Quantifying the multiple impacts of energy efficiency policies

Applying the MICATool to two Italian case studies

SEED MICAT
Support Energy Efficiency Deployment with the Multiple Impacts CAlculation Tool

INTRODUCTION

Two **national** policy measures dedicated to Energy Efficiency were selected.

In both cases, an ex-ante assessment was carried out.

TRANSPORT SECTOR: FS plan

- Development of infrastructures to increase the modal shift from private to public transport.
- €100 billion in investments over five years.
- The case study focuses on three main goals: 1) +100 million of additional railway passengers per year by 2029; 2) +95 million of additional bus passengers per year by 2029; 3) +5% of rail freight transport by 2029 in Millions of tons transported per year.
- Total final energy saving (est.) = 11 Mtoe (2025-2050)

INDUSTRY SECTOR: Transition 5.0

- Incentive programme supporting clean energy investments by private companies (all sector, but mainly industry).
- Government tax credits (€6.3 billion of public budget) subject to specific primary EE targets.
- Eligible projects: i) investments made in 2024 and 2025; ii) linked to material goods, immaterial goods, or renewable energy plants. However, the case study focuses exclusively on final EE in industry.
- Total final energy saving (est.) = 1.7 Mtoe (2024-2039)

RESULTS

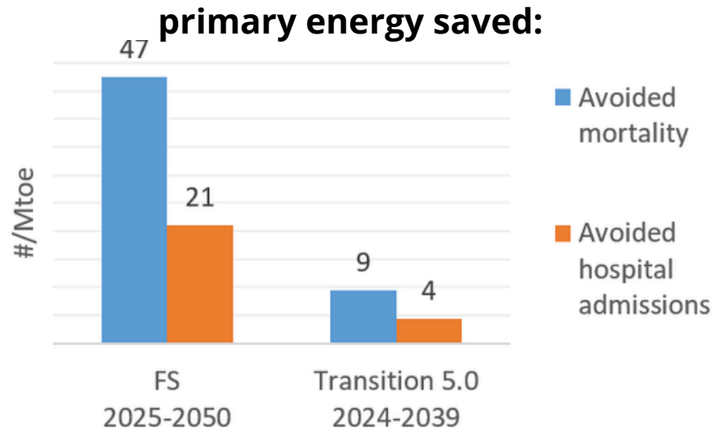
Quantification of the main indicators (absolute values):

	FS plan 2025-2050	Transition 5.0 2024-2039
Environmental indicators		
Primary energy savings (Mtoe)	11.0	1.9
Reduction in air pollution (t PM2.5)	1,055	9
Reduction in CO2 emissions (kt)	32,933	3,821
Social indicators		
Avoided mortality (#)	520	18
Avoided hospital admissions (#)	231	8
Avoided lost working days (days)	99,738	3,703
Economic indicators		
Impact on GDP (Bill. €)	61.8	4.2
Additional full-time employment years	1,089,813	73,988

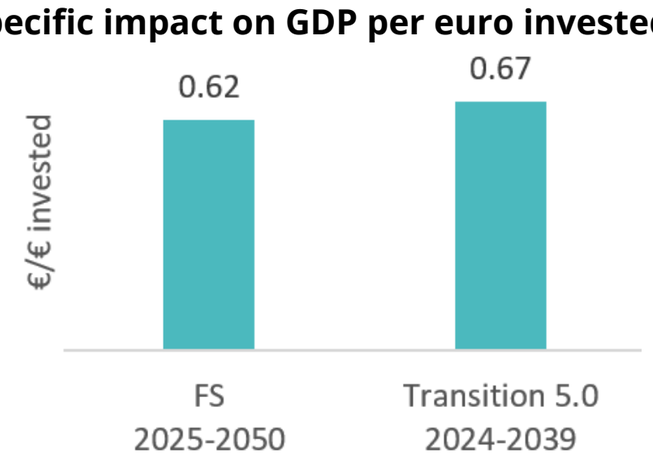
The two measures have very different lifespan and investment size, therefore they must be compared in terms of specific impacts:

- the FS plan has higher specific environmental & social impacts due to savings of oil products instead of gas and electricity;
- the two measures have similar specific economic impacts.

