

**OPEN HOUSE**

Benchmarking and mainstreaming building sustainability in the UE based on transparency and openness from model to implementation



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D1.2.2. First set of recommendations for standardisation for the baseline.

Author(s): **Natalie Eßig** **Fraunhofer IBP**
 Matthias Fischer **Fraunhofer IBP**
 Sebastian Eberl **Fraunhofer IBP**

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Summary

The D1.2.2. First set of recommendations for standardisation for the baseline is a public document delivered in the context of WP1, Task 1.2: Analysis of existing methodologies, normative, standards and guidelines related to the sustainability of buildings with regard to develop the OPEN HOUSE methodology's baseline.

This document is about analysis of the results from D1.2.1. Assessment of methodologies, normative, standards and guidelines for sustainability of buildings at national, European and International level. Furthermore a first framework including definitions and a first recommendation for the selection of indicators will be given.

Contents

SUMMARY	3
ABBREVIATIONS	8
INTRODUCTION	9
1. FRAMEWORK	10
1.1 DEFINITIONS.....	10
1.2 GENERAL APPROACH.....	10
2. INDICATORS	11
2.1 ENVIRONMENTAL.....	11
2.1.1 Global Warming Potential (GWP).....	11
2.1.2 Ozone Depletion Potential (ODP).....	14
2.1.3 Acidification Potential (AP).....	18
2.1.4 Eutrophication Potential (EP).....	19
2.1.5 Photochemical Ozone Creation Potential (POCP).....	20
2.1.6 Risks from materials.....	22
2.1.7 Certified wood.....	23
2.1.8 Microclimate / Heat-Island-Effect.....	23
2.1.9 Biodiversity.....	24
2.1.10 Light Pollution.....	25
2.1.11 Non-Renewable Primary Energy Demands (PEne).....	26
2.1.12 Total Primary Energy Demands and Percentage of Renewable Primary Energy.....	27
2.1.13 Abiotic Resource Depletion.....	31
2.1.14 Non-renewable freshwater resources depletion.....	35
2.1.15 Depletion of habitats.....	39
2.1.16 Contamination of undisturbed areas.....	40
2.1.17 Exhaustion of solid waste sites suitable for non-hazardous waste.....	43
2.1.18 Waterbody pollution excluding Eutrophication.....	45
2.1.19 Hazards from disposal of non-radioactive hazardous waste.....	47
2.1.20 Hazards from disposal or storage of radioactive waste.....	47
2.1.21 Responsible Material Sourcing.....	48
2.2 SOCIAL.....	50
2.2.1 Barrier-free Accessibility.....	50
2.2.2 Personal Safety and Security of Users.....	51
2.2.3 Thermal Comfort.....	51
2.2.4 Indoor Air Quality.....	53
2.2.5 Water Quality.....	57

2.2.6 Acoustic Comfort	58
2.2.7 Visual Comfort.....	60
2.2.8 Operation Comfort	63
2.2.9 Service Quality	66
2.2.10 Electro Magnetic Pollution	67
2.2.11 Accessibility	68
2.2.12 Noise from Building and Site.....	69
2.2.13 Quality of the Design and Urban Development of the building and Site	70
2.2.14 Bicycle Comfort	72
2.3 ECONOMIC	73
2.3.1 Building-related Life Cycle Costs (LCC)	73
2.3.2 Socio-economic impact	74
2.3.3 Value Stability	75
2.4 TECHNICAL	75
2.4.1 Fire Protection.....	75
2.4.2 Designing for Robustness.....	76
2.4.3 Easiness of clean and maintenance	77
2.4.4 Ability to resist against hail, storm, high water and earthquake.....	78
2.4.5 Noise Protection.....	78
2.4.6 Quality of the building shell.....	79
2.5 FUNCTIONAL	81
2.5.1 Area Efficiency	81
2.5.2 Conversion Feasibility	82
2.6 PROCESS.....	86
2.6.1 Quality of the Project's Preparation	86
2.6.2 Integral Planning	86
2.6.3 Optimization and Complexity of the Approach to Planning	87
2.6.4 Evidence of Sustainability during Bid Invitation and Awarding.....	88
2.6.5 Construction Site impact/ Construction Process.....	89
2.6.6 Quality of the Executing Contractors/Pre-Qualification.....	90
2.6.7 Quality of the Executing Contractors/Pre-Qualification.....	91
2.6.8 Quality Assurance of Construction Execution	91
2.6.9 Commissioning.....	92
2.7 PROCESS.....	94
2.7.1 Risks at the Site	94
2.7.2 Risks at the Site	95
2.7.3 Circumstances at the Site.....	96
2.7.4 Options for Transportation	96
2.7.5 Image and Condition of the Location and Neighbourhood.....	99
2.7.6 Vicinity to amenities	99
2.7.7 Adjacent Media, Infrastructure, Development	101

2.7.8 Adjacent Media, Infrastructure, Development 101

2.7.9 Summary 102

CONCLUSION 105

ACKNOWLEDGEMENTS..... 107

Abbreviations

AP	Acidification Potential
CEN	European Committee for Standardisation
EP	Eutrophication Potential
GWP	Global Warming Potential
ISO	International Organization for Standardisation
LCA	Life Cycle Assessment
LCC	Life Cycle Costing
ODP	Ozone Depletion Potential
OPEN HOUSE	Benchmarking and mainstreaming building sustainability in the EU based on transparency and openness (open source and availability) from model to implementation.
PEne	Non-Renewable Primary Energy Demands
POCP	Photochemical Ozone Creation Potential
SC	Subcommittee
TC	Technical Committee

Introduction

In Task 1.2 of Workpackage 1, methodologies of normative, standards and guidelines for sustainability of buildings at national, European and International level are collected and assessed. The knowledge gathered in this Task will be used as a basis to develop a respective European guideline. Therefore, first target group for the findings of this Task are the members of the OPEN HOUSE consortium. As the Deliverables D1.2.1 and 1.2.2 are public, also any interested party may read and use these findings.

This is the second deliverable of the project. It is very much based on the findings from Deliverable D1.2.1 (analysis and assessment of methodologies, normative, standards and guidelines for the sustainability of buildings at national, European and International level): From the indicators identified and classified in the assessment systems analysed (D1.2.1), in D1.2.2 a set of indicators to be proposed for the OPEN HOUSE baseline is developed. This first set of recommendations as presented in D1.2.2 will be the basis for the further development of the OPEN HOUSE building sustainability assessment system; for example in Task 1.3, the indicators suggested in this deliverable will be discussed and calculation schemes will be defined, also based on the findings from D1.2.1.

Whereas all participants of the OPEN HOUSE project were involved in identifying and analysing the international assessment methodologies (cp. D1.2.1), the classification of indicators and the development of a first set of recommendations for the OPEN HOUSE baseline has been elaborated by Fraunhofer IBP. Nevertheless, this first set of recommendations will be further discussed and elaborated by the OPEN HOUSE partners in Task 1.3.

1. Framework

1.1 Definitions

Concerning the development of the framework of our OPEN HOUSE methodology's baseline we refer to the findings of our Deliverable D1.2.1. As a basis we use for example the terminology and the definitions given in the international standards from CEN/TC 350 and TC59/SC 17. In cases where they do not fit or have gaps, we are modifying and adapting them to the OPEN HOUSE approach.

1.2 General approach

When developing a sustainability assessment system, one of the first important steps is the development of the structure analysed in Deliverable D1.2.1. as well as the definition of indicators to be considered. With this step the main intentions and perspectives of the new assessment system are determined. Following, the indicators have to be specified concerning calculation methods, sub-indicators, system boundaries and benchmarks, and weightings between the different indicators or areas of interest have to be found. As in Task 1.2 only a first set of recommendations for the OPEN HOUSE system is defined, the main focus of this task lies on the identification of indicators suggested by existing systems.

In addition, information on the specification of these indicators and the respective systems is gathered, that is passed within the consortium and will serve as an important source of information for the specification of the OPEN HOUSE indicators.

2. Indicators

In Task 1.2, an extensive analysis of existing assessment schemes for building sustainability was carried out. For this, a set of questionnaires was developed, completed by the partners and assessed by Fraunhofer IBP. Respective method descriptions and result summaries can be found in Deliverable D1.2.1. One of the most important outcomes of Task 1.2 is an extensive table containing all indicators occurring in the systems analysed. The complete table will be attached to this deliverable. As the OPEN HOUSE system to be developed should be a comprehensive one, the indicators provided by the partners are classified according to the structures given by the questionnaires sent in a way that all indicators are considered (cp. D 1.2.1 and attached table). From this classification, a set of indicator suggestions is developed by again grouping the indicators according to their objectives. Following this procedure, the indicators as provided in this chapter have been developed.

Despite the fact that all partners included in Task 1.2 did their best to complete the questionnaires, some answers could not be provided. In these cases, indicators were classified according to information available (cp. full table).

2.1 Environmental

2.1.1 Global Warming Potential (GWP)

The following table includes all indicators provided by the systems analysed for the issue of Global Warming Potential (GWP).

<i>Country of Assessment Method</i>	<i>Name of Assessment Method</i>	<i>Indicator</i>	<i>Intent</i>	<i>Unit</i>
D	DGNB	Global Warming Potential (GWP)	Harm to the environment caused by the global warming potential is to be minimized.	kg CO ₂ -equiv./m ² N GF*a
ES	BREEAM ES	CO ₂ emissions	To recognise and encourage buildings that are designed to minimise the CO ₂ emissions associated	Percentage improvement over the baseline requirement

			with their operational energy consumption.	ts of ASHRAE Energy Standard 90.1-2004
ES	BREEAM ES	Low or zero carbon technologies	To reduce carbon emissions and atmospheric pollution by encouraging local energy generation from renewable sources to supply a significant proportion of the energy demand.	Percentage reduction in the building's CO2 emissions
ES	BREEAM ES	Refrigerant GWP. Building services	To reduce the contribution to climate change from refrigerants with a high GWP.	Global Warming Potential (GWP) and Ozone Depletion Potential (ODP)
ES	BREEAM ES	GWP	To reduce the emissions of refrigerants to the atmosphere arising from leakages in cooling plant.	
ES	BREEAM ES	GWP	To reduce the contribution to climate change from refrigerants with a high global warming potential.	GWP and ODP
ES	Guía País Vasco	Global Warming Potential (GWP)	Harm to the environment caused by the global warming potential is to be minimized.	kg CO2 equiv./m2N GF*a
EU	BREEAM Europe	Low zero carbon technologies	To reduce carbon emissions and atmospheric pollution by encouraging local	

			energy generation from renewable sources to supply a significant proportion of the energy demand.	
EU	BREEAM Europe	Refrigerant GWP - Building services	To reduce the contribution to climate change from refrigerants with a high global warming potential.	
EU	BREEAM Europe	Preventing refrigerant leaks	To reduce the emissions of refrigerants to the atmosphere arising from leakages in cooling plant.	
EU	BREEAM Europe	Refrigerant GWP – Cold Storage	To reduce the contribution to climate change from refrigerants with a high global warming potential.	
I	Protocollo ITACA	Issues incorporated in building materials	Reduce the emissions of CO2 equivalent from primary energy not renewable due for the extraction, production and transportation of materials and elements for the building	%
I	Protocollo ITACA	Projected emissions in operation	Reduce the emissions of CO2 equivalent from primary energy not renewable used for building operation	%
PL	SBTOOL PL - E-AUDIT	Global Warming Potential (GWP)	Harm to the environment caused by the global warming potential is to be minimized.	kg CO2 equiv./m2* a
PL	SBTOOL PL - E-	Global Warming Potential	Harm to the environment caused by	kg CO2 equiv./m2*

	AUDIT	(GWP)	the global warming potential is to be minimized.	a
S	Eco-effect	(Climate Change)		
F	ELODIE	Global Warming Potential (GWP)	Harm to the environment caused by the global warming potential is to be minimized.	t CO2 equiv
F	EQUER	Global Warming Potential (GWP)	Harm to the environment caused by the global warming potential is to be minimized.	t CO2 equiv
USA	LEED	low emitting and fuel efficient vehicles	to reduce pollution and land development impacts from automobile use	% of users
USA	LEED	parking size, number of spaces	to reduce pollution and land development impacts from automobile use	% of users
ES	Guía País Vasco			
F	ELODIE		Emission to air	m3
USA	LEED	GWP	refrigerant	

From these, the following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.1.1	Global Warming Potential (GWP)

2.1.2 Ozone Depletion Potential (ODP)

The following table includes all indicators provided by the systems analysed for the issue of Ozone Depletion Potential (ODP).

