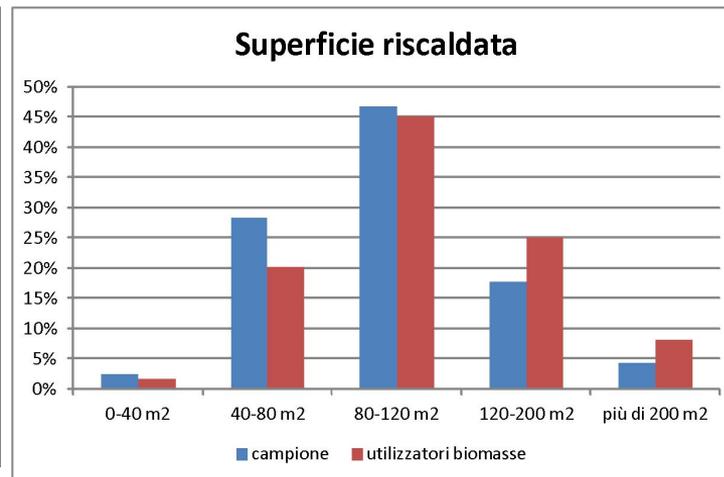
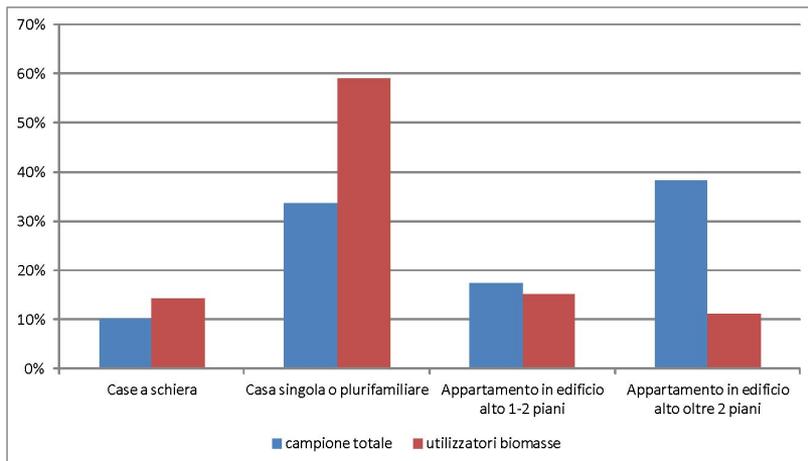


LIFE 15 IPE IT 013



The highest consumption of firewood is associated with mountain areas, while pellets are mostly used in the plains

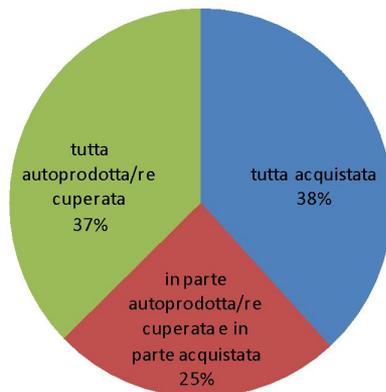
# Tipologia delle abitazioni



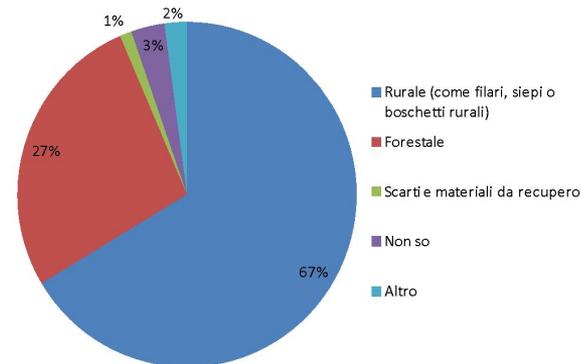
Rispetto al totale degli intervistati, gli utilizzatori di biomassa risiedono tipicamente in case singole o a plurifamiliari. In quasi la totalità dei casi le abitazioni sono dotate di uno o più impianti a biomassa singoli che riscaldano uno o più ambienti, a cui si associa tipicamente un impianto autonomo o un impianto centralizzato, generalmente a metano.

