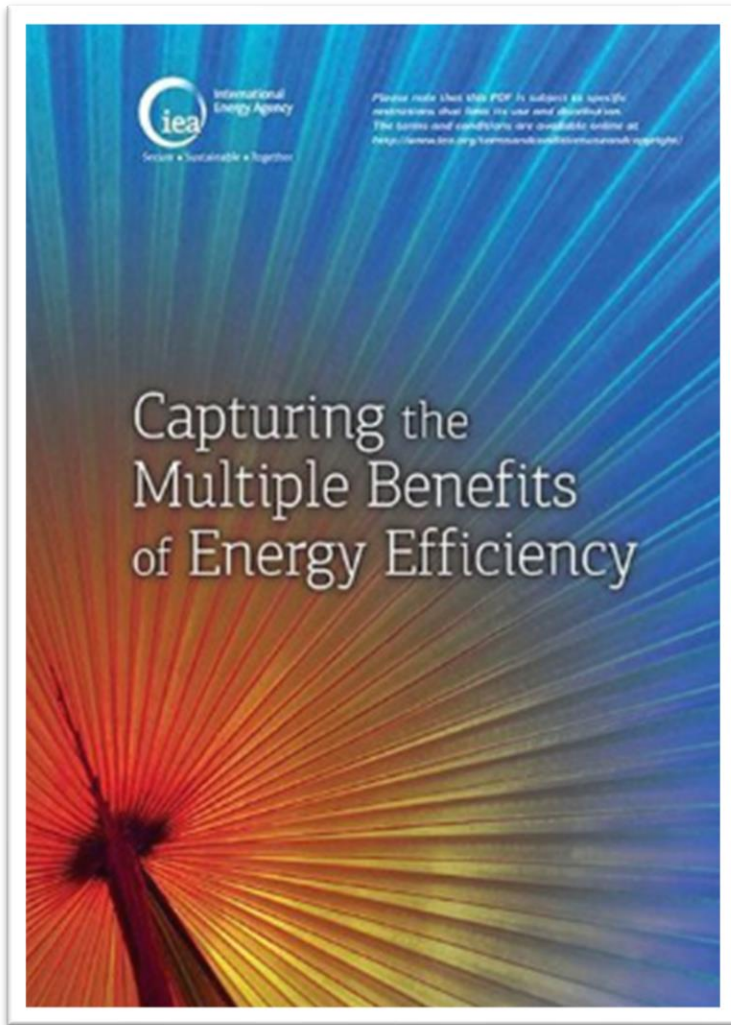




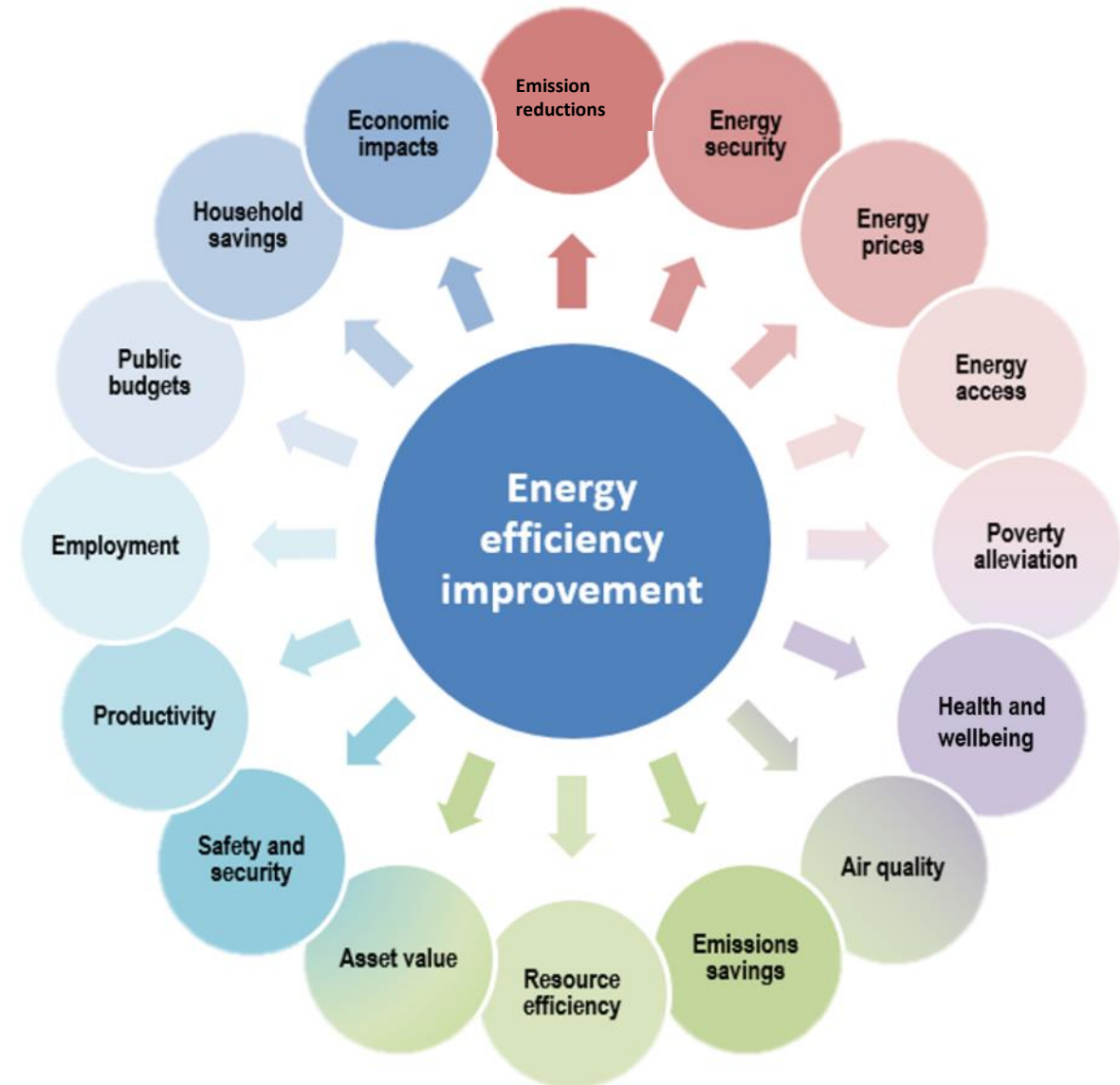
# Multiple Benefits of Energy Efficiency

