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D.2.2.1 Criteria for creation of MESTRI-CE Sustainable Building Methodology

Version 1

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Contents

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A. Introduction

The central Europe region faces a very uneven energy transition due to unbalanced economic development, distribution of technology and finance flows. Buildings, both public and private, account for 43% of the final energy consumption in EU and have been singled out in the European Green Deal as key drivers of energy transition. Nevertheless, CE countries are confronted with low building renovation rates, lack of internal capacities of the building stock managers, difficulties in gathering data on the building performance. Policies towards climate neutrality are already in place in several CE countries, but national/regional building schemes and regulations are not always efficiently translated into concrete projects. The ambitious EU energy and climate targets require therefore appropriate and effective methodologies to support the building sector towards climate neutrality and increased sustainability.

The objective of Activity 2.2 of the MESTRI-CE project is the development of a working methodology for the design of new or renovated buildings, based on sustainability and climate neutrality criteria, as a support to already existing standards and guidelines in order to achieve the ambitious targets set by the EU for this sector. A holistic approach to the sustainability of buildings, whether new or undergoing major renovation, integrating the environmental, social and economic dimensions, will enable the most appropriate investment opportunities to be identified and the building stock to be improved for long-term use.

The MESTRI-CE Sustainable Building Methodology will promote and support the development of ambitious action plans for the transition towards a climate neutral and sustainable building stock in all MESTRI-CE pilot countries, creating a common language and framework that will improve existing standards, while respecting regional differences and specifics. It will therefore incorporate the new EU requirements for buildings (new EPBD, European Taxonomy, Level(s) framework etc.) in order to achieve the long-term goals of a climate-neutral and sustainable building stock and will integrate them with the suitable building standards and methodologies already in use in the different pilot countries/regions.

The first step in the development of the MESTRI-CE Building Methodology is the definition of a comprehensive list of criteria and key indicators that can be used to assess and report the performance of buildings addressing all core areas and dimensions of sustainability.

B. Methodology for selecting criteria and indicators

Based on the analysis of the national and regional standards and schemes used in the different MESTRI-CE countries and regions, carried out in Activity 2.1, a set of thematic areas and related sustainability criteria and indicators for buildings were identified. This initial list was then integrated with the indicators and criteria defined in the European Taxonomy, in the Level(s) framework and in the new European Energy Performance of Buildings Directive, in a holistic perspective taking into account as far as possible all three dimensions of sustainability (environmental, social, economic).

This list of criteria and indicators derived from the previous analyses (Activity 2.1) was then submitted to and discussed by the Joint Working Group in order to define a common path for the creation of the MESTRI-CE Sustainable Building Methodology.

1. Impact-effort method

To identify the thematic areas, criteria and key indicators useful for the creation of the MESTRI-CE Sustainable Building Methodology, it was decided to first conduct an impact-effort analysis. The impact-effort method is commonly used to assess the relationship between the effort invested in a particular calculation/task/project and the resulting impact or outcome for the stakeholder. It should help to prioritise actions, tasks or decisions. Both effort and impact analyses are typically conducted qualitatively, meaning that the evaluation is subjective and based on expert judgment rather than quantitative metrics. Qualitative assessment may involve surveys, interviews, and discussions with experts and stakeholders to gather insights, opinions and feedback.

In the context of D2.2.1, the following aspects have been assessed:

- the effort for the calculation/assessment/evaluation of the proposed sustainable criteria and indicators
- the impact they can have in the development of an ambitious action plan aimed at achieving a climate neutral and sustainable building stock.

The goal is to provide a comprehensive understanding of the interplay between the effort invested and the resulting impact on the effectiveness and utility of the developed indicators. In summary, the effort-impact analysis provides a holistic view of the indicator development process, ensuring that the resources invested align with the significance and positive outcomes expected by the project partners and the stakeholders.

