



UNIVERSITAT
POLITÈCNICA
DE VALÈNCIA

GENERA's WEBINAR

"Strategies for Energy Planning in Islands"

Energy Tools



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GENERA's WEBINARS

"Strategies for Energy Planning in Islands"

31st March, 2025

Prof. Elisa Peñalvo

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GENERA PROJECT

This project was funded by the European Union
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1. GENERA's Energy Transition Package



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■ Create a tool that incorporates **energy strategies at the municipal island level**, which considers **existing strategies and the potential for action**, as well as the **value added by policy makers** through a multi-criteria decision algorithm that provides a qualitative analysis.

LOCAL ENERGY TRANSITION ACTIONS AND TRAINING FOR MUNICIPALITIES



ENERGY TRANSITION PLANNING

Creation of a Sustainable Scenario from BAU (Business As Usual).

Includes:

- Regulations
- Technologies
- New business models



MOST PROMISING MUNICIPAL SOLUTIONS FOR THE ENERGY TRANSITION

Database of measures implemented at the municipal level.

Inference module for the calculation of measures adapted to the municipal casuistry.

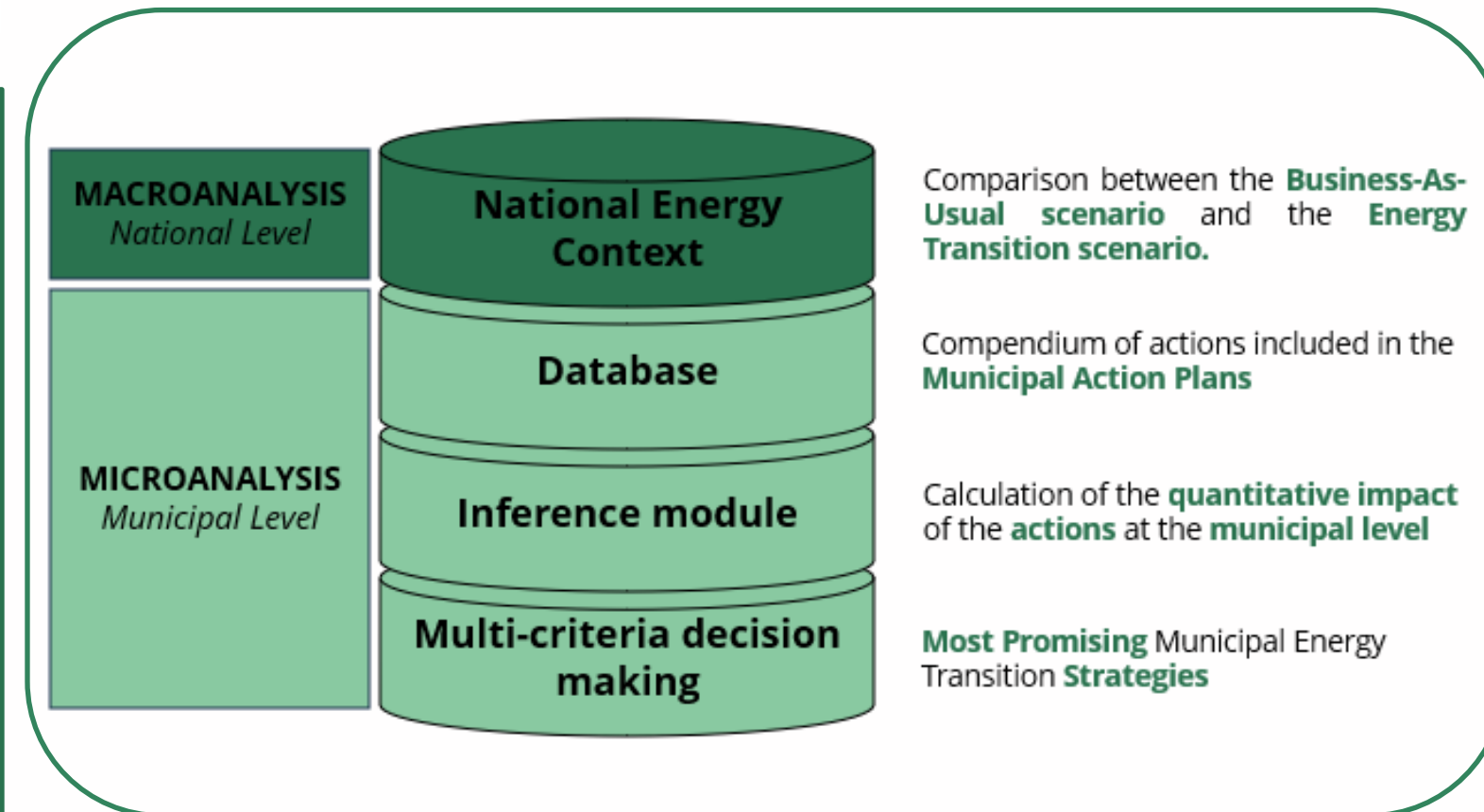


MULTI-CRITERIA DECISION PROCESS

Co-creative decision process

Qualitative and quantitative multi-criteria analysis:

- Technical
- Economical
- Social
- Environmental
- Political



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2. National Energy Context



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OBJECTIVE

Analysis of different energy scenarios at the national level.

Business As Usual (BAU) Scenario

Analyze the current scenario and its evolution over the considered time interval as a reference point.

Alternative Scenarios

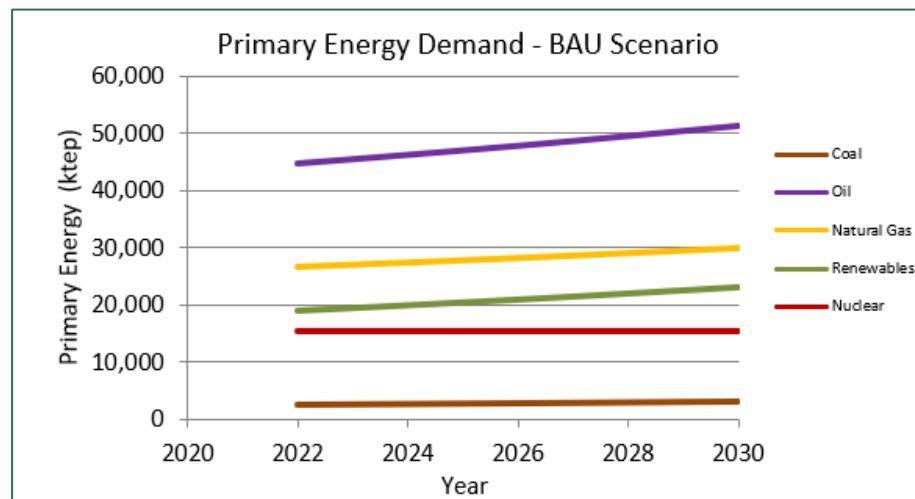
Compare alternative energy scenarios with the same time horizon and demand constraints to explore different transition pathways.

Comparative Analysis

Provide insights into the potential outcomes of different energy strategies and policy decisions.

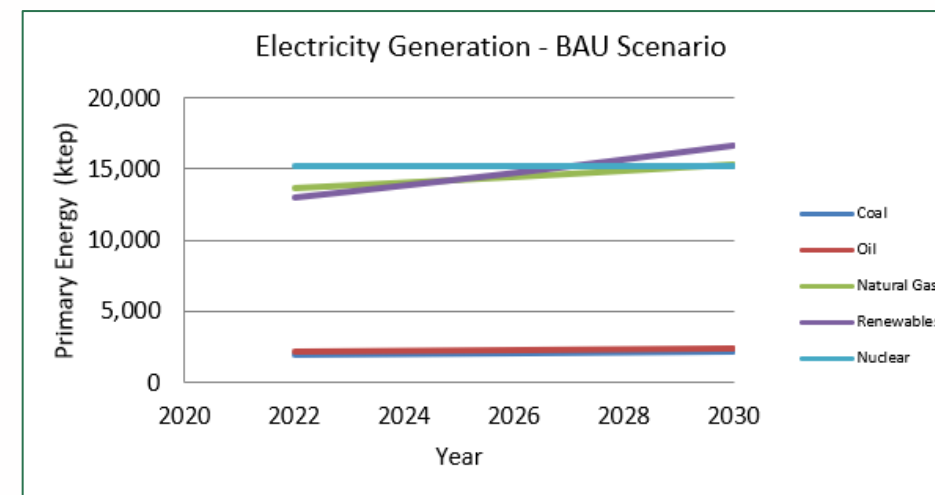
RESULTS

Evolution of indicators for each of the scenarios.



