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The EEnvest Investment Evaluation Methodology and the EEnvest Risk Assessment Report

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EEnvest Methodology

The EEnvest Investment Evaluation Methodology Streamining and standardising internal evaluation processes supporting investment decision making in energy efficiency projects

- Adapts to a wide range of users, from private investors, asset managers, financial institutions and property owners
- Enables informed investment decision-making related to building energy efficient renovations
- Provides relevant KPI along three assessment dimensions: Technical risk,
 Financial performance and Multi-Benefits



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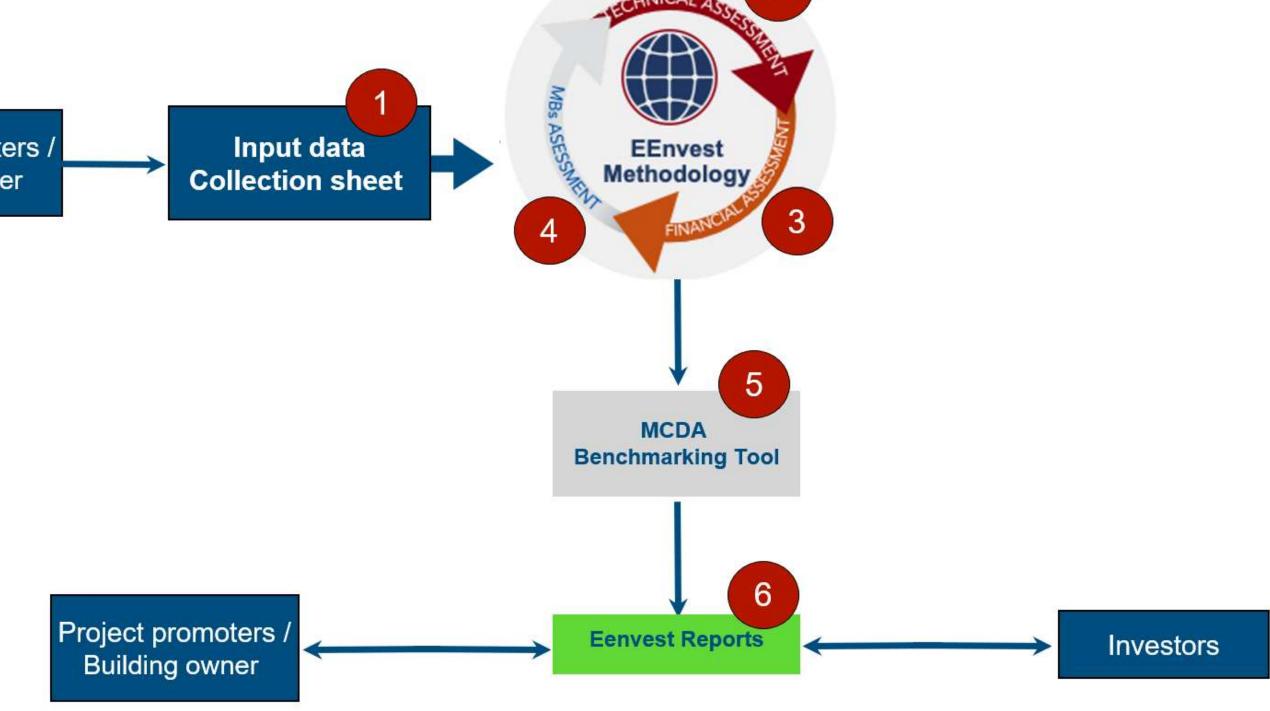
The EEnvest Investment Evaluation methodology

- Input data Collection sheet Basis for running the EEnvest assessments
- 2 Technical Risk Assessment