## Other information: biomass supply

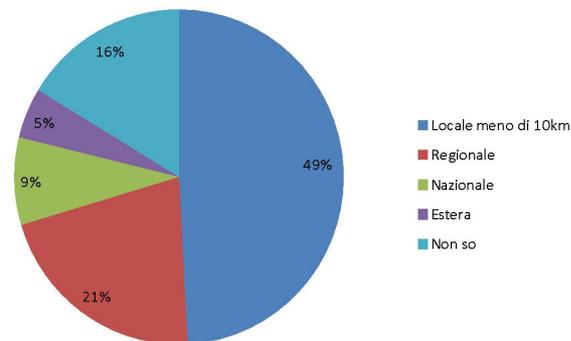
### Approvvigionamento legna da ardere



### Provenienza legna da ardere autoprodotta/recuperata



### Provenienza biomassa acquistata





LIFE 15 IPE IT 013

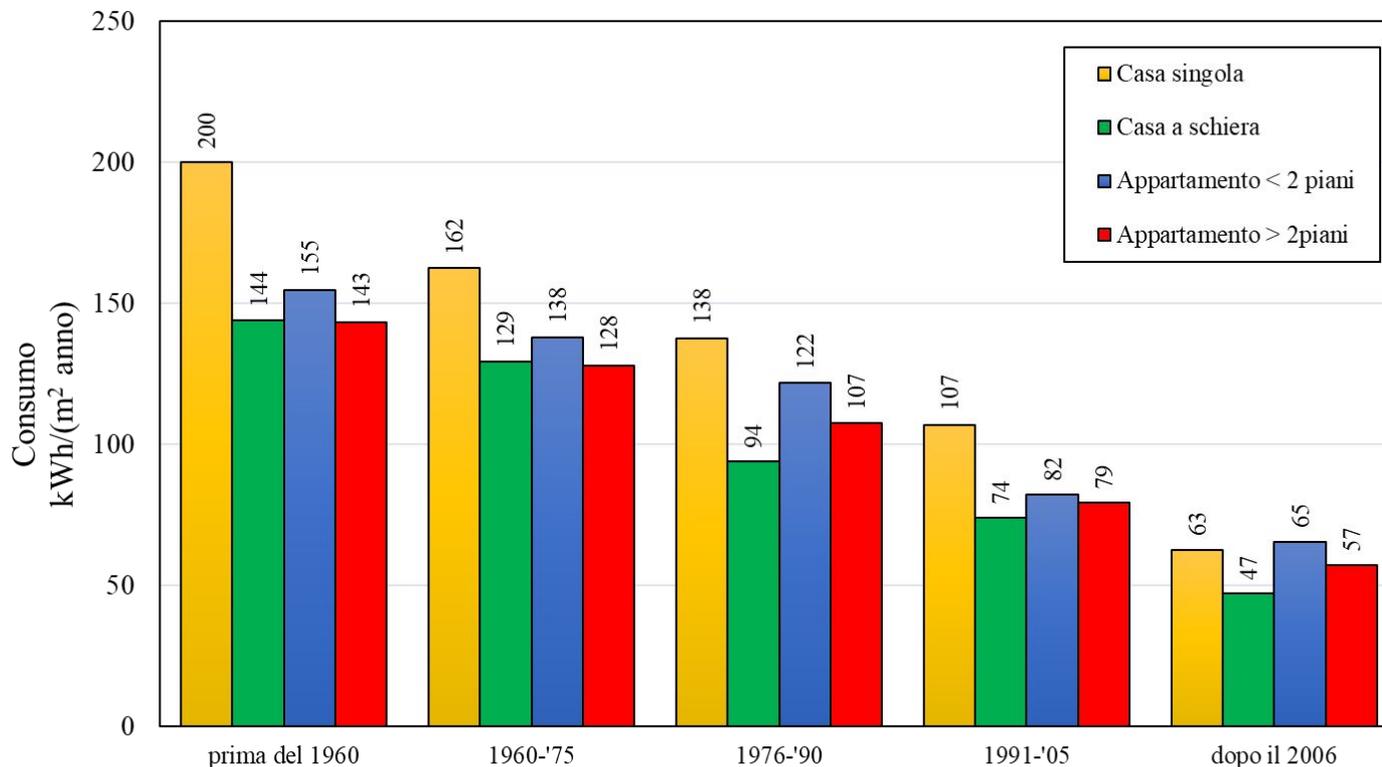
# Estimation of energy consumption of the real estate



- STEP 1: analysis of building stocks for age and typology
- STEP 2: estimate of the effect of energy renewal interventions
- STEP 3: Estimation of housing consumption
- STEP 4: reporting the results to the climatic conditions of 2018 of consumption through degree-days
- STEP 5: Sum of consumption values for homes in the Po valley (heating, cooking, domestic hot water)