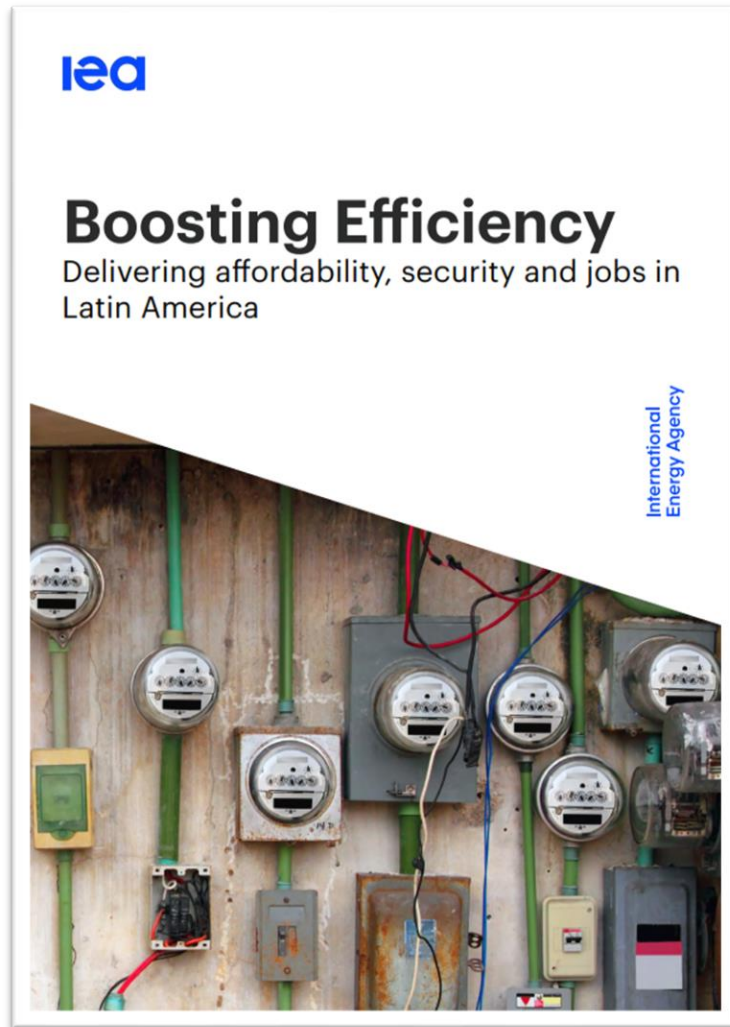
Dr Clara Camarasa. Paris, 6<sup>th</sup> of June 2023

# Multiple Benefits of Energy Efficiency



[Link](#) to the report





[Link](#) to the report

Report provides evidence from **Argentina, Brazil, Chile, Colombia, Mexico, Panama**

- **Affordability and access** to energy services for low-income households
- **Savings to public budgets** – municipal and national
- **Energy security** – crisis situations and longer-term security, decarbonisation
- **Jobs** of today, **careers** of the future

Report consulted with officials and programme leads from across the region and with the Inter-American Development Bank.

# Social and economic impacts present across our work



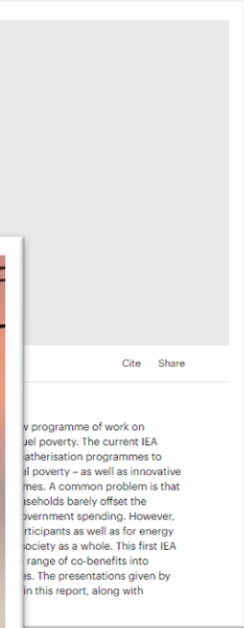
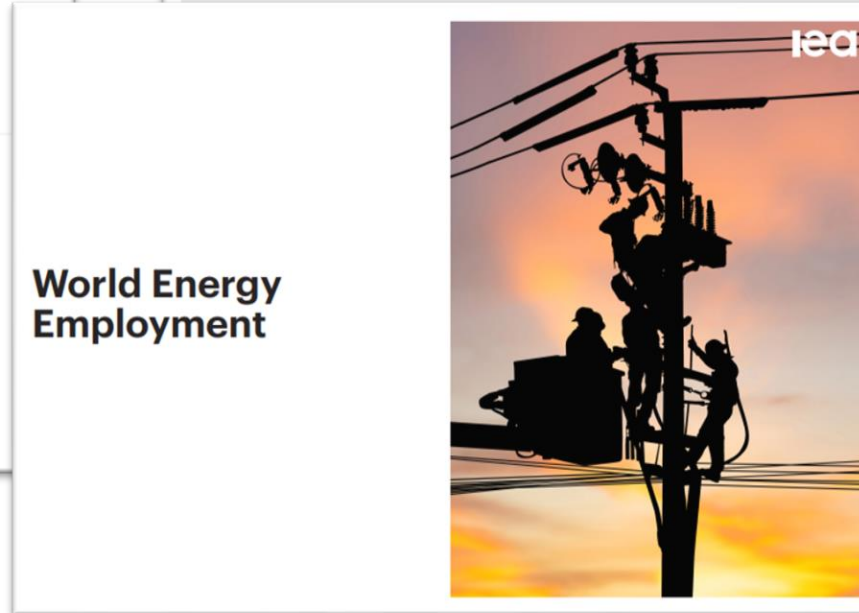
## Accelerating energy efficiency: What governments can do now to deliver energy savings



Brian Motherway, Head of Energy Efficiency Division  
Kristina Klimovych, Programme Officer - Energy Efficiency Hub  
Vida Rozita, Energy Policy Analyst  
Edith Bauer, Energy Policy Analyst - Energy Efficiency  
Commentary — 17 March 2022



## Evaluating the co-benefits of low-income energy-efficiency programmes



**led**

- <https://www.iea.org/reports/capturing-the-multiple-benefits-of-energy-efficiency>

- <https://www.iea.org/reports/multiple-benefits-of-energy-efficiency>

- <https://www.iea.org/reports/boosting-efficiency-in-latin-america>

- <https://www.iea.org/commentaries/accelerating-energy-efficiency-what-governments-can-do-now-to-deliver-energy-savings>

- <https://www.iea.org/programmes/people-centred-clean-energy-transitions>

- <https://www.iea.org/reports/evaluating-the-co-benefits-of-low-income-energy-efficiency-programmes>



Multiple Impacts Calculation Tool

## Webinar

Energy efficiency needs of EU actors:  
How can the MICATool address these?  
*6 July 2023*



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101000132.