Project promoters / **Building owner**

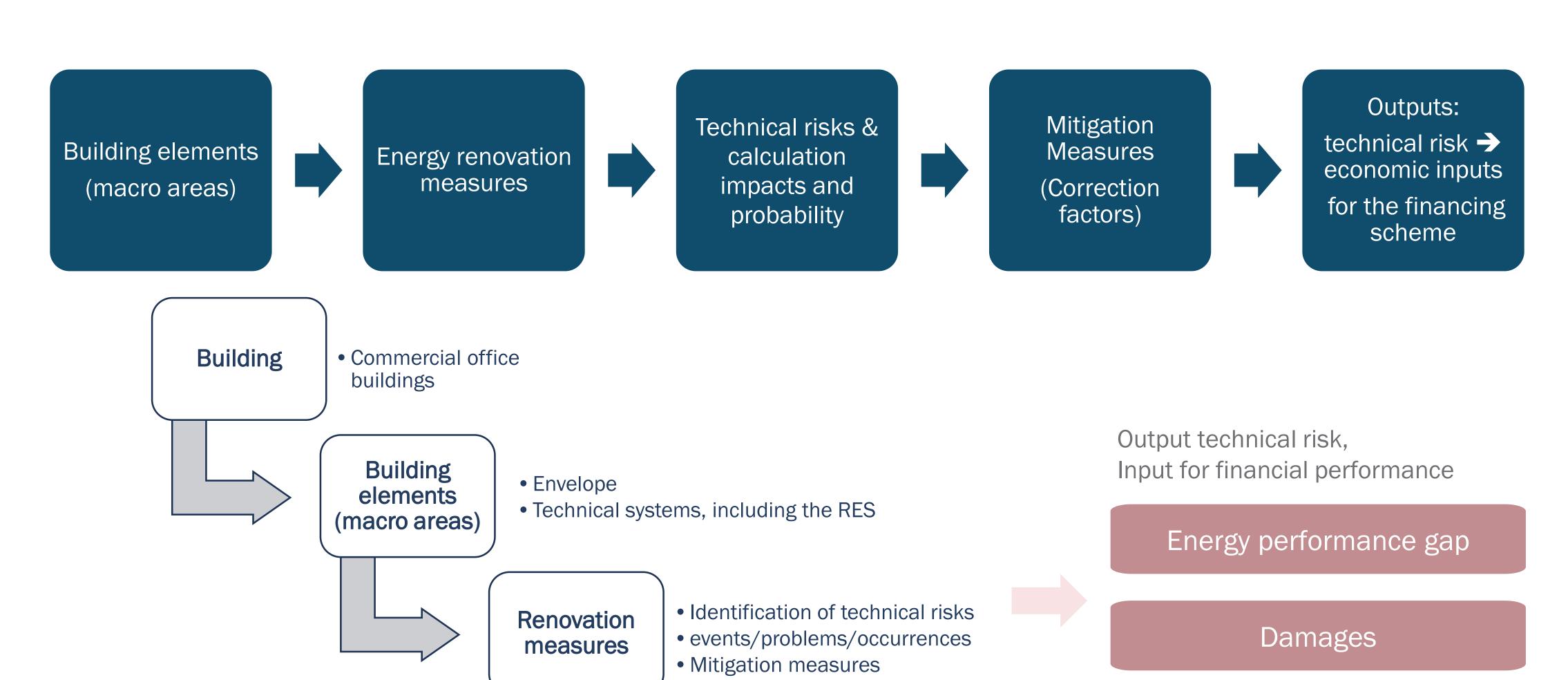


- 3 Financial Assessment
- 4 Multi-benefits Assessment
- 5 MCDA benchmarking To compare different project alternatives
- 6 EEnvest Risk Assessment Reports





