# Climate Ready Certificates the auditor's manual

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# 1. About this document

This document consists of the Climate Ready Certificates (CRC's) Methodology auditor's manual. It describes a water efficiency, water-energy nexus and climate adaptation performance standard against which buildings, in general, and at different stages (design phase, new construction and in-use) can be assessed and achieve a pre-established rating (from F to A+).

The information detailed within this manual is intended for use by trained qualified and licensed auditors in accordance with the procedural and operational requirements of CRC's Methodology.

# 2. Summary

The CRC methodology evolves from the AQUA+ methodology, a voluntary water performance certificate, that rates and improves indoor/outdoor water use/reuse in buildings, based on infrastructural evaluation. It assesses, in a simple and agile way, water use efficiency and identifies opportunities to increase water efficiency, reuse, water-energy savings and reduce water losses.

For the development of the CRC's methodology other relevant methodologies, both at the EU and international level, were considered. The BREEAM methodology which aims at achieving a sustainability based certification for buildings, and corresponds to the most ancient and well spread in the world. Also, BEAM Plus and CASBEE are two excellence examples of the application of an international certification by means of the national good practices codes for buildings.

The CRC's Methodology aims at issuing a single climate resilience certificate for buildings, based on the following three dimensions: water efficiency; water-energy nexus and climate adaptation. The issuing of the climate resilience certificate is accomplished by means of an online platform created for this purpose.

This methodology is applicable to residential and small commercial buildings in the following typologies: households, buildings and neighbourhoods. In terms of the maturity of the project, three scenarios can be considered: design phase, new construction and in-use.

This manual guides the CRC auditor in a step by step approach to issue the CRC, covering the two new dimensions: water-energy nexus and climate adaptation. The water efficiency dimension is available exclusively through the frequency of the AQUA+ training, given that this is a commercial system managed by ADENE.

The platform is open to all users who want to test the water-energy nexus and climate adaption dimensions, that were developed within the B-Water Smart project.

# 3. The AQUA+ system

The water efficiency dimension of the certificate is based on AQUA+® (www.aquamais.pt), created by the Portuguese Energy Agency.

AQUA+ is a voluntary water performance certificate, that rates and improves indoor/outdoor water use/reuse in buildings, based on infrastructural evaluation. It assesses, in a simple and agile way, water use efficiency and identifies opportunities to increase water efficiency, reuse, water-energy savings and reduce water losses.

AQUA+ index, ranging from the well-known efficiency scale F (less efficient) to A+ (more efficient), is issued and comprehensively detailed for each property, providing guidance on good practices for buildings design and renovations, quantifying resulting water, energy and economic savings, allowing for greater choices of equipment and solutions.

The AQUA+ methodology emerges as a creative solution that allows the evaluation of properties and buildings from the point of view of water efficiency, contrasting with traditional approaches, solely dependent on the behavioural patterns of the users. Innovating on these approaches, its methodology focuses on the infrastructure and equipment component of buildings related to water use, which allows for an effective comparison between properties.

AQUA+ changes the paradigm in the national (and mostly European) traditional approach to water management based on water resources availability and installed capacity of water supply services (supply centred) towards an approach that allows the transition to demand-side management (a concept consolidated for several years in energy management and key in the evolution of energy efficiency instruments and companies). It also changes the approach at the level of initiatives and programs that usually call for behavioural changes (whose success depends on continuous campaigns and generational transformations) for a new one that makes it possible to take advantage of the water efficiency potential of buildings, using solutions, devices and equipment that allow for water use according to real needs (“the right fit for water”), without waste and using alternative water sources such as rainwater and grey water.

AQUA+ Residential was launched in 2020 and AQUA+ Hotels in 2022. It will be expanded to public/commercial buildings, namely office buildings in 2024.

Certified auditors perform an evaluation, rating the building and provide guidance on better solutions/equipment (i.e., devices, alternative water sources, green/blue infrastructures) and quantify water/energy/economic savings.