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Ozone Depletion Potential (ODP)	Harm to the environment caused by the Ozone Depletion Potential is to be minimized.	kg R11-equiv./m ² N GF*a
ES	BREEAM ES	Refrigerant GWP. Building services	To reduce the contribution to climate change from refrigerants with a high GWP.	Global Warming Potential (GWP) and Ozone Depletion Potential (ODP)
ES	BREEAM ES	GWP	To reduce the emissions of refrigerants to the atmosphere arising from leakages in cooling plant.	
ES	BREEAM ES	GWP	To reduce the contribution to climate change from refrigerants with a high global warming potential.	GWP and ODP
USA	LEED	low emitting and fuel efficient vehicles	to reduce pollution and land development impacts from automobile use	% of users
USA	LEED	parking size, number of spaces	to reduce pollution and land development impacts from automobile use	% of users
ES	Guía País Vasco			
ES	BREEAM ES	NOx emissions	To encourage the supply of heat from a system that minimises	NOx emissions (mg/kWh)

			NOx emissions, and therefore reduces pollution of the local environment.	
ES	Guía País Vasco	Increase of UV radiation at ground level	Destruction of the stratospheric ozone layer should be minimized. It also affects to the global warming potential.	kg CFC11eq
ES	VERDE	Increase of UV radiation at ground level	Destruction of the stratospheric ozone layer should be minimized. It also affects to the global warming potential.	kg CFC11eq
ES	VERDE	Increase of UV radiation at ground level	Destruction of the stratospheric ozone layer should be minimized. It also affects to the global warming potential.	kg CFC11eq
EU	BREEAM Europe	Refrigerant GWP - Building services		
EU	BREEAM Europe	Preventing refrigerant leaks	To reduce the emissions of refrigerants to the atmosphere arising from leakages in cooling plant.	
EU	BREEAM Europe	Refrigerant GWP – Cold Storage		
EU	BREEAM Europe	NOx emissions from heating source	To encourage the supply of heat from a system that minimises NOx emissions, and therefore reduces pollution of the local environment.	mg/kWh, kW
F	ELODIE	Ozone Depletion Potential (ODP)		

PL	ITB-BEE	Materials with low environmental impact - impact on the ozone layer caused the disappearance of compounds using CFCs and halons	Avoiding the Use of Materials with Pollutant Content	for insulation foaming materials and refrigerants - ODP
PL	SBTOOL PL - E-AUDIT	ODP	Harm to the environment caused by the ozone layer depletion, to assess the extent to which ozone depleting substances have been minimized during building construction and operation.	kg CFC-11 equiv./m2* a
PT	SBTOOL PT		Avoid destruction of stratospheric ozone layer	euros/m2/y ear
USA	LEED	ODP (ozone depletion potential)	refrigerant	
F	ELODIE		Emission to air	m3
S	Eco-effect	(Stratospheric Ozone-layer Depletion)	Quantify the environmental impact caused by operational energy use during the anticipated life span and the impact caused by the production of construction materials.	

From these, the following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.1.2	Ozone Depletion Potential (ODP)

2.1.3 Acidification Potential (AP)

The following table includes all indicators provided by the systems analysed for the issue of Acidification Potential (AP).

<i>Country of Assessment Method</i>	<i>Name of Assessment Method</i>	<i>Indicator</i>	<i>Intent</i>	<i>Unit</i>
D	DGNB	Acidification Potential	Harm to the environment caused by the global warming potential is to be minimized.	kg SO ₂ -equ./m ² NG F*a
F	ELODIE		Harm to the environment caused by the emission of SO ₂ to water and land	kg SO ₂ equiv
F	EQUER		Harm to the environment caused by the emission of SO ₂ to water and land	kg SO ₂ equiv
ES	Guía País Vasco	Loss of fertility		kg SO ₂ eq
ES	VERDE	Loss of fertility		kg SO ₂ eq
PL	SBTOOL PL - E-AUDIT	AP	Harm to the environment caused by the acidification	kg SO ₂ equiv./m ² *a
PL	ITB-BEE	Evaluates the rate of reduction in concentrations of atmospheric pollutants emitted by the building or from within its site	1) Actions taken in the facility: a) The choice of equipment in the building of low-emission factors of NO _x and SO _x , b) The choice of the central equipment with low emission factors of NO _x and SO _x , c) The use of green fuels (low sulfur fuel, natural gas)	

			d) Monitoring the concentrations obtained 2) Actions taken outside the building a) Greening of reducing the concentration of gases and dust emitted b) The use of such atmospheric purification systems such as photocatalysis	
USA	LEED	low emitting and fuel efficient vehicles	to reduce pollution and land development impacts from automobile use	% of users
USA	LEED	parking size, number of spaces	to reduce pollution and land development impacts from automobile use	% of users
ES	Guía País Vasco			
F	ELODIE		Emission to air	m3
S	Eco-effect	(Acidification)		

From these, the following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.1.3	Acidification Potential (AP)

2.1.4 Eutrophication Potential (EP)

The following table includes all indicators provided by the systems analysed for the issue of Eutrophication Potential (EP).

Country of Assessment Method	Name of Indicator	Intent	Unit

D	DGNB	EutrophicationPotential (EP)	Harm to the environment caused by the global warming potential is to be minimized.	kg PO43-equiv./m ² N GF*a
ES	Guía País Vasco	Loss of aquatic life		kg PO4eq
EU	BREEAM Europe	Minimising Watercourse Pollution	To reduce the potential for silt, heavy metals, chemicals or oil pollution to natural watercourses from surface water run-off from buildings and hard surfaces.	
F	EQUER		Harm to the environment caused by the emission of PO4 to water and land	kg PO4 equi
PL	SBTOOL PL - E-AUDIT	EUP	Harm to the environment caused by eurtofication	kg PO4 equiv./m ² *a
USA	LEED	organisation of the construction site	to reduce pollution from construction activities by controlling soil erosion, waterway sedimentation and airborne dust generation	

From these, the following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.1.4	EutrophicationPotential (EP)

2.1.5 Photochemical Ozone Creation Potential (POCP)

The following table includes all indicators provided by the systems analysed for the issue of Photochemical Ozone Creation Potential (POCP).

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Photochemical Ozone Creation Potential (POCP)	Harm to the environment caused by the global warming potential is to be minimized.	kg C ₂ H ₄ -equiv./m ² N GF*a
F	ELODIE		Formation of tropospheric ozone	kg C ₂ H ₂
F	EQUER		Formation of tropospheric ozone	kg C ₂ H ₄
USA	LEED	low emitting and fuel efficient vehicles	to reduce pollution and land development impacts from automobile use	% of users
USA	LEED	parking size, number of spaces	to reduce pollution and land development impacts from automobile use	% of users
ES	Guía País Vasco			
S	Eco-effect			
F	ELODIE		Emission to air	m ³
PL	SBTOOL PL - E-AUDIT	POCP	Harm to the environment caused by fotochemical oxidation	kg CH ₄ equiv./m ² *a

From these, the following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.1.5	Photochemical Ozone Creation Potential (POCP)

2.1.6 Risks from materials

The next category according to the questionnaire structure was called "Changes in biodiversity and other ecological systems". From this category, indicators referring to five different issues were identified: Risks from materials, Certified wood, Microclimate / Heat island effects, Biodiversity and Light pollution:

<i>Country of Assessment Method</i>	<i>Name of Assessment Method</i>	<i>Indicator</i>	<i>Intent</i>	<i>Unit</i>
D	DGNB	Risks for the Local Environment	The risks for the local environment are minimized through a purposeful choice of building materials that come in contact with the surrounding air, soil, and surface- and/or groundwater during the operation of the building.	
S	Nordic Ecolabel - Svanen	Chemical building products		
S	Miljöklassad Byggnad	Documentation of building products		
S	Miljöklassad Byggnad			
S	Miljöstatus för byggnader o. E.	Asbestos, Pb, Freon, As, CU, CR, Creosot, Pentaklofenol, Hg, PCB, Oil-products, othes (eg PVC, Br Flame ret, glycol etc)		
S	Miljöstatus för byggnader o. E.			
S	Nordic Ecolabel - Svanen	Chemical substances in permanent building products		

From these, the following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.2.1	Risks from materials

2.1.7 Certified wood

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Other Impacts on the Global Environment	The impacts of a building on the global environment shall be reduced. A central aspect is the proof of the use of certificated wood.	%

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.2.2	Certified wood

2.1.8 Microclimate / Heat-Island-Effect

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Microclimate	The choice of appropriate products and solutions shall reduce the negative impact on the micro-	

			climate of roofs and façades, which can contribute to “heat islands”.	
I	Protocollo ITACA	Heat island effect: roofing	Guarantee an adequate thermal confort during the summer time on the roofing surface	%
I	Protocollo ITACA	Heat island effect: external paved areas	Guarantee an adequate thermal confort during the summer time within the external paved areas	%
USA	LEED	surface of hardscape/roof under cover/low SRI	to reduce heat islands to minimize impacts on microclimates and human and wildlife habitats	%
ES	Guía País Vasco			
USA	LEED	stormwater management plan		cubic feet
USA	LEED	stormwater management plan		%

From these, the following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.2.3	Microclimate / Heat-Island-Effect

2.1.9 Biodiversity

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
ES	Guía País Vasco		Avoid biodiversity reduction and negative impacts on ecological systems	%

ES	VERDE		Avoid biodiversity reduction and negative impacts on ecological systems	%
F	HQE			
EU	BREEAM Europe	Long Term Impact on Biodiversity	To minimise the long term impact of the development on the site's, and surrounding area's, biodiversity.	
ES	BREEAM ES	Long term impact on biodiversity	To minimise the long term impact of the development on the site's, and surrounding area's biodiversity	
PT	SBTOOL PT	Biodiversity		%
USA	LEED	surface of open space	to promote biodiversity	%
ES	VERDE			
EU	BREEAM Europe	Long Term Impact on Biodiversity	To minimise the long term impact of the development on the site's, and surrounding area's, biodiversity.	