# RECAST EED - new art. 3 – EE1st principle

1. In conformity with the energy efficiency first principle, Member States shall ensure that energy efficiency solutions are taken into account in the planning, policy and major investment decisions related to the following sectors: (a) energy systems, and (b) non-energy sectors, where those sectors have an impact on energy consumption and energy efficiency.
2. Member States shall ensure that the application of the energy efficiency first principle is verified by the relevant entities where policy, planning and investment decisions are subject to approval and monitoring requirements.
3. In applying the energy efficiency first principle, Member States shall:
  - (a) promote and, where cost-benefit assessments are required, ensure the application of cost-benefit methodologies that allow proper assessment of wider benefits of energy efficiency solutions from the societal perspective;
  - (b) identify an entity responsible for monitoring the application of the energy efficiency first principle and the impacts of planning, policy and investment decisions on energy consumption and energy efficiency;
  - (c) report to the Commission, as part of the integrated national energy and climate progress reports in accordance with Article 17 of Regulation (EU) 2018/1999 on how the principle was taken into account in the national and regional planning, policy and major investment decisions related to the national and regional energy systems.



# Potential of the MICATool

## At IEA conference, 45 governments endorse goal of doubling global energy efficiency progress by 2030



Forty-five governments from around the world have endorsed the goal of doubling the average global rate of energy efficiency improvements by the end of the decade to foster sustainable economic growth and help put the world on a secure and affordable path towards net zero emissions. In a ministerial statement released today following the IEA's 8th Global Conference on Energy Efficiency in Versailles, France, governments from across Africa, the Americas, Asia and Europe highlighted the critical role that energy efficiency can play in improving living standards and energy security – and in accelerating the clean energy transition toward reaching net zero emissions by 2050. This means ramping up annual energy efficiency progress from 2.2% today to over 4% annually by 2030 in a move that would **create jobs, expand energy access, reduce energy bills, decrease air pollution, and diminish countries' reliance on fossil fuel imports** – among other social and economic benefits.

- Online tool to quantify and monetize multiple impacts of EE and to carry out CBA
- Main focus is on practical usability and ease of handling
- The tool is not developed as an alternative to more comprehensive model-based scenario calculations and impact assessments of policy measures, but to complement them.

# Application of the MICATool at national level

- new Article 3 of the Energy Efficiency Directive (EED)
- NECPs update (foresee for 2023 and 2024)
- tool to assess measures' aptitude for the EU taxonomy.
- asset for research purposes

## INTEGRATED NATIONAL ENERGY AND CLIMATE PLAN – December 2019

**5.2 Macroeconomic impact and, to the extent feasible, the health, environmental, employment and education, skills and social impacts, including fair transition aspects (in terms of costs and benefits as well as cost-effectiveness) of the planned policies and measures described in section 3 at least until the last year of the period covered by the plan, including comparison with projections with current policies and measures**

The INECP scenario can be analysed from the point of view of its macroeconomic impact compared with the scenario with the current policies (or baseline).

The analysis was conducted using three different approaches:

- a standard input/output model based on the sectoral input-output tables published by the National Institute for Statistics
- the social accounting matrices

# Catch Stakeholder Needs

## Maximisation of the tool's usefulness

- large target group/wide range of use-cases: **input and validation** data from case studies on the three governmental levels
- guarantee to **fit the requirements of stakeholders** and to maximise its use for scientists, stakeholders and policy-makers.
- **making stakeholders familiar** with the tool/ approach & get direct feedback

3 Workshops on **three governance levels: local, national, and EU level**



**1. Analyse underlying assumptions and methodology** | Introduction of the project and indicator preferences

**2. Embedding of the tool** | Discussion of an advanced mock-up to enable adjustments



**3. Implementation & Training** | Presentation and introduction into the use of the MICATool

# Stakeholders workshops – national

			
<b>National expert team</b>	 		
<b>Participants</b>	<p><b>Ministries:</b> Federal Ministry for Economic Affairs and Energy, Federal Ministry of the Environment, Federal Energy Efficiency Center;</p> <p><b>National agencies:</b> Federal Environment Agency, German Energy Agency;</p> <p><b>Other participants:</b> IIT Berlin, KfW, BiBB, Agora Energiewende, DENEFF.</p>	<p><b>Ministries:</b> Ministry of the Ecological Transition – Energy Department; Ministry of the Ecological Transition – Environment Department;</p> <p><b>National agencies:</b> ENEA, ISPRA;</p> <p><b>Other participants:</b> GSE, Confindustria.</p>	<p><b>Ministries:</b> Ministry of Economic Development and Technology, Ministry of Climate and Environment;</p> <p><b>National agencies:</b> National Centre for Emissions Management, National Energy Conservation Agency;</p> <p><b>Other participants:</b> Pro Akademia, University of Science and Technology.</p>
<b>Step 1 ws</b>	31st November 2021	2nd December 2021	23rd November 2021
<b>Step 2 ws</b>	6th December 2022	23rd November 2022	7th December 2022
<b>Step 3 ws</b>	11 July 2023	12 July 2023	23 June 2023
<b>Measures proposed for evaluation</b>	Regulatory approaches; subsidy programmes; and information and communication campaigns.	Super eco bonus 110 (building renovation incentive); white certificates scheme.	White certificates; Building renovation strategy (especially concerning heating); decentralized RES production; tax reliefs; transport policies.

# Aggregated energy security

$$E = \left( 1 - \frac{PP}{(GIC - \Delta E) - NE} \right) \times \left[ \sum_c \partial_c \times \left( \frac{Supply_c}{Total\ supply} \right)^2 \right]$$

