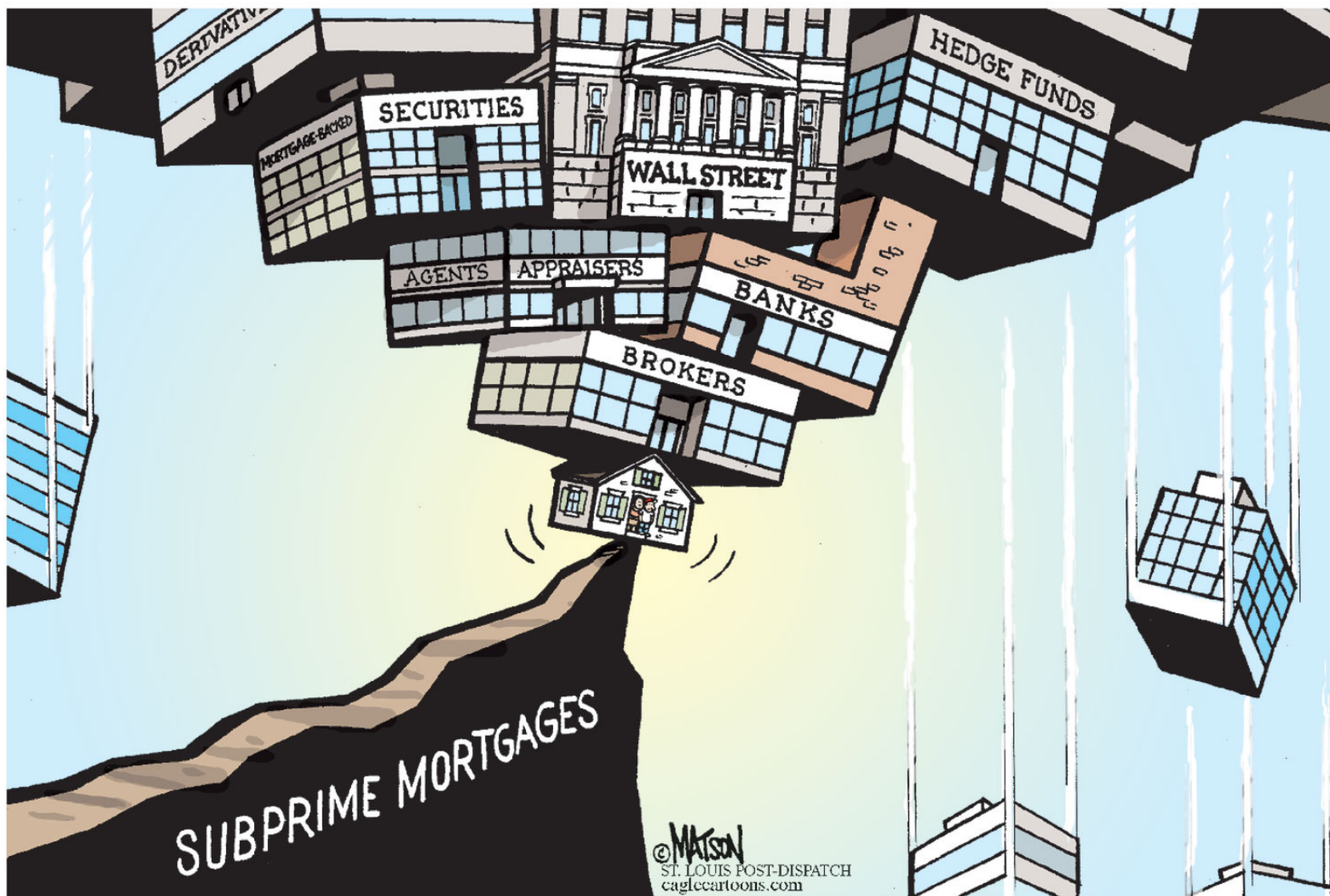# Energy crisis and energy efficiency financing in real estate

Challenges and opportunities for the Italian banking system
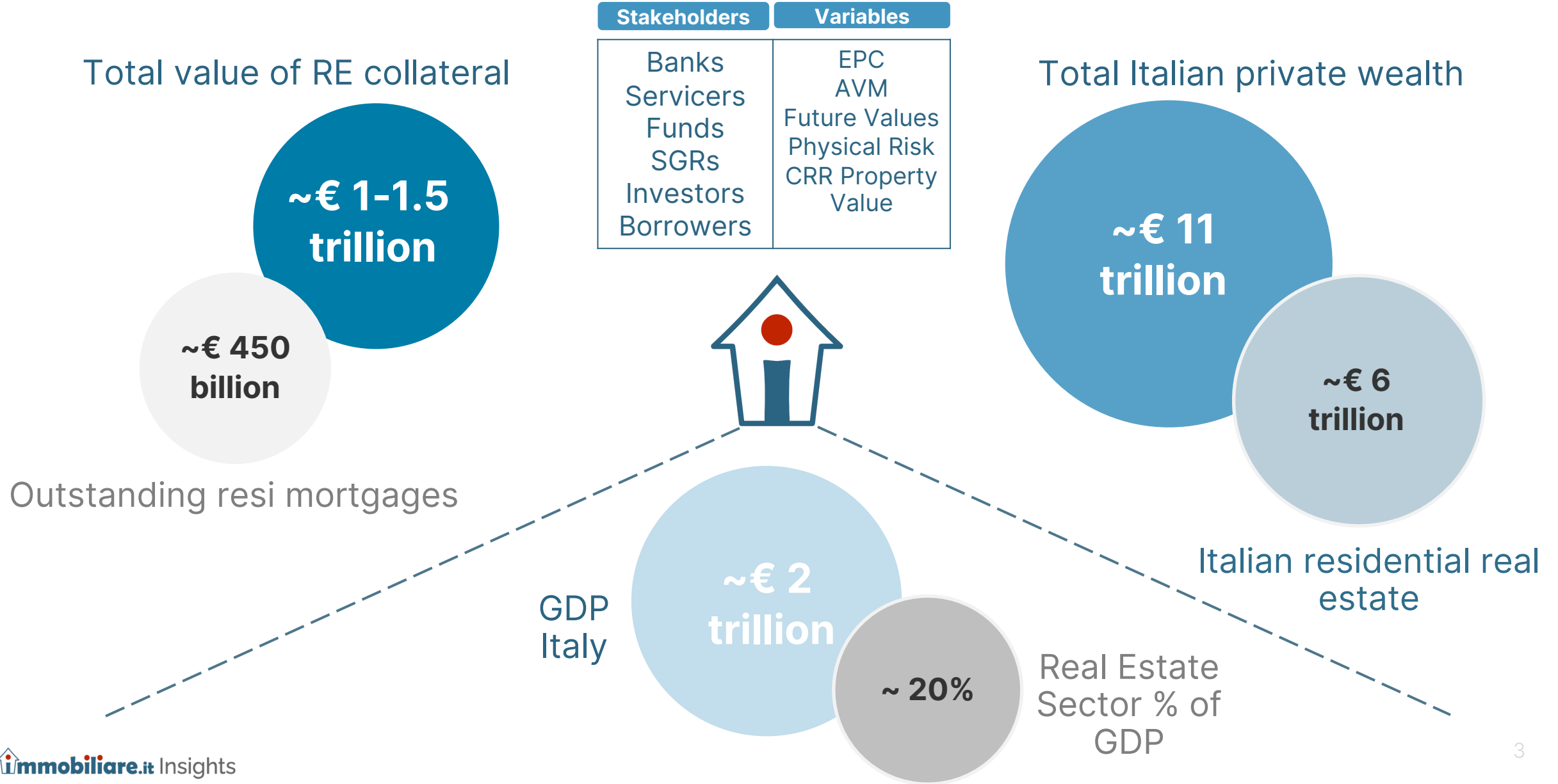
ERES
European Real Estate Society

Rome, 08/03/2024

immobiliare.it Insights

«I THOUGHT OUR HOUSE WOULD ALWAYS INCREASE IN VALUE!»