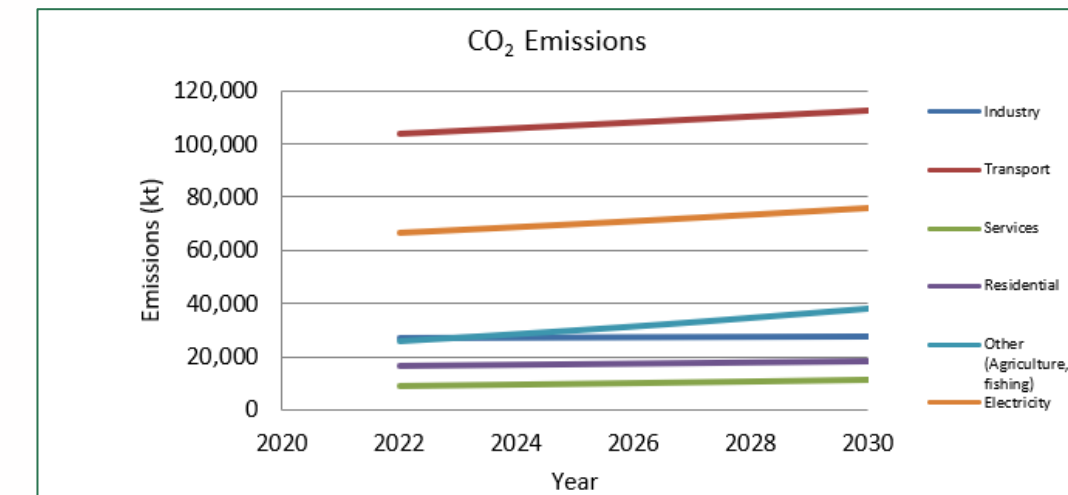
Energy Demand Projection

Visualizes the projected energy demand over time for different sectors.



Electricity Generation Mix

Illustrates the projected electricity generation by source over the years.



CO2 Emissions Trend

Shows the projected CO2 emissions from different energy sectors over time.

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3. Database



- After studying different local action plans, a **compilation** was made of the **main actions** carried out.
- To evaluate the actions, **measurement indicators** were used to measure **annual energy savings**, **annual CO2 emissions savings** and the **cost of implementation per 1000 inhabitants**.



<https://dsp.life-genera.eu/energy-transition>

- The **actions were grouped into different categories**, according to those considered in the action plans.
- The categories of actions analyzed are: **awareness, industry, transport and municipal buildings and facilities**.

Energy Transition

Awareness-raising | **Municipal Buildings and Equipment** | Transport

Sector	Actions
Transport	Establishment of a network of electric vehicle charging points
Transport	Adapting municipal roads for the creation of cycle routes
Transport	Promotion of public transport: inland public transport circuit and increased frequency
Transport	Tax ordinances to incentivise the renewal or purchase of electric and hybrid vehicles

Sector: Municipal Buildings and Equipment
Action: Improvement of Insulation and Air Conditioning Systems

Number of Action Plans

Country	Number of Action Plans
Spain	13
Greece	8
Italy	7

Energy Savings: 15 MWH/year
CO2 Savings: 9.8 tCO2e
Cost: 32,500 €





4. Inference Module



Implemented in **excel spreadsheet**, allows to calculate emission and energy savings for certain measures of municipal interest, performing the calculations based on the information provided by the user.

The more information, the more it adapts to the municipality of analysis.