Technical Risk Assessment

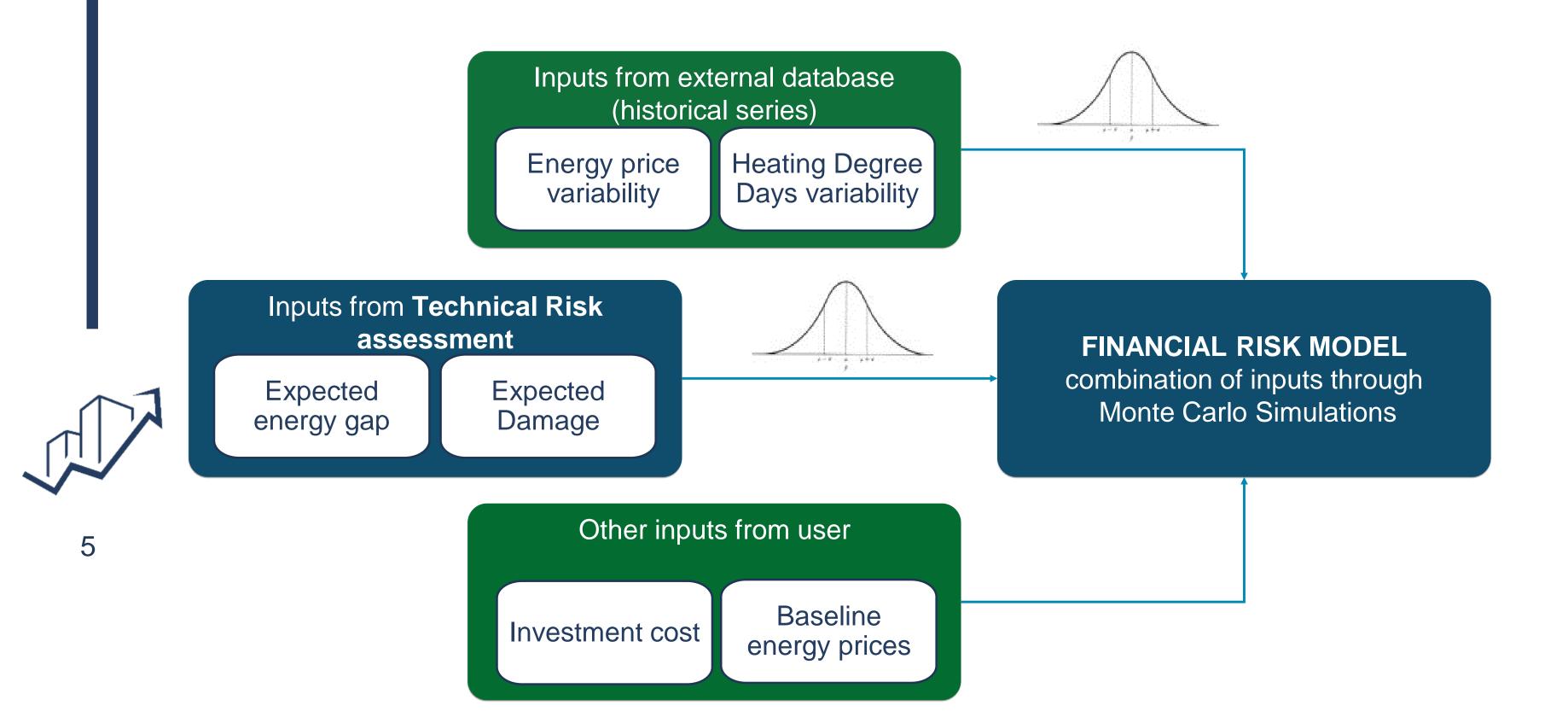


Source: **eurac** research





Financial Risk Assessment

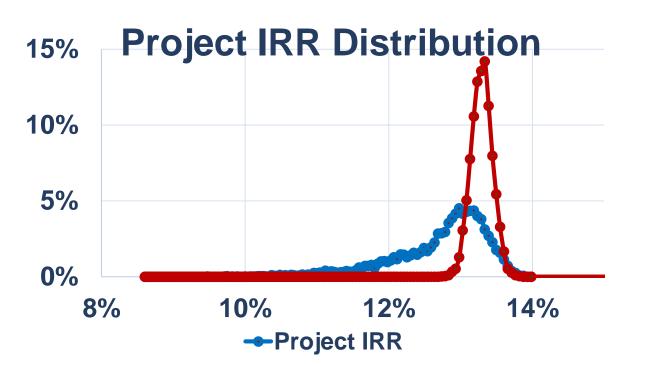


Processing