2024

Why this matters?

Total value of RE collateral

~€ 1-1.5 trillion

~€ 450 billion

Outstanding resi mortgages

Stakeholders	Variables
Banks	EPC
Servicers	AVM
Funds	Future Values
SGRs	Physical Risk
Investors	CRR Property
Borrowers	Value

Total Italian private wealth

~€ 11 trillion

~€ 6 trillion

Italian residential real estate

GDP Italy

~€ 2 trillion

~ 20%

Real Estate Sector % of GDP

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Changes in the market environment produce impacts on the entire Italian real estate stock

More than half of the properties are residential units and private offices (category A)

67 mln

Properties surveyed in ordinary categories

A 54%
B 0,3%
C 43%
D 2,5%
E 0,2%

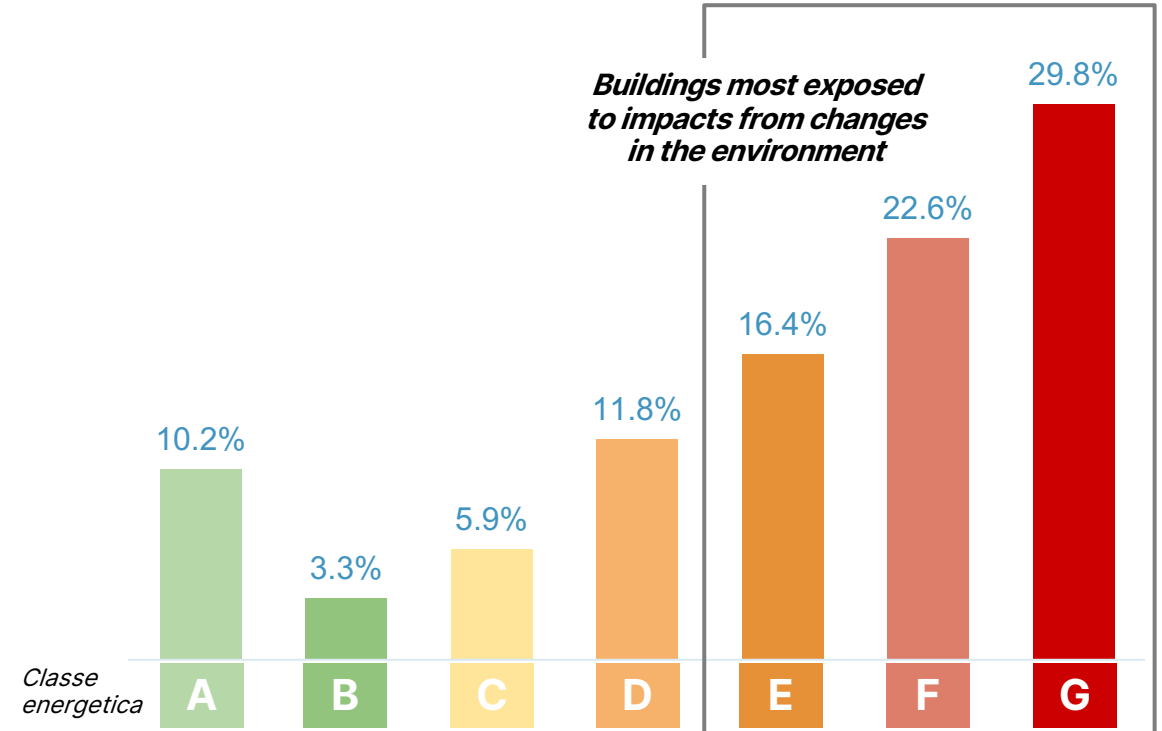|	
A	Residential office and private study units
B	Units intended for collective use
C	Ordinary commercial and miscellaneous units
D	Special purpose properties (hotels, nursing homes, hospitals)
E	Special purpose buildings (stations for transportation services, bridges, cemeteries)
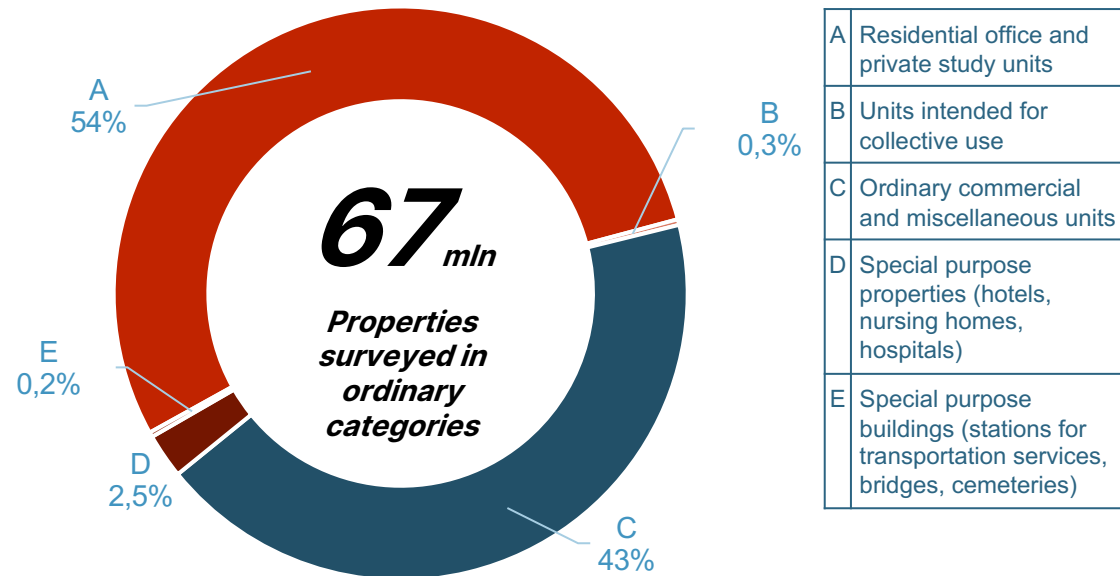
35.5 mln residential properties