From these, the following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.2.4	Biodiversity

2.1.10 Light Pollution

Country of Assessment Method	Name of Indicator	Intent	Unit

PL	SBTOOL PL - E-AUDIT	Reflectance of horizontal building surfaces and hard-surfaced site areas	To account for local heat island effects caused by large areas with low reflectance.	%
ES	VERDE			
USA	LEED	light pollution reduction		footcandles

From these, the following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.2.5	Light Pollution

2.1.11 Non-Renewable Primary Energy Demands (PEne)

The following indicator was classified in the category “Depletion of non-renewable primary energy”:

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Non-Renewable Primary Energy Demands (PEne)	The use of non-renewable energy resources shall be reduced. With the identification of the non-renewable primary energy demands, the energy-efficiency of the construction and use, as well as the energy demands of the upstream chain is evaluated.	kWh/m ² NG F*a

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.3.1	Non-Renewable Primary Energy Demands (PEne)

2.1.12 Total Primary Energy Demands and Percentage of Renewable Primary Energy

The following indicators were classified in the category "Depletion of non-renewable primary energy":

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Total Primary Energy Demands and Percentage of Renewable Primary Energy	The total demand for primary energy shall be minimized and the percentage of renewable energy shall be maximized during the life cycle of a property.	kWh/m ² NG F*a, %
ES	Guía País Vasco		Avoid natural resources depletion	MJ
ES	VERDE		Avoid natural resources depletion	MJ
F	ELODIE		Energy used for the LC of the building	GJ
F	EQUER		Energy used for the LC of the building	GJ
F	HQE		Energy used for the LC of the building	kWh
F	HQE	Cep : energy consumption	Reducing the use of non-renewable primary	kWh/m ² /an

			energy	
F	HQE	Ventilation power	Design of a performant ventilation system	W Th-C
F	HQE	Type of lighting products	Use of performant and low-consumption lighting systems	
I	Protocollo ITACA	Energy incorporated in building materials	Reduce the primary energy incorporated in building materials	%
I	Protocollo ITACA	Thermal transmittance of the building envelope	Reduce the need of primary energy for winter air conditioning	%
I	Protocollo ITACA	Net energy for heating	Reduce the building's energy need, optimising the construction solutions, in particular with reference to the envelope solution	%
I	Protocollo ITACA	Primary energy for heating	Reduce the building's energy need, optimising the construction solutions, in particular with reference to the envelope solution	%
I	Protocollo ITACA	Control of solar radiation	Reduce the solar radiation	MJ/m ² (-)
I	Protocollo ITACA	Thermal inertia of the building	Avoid the thermal overheating during the summer time	W/m ² K
I	Protocollo ITACA	Net energy for cooling	Reduce the building's energy need, optimising the construction solutions, in particular with reference to the envelope solution	%
I	Protocollo ITACA	Primary energy for cooling	Reduce the building's energy need, optimising the construction solutions, in particular with reference to the envelope solution	%

PT	SBTOOL PT	Energy efficiency	Avoid natural resources depletion	MJ
PL	ITB-BEE	Primary energy factor		kWh/(m2* year)
PL	ITB-BEE	Evaluates efforts for direct use of natural energy (light and ventilation etc.) and converted use of renewable energy (solar generation, heat use etc.).		
PL	ITB-BEE	Assessment by ERR value		%
PL	ITB-BEE	LR 141 Monitoring LR 142 Operation and Management System		
PL	SBTOOL PL - E-AUDIT	Primary energy embodied in materials, annualized over life-cycle	Depletion of resources	MJ/M2 *yr
PL	SBTOOL PL - E-AUDIT	Net primary non-renewable energy used for building ops over the life-cycle	Depletion of resources	MJ/M2 *yr
ES	Guía País Vasco	Energy production based on renewable energies	Harm to the environment caused by the global warming potential is to be minimized.	kWh/ m2 year
S	Nordic Ecolabel - Svanen	Energy consumption	Obligatory	
I	Protocollo ITACA	Thermal energy	Foster the use of energy from renewable sources	%
ES	BREEAM ES	Sub-metering of substantial energy uses	To recognise and encourage the installation of energy sub-metering that facilitates the monitoring of in-use energy consumption.	
ES	BREEAM ES	Sub-metering of high energy load and Tenancy Areas	To recognise and encourage the installation of energy sub-metering that	

			facilitates the monitoring of in-use energy consumption by tenant or end user.	
ES	BREEAM ES	Energy efficient Cold storage systems	To recognise and encourage the installation of energy efficient cold storage systems, therefore reducing operational CO2 emissions.	
ES	BREEAM ES	Energy efficient lifts	To recognise and encourage the specification of energy-efficient transportation systems.	
ES	BREEAM ES	Energy efficient escalators and walkways	To recognise and encourage the specification of energy-efficient transportation systems.	
EU	BREEAM Europe	External lighting	To recognise and encourage the specification of energy-efficient light fittings for external areas of the development.	lamp lumens/circuit Watt; colour
EU	BREEAM Europe	Building fabric performance and avoidance of air infiltration	To recognise and encourage measures taken to minimise heat loss and air infiltration through the building fabric.	
EU	BREEAM Europe	Cold Storage	To recognise and encourage the installation of energy efficient cold storage systems, therefore reducing operational CO2 emissions.	
EU	BREEAM Europe	Lifts	To recognise and encourage the specification of energy-	

			efficient transportation systems.	
EU	BREEAM Europe	Escalators and travelling walkways	To recognise and encourage the specification of energy-efficient transportation systems.	
S	Nordic Ecolabel - Svanen	Permanent light sources	Obligatory	
S	Nordic Ecolabel - Svanen	Energy labelled white goods	Obligatory	
S	Nordic Ecolabel - Svanen	Low flow showers and taps	Obligatory	
S	Nordic Ecolabel - Svanen	Individual measurement of energy		
I	Protocollo ITACA	Electricity	Foster the utilization of energy from renewable sources	%

From these, the following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.3.2	Total Primary Energy Demands and Percentage of Renewable Primary Energy

2.1.13 Abiotic Resource Depletion

According to the questionnaire structure, the following indicators are classified as "Depletion of non-renewable resources other than primary energy".

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
ES	BREEAM ES	Re-use of facades	To recognise and encourage the in-situ reuse of existing	Percentage of the total final

			building facades.	building facade that is reused.
ES	BREEAM ES	Reuse of building structure	To recognise and encourage the reuse of existing structures that previously occupied the site.	Percentage of the reused structure
ES	BREEAM ES	Responsible sourcing materials	To recognise and encourage the specification of responsibly sourced materials for key building elements.	Percentage of the used materials
ES	BREEAM ES	Designing for robustness	To recognise and encourage adequate protection of exposed parts of the building and landscape, therefore minimising the frequency of use of replacement materials.	
EU	BREEAM Europe	Re-Use of Facade	To recognise and encourage the in-situ reuse of existing building façades.	
EU	BREEAM Europe	Re-Use of Structure	To recognise and encourage the reuse of existing structures that previously occupied the site.	
EU	BREEAM Europe	Designing for Robustness	To recognise and encourage adequate protection of exposed parts of the building and landscape, therefore minimising the frequency of use of replacement materials.	
ES	BREEAM ES	Construction site waste management	To promote resource efficiency via the effective and appropriate	

			management of construction site waste.	
ES	Guía País Vasco		Avoid natural resources depletion	kg SB eq
ES	Guía País Vasco		Avoid natural resources depletion	kg SB eq
F	ELODIE	Abiotic Depletion Potential		Sb equivalent
F	EQUER	Abiotic Depletion Potential		Sb equivalent
F	HQE	Type of products	Promoting the use of renewable materials (wood especially)	
PL	ITB-BEE	Reducing usage of non-renewable Resources		
PT	SBTOOL PT	Materials and solid wastes	Avoid natural resources depletion	%
PL	SBTOOL PL - E-AUDIT	Amount and quality of off-site materials used	To assess the amount of materials salvaged from off-site sources that are re-used in the Design.	% weight
USA	LEED	recycled content	to increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials	% of recycled materials (based on cost)
USA	LEED	proportion of rapidly renewable materials	to reduce the use and depletion of finite raw materials	% of rapidly renewable materials (based on cost)
S	Eco-effect	Natural Resources- fuels, metals, minerals (biomass)		
ES	BREEAM ES	Recycled aggregates	To recognise and encourage the use of	Percentage of recycled

			recycled and secondary aggregates in construction, thereby reducing the demand for virgin material.	aggregates used
EU	BREEAM Europe	Recycled Aggregates	To recognise and encourage the use of recycled and secondary aggregates in construction, thereby reducing the demand for virgin material.	
USA	LEED	proportion of building reuse		% of building reuse
I	Protocollo ITACA	Materials from renewable sources	Reduce the use of traditional material	%
I	Protocollo ITACA	Recyclable materials and disassembled	Foster the development of designs with recycling material and easy to be disassembled	-
I	Protocollo ITACA	Reuse of existing structures	Foster the re-utilization of existing buildings demotivate the demolition actions if the building could be refurbished	%
EU	BREEAM Europe	Floor Finishes	To encourage the specification and fitting of floor finishes selected by the building occupant and therefore avoid unnecessary waste of materials.	
ES	BREEAM ES	Floor finishes	To encourage the specification and fitting of floor finishes selected by the building occupant and therefore avoid unnecessary waste of materials.	

I	Protocollo ITACA	Materials recycled / recovered	Increase the use of Materials recycled / recovered	%
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In accordance with a common indicator provided by the Centre for Milieukunde, Leiden, the following naming of the respective indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.3.3	Abiotic Resource Depletion

2.1.14 Non-renewable freshwater resources depletion

The following indicators were grouped into "Depletion of non-renewable freshwater resources":

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Potable Water Consumption and Sewage Generation	Potable water consumption and sewage generation shall be reduced.	m ³ /year
ES	BREEAM ES	Water consumption	To minimise the consumption of potable water in sanitary applications by encouraging the use of low water use fittings	
ES	BREEAM ES	Water meter	To ensure water consumption can be monitored and managed and therefore encourage reductions in water consumption.	
ES	BREEAM ES	Major leak detection	To reduce the impact of	

			major water leaks that may otherwise go undetected.	
ES	BREEAM ES	Sanitary supply shut off	To reduce the risk of minor leaks in toilet facilities	
ES	BREEAM ES	Irrigation systems	To reduce the consumption of potable water for ornamental planting and landscape irrigation.	
ES	BREEAM ES	Vehicle wash	To minimise the volume of potable water used by vehicle washing facilities	
ES	BREEAM ES	In situ sustainable water treatment	To encourage the treatment and wastewater reuse on-site in order to reduce the need for centralized systems of water treatments, harmful to the environment, and enable the recycling of water and nutrients in less distance and time.	
ES	Guía País Vasco	Drinkable water depletion	Avoid water resources depletion	m ³
EU	BREEAM Europe	Water Consumption	To minimise the consumption of potable water in sanitary applications by encouraging the use of low water use fittings.	m ³
EU	BREEAM Europe	Water Meter	To ensure water consumption can be monitored and managed and therefore encourage reductions in water consumption.	
EU	BREEAM Europe	Major Leak Detection	To reduce the impact of major water leaks that	

			may otherwise go undetected.	
EU	BREEAM Europe	Sanitary Supply Shut Off	To reduce the risk of minor leaks in toilet facilities.	
EU	BREEAM Europe	Irrigation Systems	To reduce the consumption of potable water for ornamental planting and landscape irrigation.	
EU	BREEAM Europe	Vehicle Wash	To minimise the volume of potable water used by vehicle washing facilities.	
EU	BREEAM Europe	Sustainable on-site water treatment	To encourage the treatment and re-use of waste water on-site to reduce the need for environmentally-damaging centralised water treatment systems and enable the recycling of water and nutrients in a shorter time and distance.	
ES	VERDE	Drinkable water depletion	Avoid water resources depletion	m3
F	ELODIE		Measure the fresh water used	
F	EQUER		Measure the fresh water used	
F	HQE		Measure the fresh water used	
F	HQE	Water systems	Use of economical water systems	
I	Protocollo ITACA	Drinking water for irrigation	Reduction of drinking water used for irrigation	%
I	Protocollo ITACA	Drinking water for indoor use	Reduction of drinking water used for indoor	%

			use	
I	Protocollo ITACA	Collected and stored rainwater	Foster the collection and storage of rainwater	%
PL	ITB-BEE	1. Water saving, 2. Rainwater & Gray Water a) Rainwater Use System b) Gray Water Reuse System		
PT	SBTOOL PT	Efficient use of water and wastewater	Avoid water resources depletion	m3 %
PL	SBTOOL PL - E-AUDIT	Net consumption of potable water	To assess the efficiency of total annual water use of the case study, taking into account the use of grey water and rain water for landscaping and for some limited building uses.	(m3 / occ)* yr
I	Protocollo ITACA	Gray water sent into sewer	Reduce the volume of gray water sent into sewer	%
S	Miljöstatus för byggnader o. E.	Amount of water use	So prevent water save	
USA	LEED	water reduction	to increase water efficiency, to reduce te burden on municipal water supply	% of water use reduction (compared to a baseline case)
USA	LEED	consumption of water for irrigation	water efficient landscaping	% reduction from a calculated midsummer baseline case
USA	LEED	reduction of water use for sewage	innovative wastewater technologies	% of reduction

From these, the following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.4.1	Non-renewable freshwater resources depletion

2.1.15 Depletion of habitats

The next category in the questionnaires was called "Depletion of land resources with ecological or agricultural value". From the indicators grouped in this category, regarding their content, two indicator suggestions were derived, namely "Depletion of habitats" and "Contamination of undisturbed areas".