(Monte Carlo) Post-

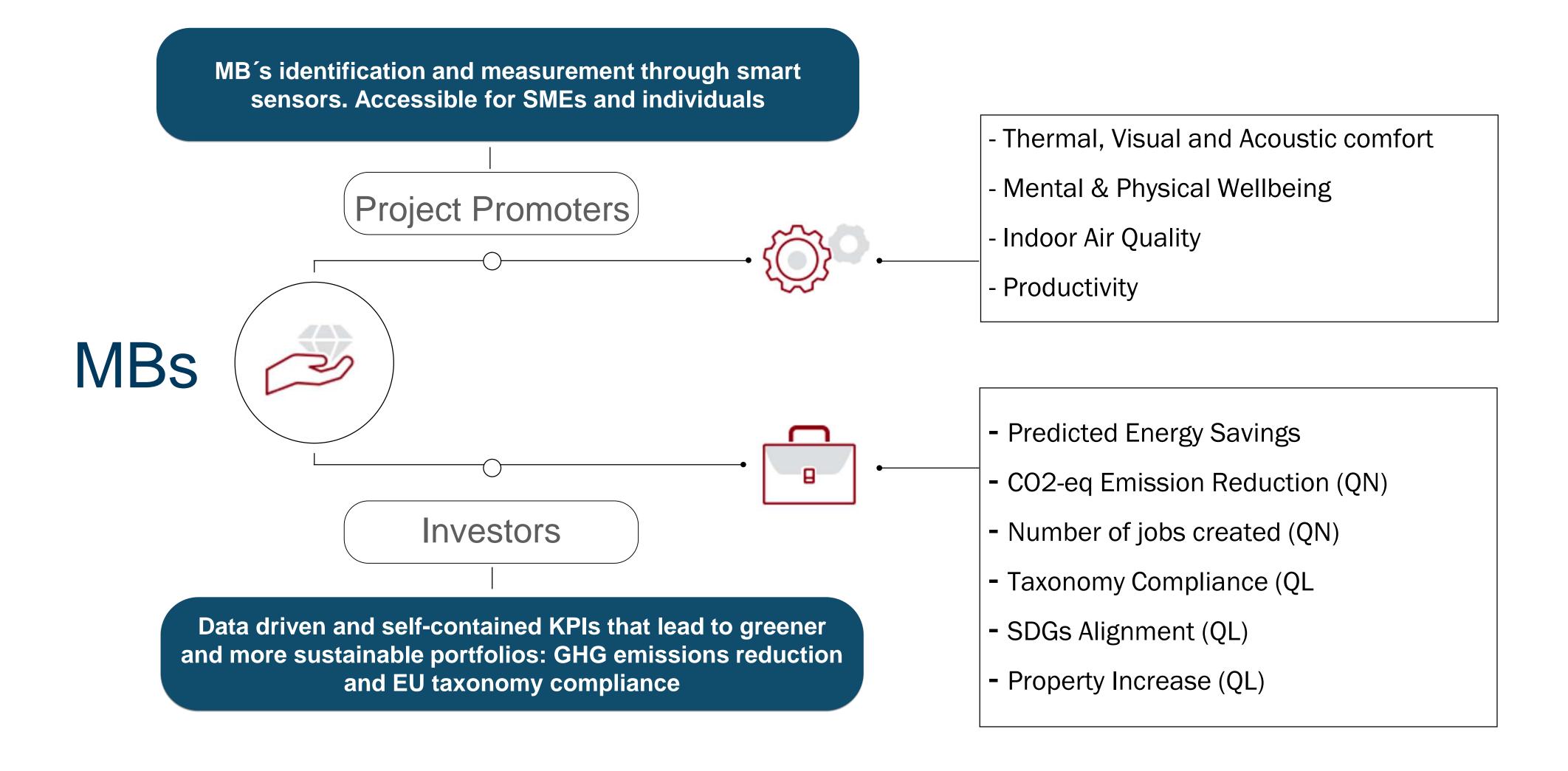
processing

Preprocessing



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Multiple Benefits Assessment