Fonte dati: Statistiche Catastali 2022- Catasto Edilizio Urbano (al 31.12.2022)
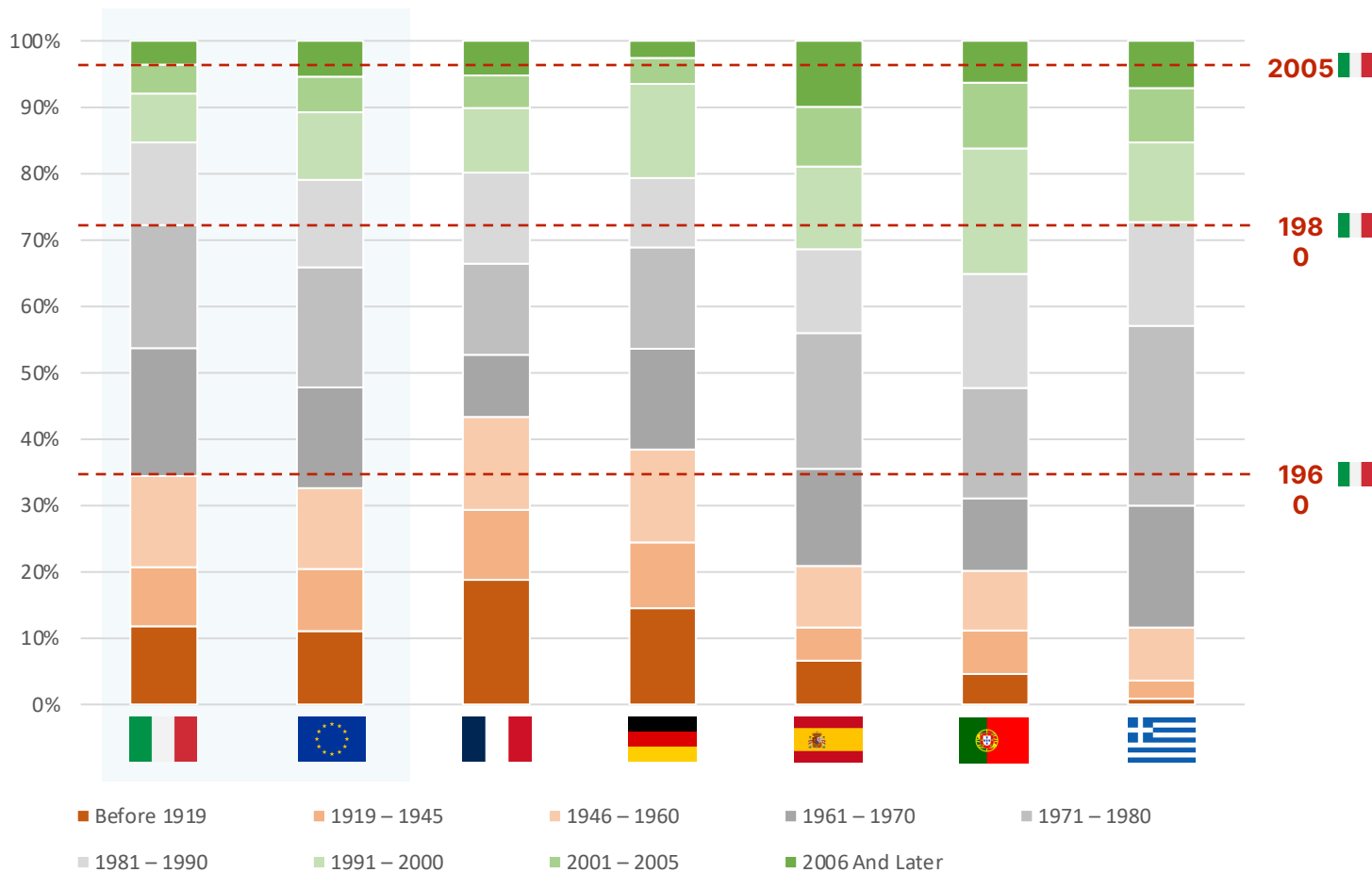
Distribution of properties by energy class in Italy

The Italian housing stock is characterized by the majority of properties with low energy ratings (c.a. 70% in classes E, F and G)

Buildings most exposed to impacts from changes in the environment

A 10.2%
B 3.3%
C 5.9%
D 11.8%
E 16.4%
F 22.6%
G 29.8%

Classe energetica

Fonte dati: https://siape.enea.it/caratteristiche-immobili

Italian real estate compared with Europe

Legend:
- Before 1919
- 1919 – 1945
- 1946 – 1960
- 1961 – 1970
- 1971 – 1980
- 1981 – 1990
- 1991 – 2000
- 2001 – 2005
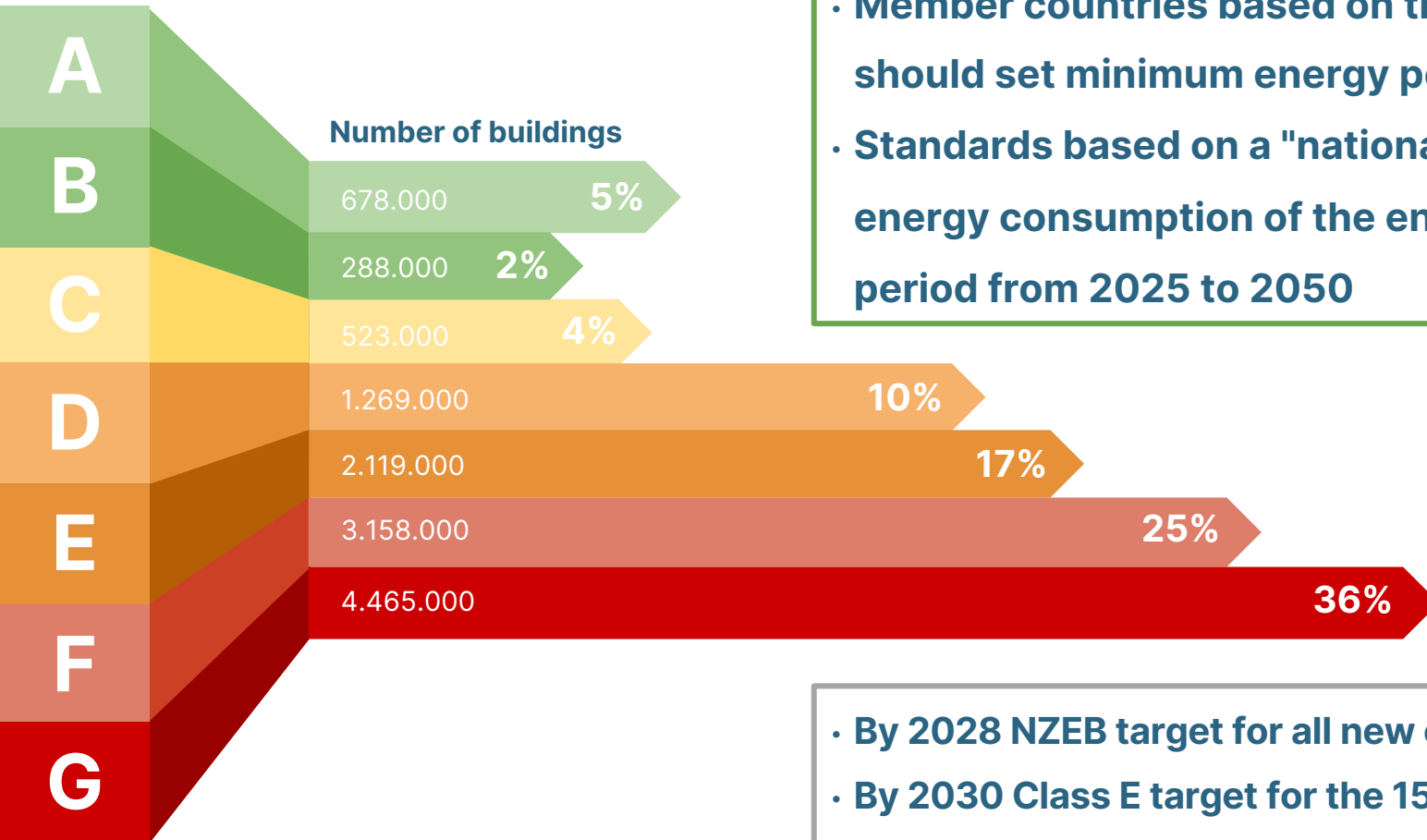- 2006 And Later

Reference lines: 2005, 1980, 1960

AGING ITALIAN REAL ESTATE

- Built between 1960 and 1980: 38% Italy vs 33% EU
- From 2006 to present: 3.5% Italy vs >5% EU
- Low propensity for new land use for development or demolition of current stock
- Renovation will be primary green driver

Fonte: Sole 24ore - Eurostat

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Stock quality: how many buildings need renovation?