Only certified consultants and auditors have access to the evaluation methodology.

A good application example is Uptown Garden, a building with 14 households which was evaluated in the design phase by an AQUA+ advisor. The improvement measures implemented included the choice of efficient devices (taps, cisterns, showers) in bathrooms and kitchens, washing machines and dishwashers with lower water consumption and installation of a hot water circulation and return system for domestic hot water in all apartments, leading to significant water and energy savings. These improvements will allow for an average saving of 282 litres per household per day (including irrigation of common spaces), corresponding to a total saving of 1.3 million litres of water per year, which translates into a cost reduction of circa €2200 per year with water supply and wastewater services (excluding service or municipal fees).

# 4. Audit step by step

The completion and issuing of a CRC has four main components:

- Identification of the certification object (dwelling, building, neighbourhood) and stage of maturity (project, construction or in use)
- Gathering of support information and documentation about the building (or neighbourhood) to assess its performance. This should be done upon the identification of the CRC focus and prior to the site visit;
- On-site visit, aims at assessing measurable parameters, validating data assessed in the preliminary documentation and collect evidence to support the calculations and options;
- Upload all the data in the CRC platform to issue the CRC.

## *4.1 Certification object*

The 1st step of the CRC audit is the identification of the certification object. The CRC methodology can be applied to individual dwellings, single or multi-family buildings, small commercial buildings, and neighbourhoods.

While the delimitation of the dwelling is fairly easy to comprehend, the delimitation of the multi-family buildings and the neighbourhood requires harmonization.

Multi-family buildings: it encompasses the evaluation of all the common areas, including common systems, such as pool or centralized heating and cooling systems.

Neighbourhood: it is up to the auditor, together with the project owner, to identify the neighbourhood area it wishes to classify. The proposal for the area to evaluate should be submitted to the CRC management body to validate prior to any assessment. This area should consider the evaluation of the outdoor spaces as well as of the surrounding buildings.

## *4.2 Gathering of support information/documentation*

The list of the data, relevant to collect and assess prior to the on-site visit, is presented below. This is an exhaustive list that allows gathering a lot of information from the project site and regarding the project development. The analysis of this documentation prior to the on-site visit allows the identification of specific issues that may need a more detailed evaluation or confirmation upon the visit.

It should be provided by the project owner and also gathered via desk research.

- Water and sewage network projects – descriptive memory, measurements and drawings;
- Projects for exterior arrangements and irrigation network – descriptive memory, measurements and drawings, including irrigated garden area, by type of irrigation system;
- Architectural design (in the case of properties under design) or final architectural screens (in the case of completed properties) – descriptive memory and drawings;
- License/approval for the use of water from alternative water sources (e.g. rainwater and greywaters);
- Installation characteristics of swimming pools to be installed or installed, whenever applicable (volume, surface area, type of treatment, equipment and water saving strategies);

- Maintenance plans for the building/household and history of main interventions (rehabilitation);
- Technical specifications and/or catalogs and/or water or energy efficiency labels, including the features and consumption of:
    - Terminal devices to be installed or installed;
    - Washing machines and dishwashers;
- Technical specifications and/or catalogs and/or energy label of energy production systems DHW.
- Water and energy bills (preferably from the last year);
- Invoices or administrative elements referring to devices or equipment (for analysis of the date of installation);
- Technical-scientific references (e.g., labeling) from independent entities.

Additionally, desk research to collect data relevant to evaluate the climate adaptation dimension, especially regarding the site pre-conditions is also relevant (and is also further detailed in the Climate Adaptation chapter).

### *4.3 On-site visit*

All information that is necessary for the emission of a Climate Ready Certificate should be backed up by evidence.