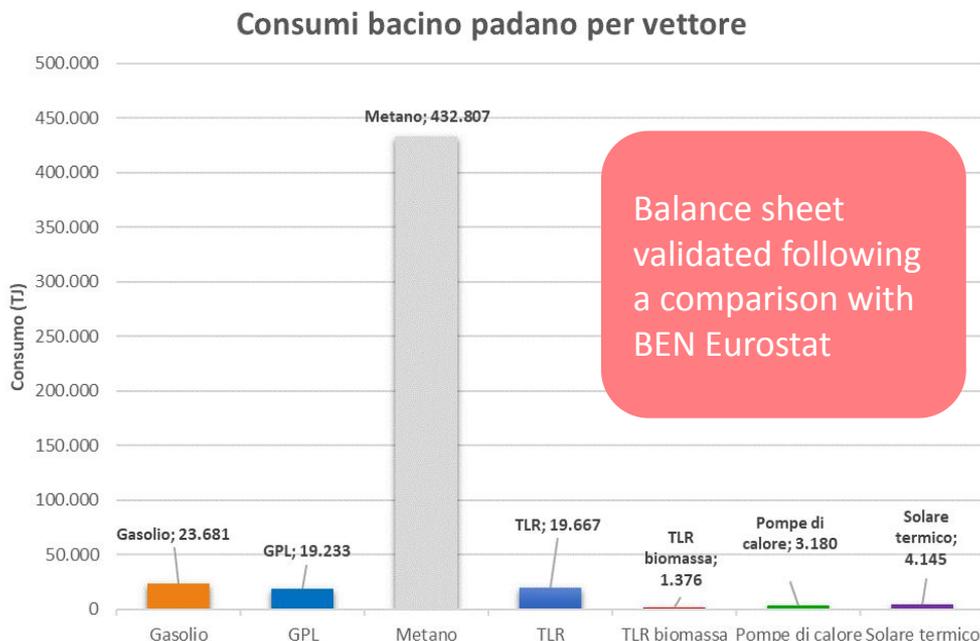
# Domestic heating consumption

(existing building stock, including renewal interventions)



# Energy balance

- Report based on the data provided by the various bodies regarding the consumption of raw materials for heating, cooking food and DHW for the regions of the Po valley

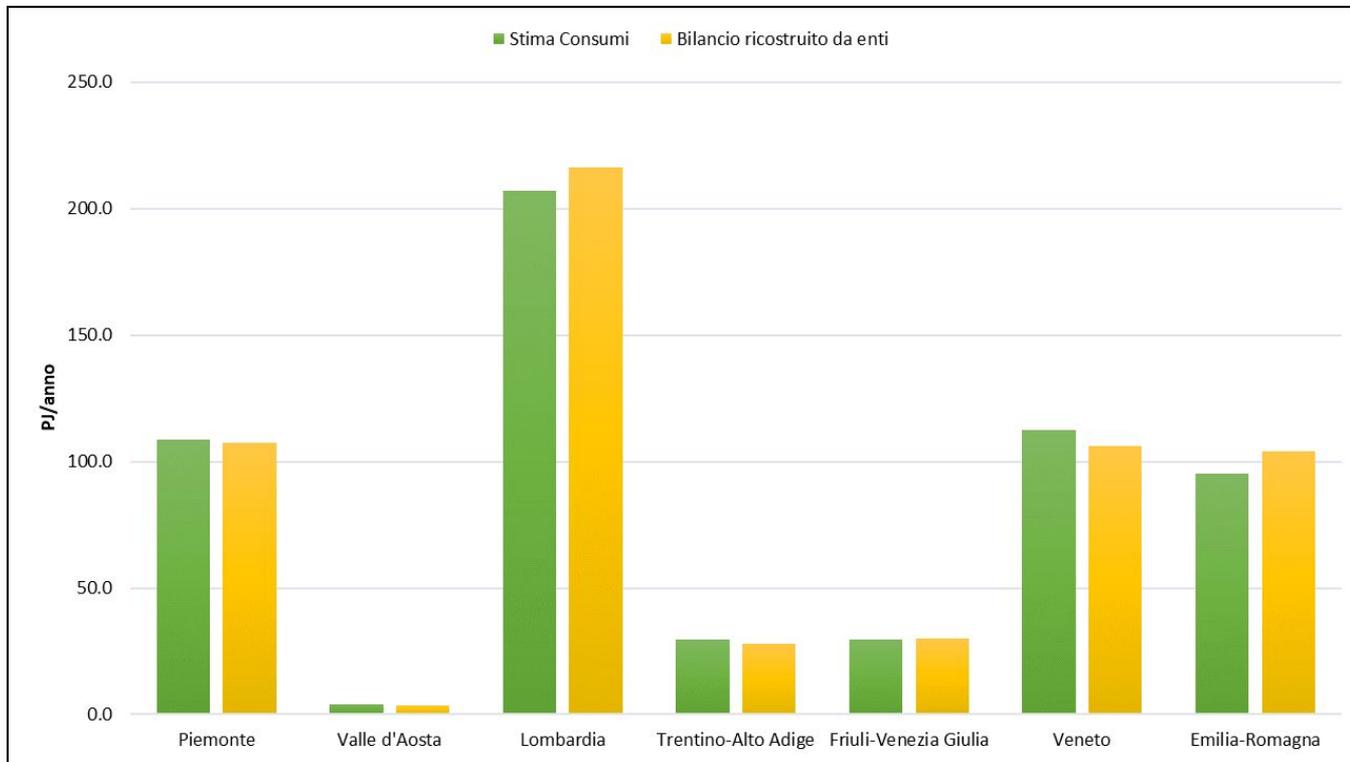


Total consumption, excluding biomass, equal to 502 714 TJ

gasolio	MISE
LPG	MISE
metane	ARERA
district heating	AIRU
heat pumps	GSE
solar thermal	GSE