Number of buildings

Class	Number	Percentage
A		
B	678.000	5%
	288.000	2%
C	523.000	4%
D	1.269.000	10%
	2.119.000	17%
E	3.158.000	25%
F	4.465.000	36%
G		

Fonte: Istat

New EPBD Draft

- **Member countries based on their national energy class system should set minimum energy performance standards**
- **Standards based on a "national trajectory" calculated on the average energy consumption of the entire residential building stock over the period from 2025 to 2050**

Old EPBD Draft

- **By 2028 NZEB target for all new construction**
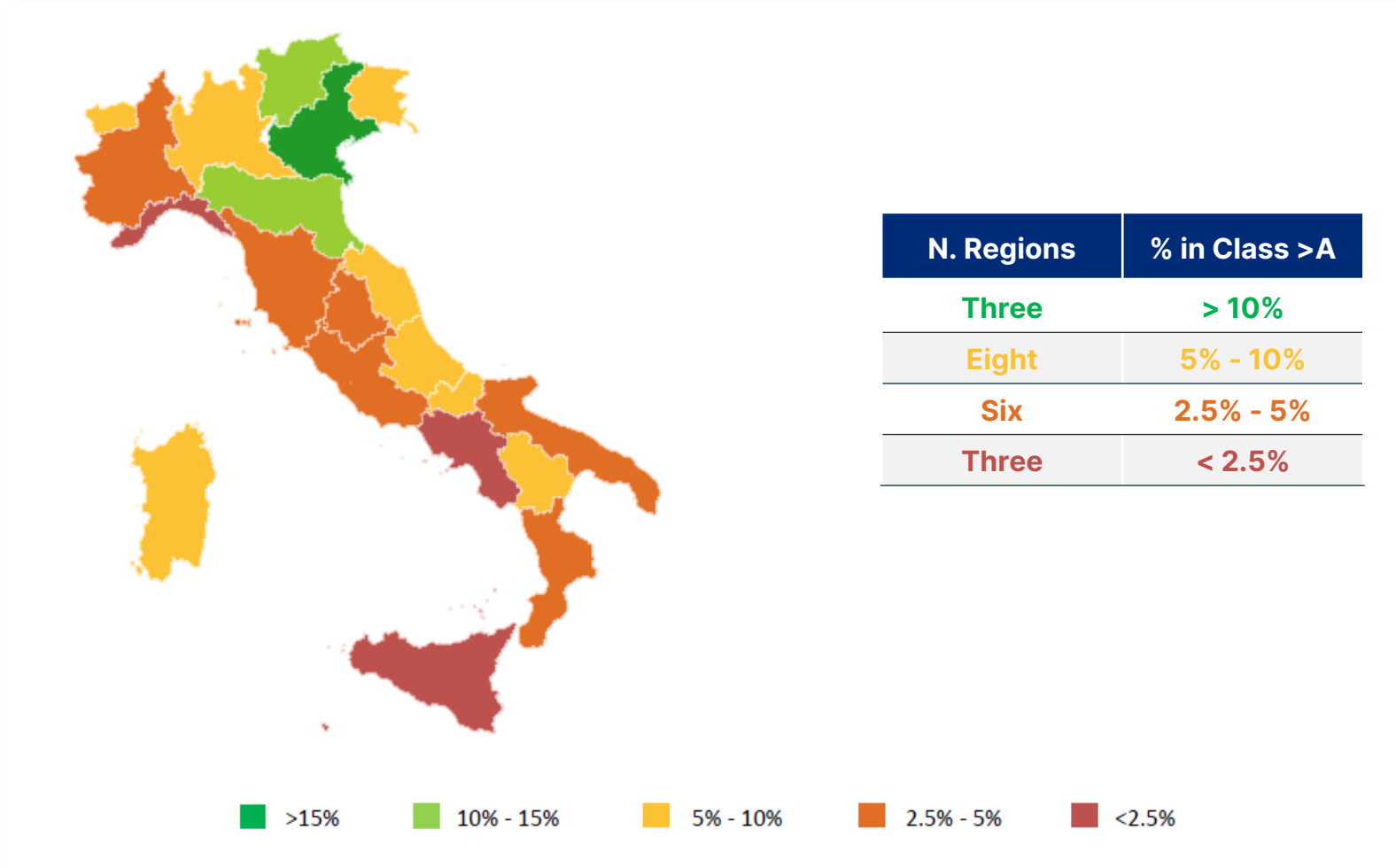- **By 2030 Class E target for the 15% most energy intensive**
- **By 2033 target Class D**

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Green properties: distribution over the territory

Breakdown of energy efficient RRE
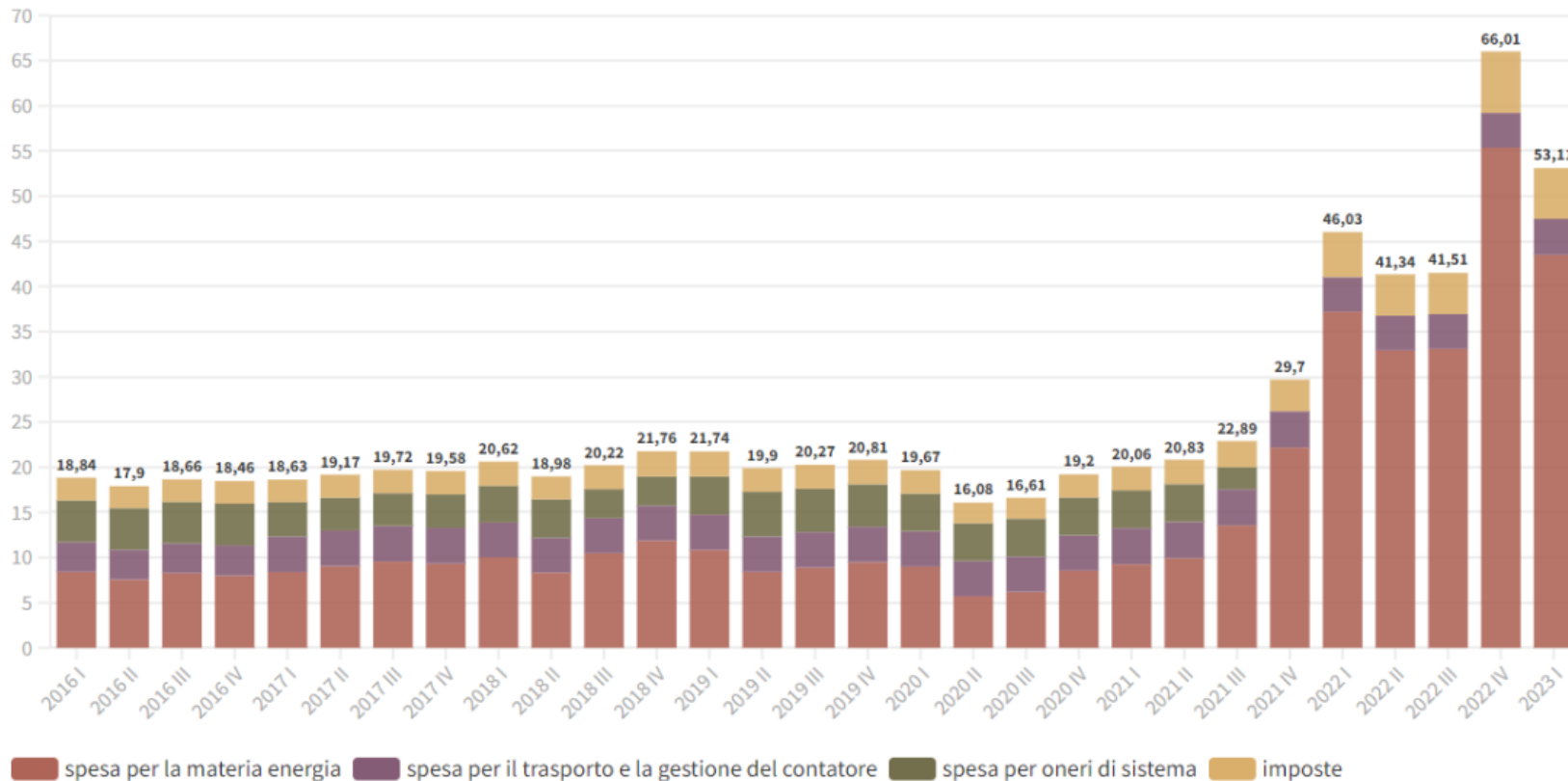*% of listings in Class A on Immobiliare.it, Nov 2023*

N. Regions	% in Class >A
Three	> 10%
Eight	5% - 10%
Six	2.5% - 5%
Three	< 2.5%

Legend: ■ >15% ■ 10% - 15% ■ 5% - 10% ■ 2.5% - 5% ■ <2.5%

Highlights

The **Northeast** proves to be the macro area with the highest percentage of buildings with Energy Class A.