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
PL	SBTOOL PL - E-AUDIT	Change in ecological value of the site	To assess the effectiveness of measures taken to restore, maintain or enhance the ecological productivity of the site.	description [-]
PL	SBTOOL PL - E-AUDIT	Change in ecological value of the site	To assess the effectiveness of measures taken to restore, maintain or enhance the ecological productivity of the site.	description [-]
PL	ITB-BEE	Preservation and Creation of Biotope	Evaluates improvement of the environmental quality of the outdoor environment on site and its surroundings, derived from efforts within the building and within the site.	
PL	ITB-BEE	Preservation and Creation of Biotope	existing security measures ecosystems (the shape of the land,	

			trees, soil, water surface)	
ES	BREEAM ES	Ecological impact	To minimise the impact of the development on the site ecology and, where possible, enhance the ecological value of the site	
EU	BREEAM Europe	Mitigating Ecological Impact	To minimise the impact of a building development on existing site ecology.	

From these, the following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.5.1	Depletion of habitats

2.1.16 Contamination of undisturbed areas

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
I	Protocollo ITACA	Level of site contamination	Define the level of site contamination before the cleaning up actions to foster the utilization of area contaminated and not used	qualitative
I	Protocollo ITACA	Level of site preparation	Define the urbanization level. Foster the exploitation of urbanised area to preserve uncontaminated one.	Qualitative
EU	BREEAM Europe	Contaminated Land	To encourage positive action to use	

			contaminated land that otherwise would not have been remediated and developed.	
EU	BREEAM Europe	Contaminated Land	To encourage positive action to use contaminated land that otherwise would not have been remediated and developed.	
F	EQUER	Ecotoxicity		kg
USA	LEED	site selection		Y/N
EU	BREEAM Europe	Reuse of Land	To encourage the reuse of land that has been previously developed, and discourage the use of previously undeveloped land for building.	
D	DGNB	Surface Area Usage	The constant increase in traffic and settlement areas shall be reduced.	
ES	Guía País Vasco	Land Use	Avoid land depletion	m2
EU	BREEAM Europe	Reuse of Land	To encourage the reuse of land that has been previously developed, and discourage the use of previously undeveloped land for building.	
ES	VERDE	Land Use	Avoid land depletion	m2
PL	SBTOOL PL - E-AUDIT	Net area of land used for building and related development purposes	To assess the area of land that is used in the case-study building and related development.	m2 land per m2 net area
USA	LEED	contaminated site	to rehabilitate damages sites where development is complicated by environmental contamination and to	Y/N

			reduce pressure on undeveloped land	
USA	LEED	density of development and surrounding	to channel development to urban areas with existing infrastructure, protect greenfields and preserve habitat and natural resources	sq ft / acre
USA	LEED	parking size, number of spaces	to reduce pollution and land development impacts from automobile use	% of users
ES	BREEAM ES	Ecological value of land and protection of ecological features	To encourage development on land that already has limited value to wildlife and to protect existing ecological features from substantial damage during site preparation and completion of construction works.	
EU	BREEAM Europe	Ecological value of site AND Protection of ecological features	To encourage development on land that already has limited value to wildlife and to protect existing ecological features from substantial damage during site preparation and completion of construction works.	
USA	LEED	site disturbance perimeter	to conserve existing natural areas	feet
USA	LEED	surface of native or adapted vegetation	to conserve existing natural areas	% of total site area
EU	BREEAM Europe	Ecological Value of Site and Protection of Ecological Features	To encourage development on land that already has limited value to wildlife and to protect existing	

			ecological features from substantial damage during site preparation and completion of construction works.	
USA	LEED	density of the area	to channel development to urban areas with existing infrastructure, protect greenfields and preserve habitat and natural resources	units/acre
USA	LEED	site disturbance, site impact	to conserve existing natural areas, and restore damages areas	% of the site area
ES	Guía País Vasco			
USA	LEED	low emitting and fuel efficient vehicles	to reduce pollution and land development impacts from automobile use	% of users
USA	LEED	parking size, number of spaces	to reduce pollution and land development impacts from automobile use	% of users
S	Miljöstatus för byggnader o. E.			

From these, the following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.5.2	Contamination of undisturbed areas

2.1.17 Exhaustion of solid waste sites suitable for non-hazardous waste

The following indicators were provided for "Exhaustion of solid waste sites suitable for non-hazardous waste":

Country	Name of Indicator	Intent	Unit
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DRAFT (31/08/2010) Deliverable not yet approved by the EC.

<i>of Assessment Method</i>	<i>Assessment Method</i>			
ES	Guía País Vasco		Reduce waste production	
ES	VERDE		Reduce waste production	
PL	SBTOOL PL - E-AUDIT	Avoidance of solid waste from clearance of existing structures on the site	To assess the extent to which solid waste that would typically be sent to a landfill has been offset through salvaging and recycling programs.	percent weight
PL	SBTOOL PL - E-AUDIT	Avoidance of solid waste resulting from construction process	To assess the effectiveness of construction waste management practices.	percent weight
F	ELODIE	Quantity of inert waste to disposal		t
F	EQUER	Quantity of inert waste to disposal		t
PL	SBTOOL PL - E-AUDIT	Avoidance of solid waste resulting from tenant and occupant operations	To assess the provision of space for sorting and storage of solid wastes within the case-study building, which will likely affect the success of waste-minimization programs during operation.	m2 per m2
USA	LEED	recycling/salvage of non hazardous construction waste	to divert construction and demolition debris from disposal in landfills and incineration facilities.	% of recycled debris
USA	LEED	reuse of materials	to reuse building materials and products to reduce demand for virgin materials and reduce waste	% of reused materials based on cost

EU	BREEAM Europe	Recyclable Waste Storage	To recognise the provision of dedicated storage facilities for a building's operational-related recyclable waste streams, so that such waste is diverted from landfill or incineration.	
F	ELODIE	kg		kg
ES	BREEAM ES	Recyclable waste storage	To recognise the provision of dedicated storage facilities for a building's operational-related recyclable waste streams, so that such waste is diverted from landfill or incineration.	
F	HQE		all type of wastes are summed	t

From these, the following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.6.1	Exhaustion of solid waste sites suitable for non-hazardous waste

2.1.18 Waterbody pollution excluding Eutrophication

The following indicators were provided for "Pollution of water bodies by wastewater, other than eutrophication":

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
ES	BREEAM ES	Watercourse pollution	To reduce the potential for silt, heavy metals, chemicals or oil pollution to natural	

			watercourses from surface water run-off from buildings and hard surfaces.	
S	Miljöstatus för byggnader o. E.			
F	ELODIE		Emission to water	m3
PL	SBTOOL PL - E-AUDIT	Liquid effluents	To assess the design measures taken to minimize sanitary waste water that must be handled by municipal systems.	(m3 / m2) * yr
USA	LEED	erosion and sedimentation		N/A
USA	LEED	stormwater management plan		cubic feet
EU	BREEAM Europe	Minimising Watercourse Pollution	To reduce the potential for silt, heavy metals, chemicals or oil pollution to natural watercourses from surface water run-off from buildings and hard surfaces.	
PL	SBTOOL PL - E-AUDIT	Thermal emissions to lake water or sub-surface aquifers	To assess the potential adverse effects of thermal emissions to lake water or sub-surface aquifers from using ground source heat pumps in the Design.	yes/no
I	Protocollo ITACA	Permeability soil	Reduce the interruption and the pollution of natural water flow	%
F	EQUER		Harm to the aquatic environment	m3

From these, the following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
DRAFT (31/08/2010) Deliverable not yet approved by the EC.	

1.7.1	Waterbody pollution excluding Eutrophication
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2.1.19 Hazards from disposal of non-radioactive hazardous waste

The following indicators were provided for "2.1.19 Hazards from disposal of non-radioactive hazardous waste":

<i>Country of Assessment Method</i>	<i>Name of Assessment Method</i>	<i>Indicator</i>	<i>Intent</i>	<i>Unit</i>
F	ELODIE	kg		kg
F	HQE		Promoting and facilitating waste sorting and efficient waste management	
ES	Guía País Vasco			
ES	VERDE			
F	HQE		all type of wastes are summed	t

From these, the following indicator is proposed for use in OPEN HOUSE:

<i>Number</i>	<i>Indicator</i>
1.8.1	Hazards from disposal of non-radioactive hazardous waste

2.1.20 Hazards from disposal or storage of radioactive waste

The following indicators were provided for "Hazards from disposal or storage of radioactive waste":

<i>Country of Assessment Method</i>	<i>Name of Assessment Method</i>	<i>Indicator</i>	<i>Intent</i>	<i>Unit</i>
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F	ELODIE	kg of radioactive waste		kg
ES	Guía País Vasco			
F	EQUER	kg of radioactive waste		kg
F	HQE		all type of wastes are summed	t

From these, the following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.8.1	Hazards from disposal or storage of radioactive waste

2.1.21 Responsible Material Sourcing

The following indicators were primarily listed as “divers” but are now grouped as “Responsible Material Sourcing”:

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
I	Protocollo ITACA	Local materials	Foster the use of local material	%
I	Protocollo ITACA	Local materials for details	Foster the use of local material	%
USA	LEED	proportion of regional materials	to reduce impacts from transportation and to support the use of indigenous resources	% of regional materials (based on cost)
ES	BREEAM ES	Materials specification (Major building elements)	To recognise and encourage the use of construction materials with a low environmental impact over the full life cycle	

			of the building.	
EU	BREEAM Europe	Materials Specification (Major Building Elements)	To recognise and encourage the use of construction materials with a low environmental impact over the full life cycle of the building.	
EU	BREEAM Europe	Hard Landscaping and Boundary Protection	To recognise and encourage the specification of materials for boundary protection and external hard surfaces that have a low environmental impact, taking account of the full life cycle of materials used.	
EU	BREEAM Europe	Responsible Sourcing of Materials	To recognise and encourage the specification of responsibly sourced materials for key building elements.	
EU	BREEAM Europe	Insulation	To recognise and encourage the use of thermal insulation which has a low embodied environmental impact relative to its thermal properties and has been responsibly sourced.	ows: a. (Area of insulation (m2) * thickness (m)) / Thermal Conductivity (W/ m.K) OR b. Total volume of insulation used (m3) / Thermal conductivity (W/m.K)
EU	BREEAM Europe	Hard Landscaping and Boundary Protection	To recognise and encourage the specification of	

			materials for boundary protection and external hard surfaces that have a low environmental impact, taking account of the full life cycle of materials used.	
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The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
1.10.1	Responsible Material Sourcing

2.2 Social

2.2.1 Barrier-free Accessibility

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Barrier-free Accessibility	Buildings shall be constructed barrier-free. Barrier-free accessibility augments value and attractiveness for all population groups and concerns for all people with motor and sensory restrictions.	
PL	ITB-BEE	Q2113 Barrier free planning		m2/person
ES	VERDE		Improve accessibility conditions	

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
2.1.1	Barrier-free Accessibility