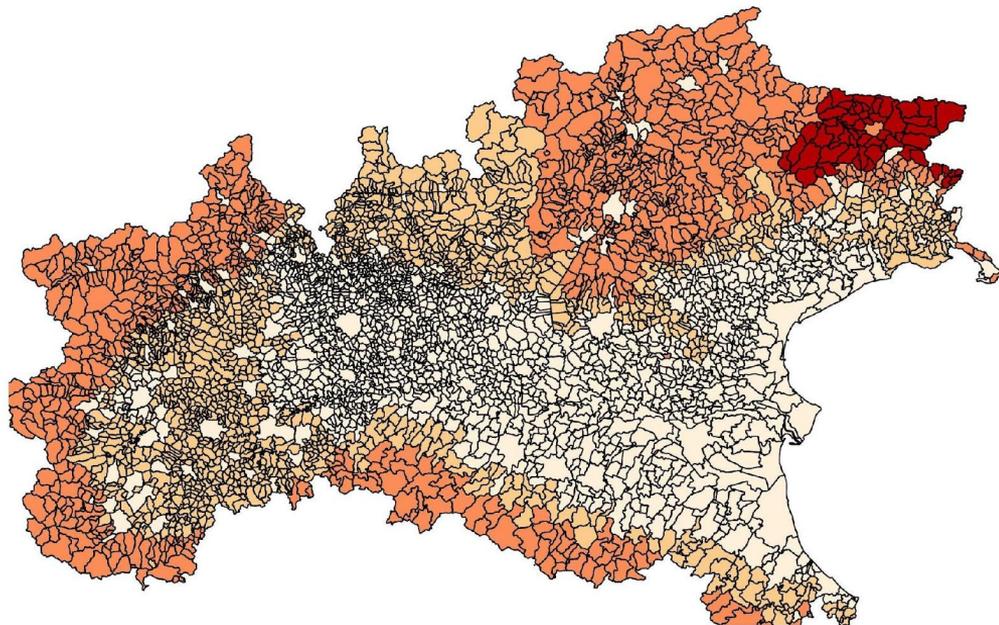
LIFE 15 IPE IT 013



Green bar: existing building stock consumption for 2018 climatic conditions  
Yellow bar: energy balance of residential sector, included biomass consumption from PREPAIR survey



LIFE 15 IPE IT 013



### Legenda

Com01012019\_g\_WGS84

- 0.0 - 5.0
- 5.0 - 10.0
- 10.0 - 15.0
- 15.0 - 20.0
- 20.0 - 21.1

GJ anno pro capite

comunale\_pro\_capite



LIFE 15 IPE IT 013

# Conclusions



- Biomass powered devices are used by about 20% of families living in Po Valley, with percentages ranging from just over 10% in the most populous municipalities up to over 50% of families in low-density mountain municipalities.
- The sample survey made it possible to estimate the presence in the North Italy of about 100,000 wood and 50,000 pellet boilers, 990,000 wood stoves and 480,000 pellet stoves, 470,000 open fireplaces and 460,000 wood inserts; wood-burning kitchens and majolica stoves are also frequently used in the mountain area of North East.
- About 3/4 of the wood-burning stoves, and in general more than half of the wood-burning systems, have an installation age of over 10 years.
- Annual consumption in Po Valley is estimated to be approximately 980,000 tons of pellets and 5.6 million tons of firewood, values comparable to the estimates of the national survey on energy consumption of households carried out by ISTAT in 2013.

the survey made it possible to investigate some aspects of plant management useful for directing education and awareness-raising activities to environmental aspects related to the use of biomass for heating and cooking.

Finally a database on energy consumption for domestic heating at the municipality level was provided, useful as input for the emission estimations.



LIFE 15 IPE IT 013



# Thank you for your attention

[www.lifepreair.eu](http://www.lifepreair.eu) - [info@lifepreair.eu](mailto:info@lifepreair.eu)



REGIONE DEL VENETO



PROVINCIA AUTONOMA DI TRENTO



Agenzia Regionale per la Prevenzione e Protezione Ambientale del Veneto



ARSO ENVIRONMENT  
Slovenian Environment Agency



Comune di Bologna



Comune di  
Milano



CITTA' DI TORINO



ART-ER  
ATTIRATIVITA'  
RICERCA  
TERRITORIO



Fondazione Lombardia  
per l'Ambiente