Port dependence

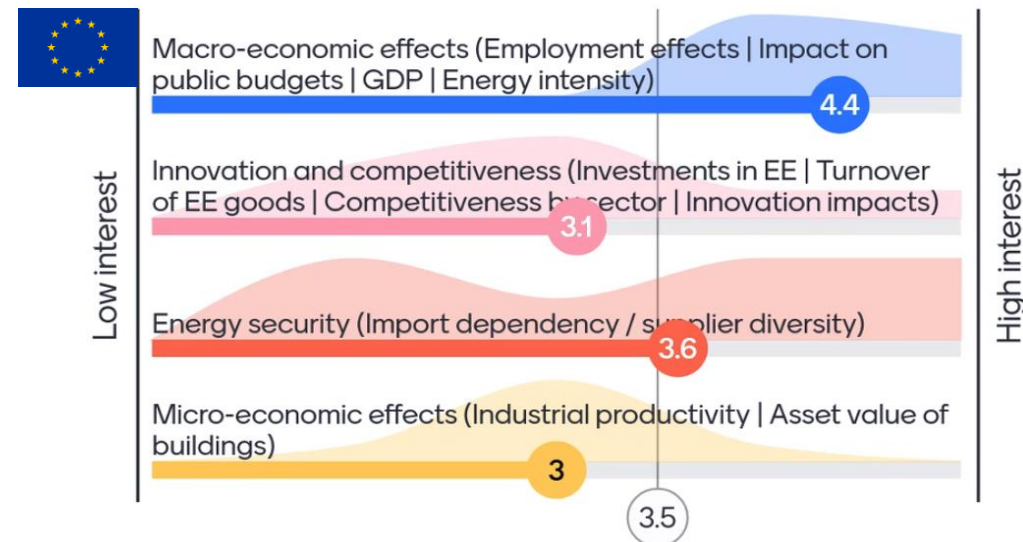
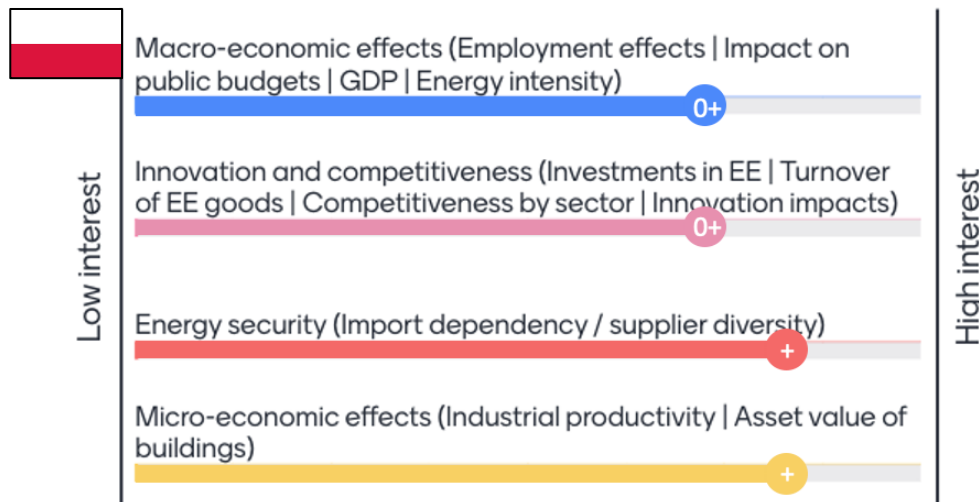
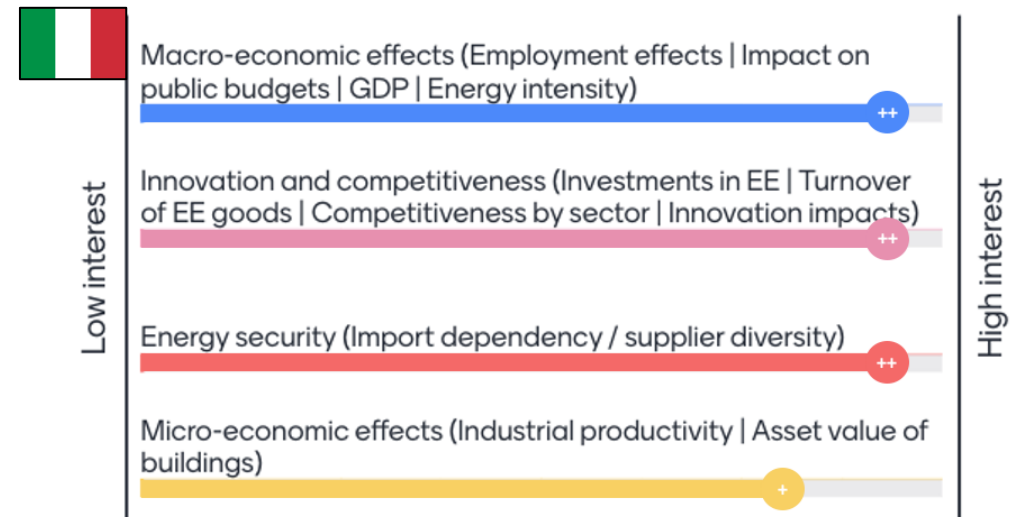
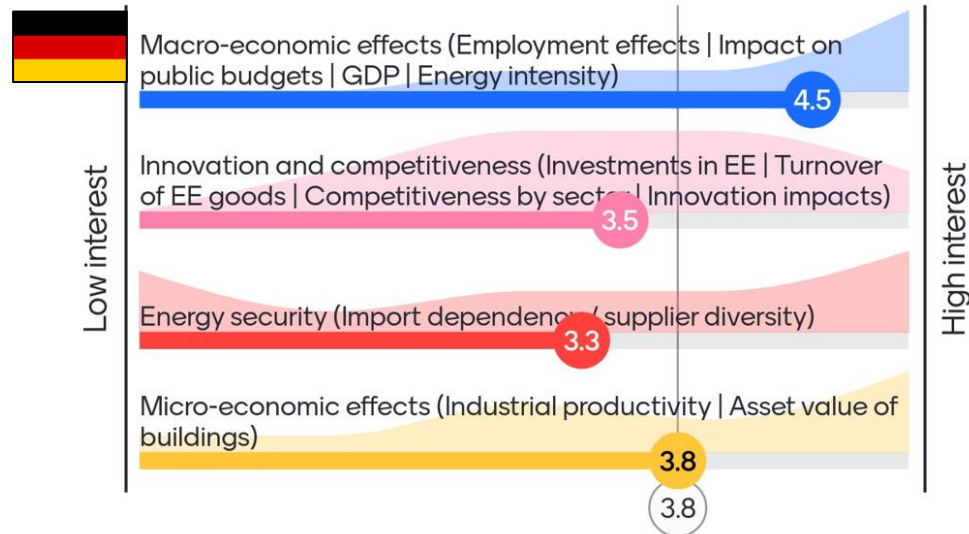