**Evidence gathering:**

- Visual inspection
- Photography
- Catalogues
- Drawings
- Working diagrams

**Measuring methodologies/methods:**

- Flowmeter
- Measuring tape
- Thermometer
- Timer
- Thermographic device

**For buildings in use:**

1. The first step of the field work should be the documentation trough photo of the water meter to be able to quantify the water consumption throughout the audit.
2. Identify in each sanitary installation the number and type of systems – document trough photography key aspects and details.
3. Execute the trial that quantifies the volume of water consumed until it reaches 37ºC, at the most unfavourable point.
4. Take general photos and key aspects of all the composing elements of:
    a. Alternative water sources and water networks
    b. Irrigation, pavements, and roofs
    c. Sanitary devices
    d. Washing devices: dishes and clothes

e. Water Heating Devices, also ask for construction pictures that show evidence of existing thermal insulation.

5. Check for leaks in pipes, valves, joints and devices.
6. In the absence of floor plans, it's required to measure areas.
7. Execute flow measurements of all devices.

### *4.4 Upload the data on the CRC platform*

To facilitate the issuing of the CRC a web platform is available where to upload the data collected to evaluate each criteria.

A supplementary excel file is also provided in the training session to assist in the systematization of the data and facilitate the process in the platform, either to directly upload the excel file or guide the auditor. Furthermore, images and other complementary information can also be stored in the platform to complement the information available in the database.

# 5. Rating: areas, themes and criteria

The CRC's methodology focuses on different areas, themes and criteria, related to each of the three dimensions of the certificate: water efficiency, water-energy nexus and climate adaptation.

The water efficiency dimension of the certificate considers five areas, 14 themes and 58 criteria, according to the following diagram.

The water-energy nexus dimension considers eight areas, 14 themes and 33 criteria as showed in the next diagram.

***Water Efficiency***

- Water Sources and Networks
- Outside Uses
- Fixtures Efficiency
- Washing Machines
- Domestic Hot Water

**Water Sources and Networks**:
- Alternative Water Sources;
- Water Networks.

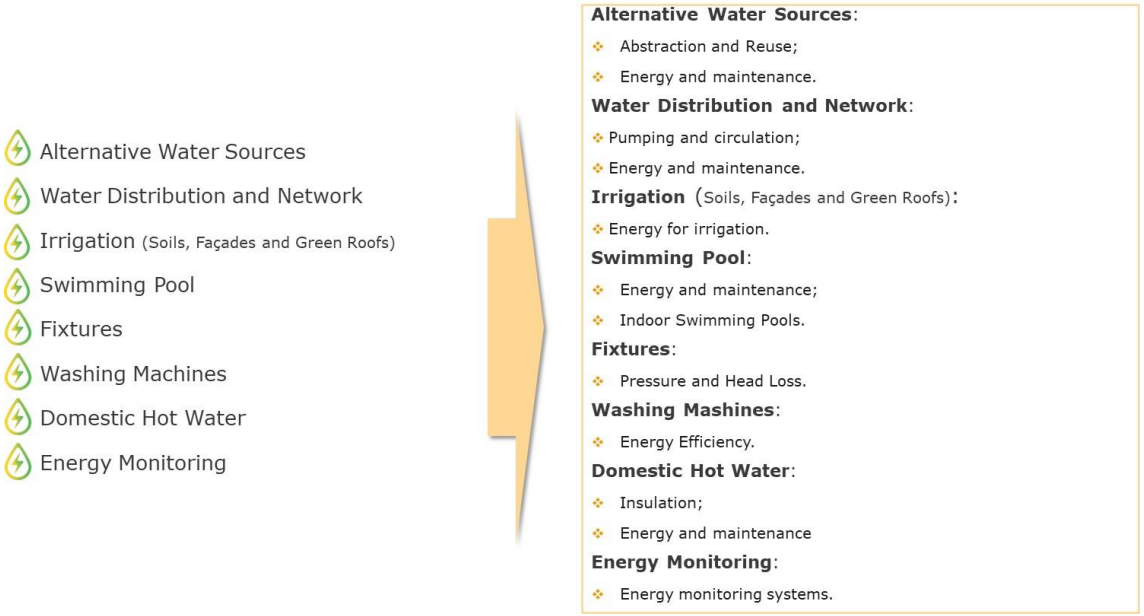
**Outside Uses**:
- Irrigation;
- Soil and Roofs;
- Swimming pool.
- Irrigation (soils, facades and green roofs).