2.2.2 Personal Safety and Security of Users

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Safety and Failure Risks	Danger, accidents and catastrophes shall be avoided; safety shall be assured as far as possible if accidents or catastrophes happen.	
I	Protocollo ITACA	Videocontrollo	Monitoring of the inhabited spaces in order to improve the security	-
I	Protocollo ITACA	Safety Anti intrusion, Access Control and Safety	Increase the inhabitants's safety	-

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
2.2.1	Personal Safety and Security of Users

2.2.3 Thermal Comfort

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Thermal Comfort in the	The acceptance of the indoor climate is	

		Winter	evaluated with focus on the factors; thermal comfort, air quality, noise and illumination.	
D	DGNB	Thermal Comfort in the Summer	The acceptance of the indoor climate is evaluated with focus on the factors; thermal comfort, air quality, noise and illumination.	
ES	BREEAM ES	Thermal comfort	To ensure, with the use of design tools, that appropriate thermal comfort levels are achieved.	
ES	BREEAM ES	Thermal zoning	To recognise and encourage the provision of user controls which allow independent adjustment of heating/cooling systems within the building.	
ES	VERDE			
EU	BREEAM Europe	Thermal Comfort	To ensure, with the use of design tools, that appropriate thermal comfort levels are achieved.	
EU	BREEAM Europe	Thermal Zoning	To recognise and encourage the provision of user controls which allow independent adjustment of heating/cooling systems within the building.	m ³
I	Protocollo ITACA	Air temperature	Guarentee an adeguate air temperature with low enery consumptions	
PL	SBTOOL PL - E-AUDIT	Relative humidity in primary occupancies	To assess the capability of the building systems to maintain acceptable	% RH

			levels of Relative Humidity in primary occupancies during heating season.	
PL	SBTOOL PL - E-AUDIT	Air temperature in primary occupancies.	To assess whether the indoor air temperature within occupied spaces is consistent with user comfort requirements.	% of hours
S	Miljöklassad Byggnad	Thermal comfort		C
S	Miljöstatus för byggnader o. E.	Thermal Comfort		ug/m3
S	SPCR 114 E		Thermal comfort	C, m/s, %

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
2.3.2	Thermal Comfort

2.2.4 Indoor Air Quality

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Indoor Hygiene	The goal is to assure the indoor hygiene and to avoid negative impacts on the user's state of health.	%
ES	Guía País Vasco			
ES	VERDE			
EU	BREEAM Europe	Indoor Air Quality	To reduce the risk to health associated with poor indoor air quality.	m ³

USA	LEED	indoor air quality management plan	to reduce IAQ problems resulting from construction or renovation and promote the comfort and well being of construction workers and building occupants	N/A
PL	ITB-BEE	LR 322 Odor	Restriction sites and the formation of odor sources and constant control of these sites. Installations refreshing and purifying the air smells. Efforts have been made to secure the waste generated in the building.	
F	EQUER	Olfactive emission		Mm3
ES	BREEAM ES	Indoor air quality	To reduce the risk to health associated with poor indoor quality.	
ES	BREEAM ES	Volatile Organic Compounds	To recognise and encourage a healthy internal environment through the specification of internal finishes and fittings with low emissions of volatile organic compounds (VOCs).	
ES	Guía País Vasco			
EU	BREEAM Europe	Volatile Organic Compounds	To recognise and encourage a healthy internal environment through the specification of internal finishes and fittings with low emissions of volatile organic compounds (VOCs).	
F	HQE		Ensuring a pleasant	

			quality of the air in the building	
F	HQE		Having an efficient ventilation and master pollution sources	
I	Protocollo ITACA	Ventilation	Guarantee an adequate ventilation, high level of indoor air quality and low energy consumptions for air conditioning	-
I	Protocollo ITACA	Radon	Control the migration of gas radon from land to the indoor environment	-
PL	ITB-BEE	1. Source control 2. Ventilation 3. Operation Plan		
PL	SBTOOL PL - E-AUDIT	Ventilation effectiveness in occupant zone of primary occupancies	To assess the effectiveness of the ventilation strategy in delivering air to the breathing zone.	description of levels
PL	SBTOOL PL - E-AUDIT	Ventilation and outdoor air delivery	To assess the total outdoor air rate ventilation in mechanically conditioned areas of Multi-unit residential occupancy meets or exceeds the minimum acceptable levels set by national or regional authorities. To assess the use and effectiveness of natural ventilation in those spaces within the Design having access to natural ventilation from one side.	L/s per occupant
PL	SBTOOL PL - E-AUDIT	Filtration performance in HVAC systems	To assess the effectiveness of the HVAC filtration system	%

			at trapping particulates.	
PL	SBTOOL PL - E-AUDIT	Location of outdoor air supply for HVAC systems	To assess whether the air intakes for the case-study building are located to draw on the best possible outdoor air.	ratio of distance
PL	SBTOOL PL - E-AUDIT	Pollutant control-fibers	To assess the extent of design measures taken to minimise the release of fibres from un-contained mineral fiber materials, particularly where exposed in ceilings used as air plenums.	description levels
PL	SBTOOL PL - E-AUDIT	Airborne pollution migration between occupancies	To assess the extent of measures taken to eliminate or minimise the migration of airborne pollutants between occupancies that contain polluting activities, such as printing shops, graphics departments, printers or photocopiers.	decription levels
PL	SBTOOL PL - E-AUDIT	VOC emissions in interior spaces	To assess the extent of measures to eliminate or control the emission of volatile organic compounds (VOCs) from materials based on polymers, or containing solvents or plasticizers.	% by weight
PT	SBTOOL PT	Comfort and health of occupants	Health of occupants	
S	Miljöklassad Byggnad	Ventilation	good ventilation	l/s etc
S	Miljöklassad Byggnad	Radon	To award buildings with low radon in indoor air	Bq/m ³

S	Miljöklassad Byggnad	IAQ		
S	Miljöstatus för byggnader o. E.	Air		
S	Miljöstatus för byggnader o. E.	Formaldehyd		ug/m3
S	Miljöstatus för byggnader o. E.	VOC		
S	Miljöstatus för byggnader o. E.	Radon		Bq/m3
S	SPCR 114 E			%, ppm etc
S	SPCR 114 E			l/s etc
S	Nordic Ecolabel - Svanen	Ventilation		
S	Nordic Ecolabel - Svanen	Timber and fibre based materials		

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
2.3.2	Indoor Air Quality

2.2.5 Water Quality

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
EU	BREEAM Europe	Microbial Contamination	To ensure the building services are designed to reduce the risk of legionellosis in operation.	
ES	BREEAM ES	Microbial contamination	To ensure the building services are designed to	

			reduce the risk of legionellosis in operation.	
F	HQE		Ensuring the quality of water	
S	Miljöklassad Byggnad	Legionella safety	To decrease risk for legionella in hot water system	C
S	Miljöstatus för byggnader o. E.	Legionella	Decrease risk of Legionella	
S	Miljöstatus för byggnader o. E.	Tap water quality		
S	Miljöklassad Byggnad			
S	Nordic Ecolabel - Svanen	Radon		Bq/m3
S	SPCR 114 E			Bq/m3
S	SPCR 114 E			C

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
2.3.3	Water Quality

2.2.6 Acoustic Comfort

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Acoustic Comfort	The aim is to achieve a low level interference and background noise with speech intelligibility in all rooms to avoid	T in s

			affecting use, health and capability of the users.	
ES	BREEAM ES	Acoustic performance	To ensure the acoustic performance of the building meets the appropriate standards for its purpose.	dB LAeq, T / Dw
EU	BREEAM Europe	Acoustic Performance	To ensure the acoustic performance of the building meets the appropriate standards for its purpose.	dB LAeq,T
EU	BREEAM Europe	Office Space	To recognise steps taken to provide a good working environment in smaller office areas within the development.	
F	HQE		Ensuring a good level of acoustic comfort to the users	
I	Protocollo ITACA	Soundproofing partitions	Ensure the soundproofing of building among the indoor environments	Qualitative
PL	ITB-BEE	1. Noise insulation 3. Acoustic absorptivity		
PL	SBTOOL PL - E-AUDIT	Noise attenuation between occupancies.	To assess the measures that have been taken to reduce sound transmission between principal work areas.	description of levels
S	Miljöklassad Byggnad	Acoustics/ sound	To award buildings with good acoustics	dB, sec.
S	Miljöstatus för byggnader o. E.	Acoustics		
S	SPCR 114 E			dB, s etc
S	Nordic Ecolabel	Noise		

	- Svanen		
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The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
2.3.4	Acoustic Comfort

2.2.7 Visual Comfort

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Visual Comfort	Visual comfort shall be achieved by balanced illumination without appreciable interferences such as direct and reflected glare, a sufficient illumination level and the possibility to adjust illumination individually to the particular needs.	
ES	VERDE			
ES	BREEAM ES	Daylighting	To give building users sufficient access to daylight	Illuminance (lux)
ES	BREEAM ES	Viewout	To allow occupants to refocus their eyes from close work and enjoy an external view, thus reducing the risk of eyestrain and breaking the monotony of the indoor environment.	
ES	BREEAM ES	Glare control	To reduce problems	

			associated with glare in occupied areas through the provision of adequate controls.	
ES	BREEAM ES	High frequency lighting	To reduce the risk of health problems related to the flicker of fluorescent lighting.	
ES	BREEAM ES	Internal and external lighting levels	To ensure lighting has been designed in line with best practice for visual performance and comfort.	Illuminance (lux)
ES	BREEAM ES	Lighting zones and control	To ensure occupants have easy and accessible control over lighting within each relevant building area.	
EU	BREEAM Europe	Daylighting	To give building users sufficient access to daylight.	average daylight illuminance of 200 lux for 2650 hours per year
EU	BREEAM Europe	View Out	To allow occupants to refocus their eyes from close work and enjoy an external view, thus reducing the risk of eyestrain and breaking the monotony of the indoor environment.	m ³
EU	BREEAM Europe	Glare Control	To reduce problems associated with glare in occupied areas through the provision of adequate controls.	
EU	BREEAM Europe	High frequency lighting	To reduce the risk of health problems related to the flicker of fluorescent lighting.	

EU	BREEAM Europe	Internal and external lighting levels	To ensure lighting has been designed in line with best practice for visual performance and comfort.	
EU	BREEAM Europe	Lighting zones and controls	To ensure occupants have easy and accessible control over lighting within each relevant building area.	
F	HQE		Ensuring a pleasant quality of visual comfort in the building	
I	Protocollo ITACA	Natural lighting	Ensure an adequate natural lighting within all the indoor environment	-
PL	ITB-BEE	1. Daylighting 2. Anti-glare Measures 3. Illuminance Level 4. Lightning Controllability		
PL	SBTOOL PL - E-AUDIT	Ambient illumination levels in primary areas of non-residential occupancies.	To assess the appropriateness of the illumination provided in the primary non-residential occupancies.	Lux
PL	SBTOOL PL - E-AUDIT	Potential glare in primary areas of all occupancies	To assess the potential for glare in the primary occupied spaces associated with windows.	description of levels
PL	SBTOOL PL - E-AUDIT	Provision of daylighting in primary areas of all occupancies	To assess the amount of daylight in the primary areas of the case-study building.	%
PL	SBTOOL PL - E-AUDIT	Access to direct sunlight from principal day-time living areas of dwelling units.	To assess the degree to which principal daytime living areas in dwelling units have access to direct sunlight.	%

PL	SBTOOL PL - E-AUDIT	Visual access to the exterior from primary occupancies.	To assess whether the majority of building occupants have access to distant views and visual contact with the exterior.	description of levels
S	Miljöklassad Byggnad	Daylight		
S	Nordic Ecolabel - Svanen	Light		%, lux
S	Miljöstatus för byggnader o. E.	Light		
S	SPCR 114 E			Lux etc

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
2.3.5	Visual Comfort

2.2.8 Operation Comfort

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Visual Comfort	Visual comfort shall be achieved by balanced illumination without appreciable interferences such as direct and reflected glare, a sufficient illumination level and the possibility to adjust illumination individually to the particular needs.	