- **Municipal Buildings and Public Facilities:** actions related to municipal buildings and equipment under the responsibility of the city council.
- **Industry:** includes all industry-related actions and an incentive programme for energy saving and efficiency and the use of renewable energy in housing and SMEs.
- **Transport:** includes information and actions related to the improvement of transport at municipal level.
- **Awareness:** includes information and actions related to recycling and environmental awareness of citizens

SECAPs MONITORING TOOL

INFERENCE
MODULE 3

DESCRIPTION: It seeks to adapt the measures to the municipality that applies the tool, performing the calculations based on the information provided by the user. The more information, the more it adapts to the municipality of analysis.

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Improvement of municipal lighting

BUILDINGS

[1] Current Bulbs: (Select from the list)

[2] New Bulbs: (Select from the list)

Number of luminaires to be replaced: (Enter manual)

[1] Max. Power (W): (Enter manual, Default value)

[2] Max. Power: (Enter manual, Default value)

Hours of use (h) [SUMMER]: (Enter manual, Default value)

STREETS

[1] Current Bulbs: (Select from the list)

[2] New Bulbs: (Select from the list)

be replaced: (Enter manual)

[1] Max. Potencia (W): (Enter manual, Default value)

[2] Max. Potencia (W): (Enter manual, Default value)

Hours of use (h) [SUMMER]: (Enter manual, Default value)

Hours of use (h) [WINTER]: (Enter manual, Default value)

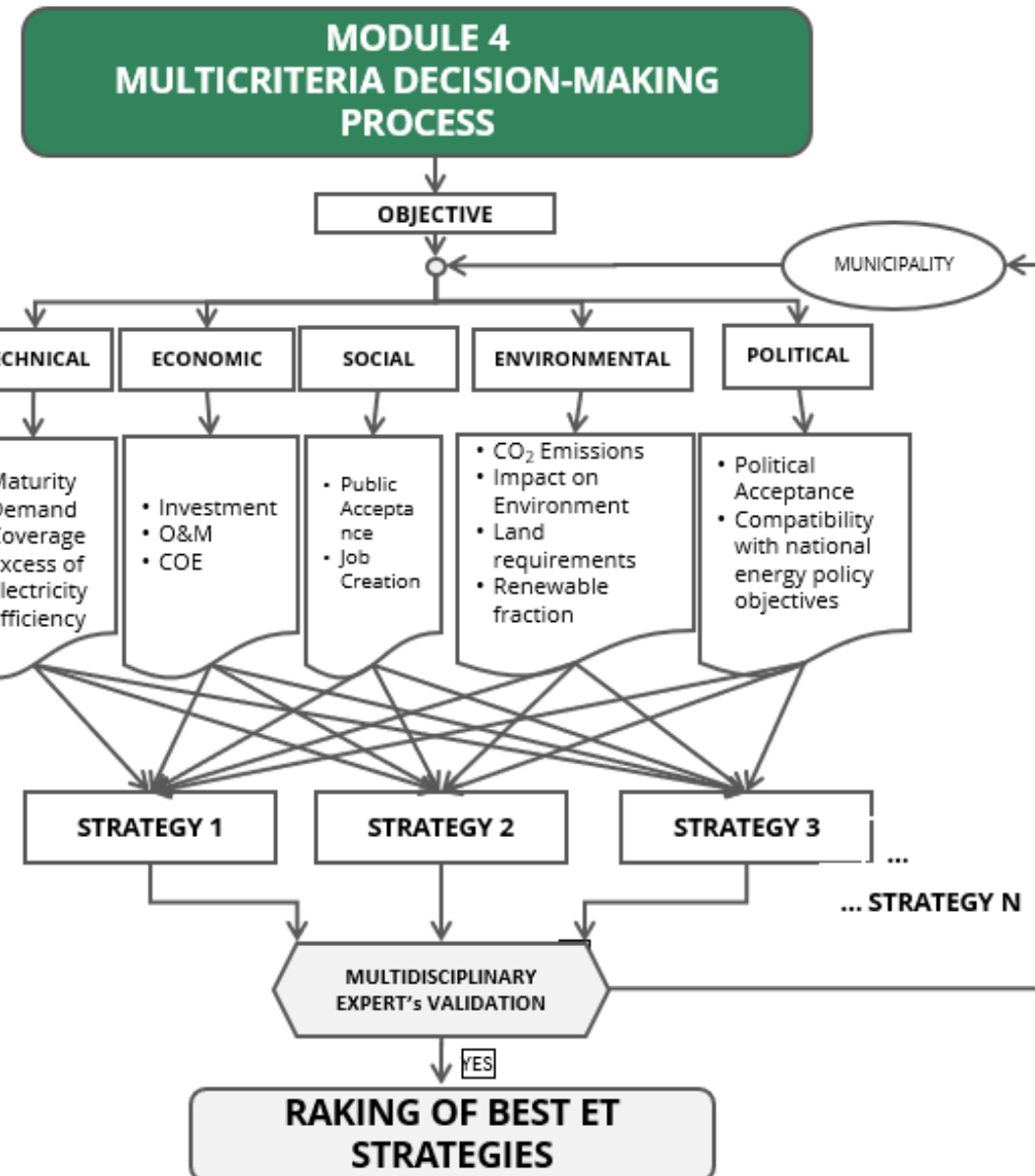
Energy saving (kWh/Year): (Lightbulb icon)