Supplier diversity

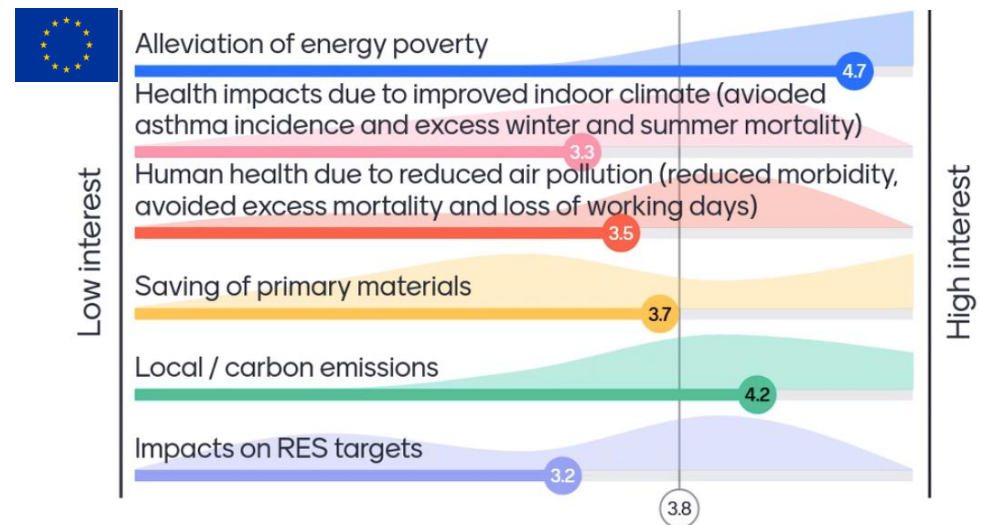
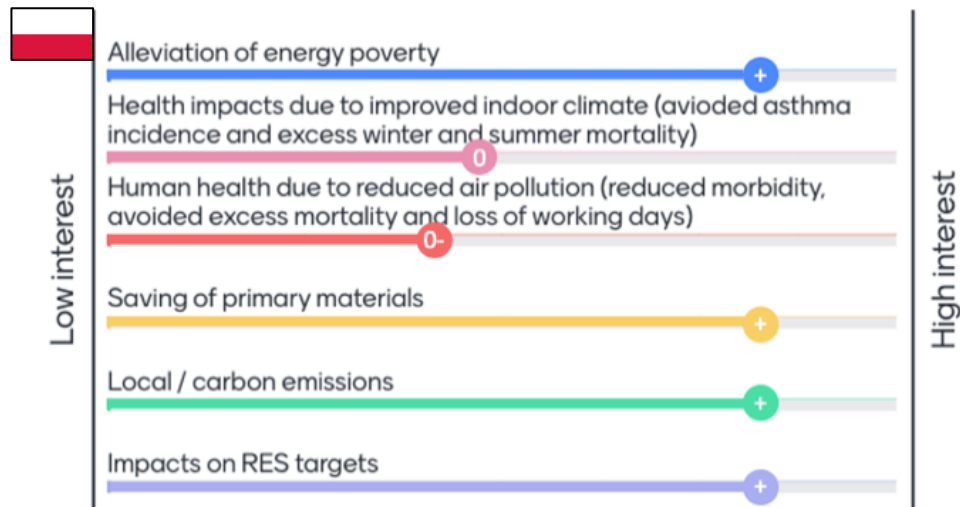
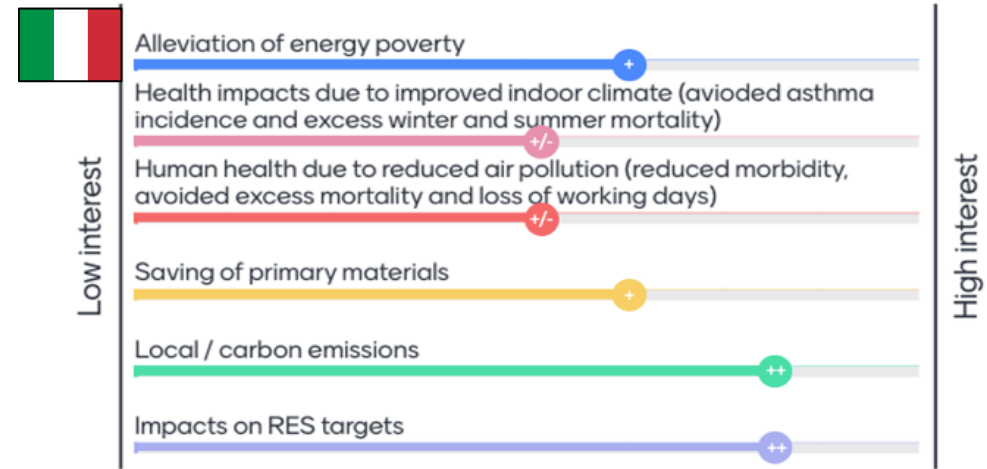
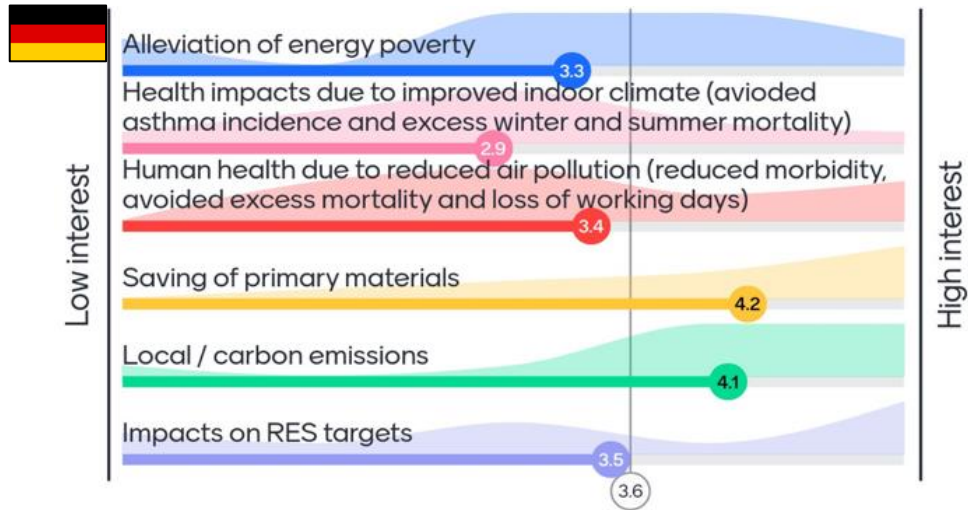
Aggregated energy security