**Fixtures Efficiency**:
- Showers;
- Toilets;
- Sinks;
- Bidet;
- Kitchen taps.

**Washing Machines**:
- Laundry machine;
- Dishwasher.

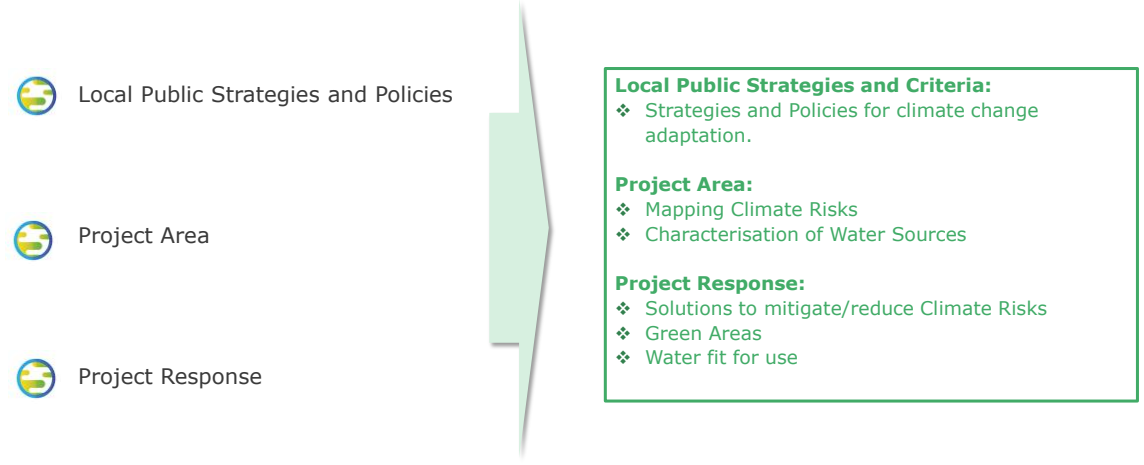
**Domestic Hot Water**:
- Water heating system;
- Hot water distribution network.

## *Water- Energy Nexus*




The climate adaptation dimension encompasses three areas, 11 themes and 19 criteria, as presented in the diagram, in the next page.

## *Climate Adaptation*




For each of the three dimensions (water efficiency; water-energy nexus and climate adaptation) the score is distributed among different assessment areas, based on the CRC's methodology, correspondent to a total of 100%. The defined weightings, for the three dimensions of the certificate, are detailed in the following table.

*Table 1: Weighting of CRC's assessment areas.*

| | ID | Assessment area | Weightings | | |
|---|---|---|---|---|---|
| | | | Household | Building | Outdoor spaces |
| **Water Efficiency** | W1 | Alternative water sources and water distribution | 10% | 30% | 40% |
| | W2 | Outside uses | 15% | 20% | 50% |
| | W3 | Fixtures | 45% | 20% | 10% |
| | W4 | Devices (washing machines) | 15% | 5% | - |
| | W5 | Domestic hot water system (DHW) | 15% | 25% | - |
| **Water-Energy Nexus** | N1 | Alternative water sources | 5% | 20% | 30% |
| | N2 | Water distribution and building networks | 15% | 20% | 25% |
| | N3 | Irrigation (soils, green roofs, green facades) | 5% | 10% | 15% |
| | N4 | Swimming pool | 15% | 10% | 15% |
| | N5 | Fixtures | 20% | 10% | - |
| | N6 | Appliances | 20% | 10% | - |
| | N7 | Domestic hot water system (DHW) | 15% | 10% | - |
| | N8 | Energy Monitoring and control | 5% | 10% | 15% |
| **Climate Adaptation** | C1 | Local Policies and Strategy | - | - | - |
| | C2 | Project Area | 60% | 30% | 30% |
| | C3 | Project Response | 40% | 70% | 70% |

According to the characteristics of each certification object, it should be assessed during the visit, or prior to it if already possible, the non-applicable areas and corresponding evaluation criteria. The maximum score foreseen for these "non-mandatory" criteria will be distributed (normalized), automatically and proportionally, by all the remaining criteria, thus ensuring the comparison of all pilots on the same scale from 0% to 100%.