A qualitative impact-effort analysis in form of a questionnaire was conducted during project period 2 among the MESTRI-CE Joint Working Group for evaluating the utility-driven impact of the proposed sustainability indicators and the computational effort required for their calculation.

Impact Analysis: This aspect focuses on assessing the usefulness and significance of the proposed indicators from the perspective of the MESTRI-CE Joint Working Group. The analysis is based on the long experience of the experts in defining and applying energy and sustainability assessment systems for buildings. While taking into account the different national and regional specificities, the impact analysis shall focus on the main objective of the MESTRI-CE Sustainable Building Methodology, i.e. to ensure future-proof sustainability performance of buildings.

Effort Analysis: This involves examining the resources, time, and expertise invested by the MESTRI-CE experts in calculating the identified indicators for each region. It may consider the complexity of the calculations, data collection processes, and any challenges faced during the indicator development phase.

The Effort analysis helps in understanding the workload, potential bottlenecks, and areas where efficiency improvements might be necessary.

An impact analysis is planned to be conducted also among regional/national stakeholders during the regional and national round-table sessions that will be organised in the first months of project period 3 (D.2.3.1).

Impact Analysis of Regional/National Stakeholders: This aspect focuses on assessing the usefulness and significance of the selected indicators from the perspective of regional/national stakeholders. It involves understanding how the indicators contribute to decision-making, (local, SME) policy formulation, or overall improvement in the targeted regions. Impact analysis considers the practical implications, benefits, and positive changes brought about by the sustainability indicators, as perceived by the stakeholders.

1.1. Impact-effort questionnaire

The MESTRI-CE Joint Working Group was provided with a questionnaire as Xls file containing a selected list of indicators and criteria grouped in different thematic areas as analysed in D.2.1.2.

In order to carry out the qualitative impact analysis, the MESTRI-CE experts were confronted with the following question:

"*When formulating a climate action plan tailored to local communities and SMEs within the building sector, it becomes crucial to establish a set of fundamental indicators. These indicators are pivotal for a thorough evaluation of sustainability aspects. They serve as a foundation for more informed decision-making. To gauge the effectiveness of the selected indicators, consider the question: How strongly do you believe that the indicators identified in the questionnaire will provide valuable information for the development of your action plan?*"

For each indicator, experts were asked to respond according to one of the following five options:

- **Strongly Disagree:** You vehemently disagree with the statement.
- **Disagree**: You generally disagree with the statement, though not vehemently.
- **Neither Agree nor Disagree**: You neither agree nor disagree with the statement or you are unsure.
- **Agree**: This indicates a general agreement with the statement, but not strongly.
- **Strongly Agree**: This is a total agreement with the statement without any reservations.

	Strongly disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Level(s) indicators					
Indicators from new EPBD					
Indicators from EU Taxonomy					
Others identified in A2.1					

The responses collected from the MESTRI-CE Joint Working Group were then scored according to the following values:

Strongly disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
-2	**-1**	**0**	**1**	**2**

The MESTRI-CE experts were also asked to estimate the effort needed to assess/calculate each proposed indicator.

To the question "*Based on your experience, how would you estimate the effort required to evaluate/calculate each indicator?*" MESTRI-CE Experts were invited to choose between "**High effort**" or "**Low effort**". High effort was then scored with 2 points, low effort with 0.

High effort	Low effort
2	**0**

C. List of indicators based on previous analysis (A.2.1)

1. Thematic areas, criteria and indicators

Based on the analyses carried out in the previous activity A.2.1 a list of 68 indicators belonging to 11 different thematic areas of building sustainability were selected.

The main references for the definition of the indicators are:

- The new Energy Performance of Buildings Directive as drafted in the consolidated compromise text of 20 December 2023
- The EU Taxonomy for sustainable activities
- The Level(s) framework
- Other national/regional building standards and schemes in use in the MESTRI-CE partner countries

1.1. Energy

1.1.1. Use stage energy performance

This criterion focuses on assessing the energy performance of the building during its operational or 'in use' phase. The aim is to evaluate how efficiently the building uses energy resources for heating, cooling, lighting and other operational needs. The assessment of energy performance in the use phase takes into account factors such as energy needs/consumption, use of renewable energy sources and overall efficiency in maintaining a comfortable indoor environment for the occupants. The aim is to promote and measure sustainable practices that minimise the environmental impact associated with the building's ongoing energy use.