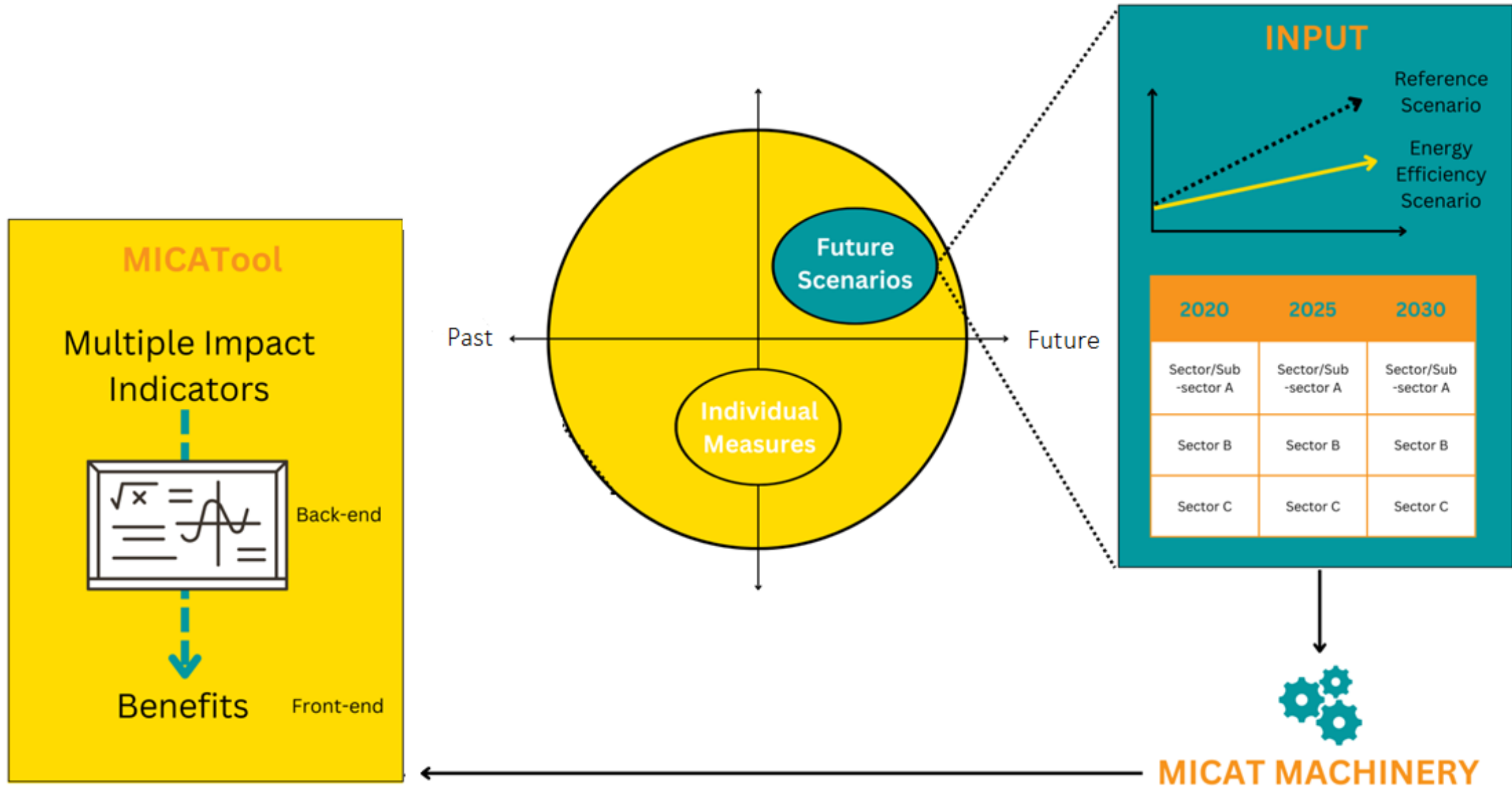
# Indicators preferences at MS level



# Indicators preferences at MS level



# Functioning of the MICATool





# Functioning of the MICATool

Input

Energy savings  
(mandatory)

Further parameters  
(optional)

Output

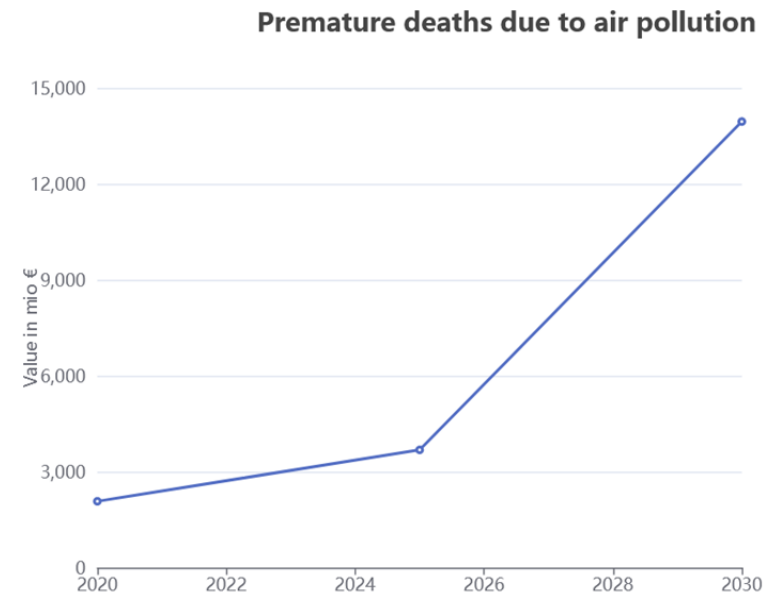
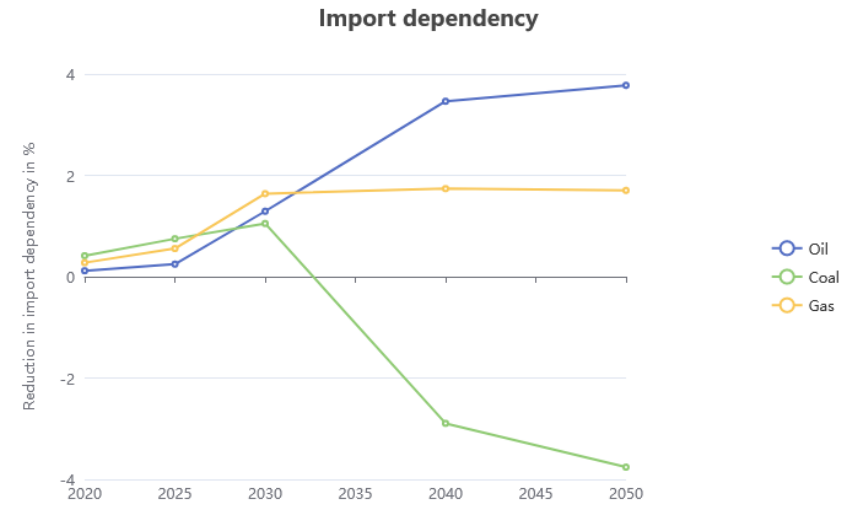
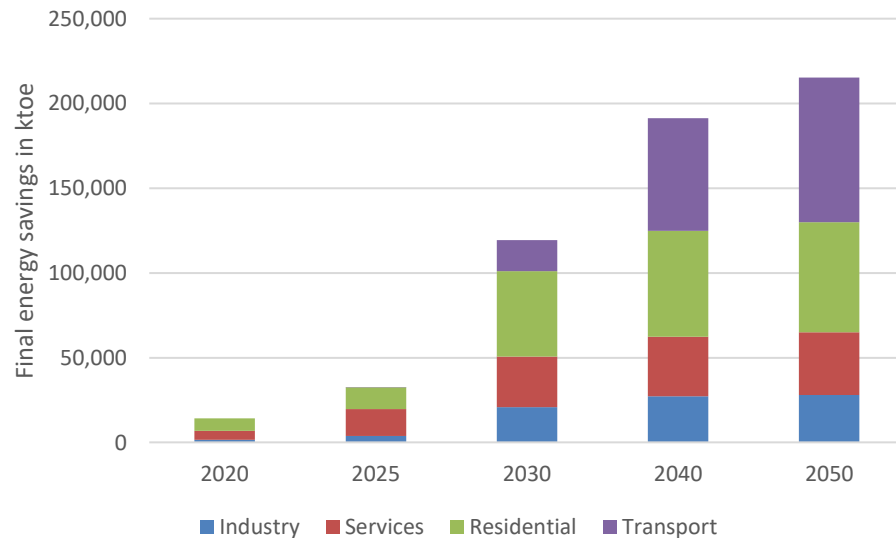
Multiple impacts  
*Quantification*  
*Monetisation*  
*Cost-benefit analysis*