There are some criteria, like the "dishwasher" that are mandatory, even if the household is not equipped with such electric appliance. The main reason for this approach, in comparison with what is applicable for the washing machine, is the fact that dishes are usually washed inside the household itself (hand wash or other electric appliance), which results in higher water consumption than washing in the dishwasher (for the same quantity of dishes). In the case of nonexistence of such a dishwasher the auditor should select NA.

In the case of the climate adaptation dimension, the first area "Local Policies and Strategy" is non compulsory and the information provided is not taken into account in the object's classification. It is meant as informative on the local authorities' engagement towards sustainability and energy transition goals.

The household, building or neighbourhood class will be determined based on the sum of the obtained score for the verifiable criteria (after normalization, if necessary). The classification will be assigned on a scale from 0% to 100%, correspondent to a scale from F to A+, as presented in the table below.

*Table 2: Distribution of the evaluation intervals per class.*

| Limit (%) | | Class |
|---|---|---|
| **Lower (*including)** | **Higher (excluding)** | |
| 90% | *100% | A+ |
| 75% | 90% | A |
| 60% | 75% | B |
| 45% | 60% | C |
| 30% | 45% | D |
| 15% | 30% | E |
| 0% | 15% | F |

# 6. Evaluation and Score

The evaluation of each criteria is performed by selecting one or more options in the ranking grid.

Based on the chosen options, a percentage of the maximum contribution estimated for that criteria will be added (or summed) to the overall score of the household, building or neighbourhood. It's mandatory to choose one option for each criteria, although the options "none of the previous options" or "could not be determined", both scored with zero from the perspective of the evaluation of each criteria, can also be selected. In this case there should be a justification to why this criteria could not be evaluated with the available options or why it could not be determined.

To complete the evaluation matrix must be filled by using one of the following possibilities:

***Single***

Only one of the available options must be selected. The score for this parameter will be given by multiplying the correspondent maximum contribution by the percentage given to the selected option. For example, if about 40% of the external area is waterproofed (e.g. garage or surface with bituminous), the option "between 25% and 50% of the area…" must be selected, which allows scoring with 75% of the maximum contribution (1.00%) stipulated for this parameter, adds 0.75% to the total score.

***Multiple***

One or more options can be selected, as applicable. In this case, the total is equal to the sum of all the options existing in the validation. For example, if the household has alternative water sources from different resources, namely the use of rainwater and water from a borehole, both options must be selected. This will correspond to 60% (40% + 20%) of the maximum contribution (4%) stipulated for this parameter, i.e., it adds 2.4% to the total score.

***Percentage (%)***

It is mandatory to mention the percentage of devices, area, equipment, etc., from those available in the entire household, building or neighbourhood, that fits each option. In this case, the total must be equal to 100%. For example, if half of the garden area is watered with sprinklers, 1/5 has a drip system and the rest is watered with a hose, "50%", "20%" and "30%" must be entered in the correspondent options.

***Multiple percentage (%)***

It is mandatory to mention the percentage of devices, area, equipment, etc., from those available in the entire household, building or neighbourhood, that fits each option. In this case, the sum of the percentages in the different options can be higher or lower than 100%. The % calculation must be performed by dividing a quantity (number of devices, area, equipment, etc.) that fits the option under evaluation in the matrix, by the total quantity (number of devices, area, equipment, etc.) that is verified for the entire household, building or neighbourhood.