Indicators	Main references
Primary energy use	EPBD, Level(s), Taxonomy
Final energy use	EPBD
Heating demand	EPBD
Cooling demand	EPBD
Summer heat protection	KH Nature/klimaaktiv
Energy performance standards for building elements	EPBD
Thermal integrity of the building envelope/Thermal bridges	Taxonomy
Airtightness of the building envelope (testing)	Taxonomy
Energy efficiency requirements for the technical building systems	EPBD
Building automation and control system	EPBD
Smart Readiness Index	EPBD
Renewable energy produced on site	EPBD
Share of renewable energy in delivered energy	EPBD
Optimisation of the building solar energy generation potential	EPBD
Electrical or thermal storage capacity	EPBD

1.2. Emissions

1.2.1. Greenhouse gas emissions

This criterion aims at reducing the embodied greenhouse gas emissions along the building whole life cycle, including those associated with product manufacturing, maintenance, repair, adaptation, renovation and end of life.

Indicators	Main references
Life-Cycle Global Warming Potential	EPBD, Level(s), Taxonomy
Operational greenhouse gas emissions	EPBD
Embodied greenhouse gas emissions	EPBD
On-site carbon emissions from fossil fuels	EPBD

1.3. Materials

1.3.1. Circularity & building materials environmental impacts

This criterion aims at optimising material use, reduce waste and introduce circularity into design`s and materials choices to extend the buildings life cycle, the long-term material utility and reduce significant environmental impacts.

Indicators	Main references
Bill of quantities, materials and lifespans	Level(s), Taxonomy
Construction and demolition waste and materials	Level(s); Taxonomy
Design for deconstruction	Level(s)
Building LCA (all phases or partial)	Level(s)
Sustainable and efficient use of primary raw materials	Taxonomy
No materials with high env. impact/dangerous substances	klimaaktiv/KH Nature
Use of eco-labelled products	klimaaktiv/KH Nature

1.4. Adaptability

1.4.1. Adaptability and flexibility

This criterion assesses the capacity of a building to continue fulfilling its function and to extend the useful service life into the future with the objective of reducing environmental impacts and increasing the building´s value.

Indicators	Main references
Design for adaptability and renovation	Level(s), Taxonomy
Flexibility aspects of the structure/of the technical building systems	Taxonomy

1.5. Water

1.5.1. Water use and disposal

This criterion aims to promote the efficient use of water resources by introducing water efficiency measure and grey water reuse and rainwater harvesting.

Indicators	Main references
Use stage water demand/consumption	Level(s)
Rainwater retention and harvesting	KH Nature
Requirements for water-saving sanitary fittings	Taxonomy
Greywater reuse	DGNB

1.6. Adaptation and resilience to climate change

1.6.1. Climate risk&vulnerability assessment and adaptation measures

This criterion assesses the exposition to climate risk and the vulnerability of the building and aims at ensuring the futureproof building performance against future changes in the climate in order to protect occupier health and comfort and to minimise long-term risks to property values and investments.

Indicators	Main references
Climate risk&vulnerability assessment	Taxonomy
Time outside of thermal comfort range (future climate projections)	Level(s)
Adaptation measures for increased risk of extreme weather events	Level (s)/Taxonomy
Sustainable drainage	Level(s)

1.7. Site and biodiversity

1.7.1. Reduction of the heat island effect and protection of biodiversity

This criterion aims at avoiding/ reducing the heat island effect through measures that positively influence the microclimate around the building such as a minimal soil sealing degree, natural infiltration, greening and planting measures, the maintenance of existing natural ecosystems.