CO2 emissions saved per year (kgCO2 eq): (Recycling icon)

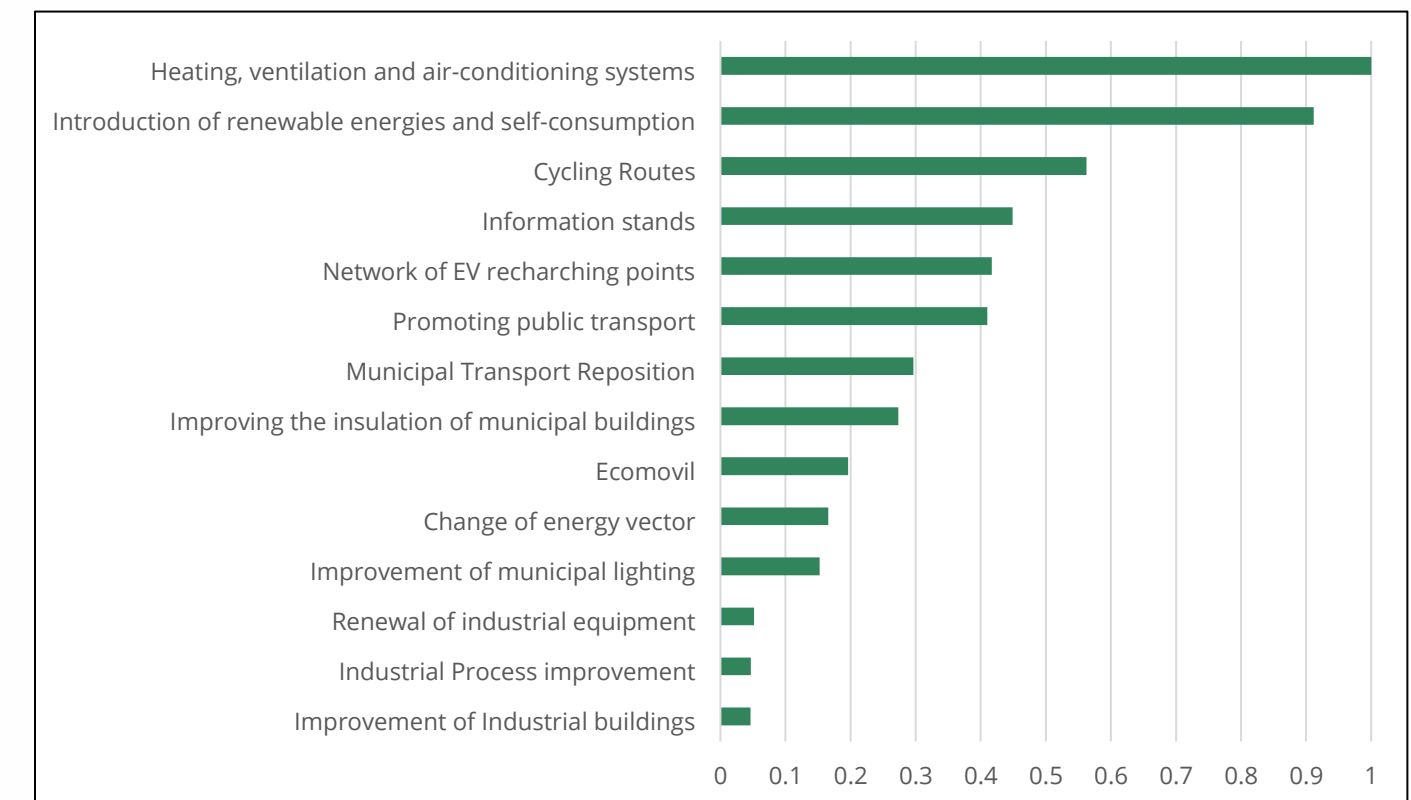




5. Strategy Evaluation



Ranking of Best Energy Transition Strategies at the municipal level



- **Level 1:** in reference to the different areas that affect the municipal level.
- **Level 2:** the indicators that affect each area.
- **Level 3:** each of the strategies/alternatives is evaluated according to the previous levels.





6. GENERA PILOTS



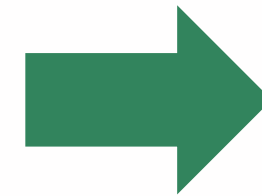
Learning Objectives

Understand how the tool is used in practice, interpret results, and apply insights to different scenarios.