Specific avoided health impacts per unit of primary energy saved:



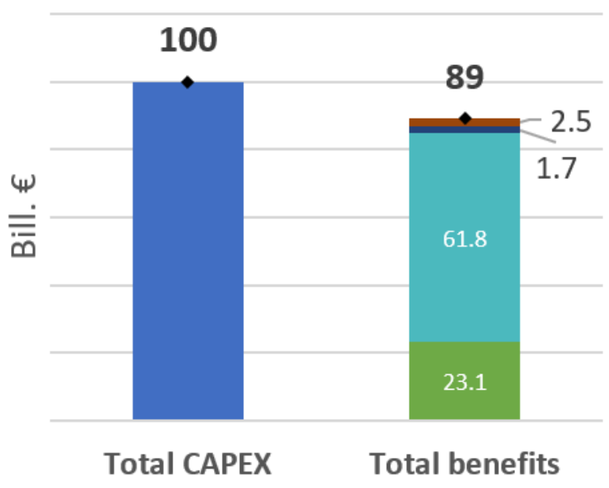
Specific impact on GDP per euro invested:



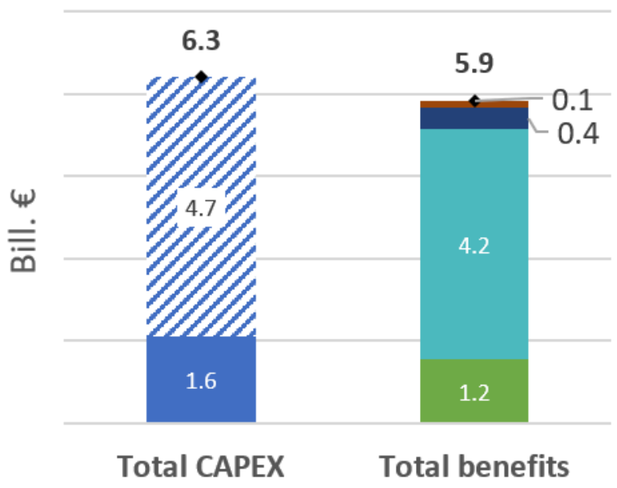
Monetisation (absolute values over the entire useful life of technologies):

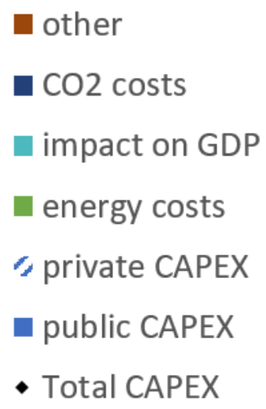
- impact on GDP is by far the largest monetised benefit (about 70% in both cases);
- reduction in energy costs represents the second-largest benefit, accounting for 26% and 20% of total social benefits for the FS plan and Transition 5.0, respectively.

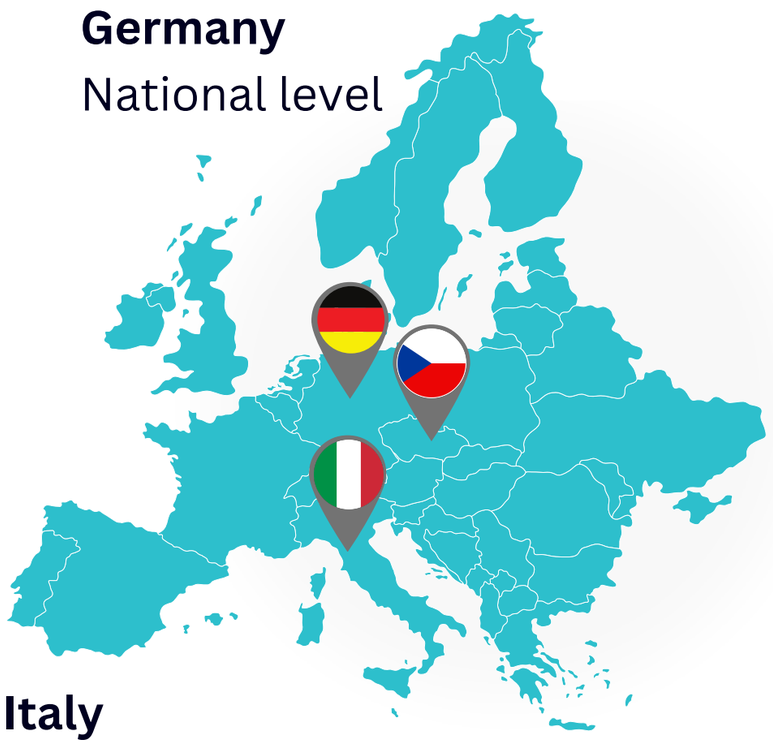
FS plan (2025-2050):



Transition 5.0 (2024-2039):







LESSONS LEARNED/ ACHIEVEMENTS

- Once the inputs have been estimated, results can be obtained in just a few seconds.
- The MICATool is flexible and allows the user to adjust various calculation parameters.
- The methodological factsheets are very clear and exhaustive.
- The MICATool allows to consider not only energy savings, but also the social and economic benefits of EE measures.

→ The MICATool is useful for comparing the broader effects of different energy policy measures and for implementing the Energy Efficiency First principle.

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