Central Italy and the **Northwest** have an average percentage of Energy Class A buildings **below 10 percent**.

Southern Italy and the **Islands** have the **worst results** in terms of energy efficiency.

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Average energy expenditure of Italian households has been rising

Energy Supply Prices

Condizioni economiche di fornitura per una famiglia con 3kW di potenza impegnata e 2.700 kWh di consumo annuo in c€/kWh (ARERA)

- Lowest available cost of electricity **increased more than eightfold between** 2021 and 2023

- Rising energy costs impact **lower income borrowers** the most

- In this context, buying a home in better energy classes or considering a renovation is an **opportunity to reduce consumption**

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Green real estate: trends and prices

Change in prices in relation to energy class
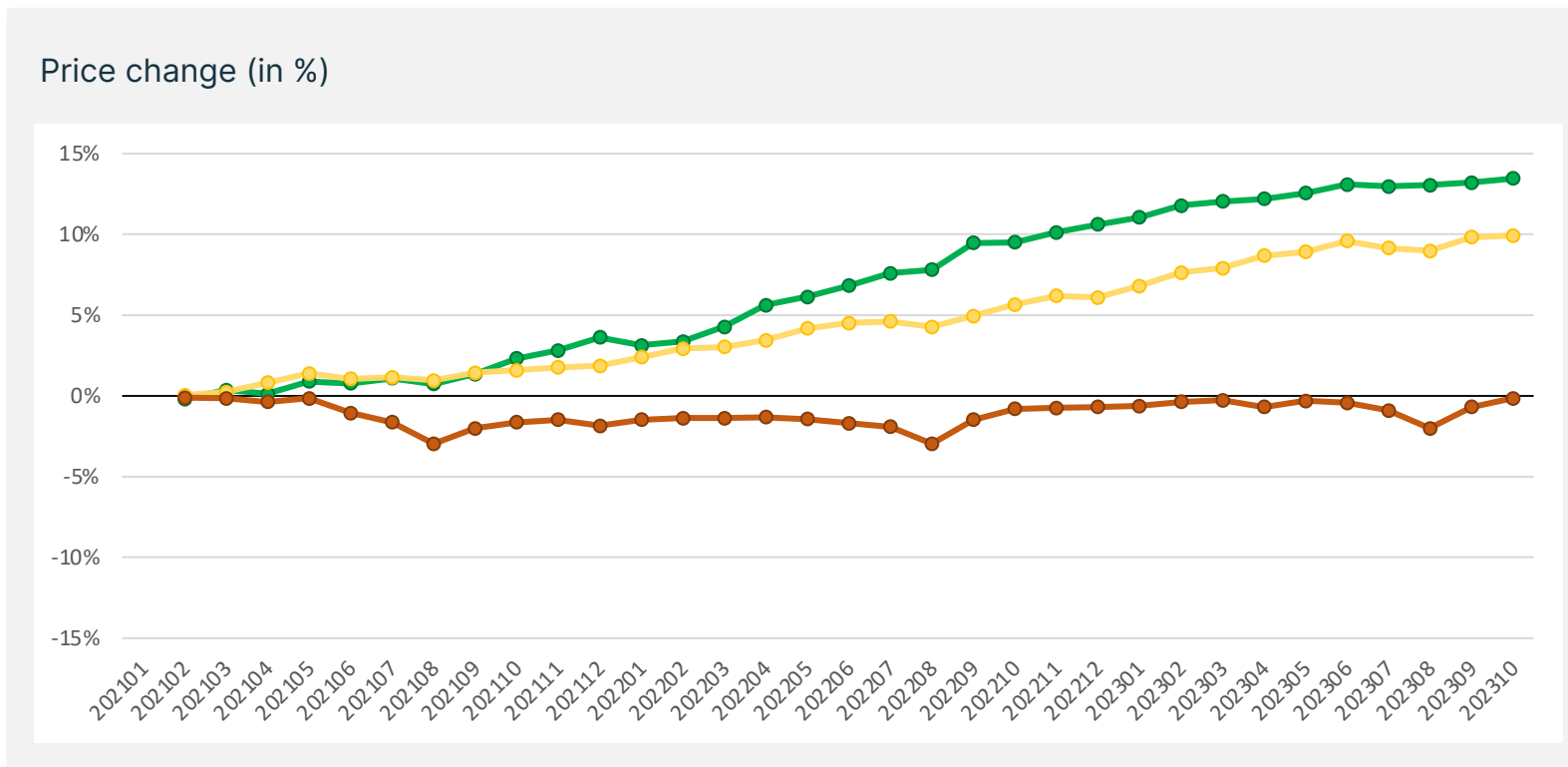*Residential Real Estate, €/mq, 01/2021 – 10/2023*

🔍 ***Highlights***

Price change (in %)

Legenda

— APE = classi A1, A2, A3, A4   — APE = classi B, C, D   — APE = classi E, F, G

+13% | **Price per square meter of properties in high energy classes (A1, A2, A3, A4)**

+10% | **Price per square meter of properties in medium energy classes (B, C, D)**

0% | **Price per square meter of properties in low energy classes (E, F, G)**

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Green real estate: forecast to 2030

Prediction of price change in relation to energy class
Residential Real Estate, €/mq, 2016 – 2030
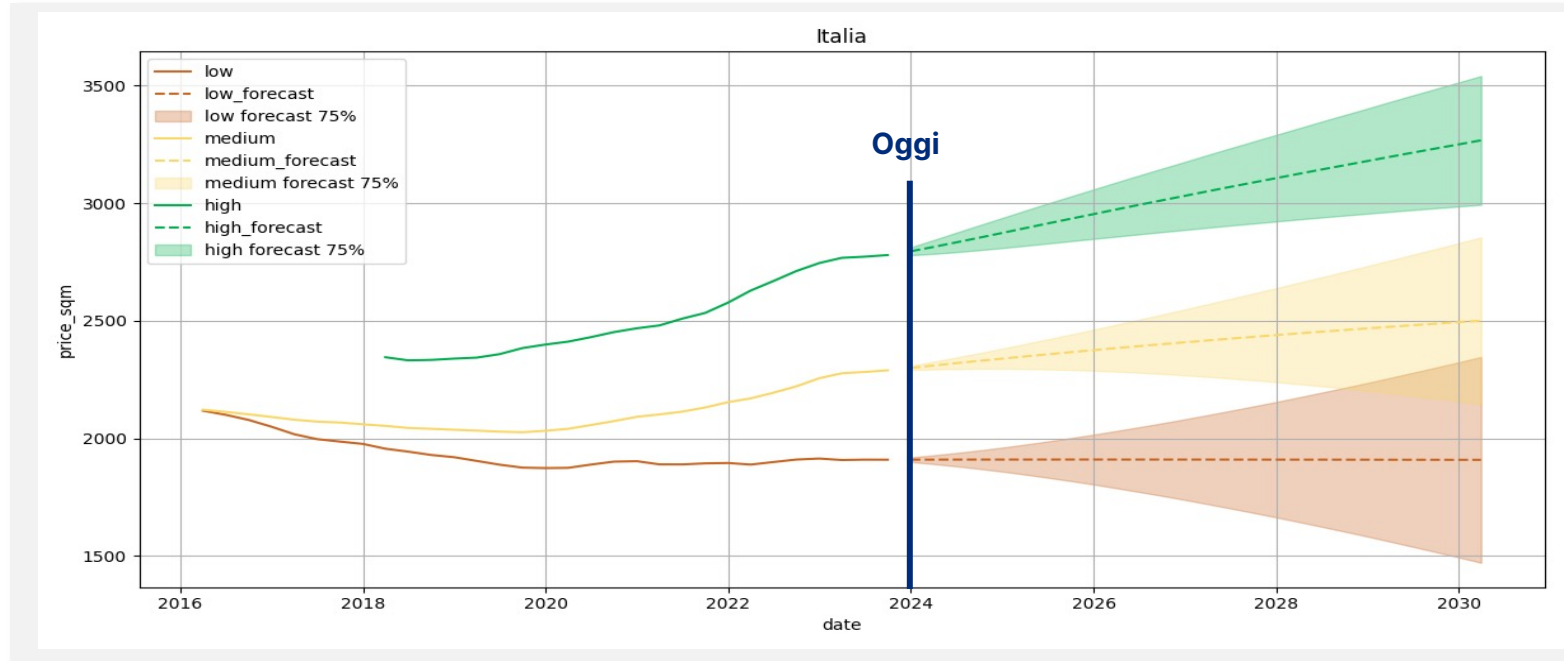
Highlights