Indicators	Main references
Soil sealing degree	klimaaktiv, KH Nature
Materials for external paving and roofing with high SRI	MEC
Microclimate analysis	klimaaktiv
Implementation of green infrastructure and nature-based solutions	Taxonomy
Maintenance/improvement of existing natural ecosystems	MEC

1.8. Health and indoor comfort

1.8.1. Indoor air quality

This criterion aims at reducing human health risks related to inadequate indoor air quality due to the presence of pollutants or other air conditions (CO2, humidity).

Indicators	Main references
Measurement of IAQ conditions and target pollutants	Level(s)
Requirements for low-polluting materials (formaldehyde, VOCs etc.)	Taxonomy
Radon risk exposure and protection measures	KH Nature
Ventilation strategy	klimaaktiv
Quality requirements for ventilation systems	klimaaktiv
Measuring and control devices for monitoring IEQ	EPBD

1.8.2. Thermal comfort

This criterion aims at ensuring adequate levels of thermal comfort for occupants by reducing the risk of overheating in summer and avoiding situations of inadequate heating in winter.

Indicators	Main references
Time outside of thermal comfort range	Level`s

1.8.3. Lighting and visual comfort

This criterion aims at assessing the availability and quality of lighting to ensure healthy and comfortable homes and workspaces.

Indicators	Main references
Daylight availability	Level`s
Avoidance of glare	Level`s
Views to the outside	Level`s
Quality of electric light sources	Level`s
Control of lighting	Level`s

1.8.4. Acoustics and protection against noise

This criterion aims at avoiding negative impacts on the health, comfort, well-being of occupants and their productivity and ability to communicate due to noise.

Indicators	Main references
Airbone and impact sound insulation	Level`s
Reverberation time, speech intelligibility	Level`s

1.9. Mobility

1.9.1. Building´s infrastructure for sustainable mobility

This criterion aims at improving the use of electrical vehicles and bicycles and to reduce environmental impacts connected to mobility by improving the recharging infrastructure in the building and nearby and offering parking spaces for bicycles.

Indicators	Main references
Recharging points for e-vehicles/ e-bikes	EPBD
Pre-cabling of parking spaces	EPBD
Parking spaces for bicycles	EPBD

1.9.2. Connection to local facilities

This criterion aims at assessing the proximity to facilities for daily life and to infrastructure for sustainable mobility.

Indicators	Main references
Public transport connection	DGNB, klimaaktiv
Distance to facilities	DGNB, klimaaktiv

1.10. Cost&value

1.10.1. Life Cycle Cost&Value creation

These criteria aim at optimising the life cycle cost and value of buildings to reflect the potential for long-term performance improvement, inclusive of acquisition, operation, maintenance, refurbishment, disposal and end of life.

Indicators	Main references
Life cycle cost calculation and optimisation	Level`s
Value creation and risk exposure	Level`s
Market potential	DGNB
Cost-benefit analysis/ Economic efficiency calculation	klimaaktiv, KH Nature

1.11. Management

1.11.1. Monitoring & maintenance

The criterion aims at ensuring that the planned building performances are actually achieved and ultimately optimised.

Indicators	Main references
Metering strategy	DGNB
Energy and water consumption monitoring	klimaaktiv
Inspection and maintenance of heating and air conditioning systems	EPBD
Maintenance plan	DGNB

D. Impact-effort analysis results

1. Results from the MESTRI-CE Joint Working Group impact-effort analysis

The results of the impact-effort analysis, based on the questionnaires completed by the MESTRI-CE Joint Working Group in each partner country, are visualised on the following pages. The indicators for each thematic area have been grouped according to the total impact and total effort scores as follows:

HIGH IMPACT	LOW EFFORT
≥9	< 6
HIGH IMPACT	HIGH EFFORT
≥9	≥ 6
MODERATE IMPACT	LOW EFFORT
6- 8	< 6
MODERATE IMPACT	HIGH EFFORT
6-8	≥ 6
LOW IMPACT	LOW EFFORT
<6	< 6
LOW IMPACT	HIGH EFFORT
<6	≥ 6

Both for impact and effort the maximum score achieved is 12.