# MICATool – Exemplary results at EU level

Basis for the calculation of multiple impacts:

- Comparison of the EU Reference scenario 2020 and the EU Energy Efficiency Scenario including the impact of the “Fit for 55” policy package (as proposed in July 2021)
- Additional final energy savings generated through the “Fit for 55” package:



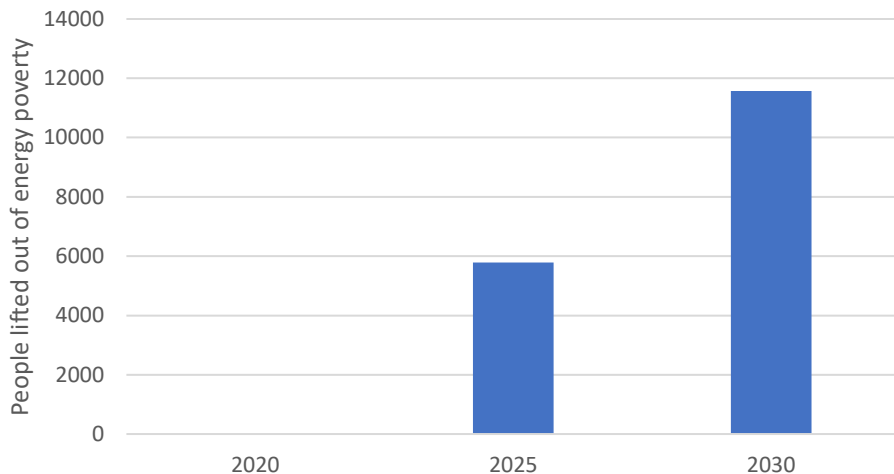
# MICATool – Exemplary results at national level (Poland)

Basis for the calculation of multiple impacts:

- Comparison of a Reference scenario without NECP measures and a NECP scenario including a number of additional energy efficiency policies
- Calculation of additional final energy savings generated through the energy efficiency policies



Energy poverty



Monetised impacts:

<b>Environmental Impacts</b>	¤	
Energy cost savings	¤	
<i>Electricity</i>		2294¤
<i>Oil</i>		1265¤
<i>Coal</i>		62¤
<i>Natural Gas</i>		1298¤
<i>Biomass and Waste</i>		1735¤
<i>District heating</i>		89¤
<i>Hydrogen and synthetic fuels</i>		-109¤
Impact on RES Targets (Statistical transfer of RES)		70¤
Reduction in Greenhouse Gas Emissions	¤	3000 ¤
<b>Social Impacts</b>	¤	
Health due to improved Indoor Climate	¤	
<i>Asthma</i>		13.21¤
<i>Mortality</i>		10.48¤
Health due to reduced Air Pollution		2009¤
Avoided lost working days		37¤
<b>Economic Impacts</b>	¤	
Impact on GDP		11 994¤
Employment Effects		299¤
Investments		24020¤

# What are developments for the local level?

- *The EE1 principle shall also be applied to the local level*
  - Recital 14: In order to have an impact, the energy efficiency first principle needs to be consistently applied by national, regional, **local** and sectoral decision makers in all relevant scenarios and policy, planning and major investment decisions....Demand side flexibility can bring wider economic, environmental and societal benefits to consumers and to society at large, including local communities.
- *The exemplary role of the Public Sector (Art. 5 and 6) is much strengthened at the local level and requires a careful justification of measures*
  - Art. 5/3. Member States shall ensure that regional and **local authorities**, establish specific energy efficiency measures in their long-term planning tools, such as decarbonisation or sustainable energy plans after **consulting relevant stakeholders**, including where appropriate energy agencies, and the public, including in particular vulnerable groups at risk of energy poverty or more susceptible to its effects.
  - Art. 5/4. Member States shall support public bodies, which without prejudice to State Aid rules may include financial and technical support, in the uptake of energy efficiency improvement measures and encourage them to take into account the **wider benefits beyond energy savings**, for example the quality of indoor environment, including at regional and local levels, by providing guidelines, promoting competence building, skills acquisition and training opportunities and encouraging cooperation amongst public bodies.
  - Art. 5/5. Member States shall encourage public bodies to consider life cycle carbon emissions as well as economic and social benefits of their public bodies' investment and policy activities

# Example: Municipality of Calvia, Spain



CALVIÀ, Mallorca,  
Spain



## **BACKGROUND: PATH TOWARDS SUSTAINABILITY**

### **LOCAL AGENDA 21 (Rio Declaration on the Environment and Development 1992)**

The Local Agenda 21 of Calvià and the drafting of **the Action Plan of 1997**, the first sustainable action plan of a tourist municipality at the international level

### **Office Calvià for the Climate (2007)**

That integrate economic and tourist development, respect and protection of the environment and citizen participation processes.

### **Covenant of Mayors for Energy (2008)**

Calvià City Council signed and adhered to the **Pact of the Mayors on November 24, 2011**. This accession led to the drafting of its first Sustainable Energy Action Plan in December 2012 (SEAP 2013 -2020).

### **Commitments of Mayors for Climate and Energy (2015)**

The municipality of Calvià assumes the commitments that the Covenant of Mayors for Climate and Energy (**adhesion February 28, 2019**) and approved Calvia SECAP 2020-2030 on Municipal plenary by majority vote on November 26, 2020

At present time, we are preparing the first MONITORING REPORT

## **COMMITMENTS OF A SUSTAINABLE ENERGY AND CLIMATE ACTION PLAN (SECAP)**

- Reducing CO<sub>2</sub> emissions by 40% by 2030
- Increase energy efficiency by 27%
- Increase the use of energy from renewable sources by 27%
- Develop a Baseline Emission Inventory (BEI)
- Conduct an assessment of risks and vulnerabilities arising from climate change
- Submit a follow-up report at least every two years

## SECAP CALVIA 2020-2030: AREAS OF ACTION

From the experience of more than 10 years in the implementation and monitoring of the SEAP 2013-2020 of Calvià, we conclude that the anterior plan had an **excessive number of actions**, and these, moreover, **were too concrete and specific**.