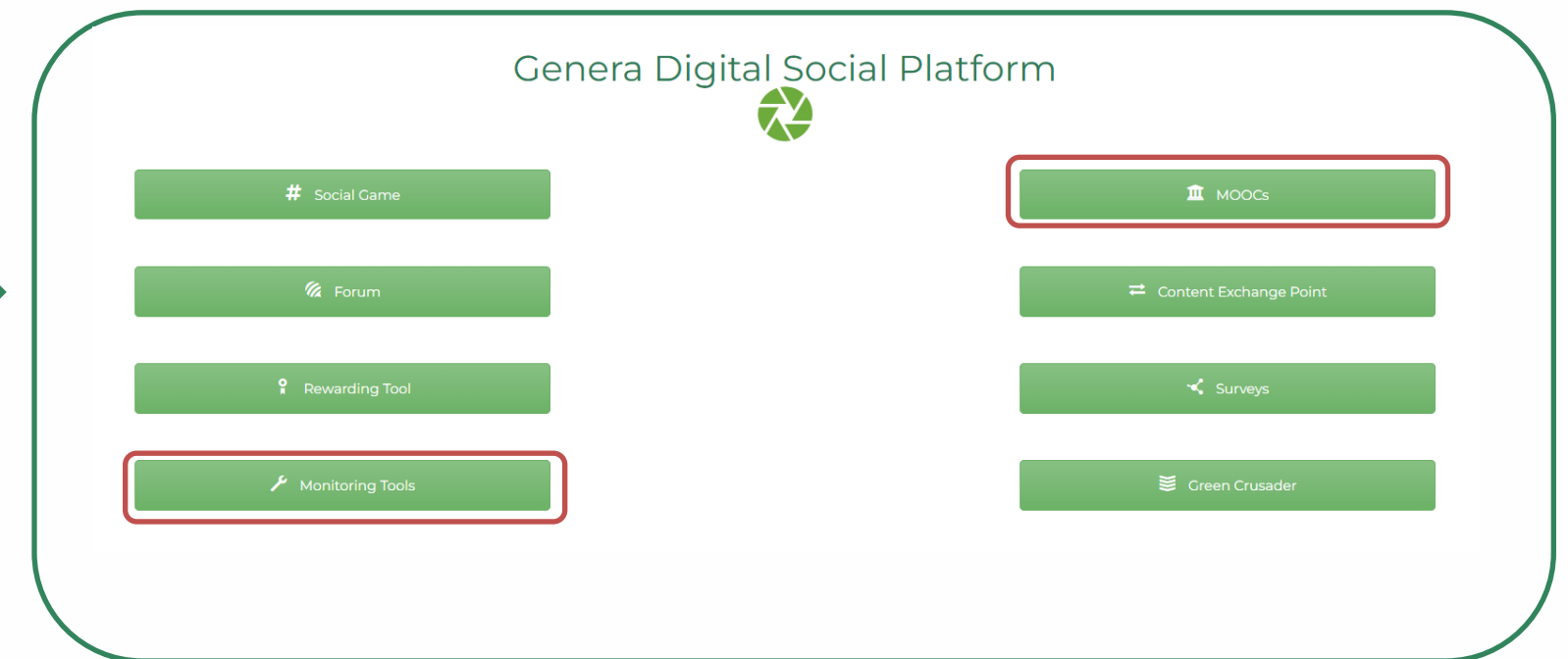


Case Studies

- 1** — **Case studies in Spain:**
 - El Rosario (Tenerife)
 - Sant Antoni (Ibiza)
- 2** — **Case study in Italy:**
 - Stintino (Sardinia)
- 3** — **Case studies in Greece:**
 - Rhodes