# 7. Methodology guidelines

## *7.1 Water-Energy Nexus*

| | |
|---|---|
| **Area** | **N1. Alternative water sources** |
| **Theme** | **N1.1. Alternative water sources for water reuse/harvesting** |
| **Criteria** | N1.1.1. What are the treatments provided to the reclaimed water/greywater, associated with the alternative water sources reuse, or harvesting? |

**Description**
Assess the type of treatment to which the water, available from alternative sources (not supplied by a water management utility) is subjected. These treatments should be available on site. The criteria values most the least energy-intensive types of treatment.

**Evaluation/Assessment:** Percentage, single. Corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N1.1.1.1 | Only pre-treatment (filtration) |
| N1.1.1.2 | Pre-treatment with disinfection (UV, ozone or ionisation) |
| N1.1.1.3 | Primary treatment |
| N1.1.1.4 | Secondary treatment |
| N1.1.1.5 | Tertiary treatment |
| N1.1.1.6 | There is no alternative water source |
| N1.1.1.7 | It was not possible to determine (Justify) |

**Data source/support:**
In situ observation, technical data from the treatment systems.

| | |
|---|---|
| **Criteria** | N1.1.2. Is the reclaimed water produced/greywater in situ, or it is provided from other locations? |

**Description**
Assess the origin of the production and treatment of the alternative water.
Local production and treatment of alternative water is valued, as less energy is consumed in the distribution to its place of use.

**Evaluation/Assessment:** Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N1.1.2.1 | In situ |
| N1.1.2.2 | Other location |
| N1.1.2.3 | It was not possible to determine (Justify) |

**Data source/support data:**
In situ observation or project evaluation

| **Criteria** | N1.1.3. What destinations has the water from the alternative sources? |
|---|---|

**Description**
Identify the uses of alternative water, by type of end use. Values the use of this water in more energy-intensive uses.

**Evaluation/Assessment:** Multiple choice, corresponding to selecting the applicable options.

**Selection options:**

| | |
|---|---|
| N1.1.3.1 | Washing machines |
| N1.1.3.2 | Irrigation |
| N1.1.3.3 | Toilet flushing |
| N1.1.3.4 | Pavement washing |
| N1.1.3.5 | Water fountains, etc. |
| N1.1.3.6 | There is no destination for alternative water sources |
| N1.1.3.7 | It was not possible to determine (Justify) |

**Data source/support:**
In situ observation or project evaluation

| **Applicability** | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Dwelling | Design phase<br>New construction<br>In-use | No |
| Building | | |
| Neighbourhood (Outdoor space) | | |
| **Observations** | | |

| **Theme** | **N1.2. Energy and maintenance for reclaimed water/greywater** |
|---|---|
| **Criteria** | **N1.2.1.** Is the reclaimed water treatment system provided with locally produced renewable energy? |

**Description**
Identify if the energy used in the treatment of the reclaimed water is locally produced with renewable energy sources. These systems can operate exclusively or partially with this type of energy source.

**Evaluation/Assessment:** Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N1.2.1.1 | Yes |
| N1.2.1.2 | Partially |
| N1.2.1.3 | No |
| N1.2.1.4 | It was not possible to determine (Justify) |

**Data source/support data:**
In situ observation and technical projects

| **Criteria** | N1.2.2. Is the reclaimed water/greywater treatment system regularly maintained? |
|---|---|

**Description**
Evaluate the existence of periodic maintenance procedures to the alternative water source production system equipment. Values periodic maintenance, within shorter periods of time, so that the system operates with high efficiency and with a reduced likelihood of water leaks.