ES	VERDE			
ES	BREEAM ES	Daylighting	To give building users sufficient access to daylight	Illuminance (lux)
ES	BREEAM ES	Viewout	To allow occupants to refocus their eyes from close work and enjoy an external view, thus reducing the risk of eyestrain and breaking the monotony of the indoor environment.	
ES	BREEAM ES	Glare control	To reduce problems associated with glare in occupied areas through the provision of adequate controls.	
ES	BREEAM ES	High frequency lighting	To reduce the risk of health problems related to the flicker of fluorescent lighting.	
ES	BREEAM ES	Internal and external lighting levels	To ensure lighting has been designed in line with best practice for visual performance and comfort.	Illuminance (lux)
ES	BREEAM ES	Lighting zones and control	To ensure occupants have easy and accessible control over lighting within each relevant building area.	
EU	BREEAM Europe	Daylighting	To give building users sufficient access to daylight.	average daylight illuminance of 200 lux for 2650 hours per year
EU	BREEAM Europe	View Out	To allow occupants to refocus their eyes from close work and enjoy an external view, thus	m ³

			reducing the risk of eyestrain and breaking the monotony of the indoor environment.	
EU	BREEAM Europe	Glare Control	To reduce problems associated with glare in occupied areas through the provision of adequate controls.	
EU	BREEAM Europe	High frequency lighting	To reduce the risk of health problems related to the flicker of fluorescent lighting.	
EU	BREEAM Europe	Internal and external lighting levels	To ensure lighting has been designed in line with best practice for visual performance and comfort.	
EU	BREEAM Europe	Lighting zones and controls	To ensure occupants have easy and accessible control over lighting within each relevant building area.	
F	HQE		Ensuring a pleasant quality of visual comfort in the building	
I	Protocollo ITACA	Natural lighting	Ensure an adequate natural lighting within all the indoor environment	-
PL	ITB-BEE	1. Daylightning 2. Anti-glare Measures 3. Illuminance Level 4. Lightning Controllability		
PL	SBTOOL PL - E-AUDIT	Ambient illumination levels in primary areas of non-residential occupancies.	To assess the appropriateness of the illumination provided in the primary non-residential occupancies.	Lux
PL	SBTOOL PL - E-AUDIT	Potential glare in primary areas of all occupancies	To assess the potential for glare in the primary occupied spaces	desription of levels

			associated with windows.	
PL	SBTOOL PL - E-AUDIT	Provision of daylighting in primary areas of all occupancies	To assess the amount of daylight in the primary areas of the case-study building.	%
PL	SBTOOL PL - E-AUDIT	Access to direct sunlight from principal day-time living areas of dwelling units.	To assess the degree to which principal daytime living areas in dwelling units have access to direct sunlight.	%
PL	SBTOOL PL - E-AUDIT	Visual access to the exterior from primary occupancies.	To assess whether the majority of building occupants have access to distant views and visual contact with the exterior.	description of levels
S	Miljöklassad Byggnad	Daylight		
S	Nordic Ecolabel - Svanen	Light		%, lux
S	Miljöstatus för byggnader o. E.	Light		
S	SPCR 114 E			Lux etc

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
2.3.6	Operation Comfort

2.2.9 Service Quality

Country of Assessment	Name of Assessment Method	Indicator	Intent	Unit

<i>Method</i>				
F	HQE		Create good hygiene conditions	
I	Protocollo ITACA	Recreation areas	Definition of recreation areas	%
PL	ITB-BEE	Q-2122 Space to Refreshment		
PL	ITB-BEE	Q2121 Room height		height of rooms
PL	ITB-BEE	Q-2123 Decor Planning		
PL	SBTOOL PL - E-AUDIT	Site amenities for shade, relaxation and play for workers and residents	To assess the extent to which designers have taken advantage of opportunities to provide site amenities for office workers, building staff and other users of the building.	description levels
PL	ITB-BEE	Q2111 Provision of Space and Storage		m ² /person

The following indicator is proposed for use in OPEN HOUSE:

<i>Number</i>	<i>Indicator</i>
2.3.7	Service Quality

2.2.10 Electro Magnetic Pollution

<i>Country of Assessment Method</i>	<i>Name of Assessment Method</i>	<i>Indicator</i>	<i>Intent</i>	<i>Unit</i>
I	Protocollo ITACA	Frequency magnetic fields (50Hertz)	Minimize the level of frequency electric and magnetic fields (50 Hz) within the indoor environment in order to	-

			mimimize the people exposure	
PL	SBTOOL PL - E-AUDIT	Electro-Magnetic Pollution	To assess the measures that have been taken to reduce occupant exposure to Electro-Magnetic fields.	desription of levels
S	Miljöstatus för byggnader o. E.	Magnetic field		

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
2.3.7	Service Quality

2.2.11 Accessibility

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Accessibility	Acceptance and integration of a building inside a district, city and region shall be enhanced by increased accessibility.	

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
2.4.2	Accessibility

2.2.12 Noise from Building and Site

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
PL	ITB-BEE	LR 321 Noise, vibration	The use of noise mitigation measures from the building on neighboring plots (screens, planting, etc.).Application of treatments to reduce the noise from the car park at neighboring plots.	
PL	SBTOOL PL - E-AUDIT	Impact on solar energy potential of adjacent property	To assess if the Design has provided an acceptable level of access to winter sunlight on adjacent properties.	% shaded
PL	SBTOOL PL - E-AUDIT	Impact on access to daylight of adjacent property	To assess if the Design has provided an acceptable level of access to daylight to adjacent properties.	degrees
PL	SBTOOL PL - E-AUDIT	Impact on solar energy potential of adjacent property	To assess if the Design has provided an acceptable level of access to winter sunlight on adjacent properties.	%
PL	SBTOOL PL - E-AUDIT	Impact on solar energy potential of adjacent property	To assess if the Design has provided an acceptable level of access to winter sunlight on adjacent	%

			properties.	
PL	SBTOOL PL - E-AUDIT	Noise from building affecting adjacent properties	To assess whether noise from fans and other HVAC equipment on the case-study building is contained within accepted limits.	description of levels

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
2.4.3	Noise from Building and Site

2.2.13 Quality of the Design and Urban Development of the building and Site

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Roof Design	The entire roof area should be designed. The integration of the roof in the design of the building and its surroundings shall enhance the development of a three-dimensional urban surrounding.	
D	DGNB	Assurance of the Quality of Design and Urban Development in Competition	Planning competitions shall take place to attain the best solution for the architectural and constructive tasks.	
D	DGNB	Art within Architecture	Art within architecture shall be enhanced. It is an element of	

			architecture that forms quality and expressiveness of the building and is therefore an integral part of the construction job and the responsibility of the owner.	
PL	ITB-BEE	Efforts based on local characteristics and outdoor amenity		
PL	ITB-BEE	Efforts for the benefit of the surrounding streets and scenery	1) The location and orientation of the building is part of the outer buildings and the landscape.2)The high and form of the building is adequate for building and landscape.3) Elements, materials and colors correspond to the environment.4)External elements and spaces fit into the environment 5) Fit into the overall panorama of the surrounding buildings and gives the effect of a harmonious and planned development.	

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
2.5.1	Quality of the Design and Urban Development of the building and Site

2.2.14 Bicycle Comfort

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Bicycle Comfort	The percentage of cyclists shall be raised.	
PL	ITB-BEE	Efforts related to use of bicycles; Efforts to provide car parking space		
PL	ITB-BEE	Efforts related to use of bicycles; Efforts to provide car parking space		
USA	LEED	bicycle racks	to reduce pollution and land development impacts from automobile use	% of users
USA	LEED	number of shower/changing facilities	to reduce pollution and land development impacts from automobile use	unit
EU	BREEAM Europe	Alternative modes of transport	To recognise the provision of adequate facilities on site allowing building users to use alternative modes of transport to go to and from the building.	
EU	BREEAM Europe	Maximum Car Parking Capacity	To encourage the use of alternative means of transport to the building other than the private car, thereby helping to reduce transport related emissions and traffic congestion.	

I	Protocollo ITACA	Support the use of bicycles	Support the use of bicycles	%
USA	LEED	parking size, number of spaces	to reduce pollution and land development impacts from automobile use	% of users
PL	SBTOOL PL - E-AUDIT	Quality of parking area development	To assess the extent to which measures have been taken to provide a user-friendly environment, sheltered from sun and the elements, in open parking areas.	description of levels

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
2.6.1	Bicycle Comfort

2.3 Economic

2.3.1 Building-related Life Cycle Costs (LCC)

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Building-related Life Cycle Costs (LCC)	Some of the goals of economic sustainability are the minimization of a building's life cycle costs and the relative cost reduction of alteration and preservation investments in comparison to new	€/m ² NGF

			constructions.	
ES	Guía País Vasco			
ES	VERDE			
PL	SBTOOL PL - E-AUDIT	Construction cost	To assess the level of immediate capital costs.	PLN/EU per m2
PL	SBTOOL PL - E-AUDIT	Operating and maintenance cost	To assess the likely level of long-term operating costs.	PLN/EU per m2
PL	SBTOOL PL - E-AUDIT	The estimated lifecycle cost	To assess the life-cycle cost of the building, taking into account capital and projected operating costs.	PLN/EU per m2

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
3.1.1	Building-related Life Cycle Costs (LCC)

2.3.2 Socio-economic impact

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
ES	VERDE			
PT	SBTOOL PT	Life cycle costs	Costs analysis Discounted value of utilization costs per m2 of useful area	euro/m2

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
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3.2.1	Socio-economic impact
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2.3.3 Value Stability

<i>Country of Assessment Method</i>	<i>Name of Assessment Method</i>	<i>Indicator</i>	<i>Intent</i>	<i>Unit</i>
D	DGNB	Value Stability	A globalized and international market demands high efficiency, flexibility, and adaptability.	

The following indicator is proposed for use in OPEN HOUSE:

<i>Number</i>	<i>Indicator</i>
3.3.1	Value Stability

2.4 Technical

2.4.1 Fire Protection

<i>Country of Assessment Method</i>	<i>Name of Assessment Method</i>	<i>Indicator</i>	<i>Intent</i>	<i>Unit</i>
D	DGNB	Fire Protection	The quality of fire protection measures shall be increased.	

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
4.1.1	Fire Protection

2.4.2 Designing for Robustness

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
EU	BREEAM Europe	Designing For Robustness		
PL	ITB-BEE	Q221 Geotechnical conditions		
PL	ITB-BEE	Q221 Geotechnical conditions	System dampen vibration or separation from sources of vibration by screens	
PL	ITB-BEE	Q 222 Service Life of Components		
PL	ITB-BEE	Q 223 Reliability		
PL	SBTOOL PL - E-AUDIT	Protection of materials from destructive elements	To assess whether the design includes adequate measures to minimize the deterioration of materials in the building envelope due to the action of exterior sun, temperature variations, rain or wind, or due to the migration of moisture-laden air through defects in the envelope.	description of levels
S	Nordic Ecolabel - Svanen			

The following indicator is proposed for use in OPEN HOUSE:

DRAFT (31/08/2010) Deliverable not yet approved by the EC.