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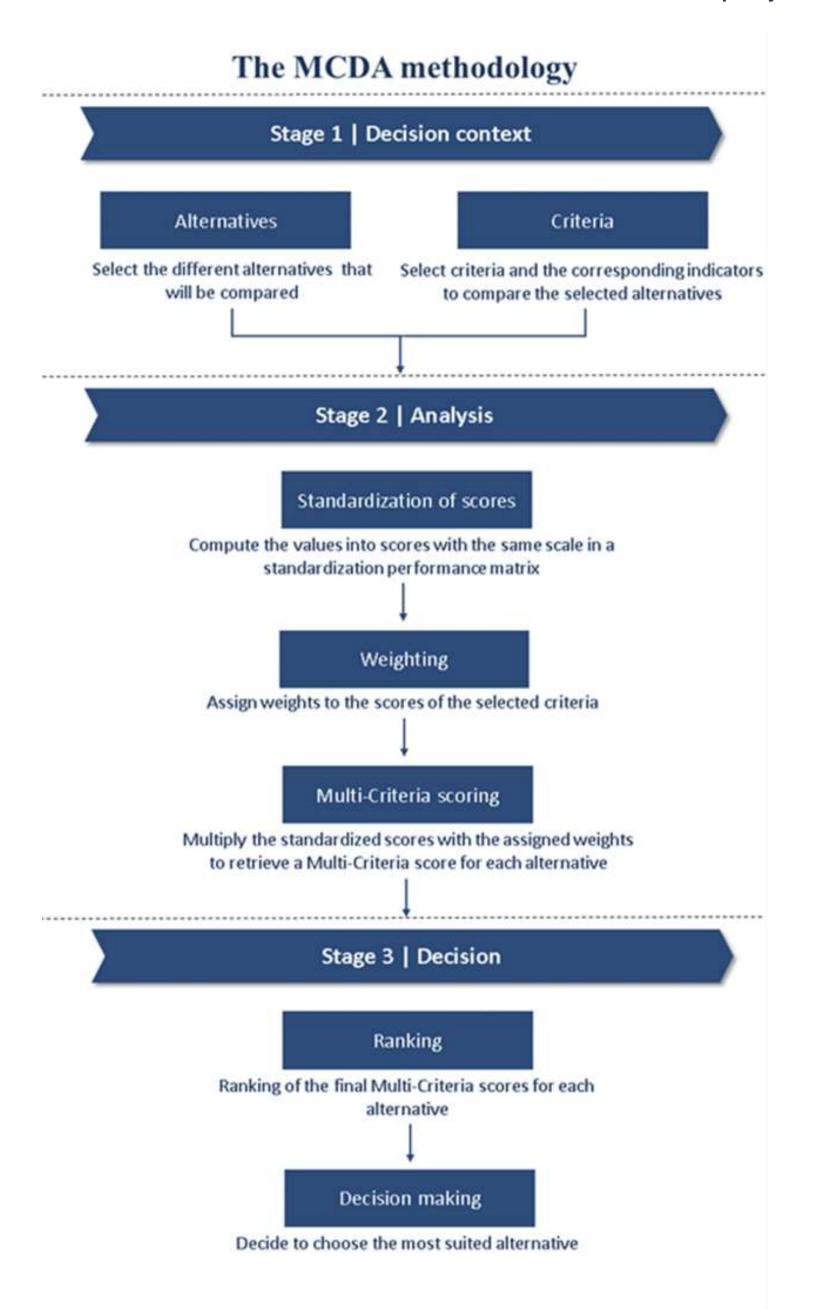
Multiple Criteria Decision Analysis

Decision-making support

Provides investors with a method to compare different investment alternatives

Based on investor's own criteria and weighing





EEnvest H2020 project GA #833112







EEnvest ASSESSMENT REPORT



EEnvest RISK ASSESSMENT REPORT e to possible malfunctioning e indicator quantifies the invesof the energy renovation measu in the renovation project. Such expressed as a percentage of the planned investment. cific project, the Damage indicator has been estimated as: gap indicator quantifies the energy performance deviation. It is expressed as e of the calculated energy performance costs after the renovation project. cific project, the estimated Energy gap is:

k time is the amount of time that he length of the investment time cific project, the estimated Payb

y is defined as the total duration of the project needed to achieve a zero NPV to cost of capital).

cific project, the estimated Maturity is:

RATE OF RETURN (IRR)

I Rate of Return (IRR) is the discount rate that makes the net present value pecific project equal to zero.

cific project, the Internal Rate of Return is:

ENT VALUE ON INVESTMENT (NPV/investment)

sent Value (NPV) is the value of all future cash flows (positive and negative) tire life of an investment discounted to the present. The NPV/investment ratio sure of profitability of the project.

ject, the estimated NPV/investment is: (VICE COVERAGE RATIO (DSCR)

ervice Coverage Ratio (DSCR) is an indicator of the project's ability to repay a alculated as the ratio between the operative cash flows generated by the the cash flows for debt, lease, or other obligations (debt service, both for d principal payment) due in one year.

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ject, the DSCR has been estimated equal to

Model version: XXX - Date: XX/XX/XXXXX

Project Quality Self-Assessment score:

sion: XXX - Date: XX/XX/XXXXX

High probability of reliable, consistent and achievable energy savings. 370/400

EEnvest RISK ASSESSMENT REPORT 0.30 % Graph n.2 - Project IRR Distribution - Cumulated project cash flows This graph shows the probability distribution of IRR. shows the cumulated cash flows the project over time. The value for Each value on the horizontal axis has a probability value. The area underneath the curve sums up to the years is calculated as the simple cash flow of that year and all the 100% probability. The dark blue curve includes all h flows. The graph below provides a risks, so it's more extended to the left, meaning that of the time needed to payback the there is higher probability that the IRR is low. The ment cost. light blue curve includes only financial risks, so it's more concentrated around the expected value. take to recover the initial. en point

12.70 %

Cumulated Project Cash Flows Probability Probability w/o technical risk MULTI-BENEFIT PERFORMANCE

NT EMISSION REDUCTION Reduction Indicator estimates king the renovation project. It predicted energy applied a conversion factor that to country as well rgy used in the building. tes to the following SDG targets: 8.4, 11.6, 11.9, 12.2