**Evaluation/Assessment:** Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N1.2.2.1 | Yes, every year. |
| N1.2.2.2 | Yes, on a biennial basis |
| N1.2.2.3 | Yes, at least once in the last 5 years |
| N1.2.2.4 | No |
| N1.2.2.5 | It was not possible to determine (Justify) |

**Data source/support data:**
Maintenance reports

| **Applicability** | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Dwelling | Design phase<br>New construction<br>In-use | No |
| Building | | |
| Neighbourhood (Outdoor space) | | |
| **Observations** | | |

| Area | N2 Water distribution and building networks |
|---|---|
| Theme | N2.1 Water elevation and circulation |
| Criteria | N.2.1.1 What is the pump´s motor energy efficiency class, of the elevation pumps? |

**Description**
Assess the energy efficiency of the pumps for the water elevation inside the buildings.

**Evaluation/Assessment:** Percentage, single, corresponding to filling in the adequate percentage in the applicable option. All the pumps should be evaluated. If more than one pump exists, and if the energy efficiency classes are different, then the percentage should consider that distribution. Example, 4 pumps, 3 with IE5 classification and 1 with IE4. IE5 75% and IE4 25%.

**Selection options:**

| | |
|---|---|
| N2.1.1.1 | IE5 |
| N2.1.1.2 | IE4 |
| N2.1.1.3 | <IE4 |
| N2.1.1.4 | It was not possible to determine (Justify) |

**Data source/support data:**
Equipment catalogue and characteristics badges.

| Criteria | N2.1.2 What is the pump energy efficiency class, of the circulation pumps? |
|---|---|

**Description**
Assess the efficiency of the pumps used for water circulation inside the buildings.

**Evaluation/Assessment:** Percentage, single, corresponding to filling in the adequate percentage in the applicable option. All the pumps should be evaluated. If more than one pump exists, and if the energy efficiency classes are different, then the percentage should consider that distribution. Example, 4 pumps, 3 with EEI<=0,18 classification and 1 with 0,18<EEI<=0,20, EEI<=0,18 75% and 0,18<EEI<=0,20 25%.

**Selection options:**

| | |
|---|---|
| N2.1.2.1 | EEI <= 0,18 |
| N2.1.2.2 | 0,18 < EEI <= 0,20 |
| N2.1.2.3 | EEI > 0,20 |
| N2.1.2.4 | It was not possible to determine (Justify) |

**Data source/support data:**
Equipment catalogue and characteristics badges.

| Applicability | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Dwelling<br>Building<br>Neighbourhood (Outdoor space) | Design phase<br>New construction<br>In-use | No |
| **Observations** | Rules on ecodesign for electric motors and variable speed drives are mandatory for all manufacturers and suppliers selling their products in the EU. https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/energy-label-and-ecodesign/energy-efficient-products/water-pumps_en | |

| **Theme** | **N2.2 Energy and maintenance for water elevation and circulation** |
|---|---|
| **Criteria** | N2.2.1 If the water elevation is not gravitic, are the elevation pumps provided with locally produced renewable energy? |

**Description**
Identify if the energy used to power the water elevation pumps is locally produced with renewable energy sources. These systems can operate exclusively or partially with this type of energy source.

**Evaluation/Assessment:** Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N2.2.1.1 | Gravitic |
| N2.2.1.2 | Yes |
| N2.2.1.3 | Partially |
| N2.2.1.4 | No |
| N2.2.1.5 | It was not possible to determine (Justify) |

**Data source/support data:**
In Situ observation, or project evaluation

| Criteria | N2.2.2 Are the elevation pumps regularly maintained? |
|---|---|

**Description**

Evaluate the existence of periodic maintenance procedures to the elevation pumps. Values periodic maintenance, within shorter periods of time, so that the system operates with high efficiency and with a reduced likelihood of water leaks

**Evaluation/Assessment:** Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N2.2.2.1 | Yes, every year. |
| N2.2.2.2 | Yes, on a biennial basis |
| N2.2.2.3 | Yes, at least once in the last 5 years |
| N2.2.2.4 | No |
| N2.2.2.5 | It was not possible to determine (Justify) |

**Data source/support data:**

Maintenance registry document.

| Criteria | N2.2.3 Are the circulation pumps regularly maintained? |
|---|---|

**Description**

Evaluate the existence of periodic maintenance procedures to the circulation pumps. Values periodic maintenance, within shorter periods of time, so that the system operates with high efficiency and with a reduced likelihood of water leaks