Number	Indicator
4.2.1	Designing for Robustness

2.4.3 Easiness of clean and maintenance

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Ease of Cleaning and Maintenance of the Structure	With targeted cleaning and maintenance, the used materials can be operated for the maximum useful lifetime.	
PL	SBTOOL PL - E-AUDIT	Potential to maintain performance of building systems	To assess whether adequate measures have been taken to make the central or major elements readily accessible for regular cleaning, maintenance and repair.	description of levels
ES	Guía País Vasco			
F	HQE		Accessibility and easiness for maintenance	
F	HQE			
PL	SBTOOL PL - E-AUDIT	Potential to maintain performance of building systems	To assess whether adequate measures have been taken to make the central or major elements readily accessible for regular cleaning, maintenance and repair.	description of levels
PL	SBTOOL PL - E-AUDIT	Ability to maintain critical performance parameters under	Provision of leak detection system	description of levels

		abnormal conditions	covering all main water and gas supplies.	
S	SPCR 114 E			

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
4.3.1	Easiness of clean and maintenance

2.4.4 Ability to resist against hail, storm, high water and earthquake

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
EU	BREEAM Europe	Flood Risk	To encourage development in low flood risk areas or to take measures to reduce the impact of flooding on buildings in areas with a medium or high risk of flooding.	

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
4.4.1	Ability to resist against hail, storm, high water and earthquake

2.4.5 Noise Protection

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
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<i>ment Method</i>				
D	DGNB	Noise Protection	Noise protection shall be improved.	
I	Protocollo ITACA	Soundproofing building envelope	Ensure the soundproofing building envelope	Qualitative
I	Protocollo ITACA	Noise from pavement	Ensure the adoption of design requirements to avoid the propagation of noise from pavement	Qualitative
PL	SBTOOL PL - E-AUDIT	Noise attenuation through the building envelope	To assess whether building glazing system is effective in reducing the transmission of externally generated noise.	STC
PL	SBTOOL PL - E-AUDIT	Transmission of building equipment noise to primary occupancies	To assess the extent to noise transmission from areas containing mechanical equipment to primary occupancies has been reduced through the selection and installation of low noise equipment and isolation of mechanical equipment.	desription of levels

The following indicator is proposed for use in OPEN HOUSE:

<i>Number</i>	<i>Indicator</i>
4.5.1	Noise Protection

2.4.6 Quality of the building shell

<i>Country of Assess-</i>	<i>Name of Assessment Method</i>	<i>Indicator</i>	<i>Intent</i>	<i>Unit</i>
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<i>ment Method</i>				
D	DGNB	Energetic and Moisture-Proofing Quality of the Building's Shell	The energy demand for the space conditioning shall be minimized, high thermal comfort shall be assured, and structural damages shall be avoided.	
S	SPCR 114 E			
S	Miljöklassad Byggnad	Moisture control		
S	Nordic Ecolabel - Svanen			
PL	ITB-BEE	Q2112 Use of Advanced Information System		number of plugs per square meters
PL	SBTOOL PL - E-AUDIT	Moisture control	To assess the design measures taken to contain or reduce moisture build-up within the building envelope.	description of levels
S	SPCR 114 E			l/sm ²
D	DGNB	Ease of Deconstruction, Recycling, and Dismantling	Goal of increasing the ease of deconstruction, recycling, and dismantling is the avoidance of waste, in particular by reducing its amount and hazard.	
S	Miljöstatus för byggnader o. E.	Moisture control		
I	Protocollo ITACA	Systems Integration	Optimisation of automation systems through their complete integration	-
I	Protocollo ITACA	Quality of the cabling system	Definition of the quality of the cabling	-

			system	
S	Nordic Ecolabel - Svanen	Airtightness	Obligatory	l/s*m2*A

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
4.5.2	Quality of the building shell

2.5 Functional

2.5.1 Area Efficiency

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Area Efficiency	Areas should be handled as economical as possible. Area efficiency is an index for the utilization of floor space inside buildings.	m ² /m ²
ES	Guía País Vasco			
ES	VERDE			

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
5.1.1	Area Efficiency

2.5.2 Conversion Feasibility

<i>Country of Assessment Method</i>	<i>Name of Assessment Method</i>	<i>Indicator</i>	<i>Intent</i>	<i>Unit</i>
D	DGNB	Conversion Feasibility	The better a building can be converted with as little time and effort as possible, the better the attribute “Feasibility of Conversion” is evaluated.	
PL	SBTOOL PL - E-AUDIT	Suitability of floor height for major changes in future uses	To assess whether adequate floor-to-floor height has been provided to facilitate adaptation of the building to future changed uses.	description of levels
ES	Guía País Vasco			
ES	VERDE			
PL	ITB-BEE	1. Spatial Margin 2. Floor Load Margin 3. Adaptability of Facilities	The ability to change profiles using the facility is important in the life cycle and raises ecological value of the facility due to lack of necessary demolition of the building, or part thereof.	
PL	SBTOOL PL - E-AUDIT	Ease of adapting technical building systems for changing occupant requirements	To assess the degree of flexibility in building systems to changes and restructuring in patterns of works require to fully meet tenant requirements, in non-	description of levels

			residential occupancies.	
PL	SBTOOL PL - E-AUDIT	Suitability of layout for structure and core for major changes in future uses	To assess whether the location and capacity of the building core and the structural grid have been designed to permit an acceptable level of flexibility in the planning of interior spaces and future uses.	description of levels
PL	SBTOOL PL - E-AUDIT	Floor loading capacity for other uses	To assess whether loading capacity of the typical floors in the case-study building are suitable for other possible uses.	description of levels
PL	SBTOOL PL - E-AUDIT	Adaptability to future changes in type of energy supply	To assess the extent to which the design of the case-study building facilitates or hinders future changes to a new fuel source or to renewable energy technologies.	description of levels
PL	SBTOOL PL - E-AUDIT	Capability for control over heating and cooling systems in primary occupancies.	To assess the extent of control that occupants have over the over heating and cooling systems in the Design.	description of levels
PL	SBTOOL PL - E-AUDIT	Level of building automation appropriate to system complexity	To assess whether the level of sophistication of the building control strategy is consistent with the operational requirements of the case-study building.	description of levels
PL	SBTOOL PL - E-AUDIT	Capability for partial operation of building technical systems	To assess the degree to which the building HVAC, lighting and control systems satisfy the need for part-floor and off-hours service in non-residential	description of levels

			occupancies.	
PL	SBTOOL PL - E-AUDIT	Ease of adapting technical building systems for changing occupant requirements	To assess the degree of flexibility in building systems to changes and restructuring in patterns of works require to fully meet tenant requirements, in non-residential occupancies.	description of levels
PL	SBTOOL PL - E-AUDIT	Suitability of layout for structure and core for major changes in future uses	To assess whether the location and capacity of the building core and the structural grid have been designed to permit an acceptable level of flexibility in the planning of interior spaces and future uses.	description of levels
PL	SBTOOL PL - E-AUDIT	Floor loading capacity for other uses	To assess whether loading capacity of the typical floors in the case-study building are suitable for other possible uses.	description of levels
PL	SBTOOL PL - E-AUDIT	Adaptability to future changes in type of energy supply	To assess the extent to which the design of the case-study building facilitates or hinders future changes to a new fuel source or to renewable energy technologies.	description of levels
PL	SBTOOL PL - E-AUDIT	Capability for control over heating and cooling systems in primary occupancies.	To assess the extent of control that occupants have over the over heating and cooling systems in the Design.	description of levels
PL	SBTOOL PL - E-AUDIT	Level of building automation appropriate to system complexity	To assess whether the level of sophistication of the building control strategy is consistent with the operational requirements of the	description of levels

			case-study building.	
PL	SBTOOL PL - E-AUDIT	Capability for partial operation of building technical systems	To assess the degree to which the building HVAC, lighting and control systems satisfy the need for part-floor and off-hours service in non-residential occupancies.	description of levels

The following indicator is proposed for use in OPEN HOUSE:

<i>Number</i>	<i>Indicator</i>
5.2.1	Conversion Feasibility

2.6 Process

2.6.1 Quality of the Project's Preparation

<i>Country of Assessment Method</i>	<i>Name of Assessment Method</i>	<i>Indicator</i>	<i>Intent</i>	<i>Unit</i>
D	DGNB	Quality of the Project's Preparation	The tasks that should be achieved prior of work phase 1 of the German fee structure for architects and engineers (HOAI = in german: Honorarordnung für Architekten und Ingenieure), should optimally prepare the project.	

The following indicator is proposed for use in OPEN HOUSE:

<i>Number</i>	<i>Indicator</i>
6.1.1	Quality of the Project's Preparation

2.6.2 Integral Planning

<i>Country of Assessment Method</i>	<i>Name of Assessment Method</i>	<i>Indicator</i>	<i>Intent</i>	<i>Unit</i>
D	DGNB	Integral Planning	The principles of integral planning are to be put into practice.	

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
6.1.2	Integral Planning

2.6.3 Optimization and Complexity of the Approach to Planning

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Optimization and Complexity of the Approach to Planning	The necessary complexity of the approach to a design task shall be secured by a minimum number and quality of concepts that are to be generated.	
I	Protocollo ITACA	Areas for waste management	Foster the waste management through the creation of dedicated areas	
ES	BREEAM ES	Compactor/baler	To recognise and encourage the provision of facilities which enable efficient and hygienic waste sorting and storage.	
ES	Guía País Vasco			
EU	BREEAM Europe	Composting	To encourage the provision of facilities that help facilitate the reduction in volume of compostable organic waste going directly to landfill during the building's operation.	

EU	BREEAM Europe	Compactor / Baler	To recognise and encourage the provision of facilities which enable efficient and hygienic waste sorting and storage	
S	Nordic Ecolabel - Svanen	Waste	Waste and recycling stations at least six fractions	
S	Miljöstatus för byggnader o. E.	Sorting out facilities for waste		

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
6.1.3	Optimization and Complexity of the Approach to Planning

2.6.4 Evidence of Sustainability during Bid Invitation and Awarding

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Evidence of Sustainability during Bid Invitation and Awarding	The foundation for a high-quality construction execution is laid during the bid invitation and awarding phases.	

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
6.2.1	Evidence of Sustainability during Bid Invitation and Awarding

2.6.5 Construction Site impact/ Construction Process

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Construction Site / Construction Process	The effects on the environment are to be minimized while simultaneously protecting the health of all participants.	
EU	BREEAM Europe	Construction Site Impacts	To recognise and encourage construction sites managed in an environmentally sound manner in terms of resource use, energy consumption and pollution.	
EU	BREEAM Europe	Construction Site Waste Management	To promote resource efficiency via the effective and appropriate management of construction site waste.	
EU	BREEAM Europe	Constructors' Environmental & Social Code of Conduct	To recognise and encourage construction sites which are managed in an environmentally and socially considerate and accountable manner.	
ES	BREEAM ES	Constructors' environmental and social code of conduct	To recognise and encourage construction sites which are managed in an environmentally and socially considerate and accountable manner.	

ES	BREEAM ES	Construction site impact	To recognise and encourage construction sites managed in an environmentally sound manner in terms of resource use, energy consumption and pollution.	
F	HQE		Ensuring the restriction of nuisances brought by the construction process	
PL	SBTOOL PL - E-AUDIT	Impact of construction process or landscaping on soil erosion within or adjacent to site.	The percentage of the southerly facing building façade of an adjacent property south of the case-study building, that is shaded by the case-study building at 12 noon on Summer Solstice is:	description of levels
S	Nordic Ecolabel - Svanen		Waste management plan during the construction process	

The following indicator is proposed for use in OPEN HOUSE:

<i>Number</i>	<i>Indicator</i>
6.2.2	Construction Site impact/ Construction Process

2.6.6 Quality of the Executing Contractors/Pre-Qualification

<i>Country of Assessment Method</i>	<i>Name of Assessment Method</i>	<i>Indicator</i>	<i>Intent</i>	<i>Unit</i>
D	DGNB	Quality of the Executing Contractors/Pre-Qualification	Competence and quality of the executing contractors shall be	

			described and valued.	
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The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
6.2.3	Quality of the Executing Contractors/Pre-Qualification

2.6.7 Quality of the Executing Contractors/Pre-Qualification

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Quality of the Executing Contractors/Pre-Qualification	Competence and quality of the executing contractors shall be described and valued.	