+10%

Price per square meter of properties in
**high energy classes
(A1, A2, A3, A4)**

-5%

Price per square meter of properties in
**medium energy classes
(B, C, D)**

-20%

Price per square meter of properties in
**low energy classes
(E, F, G)**

Novembre 2023

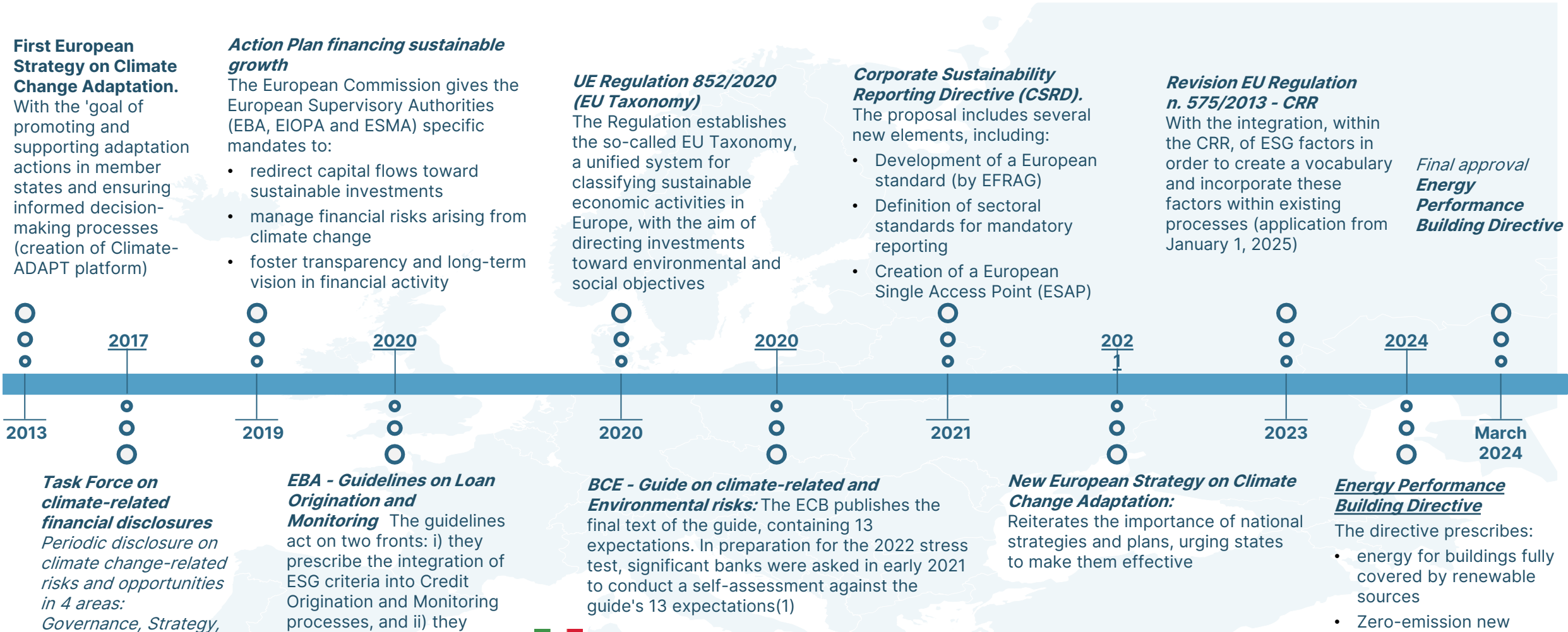*"THE IMPACT OF ENERGY CLASS ON HOUSE PRICES."*

Link to Working paper

The price of **the most energy efficient houses** (classes A1, A2, A3, A4) is **25% higher than the houses with the worst energy performance** (class G)The price differential is highly variable between provinces due to different:
- Climatic conditions
- Regional regulatory frameworks for energy efficiency

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Forecasts to 2030 and their ranges were derived through the use of an ensemble of two statistical models, namely ARIMA and Exponential Smoothing

Regulatory developments in the ESG arena

pwc

First European Strategy on Climate Change Adaptation.
With the 'goal of promoting and supporting adaptation actions in member states and ensuring informed decision-making processes (creation of Climate-ADAPT platform)

Action Plan financing sustainable growth
The European Commission gives the European Supervisory Authorities (EBA, EIOPA and ESMA) specific mandates to:
- redirect capital flows toward sustainable investments
- manage financial risks arising from climate change
- foster transparency and long-term vision in financial activity

UE Regulation 852/2020 (EU Taxonomy)
The Regulation establishes the so-called EU Taxonomy, a unified system for classifying sustainable economic activities in Europe, with the aim of directing investments toward environmental and social objectives

Corporate Sustainability Reporting Directive (CSRD).
The proposal includes several new elements, including:
- Development of a European standard (by EFRAG)
- Definition of sectoral standards for mandatory reporting
- Creation of a European Single Access Point (ESAP)

Revision EU Regulation n. 575/2013 - CRR
With the integration, within the CRR, of ESG factors in order to create a vocabulary and incorporate these factors within existing processes (application from January 1, 2025)

Final approval **Energy Performance Building Directive**

Timeline

2017 — **2020** — **2020** — **202 1** — **2024**

2013 — **2019** — **2020** — **2021** — **2023** — **March 2024**

Task Force on climate-related financial disclosures
Periodic disclosure on climate change-related risks and opportunities in 4 areas: Governance, Strategy, Risk Management, and Metrics/Targets

EBA - Guidelines on Loan Origination and Monitoring The guidelines act on two fronts: i) they prescribe the integration of ESG criteria into Credit Origination and Monitoring processes, and ii) they provide a definition of Sustainable Lending

BCE - Guide on climate-related and Environmental risks: The ECB publishes the final text of the guide, containing 13 expectations. In preparation for the 2022 stress test, significant banks were asked in early 2021 to conduct a self-assessment against the guide's 13 expectations(1)

New European Strategy on Climate Change Adaptation:
Reiterates the importance of national strategies and plans, urging states to make them effective

Energy Performance Building Directive
The directive prescribes:
- energy for buildings fully covered by renewable sources
- Zero-emission new buildings and zero-emission existing buildings by 2050

Italy's response:
2015: Italy develops **national strategy for adaptation to climate change (SNAC)**
2022: Italy publishes **National Platform on Adaptation to Climate Change** and establishes dedicated working group
2023: Italy publishes **National Plan for Adaptation to Climate Change (PNACC)**

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(1) The 13 expectations cover : (i) safe and prudent management of climate and environmental risks within the current prudential framework; (ii) formulation of corporate strategies and governance and risk management systems; and (iii) transparency in terms of disclosure of climate and environmental aspects.