1.1. Energy

1.1.1. Use stage energy performance

	HIGH IMPACT	LOW EFFORT
Heating demand		
Cooling demand		
Renewable energy produced on site		
Optimisation of the building solar energy generation potential		
Energy performance standards for building elements		
Summer heat protection		
Energy efficiency of technical building systems		
Share of renewable energy in delivered energy		
	MODERATE IMPACT	LOW EFFORT
Primary energy use		
Final energy use		
Electrical or thermal storage capacity		

	MODERATE IMPACT	HIGH EFFORT
Thermal integrity of the building envelope/thermal bridges		
Airtightness of the building envelope (testing)		
Building automation and control system		
	LOW IMPACT	HIGH EFFORT
Smart Readiness Index		

Most of the indicators in the thematic area "Energy" were rated as having a high or moderate impact and requiring little effort to be evaluated. This can be well explained by the fact that energy indicators are well established in the building assessment schemes in all the project countries and the optimisation of the use stage energy performance is one of the main targets when designing a new building or in building renovation. The indicators used to assess the quality of the building envelope (thermal bridging assessment, thermal integrity of the building envelope, airtightness) or the quality of the control and automation systems remain more difficult to assess according to most of the experts. The Smart Readiness Index is given little weight in terms of impact, though demanding in terms of effort, probably because it is still a relatively unknown and not widely used indicator.

1.2. Emissions

1.2.1. Greenhouse gas emissions

	HIGH IMPACT	HIGH EFFORT
Operational greenhouse gas emissions		
	MODERATE IMPACT	HIGH EFFORT
Life-Cycle Global Warming Potential		
Embodied greenhouse gas emissions		
	LOW IMPACT	HIGH EFFORT
On-site carbon emissions from fossil fuels		

In the thematic area "Emissions" the main focus is on operational GHG emissions, but embodied GHG emissions and a whole life cycle approach are also rated quite highly in terms of potential impact, although all experts agree that much more effort is needed to calculate them.

1.3. Materials

1.3.1. Circularity & building materials environmental impacts

	HIGH IMPACT	HIGH EFFORT
No materials with high environmental impact/ dangerous substan		
	MODERATE IMPACT	LOW EFFORT
Use of eco-labelled products		
	MODERATE IMPACT	HIGH EFFORT
Bill of quantities, materials and lifespans		
Construction and demolition waste and materials		
Building LCA (all phases or partial)		
	LOW IMPACT	HIGH EFFORT
Design for deconstruction		
Sustainable and efficient use of primary raw materials		

The indicators proposed for evaluating the circularity of buildings and the environmental impact of building materials, taking into account the different phases of the building life cycle, are considered to have quite a moderate impact, but most of them require a high effort to be assessed.

1.4. Adaptability

1.4.1. Adaptability and flexibility

	HIGH IMPACT	HIGH EFFORT
Design for adaptability and renovation		
	LOW IMPACT	**HIGH EFFORT**
Flexibility aspects of the structure/of the technical building syste		

Although the indicator "Design for adaptability and renovation" is considered to have a high impact in the context of the long-term use of a building, both indicators in this thematic area are considered quite burdensome in terms of evaluation.

1.5. Water

1.5.1. Water use and disposal

	MODERATE IMPACT	LOW EFFORT
Use stage water demand/consumption		
Rainwater retention and harvesting		
	LOW IMPACT	**LOW EFFORT**
Requirements for water-saving sanitary fittings		
	LOW IMPACT	**HIGH EFFORT**
Greywater reuse		

The indicators related to the efficient use of water, even if considered easy to calculate/evaluate, seem not have a high priority for most of the experts.