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
6.2.3	Quality of the Executing Contractors/Pre-Qualification

2.6.8 Quality Assurance of Construction Execution

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Quality Assurance of Construction Execution	The quality reached in the process of the construction execution shall be described, verified, and certified – on the one hand to	

			eliminate risks and deficiencies, and on the other hand to demonstrate the achieved quality to third parties.	
ES	Guía País Vasco			
S	Nordic Ecolabel - Svanen			

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
6.2.4	Quality Assurance of Construction Execution

2.6.9 Commissioning

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Systematic Commissioning	A systematic commissioning is a major contributing factor for a long-lasting and efficiently operating building automation.	
PL	SBTOOL PL - E-AUDIT	Construction Process Planning	To assess whether plans have been made to appoint a commissioning agent before the start of construction of the case-study office building and whether a recognized	description of levels

			commissioning protocol has been recommended (or performed).	
PL	SBTOOL PL - E-AUDIT	Performance Tuning	To assess whether plans have been made to appoint a commissioning agent before the start of construction of the case-study office building and whether a recognized commissioning protocol has been recommended (or performed).	description of levels
ES	BREEAM ES	Commissioning	To recognise and encourage an appropriate level of building services commissioning that is carried out in a co-ordinated and comprehensive manner, thus ensuring optimum performance under actual occupancy conditions.	
EU	BREEAM Europe	Commissioning	To recognise and encourage an appropriate level of building services commissioning that is carried out adhering to national best practise guidelines, thus in a co-ordinated and comprehensive manner, ensuring optimum performance under	

			actual occupancy conditions.	
PL	SBTOOL PL - E-AUDIT	Construction Process Planning	To assess whether plans have been made to appoint a commissioning agent before the start of construction of the case-study office building and whether a recognized commissioning protocol has been recommended (or performed).	description of levels
USA	LEED	requirements about CxA &	fundamental commissioning/enhanced commissioning	N/A
USA	LEED	measurement and verification plan		

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
6.3.1	Commissioning

2.7 Process

2.7.1 Risks at the Site

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit

D	DGNB	Risks at the Microlocation	Technical risks and terror threats as well as nature caused risks shall be described for a location study.	
USA	LEED	site selection		Y/N
PL	SBTOOL PL - E-AUDIT	Radon control	To assess the extent of measures taken within the case-study building to minimize the entry and dispersal of radon.	description levels

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
7.1.1	Risks at the Site

2.7.2 Risks at the Site

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Risks at the Microlocation	Technical risks and terror threats as well as nature caused risks shall be described for a location study.	
USA	LEED	site selection		Y/N
PL	SBTOOL PL - E-AUDIT	Radon control	To assess the extent of measures taken within the case-study building to minimize the entry and dispersal of radon.	description levels

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
7.1.1	Risks at the Site

2.7.3 Circumstances at the Site

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Circumstances at the Microlocation	The circumstances at the microlocations will be characterized in order that they can be applied in a location study.	
F	HQE		Considering the building's environment	
PL	SBTOOL PL - E-AUDIT	Adverse wind conditions at grade around high buildings	To assess the extent of measures taken to avoid adverse wind conditions around the case-study building.	description of levels

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
7.1.2	Circumstances at the Site

2.7.4 Options for Transportation

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
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D	DGNB	Connection to Transportation	Traffic flow caused by building use is to be reduced by adequate site selection.	
ES	Guía País Vasco			
ES	BREEAM ES	Pedestrian safety	To recognise and encourage the provision of safe and secure pedestrian access routes on the development	
ES	BREEAM ES	Provision of Public Transport	To recognise and encourage the selection of sites served by good public transport facilities	Frequency (mins) and proximity (meters)
ES	Guía País Vasco			
EU	BREEAM Europe	Provision of Public Transport	To recognise and encourage developments in proximity to good public transport networks, thereby helping to reduce transport-related emissions and traffic congestion.	m, minutes
EU	BREEAM Europe	Travel Plan	To recognise the consideration given to accommodating a range of travel options for building users, thereby encouraging the reduction of user reliance on forms of travel that have the highest environmental impact.	
EU	BREEAM Europe	Travel Information Point	To ensure the building has the capacity to provide users with up-to-date information on	

			local public transport routes and timetables.	
EU	BREEAM Europe	Provision of Public Transport	To recognise and encourage developments in proximity to good public transport networks, thereby helping to reduce transport-related emissions and traffic congestion.	m, minutes
F	HQE		Considering the building's environment	
I	Protocollo ITACA	Accessibility to public transport	Foster the choice of site with high accessibility with an efficient public transportation net.	-
PT	SBTOOL PT	Accessibility	Accessibility Accesibility index to facilities	
USA	LEED	distance to rail station	to reduce pollution and land development impacts from automobile use	mile
USA	LEED	distance to a bus station	to reduce pollution and land development impacts from automobile use	mile
ES	Guía País Vasco			
EU	BREEAM Europe	Pedestrian and Cyclist Safety	To recognise and encourage the provision of safe and secure pedestrian and cycle access routes on the development.	
F	HQE		Considering the building's environment	

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
7.2.1	Options for Transportation

2.7.5 Image and Condition of the Location and Neighbourhood

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Image and Condition of the Location and Neighbourhood	The goal is to characterize image and condition of the neighbourhood / site in order to make this information available for a location study.	

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
7.3.1	Image and Condition of the Location and Neighbourhood

2.7.6 Vicinity to amenities

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
EU	BREEAM Europe	Proximity to amenities	To encourage and reward a building that is located in proximity to local amenities, thereby reducing the need for extended	m

			travel or multiple trips.	
D	DGNB	Vicinity to usage-specific Facilities	The choice of the site shall contribute to the users and their visitor's quality of life.	
USA	LEED	distance to a residential area	to reduce pollution and land development impacts from automobile use	mile
ES	BREEAM ES	Proximity to amenities	To encourage and reward a building that is located in proximity to local amenities, thereby reducing the need for extended travel or multiple trips.	Proximity (meters)
F	HQE		Considering the building's environment	
I	Protocollo ITACA	Distance from cultural and commercial activities	Foster the choice of site near cultural and commercial activities	m
USA	LEED	density of the neighborhood, residential area	to channel development to urban areas with existing infrastructure, protect greenfields and preserve habitat and natural resources	units/acre
USA	LEED	distance to neighborhood	to channel development to urban areas with existing infrastructure, protect greenfields and preserve habitat and natural resources	mile
USA	LEED	number of services	to channel development to urban areas with existing infrastructure, protect greenfields and preserve habitat and natural resources	unit
USA	LEED	distance to services	to channel development to urban areas with existing infrastructure,	mile

			protect greenfields and preserve habitat and natural resources	
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The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
7.3.2	Vicinity to amenities

2.7.7 Adjacent Media, Infrastructure, Development

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
D	DGNB	Adjoining Infrastructure Development	Media, Alternatives for supply and sanitation shall serve as ecological goals, and financially release the cities and communities.	
I	Protocollo ITACA	Adjacent infrastructure	Avoid the creation of new connection to utilities	m (-)

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
7.6.1	Adjacent Media, Infrastructure, Development

2.7.8 Adjacent Media, Infrastructure, Development

Country of Assessment Method	Name of Assessment Method	Indicator	Intent	Unit
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Assessment Method	Method			
D	DGNB	Adjoining Infrastructure Development	Media,	Alternatives for supply and sanitation shall serve as ecological goals, and financially release the cities and communities.
I	Protocollo ITACA	Adjacent infrastructure		Avoid the creation of new connection to utilities

The following indicator is proposed for use in OPEN HOUSE:

Number	Indicator
7.6.1	Adjacent Media, Infrastructure, Development

2.7.9 Summary

Summarized the following structure and indicators were carried out:

Primary Aspect	Impact Category	Criteria	Indicator
Environmental	Ecological systems	Climate change	Global Warming Potential (GWP)
		Destruction of the stratospheric ozone layer	Ozone Depletion Potential (ODP)
		Acidification of land and water resources	Acidification Potential (AP)
		Eutrophication of water bodies	Eutrophication Potential (EP)
		Photo-chemical ozone creation (POCP)	Photochemical Ozone Creation Potential (POCP)
		Changes in biodiversity and other ecological systems	Risks from materials
		Certified wood	

			Biodiversity
			Light Pollution
Resources	Depletion of non-renewable primary energy		Non-Renewable Primary Energy Demands (PEne)
			Total Primary Energy Demands and Percentage of Renewable Primary Energy
	Depletion of non-renewable resources other than primary energy		Abiotic Resource Depletion
	Depletion of non-renewable freshwater resources		Non-renewable freshwater resources depletion
	Depletion of land resources with ecological or agricultural value		Depletion of habitats
			Contamination of undisturbed areas
	Exhaustion of solid waste sites suitable for non-hazardous waste		Exhaustion of solid waste sites suitable for non-hazardous waste
Waste	Pollution of water bodies by wastewater, other than eutrophication		Waterbody pollution excluding Eutrophication
	Hazards from disposal of non-radioactive hazardous waste		Hazards from disposal of non-radioactive hazardous waste
	Hazards from disposal or storage of radioactive waste		Hazards from disposal or storage of radioactive waste
	divers		Responsible Material Sourcing
Social	Health, society and culture	Ability of users with functional impairments to use the facility	Barrier-free Accessibility
		Personal safety and security of users	Personal Safety and Security of Users
		Health, well-being and productivity for users of facility	Thermal Comfort

			Indoor Air Quality
			Acoustic Comfort
			Visual Comfort
			Operation Comfort
			Electro Magnetic Pollution
		Health, security and well-being of off-site population	Accessibility
			Noise from Building and Site
		Changes to social and cultural systems	Quality of the Design and Urban Development of the building and Site
	divers		Bicycle Comfort
Economic	Economy	Financial risk or benefits for investors	Building-related Life Cycle Costs (LCC)
		Housing affordability or commercial retail viability	Socio-economic impact
	divers		Value Stability
Technical		Fire protection	Fire Protection
		Durability of the structure und robustness	Designing for Robustness
		Clean and maintenance	Easiness of clean and maintenance
		Resistance against hail, storm, high water and earthquake	Ability to resist against hail, storm, high water and earthquake
	divers		Noise Protection
			Quality of the building shell
Functional		Area efficiency	Area Efficiency
		Conversion feasibility	Conversion Feasibility
Process		Planning quality	Quality of the Project's Preparation
			Integral Planning
			Optimization and Complexity of the Approach to Planning
		Construction quality	Evidence of Sustainability during Bid

			Invitation and Awarding
			Construction Site impact/ Construction Process
			Quality of the Executing Contractors/Pre-Qualification
			Quality Assurance of Construction Execution
		Commissioning	Commissioning
		Operating quality	Use and Operation
Site		Micro-location	Risks at the Site
			Circumstances at the Site
		Traffic connection Bicycle	Options for Transportation
		Neighbourhood	Image and Condition of the Location and Neighbourhood
			Vicinity to amenities
	Planning law	?	
	divers		Adjacent Media, Infrastructure, Development

Conclusion

Deliverable D1.2.2 presents the second part of Task 1.2, the development of a first set of recommendations for the OPEN HOUSE baseline. This was done by thematically grouping the indicators as received from the analysed systems and by suggesting indicators for these thematic groups. Indicators are suggested regarding environmental, economic, social, technical, functional and process-related aspects. The indicators suggested by this deliverable will be further specified concerning, for example, calculation methods, sub-indicators and system boundaries in Task 1.3. As they constitute a first recommendation, they are still subject of discussion and may be changed by the consortium.

The analysis of assessment systems underlying D1.2.1 and D1.2.2 is quite exhaustive as including not only international but also small and national systems only available in national languages. Existing comparisons and analyses mostly concentrate on

international and established systems, which are available in common languages, whereas this is a clear enhancement of the current state-of-the-art, which is induced by the international composition of the consortium.

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