Challenges for the banking sector to meet requirements

DATA GAP ON THE REAL ESTATE STOCK

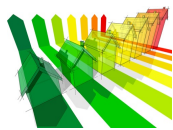Approx. 5,4 Million residential EPCs in SIAPE compared to approx. 32 million housing units

---

LIMITED ACCESS TO PUBLIC INFORMATION OR ABSENCE OF INFORMATION

- 2 regions that don't even provide aggregate data (Campania and Sardinia)
- Only 5 regional energy cadastres digitally accessible

USE OF COMPARISON BENCHMARK FOR EU TAXONOMY

National benchmark data (SIAPE) reports only aggregated data through the public interface

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DIVERSE METHODOLOGIES AT THE ITALIAN AND EUROPEAN LEVELS

Absence of EU EPC template at the European level with common criteria(1)

Example of harmonization of energy classes and consumption at the European level

Source: European Data Warehouse, ING

Industry solutions - Best PropTech Practices
Epc Data Remediation

STOCK

1

BACK-FILLING ENERGY PERFORMANCE AND PHYSICAL RISK DATA
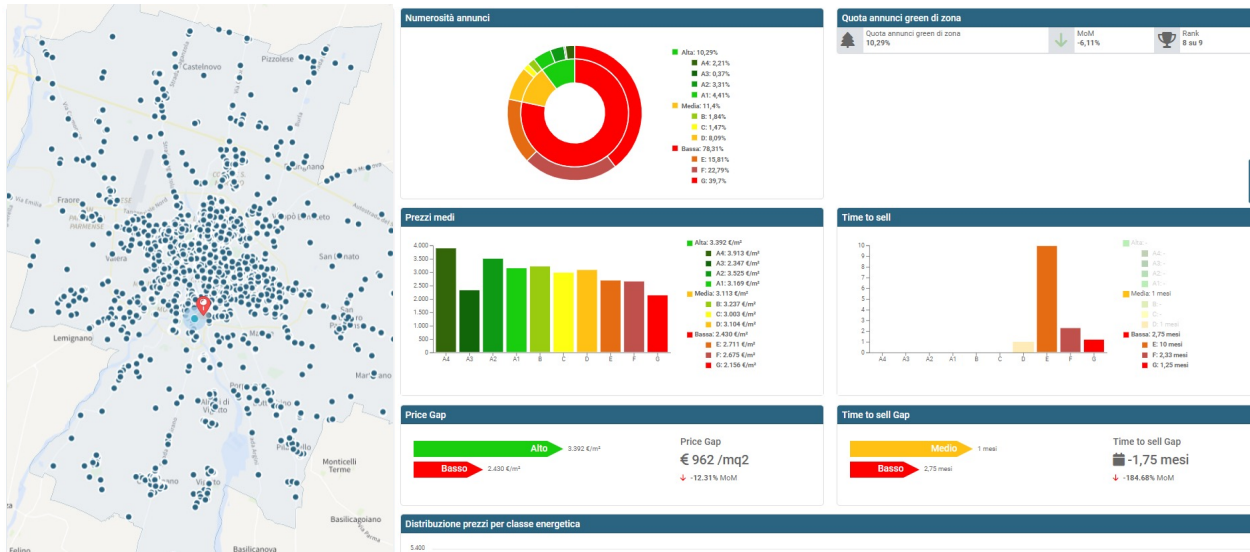
- **Recovery of Class, Consumption and C02 Emissions and Exposure to Physical Hazards**

- **Data retrieval techniques on public sources**

- **Machine learning models for statistical estimation of missing data**

NEW MORTGAGES

2 CREDIT POLICY UPDATE WITH EPC DATA COLLECTION AT ORIGINATION

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Industry solutions - Best PropTech Practices
Epc Data Remediation

SIAPE

+ 5 milioni

SIAPE: #5.435.482 EPCs collected as of 07/03/2024

2 regions still lack aggregate information on the energy performance of buildings (Sardinia and Campania)

Institutional coverage

Industrial coverage

- **Banks are required to recover energy performance KPIs on all collateral**

- **Low availability of EPAs from public sources and difficulty in accessing them**

- **Data quality issues**

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Public sources & listings +20 mln EPC data points

All regions covered and all data geolocalized

Best practices: EPC variance at the condominium level
Statistical Analysis

1,9mln EPC single units

426k residential buildings
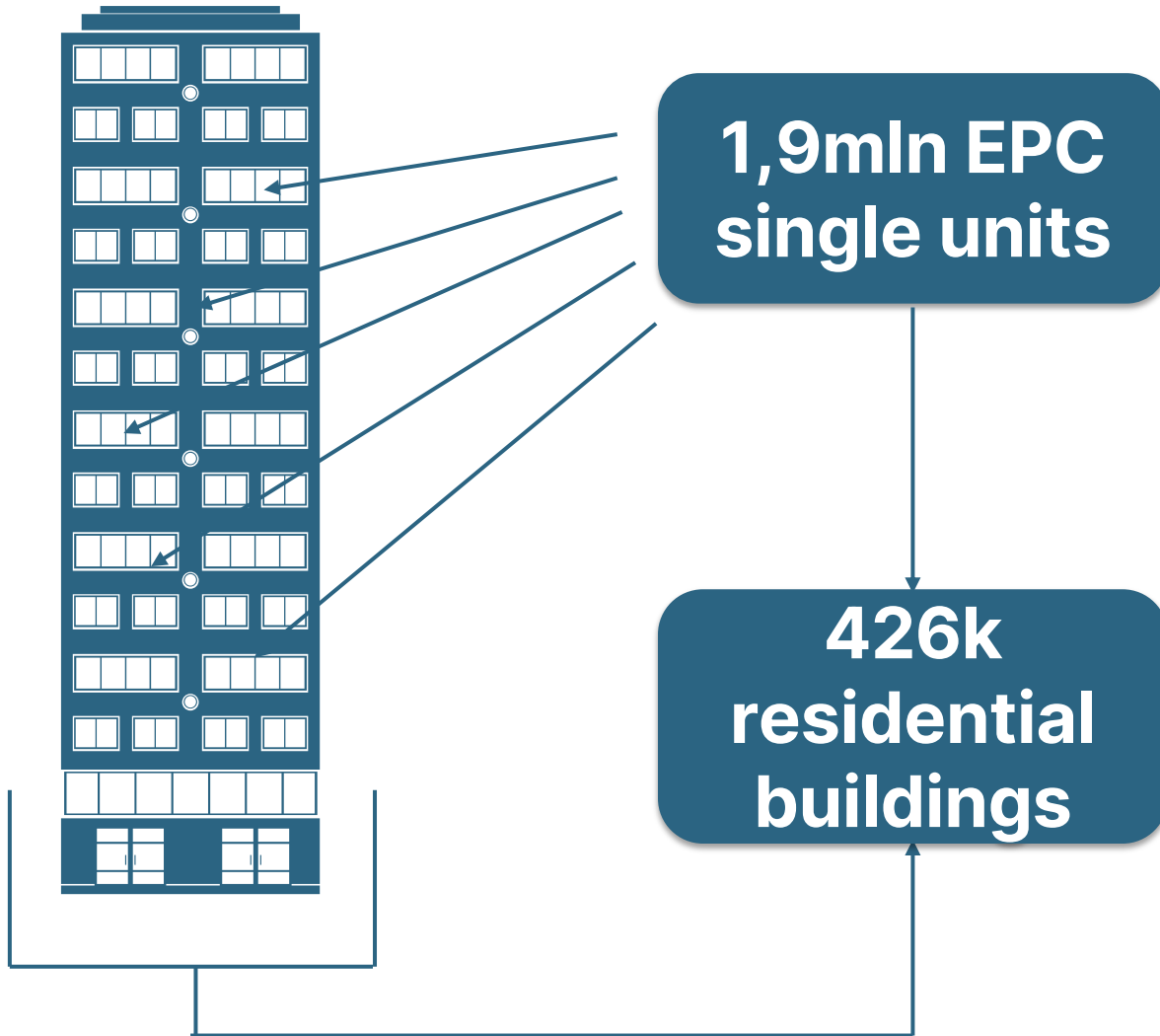
TAKEAWAYS

- +60% of the analyzed buildings show a maximum variance of EPCs of **1 energy class**