11% 12% 13%

108.4 kWh/m²y

ERGY SAVINGS

ergy Savings indicator is the difference between the actual energy ne building (baseline) and the estimated energy consumption after the It includes heating, cooling, lighting and ventilation.

es to the following SDG targets: 7.3

3 4 5 6 7 8 9 1011121314151617181930

ne predicted energy savings are:

BS CREATED

lobs Created metric refers to new jobs created as a result of the KPI is based on a proclaimed BPIE study that states that per 1 million energy efficiency projects, 18 new jobs on average are created. It ocation of the building (for example, country) and the amount of the

This KPI contributes to the following SDG targets: 8.2, 8.5, 9.1

For this specific project, the number of jobs created is

Model version: XXX - Date: XX/XX/XXXX

EEnvest RISK ASSESSMENT REPORT

Rental price:

Sale price:

10-20 ×

ONOMY COMPLIANCE

exonomy Compliance indicator defines whether or not the investment complies with the requirements defined by the EU Taxonomy. In specific, whether the project being has a minimum of 30% primary energy consumption reduction.

TY VALUE INCREASE

erty Value Increase indicator brings light to the possible increment on the value of the r the renovation project. This is also referred as the "greemium". In practical terms, it is ble to predict this increase before the renovation project. Therefore, this metric is e, and it provides a range of possible value increase backed-up by literature.

pecific project, the Property Value Increase is:

SUSTAINABLE DEVELOPMENT GOALS (SDGs)

to SDGs indicator depicts to which specific SDGs the project contributes to. It is a qualitative indicator that s the non-financial benefits of investing in the renovation project.















renovation project reduces the etween real energy consumption ated energy demand, guaranteeing ted energy savings for investments. d, it is recommended to:

external expert to define the most ergy-efficient/mitigation measures ve the energy performance of the

rification (e.g., Passive House, LEED); of the project (e.g., through lowlifferent specific analyses and tests e construction phase (e.g., Blower thermography);

he energy performance during the phase (e.g., energy consumption monitoring, maintenance programs).

Please note that the technical risk is calculated only on the building elements and technical systems under renovation/substitution: internal walls, slabs, furnishing are excluded.



In general terms, the financial The multi-benefit performance of performance of the investment the project can be improved by:

conservation measures, focusing on the ones with lower payback

- using public incentives/grants to

conservation measures with the highest impact on energy savings;

implementing a standardized procedure to compute the multibenefits for in-doors impact, such cover part of the investment costs: as thermal comfort, indoor air - optimizing the financial structure quality, acoustic comfort and productivity through smart sensors optimizing the energy

consumption levels on a monthly basis.



EEnvest

Project Self Assessment Tool

- Questionnaire with scoring, 6 themes evaluated Self assessment (input from the Project Owner)

Final project scoring reflects the level of Implementation of EE project best practises



370/400

All of the Themes have been adequately conceived and set up, with some minor flaws, almost always taking into account the highest standards, highest quality criteria and best practices. This level of conception and implementation indicates a high probability of the envisaged energy savings being reliable, consistent and achievable and the uncertainties surrounding the investment cost and future operation and maintenance costs being minimised.

Balance between size of the project and PQSA scoring needs to be considered



Design of ECM and energy savings calculations

- **Energy audit**
- Energy consumption baseline
- Energy savings modelling and calculations
- Interdependency calculations in case of multiple ECM

Implementation of ECM (Energy Efficiency Assets)

- Independency and expertise of the implementing parties (project coordinators, installers, contractors)
- Installation or implementation plan
- Roles and responsibilities of the installers and compliance requirements
- Operational performance verification
- Acceptance process and training of operators

Maintenance and operation of the Energy Efficiency Assets

- Maintenance service contract
- Independency and expertise of maintenance contractor
- Maintenance plan
- Roles and responsibilities of the maintenance contractor
- Issue logging and escalation
- Malfunctioning and non-compliance

Monitoring of the Energy Efficiency Assets and their energy consumption

- Performance monitoring and tracking methodology
- Performance Indicators
- Monitoring and management tools
- Training and performance monitoring

Measurement and verification of the energy savings

- Measurement and verification approach
- Use of M&V protocols
- M&V expertise and certification

Communication with and training (awareness) of users and/or occupants

Approach for collection, verification and implementation of users' 6. requirements

- Information process on the implemented ECM
- Energy awareness program



Thank you

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