1.6. Adaptation and resilience to climate change

1.6.1. Climate risk&vulnerability assessment and adaptation measure

	HIGH IMPACT	HIGH EFFORT
Climate risk&vulnerability assessment		
	MODERATE IMPACT	**LOW EFFORT**
Adaptation measures for increased risk of extreme events		
Sustainable drainage		
	LOW IMPACT	**HIGH EFFORT**
Time outside of thermal comfort range (with future climate)		

The indicators in this thematic area are considered to be fairly impactful, while the evaluation burden is considered to be high for the climate risk and vulnerability assessment and low for the adaptation measures.

1.7. Site and biodiversity

1.7.1. Reduction of the heat island effect and protection of biodiversity

	MODERATE IMPACT	LOW EFFORT
Soil sealing		
Green infrastructure elements and nature-based solutions		
	LOW IMPACT	LOW EFFORT
Materials for external paving and roofing with high SRI		
Maintainance/improvement of existing natural ecosystems		
	LOW IMPACT	HIGH EFFORT
Microclimate analysis		

This thematic area and related indicators, such as those related to “Water”, are not considered a high priority in terms of impact, even though most of the indicators are perceived by the experts to be easy to calculate/evaluate.

1.8. Health and indoor comfort

With the exception of air quality, for which the indicators are rated as having a high and a moderate impact, the other criteria in this thematic area are all considered to be of rather low importance.

1.8.1. Indoor air quality

	HIGH IMPACT	LOW EFFORT
Ventilation strategy		
	HIGH IMPACT	HIGH EFFORT
Requirements for low-polluting materials		
	MODERATE IMPACT	LOW EFFORT
Measurement of IAQ conditions and target pollutants		
	MODERATE IMPACT	HIGH EFFORT
Radon risk exposure and protection measures		
Quality requirements for ventilation systems		
	LOW IMPACT	LOW EFFORT
Measuring and control devices for monitoring IEQ		

1.8.2. Thermal comfort

	LOW IMPACT	HIGH EFFORT
Time outside of thermal comfort range		

1.8.3. Lighting and visual comfort

	LOW IMPACT	LOW EFFORT
Daylight availability		
Avoidance of glare		
Views to the outside		
Quality of electric light sources		
Control of lighting		

1.8.4. Acoustics and protection against noise

	LOW IMPACT	HIGH EFFORT
Airbone and impact sound insulation		
Reverberation time, speech intelligibility		

1.9. Mobility

1.9.1. Building´s infrastructure for sustainable mobility

	MODERATE IMPACT	LOW EFFORT
Parking spaces for bicycles		
Recharging points for e-vehicles/ e-bikes		
Pre-cabling of parking spaces		
	LOW IMPACT	LOW EFFORT
Public transport connection		
Distance to facilities		

Indicators related to the availability of sustainable mobility infrastructure in buildings are considered to have a moderate impact, while those related to access to public transport services and facilities are not a priority. All are considered relatively easy to assess.

1.10. Cost&value

1.10.1. Life Cycle Cost&Value creation

	HIGH IMPACT	HIGH EFFORT
Life cycle cost calculation and optimisation		
	MODERATE IMPACT	HIGH EFFORT
Cost-benefit analysis/ Economic efficiency calculation		
	LOW IMPACT	HIGH EFFORT
Value creation and risk exposure		
Market potential		

Life cycle costing and cost-benefit analysis, although demanding in terms of calculation/evaluation effort, are highly rated in terms of impact.

1.11. Management

1.11.1. Monitoring & maintenance

	HIGH IMPACT	LOW EFFORT
Energy and water consumption monitoring		
	MODERATE IMPACT	LOW EFFORT
Metering strategy		
Inspection and maintenance of heating and air conditioning syste		
Maintenance plan		

Monitoring and maintenance indicators seem to be important in the scope of the sustainability assessment of the building and are all low demanding in terms of effort for the evaluation.

E. First conclusions and further steps

The results of the impact-effort analysis were presented and discussed with the MESTRI-CE project partners during the project meeting in Nuremberg in March 2024.