 - Halki
 - Nisyros



GENERA training course

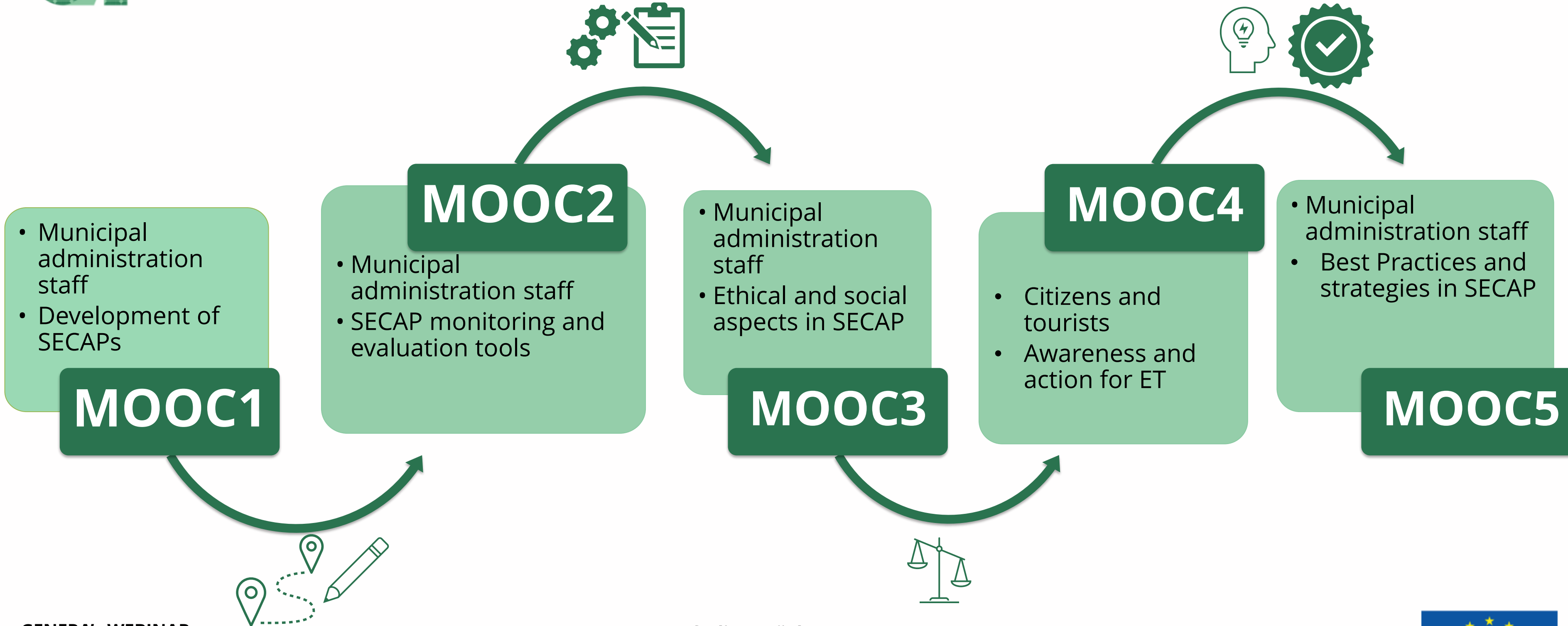




7. GENERA TRAINING COURSE



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Thank you!





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