Due to the great difficulty of implementation and monitoring of Calvià SEAP, during the drafting of the new Action Plan for Sustainable Energy and Climate of Calvià (SECAP) it was intended:

- reduce the total number of proposed actions, extending its scope of action,
- propose actions with more achievable objectives in their compliance and execution for municipal departments.

With these premises, the areas of action that make up our SECAP are:

- **ENERGY EFFICIENCY**
- **RENEWABLE ENERGIES**
- **MOBILITY AND TRANSPORT**
- **TOURISM**
- **WASTE AND WATER MANAGEMENT**



## SELECTED SECAP ACTIONS FOR MICAT TOOL

### REASONS FOR CHOOSING THEM:

- Socio-economical characteristics of Calvià
- Easy to obtain energy efficiency improvement data
- Directly related to the municipality's capacity to act
- Most practical way to carry out the pilot test

### **6. Improvement in the effectiveness and efficiency of lighting in municipal buildings**

Energy consumption of municipal equipment and facilities (kWh/year).

### **9. Replacement of public lighting with Led technology**

Quantity of LED lights installed in relation to the total (%).  
Energy consumption of public lighting (kWh/year).

### **10. Replacement of municipal vehicles powered by fossil fuels for electric vehicles**

Number of municipal fleet vehicles replaced by more efficient ones.  
Energy consumption of public and municipal transport (kWh/year).

### **12. Sustainable Urban Mobility Plan**

Number of actions included in the SUMP implemented.  
Energy consumption of private and commercial transport (Mwh/year).

### **16. Implementation of an energy cogeneration system in the Santa Ponça treatment plant**

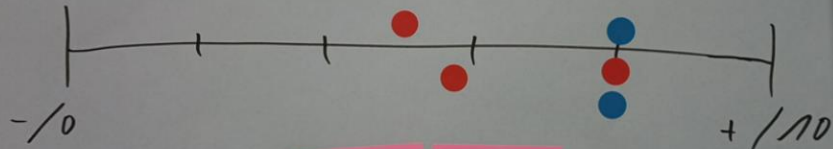
Energy produced by Calvià 2000 installations (kWh/year).

### **20. Calvià Waste Prevention Plan**

Percentage of waste collected selectively.  
Percentage of organic fraction collected selectively.

# Example: Municipality of Calvia, Spain

2) Is the sequence of steps in the tool clear?



Pre training concept @ USAG

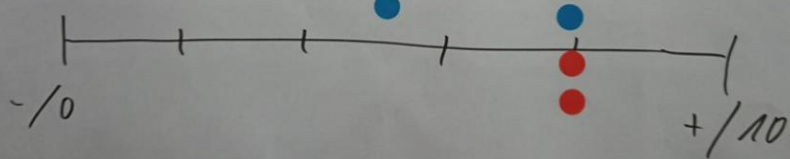
USAG can justify the public opinion in a detailed way



4) Does the tool help to inform your climate and energy strategies/plans? (SECAP e.g.)

issues in model, but some indicators do not match the needs of the local level (e.g.)

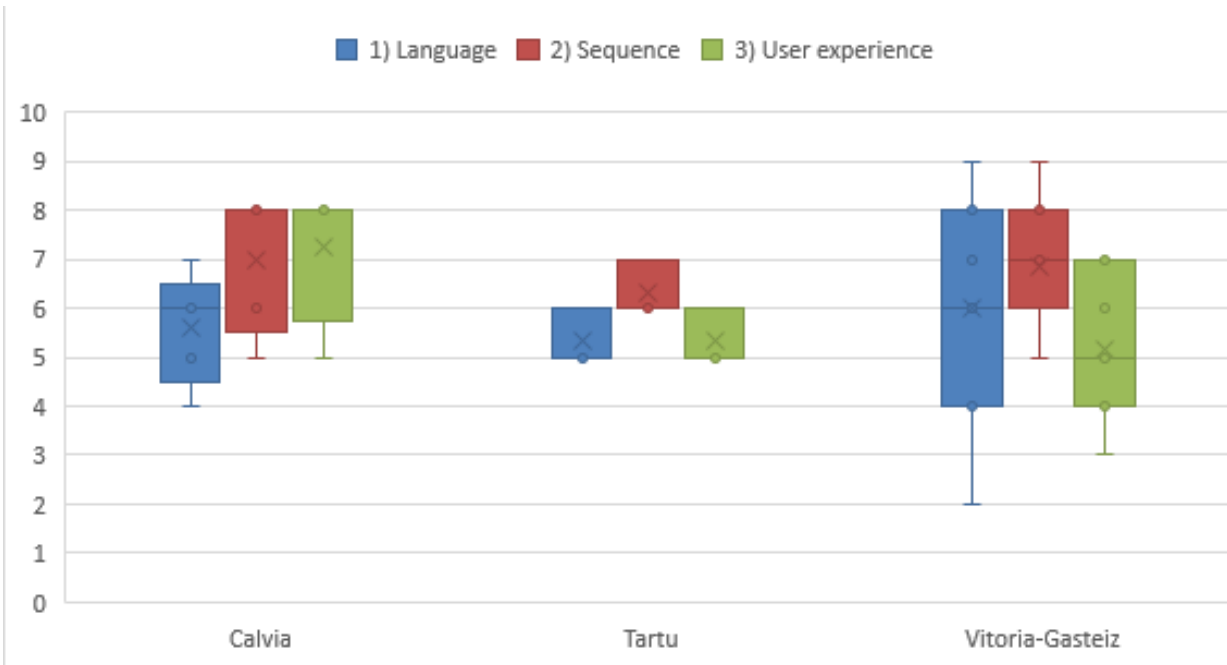
3) How do you rate the overall user experience / ease of use?



retain level by an a.g. 2. indicators of not (%) by a reason)

# Local level main conclusions

## Ratings:



- Relevant info, but not possible to explain to politics without experts support  
→ “I need to understand how I get to this number!”
- Cities often don’t have relevant data to start using the tool, i.e. cities need one(!) data management system to use such tools + do monitoring  
→ “solid data = solid insights”

# RE-ENERGISING EUROPE

Discussions, high-level panels, poster session and field visit  
organised by 7 EU-funded projects!

October 24-25, 2023

Atelier 29, Brussels (Belgium)