EVALUATION/CALCULATION EFFORT		IMPACT: HIGH	IMPACT: MODERATE	IMPACT: LOW
	HIGH	Emissions: 1 indicator Materials: 1 indicator Adaptability: 1 indicator Adaptation: 1 indicator IAQ: 1 indicator Cost&value: 1 indicator 6	Energy: 3 indicators Emissions: 2 indicators Materials: 3 indicators IAQ: 2 indicators Cost&value: 1 indicator 11	Energy: 1 indicator Emissions: 1 indicator Materials: 2 indicators Adaptability: 1 indicator Water: 1 indicator Adaptation: 1 indicator Site&biodiversity: 1 indicator Thermal comfort: 1 indicator Acoustics and noise: 2 indicators Cost&value: 2 indicators 13
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Table 1 – Summary of the results of MESTRI-CE Joint Working Group impact-effort analysis on sustainability indicators

As summarised in Table 1, the analysis highlighted a number of priority thematic areas that are considered by most of the experts of the MESTRI-CE Joint Working Group to have a high impact and should therefore form the basis for the creation of the MESTRI-CE Sustainable Building Methodology. These are the thematic areas “Energy”, “Emissions”, “Materials”, “Adaptation and resilience”, “Cost&Value” and “Management”. In the thematic area “Health and comfort”, only the indoor air quality criterion seems to have a higher priority according to the Joint Working Group.

With regard to the indicators proposed for the different thematic areas, the results of the impact analysis showed that the assessments were not always unanimous. It can be observed that the indicators considered to have the highest impact are generally those with which the experts are most familiar, as they are already widely used in the building standards and schemes already in use at national or regional level. These are mainly related to the area “Energy” (8 high impact indicators), but at least one high impact indicator is also reported for the areas “IAQ”, “Emissions”, “Materials”, “Adaptability”, “Adaptation and resilience”, “Cost&Value” and “Management”.

In terms of effort, the majority of experts perceive difficulties or at least significant effort in assessing relatively 'new' indicators such as the Smart Readiness Index or the indicators introduced by the Level(s) Framework and the Taxonomy for the thematic areas “Materials”, “Adaptability”, “Cost&Value”, “Adaptation and Resilience”. The estimation of greenhouse gas emissions for the different phases of the building life cycle was also generally considered to be a major effort.

The discussion on the results of the impact-effort analysis among the project partners highlighted some key points for the further development of the MESTRI-CE Sustainable Building Methodology:

- The holistic approach to sustainability, and therefore the integration of all its dimensions into the building assessment, should remain the guiding principle for the design of the MESTRI-CE Sustainable Building Methodology. Therefore, in addition to the priority thematic areas and their key indicators, indicators that were found to be less significant in terms of impact in this initial analysis should also be considered.
- The choice of the MESTRI-CE Sustainable Building Methodology key indicators will need to converge, regardless of the effort required, on those that will enable the new construction/renovation of buildings in a way that is consistent with long term European sustainability goals, thus anticipating future building performance requirements.
- The MESTRI-CE Sustainable Building Methodology should capitalise on the methodologies and approaches to sustainability, as well as on the indicators already successfully tested in existing standards and schemes and build on them to align with the European framework.
- For all indicators for which there is already a calculation/assessment methodology defined by national or regional standards, it will be necessary to clarify whether and to what extent harmonisation at CE level is possible/necessary.
- The MESTRI-CE Sustainable Building Methodology will have to address the difficulties associated with the evaluation of certain indicators and try to overcome them also through the exchange of know-how between project partners, as many of them have a long experience in the application of building sustainability schemes.
- The development of the MESTRI-CE Sustainable Building Methodology and related indicators will need to address the needs and expectations of building managers and owners, potential project developers and building designers who will test and apply it.

As a next step, the list of selected indicators will be presented and discussed during the regional/national round table meetings and an impact analysis will be carried out among the MESTRI-CE stakeholders.