





### ODYSSEE-MURE Fit4-55 (2022-2025) Monitoring the Energy Efficiency Pillar for Climate Neutrality

Second regional meeting, ODYSSEE-MURE, 25-26 September 2024, Rome

# Link between ODYSSEE-MURE and the MICATool

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# The MICAT and SEED MICAT project



Development of a comprehensive approach to estimate Multiple Impacts of Energy Efficiency by providing a publicly available and easily usable online tool.

- Improve scientific knowledge and methods to quantify Multiple Impacts
- Underline the **importance of MIs** in policy evaluations
- Facilitate assessment of MI of policies at EU, national, and local levels
  - Quantification and monetisation of different categories of multiple impacts
  - Go beyond the approaches of earlier MB-Tools, such as Odyssee-Mure MB:EE and COMBI
  - Cover several **key scenarios**, allow evaluation of customised scenarios and policy measures
  - Maximise usefulness for a large target group and cover a wide range of use cases

MICAT: Multiple Impacts Calculation Tool



MB:FF

# What are multiple impacts?



- also known as multiple benefits, co-benefits, ancillary benefits, non-energy benefits
- accompany energy efficiency projects and provide additional arguments to implement energy efficiency measures, but are rarely reported



Based on IEA (2014)

# Link to the Energy Efficiency Directive



MB are strongly linked to the Energy Efficiency First (EE1st) principle (Article 3 EED 2023)
Article 3(5a):

" In applying the energy efficiency first principle, Member States shall promote and, where costbenefit analyses are required, ensure the application of, and make publicly available, cost-benefit methodologies that allow proper assessment of the wider benefits of energy efficiency solutions where appropriate, taking into account the entire life cycle and long-term perspective, system and cost efficiency, security of supply and quantification from the societal, health, economic and climate neutrality perspectives, sustainability and circular economy principles in transition to climate neutrality."

- Article 3(5b) requires Member States to "address the impact on energy poverty" in applying the EE1st principle
- Article 3(5d) provides for Member States to report on how the EE1st principle has been integrated into their NECP progress reports, including "an assessment of the application and benefits" of the principle.



Ignoring multiple impacts undermines the cost-effectiveness of energy efficiency solutions

 The EE1st principle calls for a fair
 comparison of energy supply and energy efficiency in energy related decisions

Assessment of multiple impacts,
shifting the economic balance in favour of energy efficiency



# Objective of SEED MICAT





- Support the EU and its Member States at all governance levels in including Multiple Impacts in their operationalisation and implementation of the Energy Efficiency First principle, based on a strong and reliable analytical tool – the MICATool.
  - expand the methodology (RES, policy module)
  - capacity building

### Overall quantification framework of MICAT





### Impact quantification



**Overall aim:** Applicability for a broad target group and coverage of a wide range of use-cases (e.g., customised scenarios and policy measures)

### MICAT approach:

- Impact quantification based on **factors or functional** relationships linked to energy savings
- Input/modification of further **optional parameters** (e.g., investments, energy prices, fuel split) possible to **increase accuracy** of results

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Facilitate assessment & reporting of MI at EU, national and local levels



Support target groups (e.g., public authorities in MS) with limited capacities in their assessment and reporting of MI Replace detailed modelling of MI and impact assessments of policy measures



### Impact monetisation

### Support Energy Efficiency Deployment with the Multiple Impacts CAlculation Tool

Energy & Resource

Management

### Monetisation of impacts:

- Conversion of MI into monetary values (€): to compare their magnitude, for aggregation and integration into CBA
- Monetary value of MI: often higher than energy cost savings →
   MI can significantly change the results of a CBA
- Aim: gain a more complete overview of the real value of energy efficiency

### MICAT approach:

- Applying monetisation factors to physical values, e.g. societal costs of carbon, Value of Statistical Life (VSL), value of a work day
- Provision of default values for monetisation factors in the tool; modification by tool users possible



Global & Local

Pollutants

### Impact aggregation and Cost-Benefit Analysis in the MICATool



#### Impact aggregation:

- Monetary impacts only aggregated and included in the CBA, when there is **no risk of double-counting** (conservative approach)
- Some monetary impacts: not aggregated due to double-counting, i.e. only presented in the monetary tool mode (e.g., GDP, public budget)

### Included impacts in the CBA mode:

- Energy cost savings
- GHG emission reductions
- Impact on RES targets
- Avoided investments in additional energy supply capacity
- Additional work days due to reduced air pollution
- Reduced mortality due to reduced air pollution
- Reduced mortality due to improved indoor climate
- Avoided asthma cases due to improved indoor climate

### Sensitivity analysis by adjustment of

- Discount rates
- Energy prices
- Investments
- Monetisation factors and lifetimes (via optional parameters)



### CBA indicators in the MICATool:

- Net present value (NPV)
- Benefit-cost ratio / cost-benefit ratio
- Annuity
- Levelised costs of saved energy (€/kWh) / GHG emissions (€/tCO2)
- Marginal cost curves





### A brief tour of the MICATool

### MICAT - Multiple Impacts Calculation Tool (micatool.eu)

The project supports the EU and its Member States at all governance levels in including Multiple Impacts in their implementation of the Energy Efficiency First principle, it thus "sows the seeds" for a broad application of the principle.





extends the scope of and improves the MICATool to allow the analysis of complementary paths and options to climate neutrality!

#### Click here & explore the MICATool!



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# MICATool - Entering basic informations



# Assess the impacts of energy efficiency projects

Select a suitable scenario from the world of energy efficiency, optionally add your own values and receive a comprehensive analysis for your region.

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# MICATool - Entering the expected total annual savings







Support Energy Efficiency Deployment with the Multiple Impacts CAlculation Tool





### MICATool - Results: social indicators





### MICATool - Results: ecologic indicators





### MICATool - Results: monetisation





### MICATool - Results: Aggregation and CBA



Support Energy Efficiency Deployment with the Multiple Impacts CAlculation Tool



Time frame (i)   PAST (ex-post)   FUTURE (ex-ante)   Region (i) European Union Unit (i) ktoe (kilo tonne of oil equivalent)
Region (i) European Union ~ Unit (i) ktoe (kilo tonne of oil equivalent) ~
Unit 🛈 ktoe (kilo tonne of oil equivalent) 🗸





### The link between the MURE database and the MICATool



Analysis of the Multiple Impacts of the energy savings of specific energy efficiency measures ("bottom-up"). - link to the MURE API

- all measures with a quantitative impact



	ODYSSEE-MURE	
Sector	Household	~
Country	Finland	~
Starting date (optional)	2019	~
Measurement	Down a Degree Campaign	~



# MICATool – Link to MURE



ODYSSEE-MURE	Program 1	<b>i</b>
SectorHouseholdCountryFinlandMeasurementDown a Degree Campaign	Subsector (i) Average residential $\checkmark$	
Time frame (i)       2020 (ii)     2030 (iii)	Behavioural changes       ✓       (i)         2020       0,000000       PJ         2030       1,238301       PJ	(+)
	it advanced	



# MICATool – link to MURE

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# MICATool – Link to MURE







### The link between the ODYSSEE database and the MICATool



Analysis of the Multiple Impacts of the ODYSSEE energy savings (based on indicators; "top-down"):

- link to the energy saving tool of ODYSSEE
- analysis of the savings by sector (and country)



	ODYSSEE-MURE	
Sector	Household	~
Country	Germany	~
Starting year	2019	~
End year	2022	~



or use your own inputs

DESELECT ODYSSEE

# MICATool – Link to ODYSSEE





# MICATool – Link to ODYSSEE







# THANK YOU!

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