- +80% of the analyzed buildings show a maximum variance of EPCs of **2 energy class**

- Therefore, **EPC recovery can also occur at the condominium level** without particular variance

- Machine learning models with large training sets can give reliable statistical estimation where individual EPCs are not present or have yet to be produced

Top 15% - Comparing EU Taxonomy alignment approaches accross industry

European Commission

"For buildings built before 31 December 2020, the building has at least an Energy Performance Certificate (EPC) class A. As an alternative, the building is within the top 15% of the national or regional building stock expressed as operational Primary Energy Demand (PED) and demonstrated by adequate evidence, which at least compares the performance of the relevant asset to the performance of the national or regional stock built before 31 December 2020 and at least distinguishes between residential and non-residential buildings"

REAL CASE

120 K assets analyzed

Applying different methodologies results in an overall difference of only 5% on total assets in Top 15% but only 64% of properties enter the Top 15% in both methodologies. The threshold for Top 15% based on PED should be set at the lowest local level possible (province)

	Class A in TOP 15	Methodology
immobiliare.it Insights → **19,1K (16%) in TOP 15%**	⬆ Higher concentration of Class A in Top 15 (45%)	Granular methodology based on consumption kWh mq x year at the provincial level
Other approach → **25K (21%) in TOP 15%**	⬇ Lower concentration of Class A in Top 15 (40%)	Broad methodology based on consumption at a large climatic zone level (83% of all property in just 2 climatic zones)

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3 **PROACTIVE IDENTIFICATION OF COLLATERALS TO RENOVATE**

Create a ranking of energy renovation feasibility, local average construction cost, and potential future value loss to prioritize renovation, with the following benefits

Benefits	Benefits	Benefits
Increased Revenues with direct financing opportunities for renovation	Improved credit risk mitigation through increased value of collateral	Increase GAR (Green Asset Ratio) due to increase in green restructured collateral in portfolio
Direct channel with the customer who has green financing needs with return on future asset value	Ranking by property value at risk, feasibility of energy improvement, average local construction costs	Reclassification of collateral book according to new financing lines

Industry solutions - Best PropTech Practices

3 | **PROACTIVE IDENTIFICATION OF COLLATERALS TO RENOVATE**

GREEN RENOVATION RATING

High — DO LAST | DO FIRST

Low — AVOID | DO SECOND

Low ——————— High

POST RENOVATION CHANGE IN VALUE
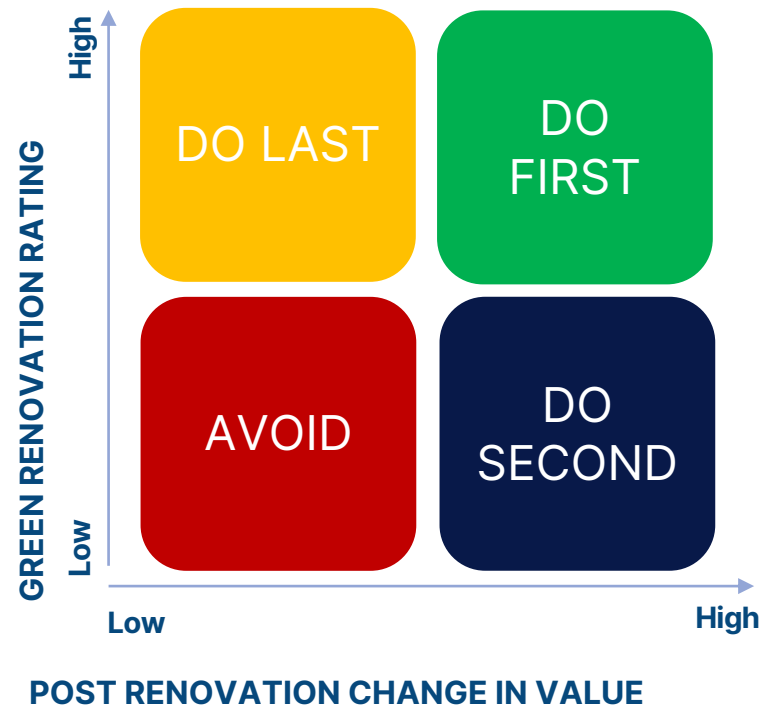
- The analysis gives the loan manager a clustered view of the collateral book

- Loan management can take targeted action on the customer to propose additional green finance

- Collateral improves in value and mitigates LTV and LGD negative fluctuation

Tools

Renvoation simulators to educate/originate on new and existing customers
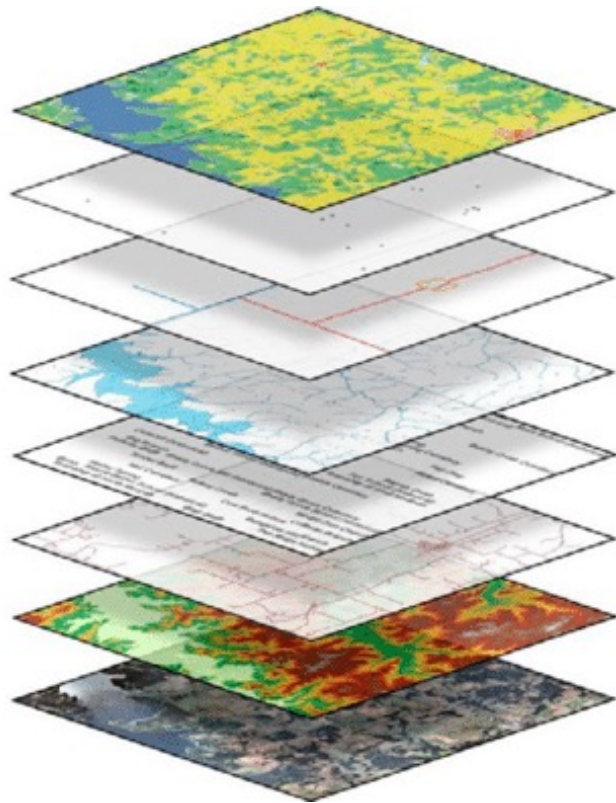
Example of energy efficiency renovation simulator

✓ Renovation simulation and energy class target
✓ Renovation costs
✓ kWh psqm per year savings
✓ Energy bill savings
✓ Fiscal incentives

Industry solutions - Best PropTech Practices

4 **PROACTIVE IDENTIFICATION OF LAND FOR SOLAR FARMS**

→ **Sun exposure**

→ **Zoning limits**

→ **Distance from electrical grid**

→ **Geo-physical risk**

→ **Ownership**

→ **Cadastre**

→ **Use of land**

→ **Agricultural land**

- Using GIS and multi-layer analysis, unproductive land can be ranked based on solar farm feasibility

- The land can generate a cash flow and reduce the company's energy expenses

- The land is revalued by virtue of the concession/lease agreement

Thanks

Contacts

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