**Evaluation/Assessment:** Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N2.2.2.1 | Yes, every year. |
| N2.2.2.2 | Yes, on a biennial basis |
| N2.2.2.3 | Yes, at least once in the last 5 years |
| N2.2.2.4 | No |
| N2.2.2.5 | It was not possible to determine (Justify) |

**Data source/support data:**

Maintenance registry document.

| **Applicability** | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Dwelling | Design phase<br>New construction<br>In-use | No |
| Building | | |
| Neighbourhood (Outdoor space) | | |
| **Observations** | | |

| Area | N3 Irrigation (soils, green roofs, green facades) |
|---|---|
| Theme | N3.1 Energy for irrigation |
| Criteria | N3.1.1 If the water elevation is not gravitic, is the irrigation system provided with locally produced renewable energy? |

**Description**
Identify if the energy used to power the water irrigation system is locally produced with renewable energy sources. These systems can operate exclusively or partially with this type of energy source.

**Evaluation/Assessment:** Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N3.1.1.1 | Gravitic |
| N3.1.1.2 | Yes |
| N3.1.1.3 | Partially |
| N3.1.1.4 | No |
| N3.1.1.5 | It was not possible to determine (Justify) |

**Data source/support data:**
In Situ observation, or project evaluation

| Applicability | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Dwelling | Design phase<br>New construction<br>In-use | No |
| Building | | |
| Neighbourhood (Outdoor space) | | |
| **Observations** | | |

| Area | N4 Swimming pool |
|---|---|
| Theme | N4.1 Energy and maintenance for the swimming pool |
| Criteria | N4.1.1 Is the water treatment, heating and the circulation system of the swimming pool provided with locally produced renewable energy? |

**Description**
Identify if the energy used to maintain the swimming pool (water heating, water treatment and water circulation) is locally produced with renewable energy sources. These systems can operate exclusively or partially with this type of energy source.

**Evaluation/Assessment:** Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N4.1.1.1 | Yes |
| N4.1.1.2 | Partially |
| N4.1.1.3 | No |
| N4.1.1.4 | It was not possible to determine (Justify) |

**Data source/support data:**
In Situ observation, or project evaluation

| Criteria | N4.1.2 Is the water of the swimming pool heated? |
|---|---|

**Description**
Identify if the water used in the swimming pool (s) is heated or not. Values low energy intensity systems, so not heated.

**Evaluation/Assessment:** Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N4.1.2.1 | No |
| N4.1.2.2 | Yes |
| N4.1.2.3 | It was not possible to determine (Justify) |

**Data source/support data:**
In Situ observation, or project evaluation

| Criteria | N4.1.3 If the water of the swimming pool is heated what is the temperature of the water? |
|---|---|

**Description**
Identify the water temperature of the heated swimming pool.

**Evaluation/Assessment:** Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N4.1.3.1 | <=28ºC |
| N4.1.3.2 | ]28, 30] ºC |
| N4.1.3.3 | ]30, 32] ºC |
| N4.1.3.4 | >32 ºC |

| | |
|---|---|
| N4.1.3.5 | It was not possible to determine (Justify) |

**Data source/support data:**
In Situ observation

| **Criteria** | N4.1.4 What is the efficiency of the water heating equipment(s)? (heated swimming pools only) |
|---|---|

**Description**
Identify the energy efficiency class of the swimming pool water heater (or package heater).

**Evaluation/Assessment:**
Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N4.1.4.1 | A+++ |
| N4.1.4.2 | A++ |
| N4.1.4.3 | A+ |
| N4.1.4.4 | A |
| N4.1.4.5 | B |
| N4.1.4.6 | C |
| N4.1.4.7 | >C |
| N4.1.4.8 | It was not possible to determine (justify) |

**Data source/support data:**
https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32013R0812&from=EN

| **Criteria** | N4.1.5 Is the water heating equipment of the swimming pool regularly maintained? |
|---|---|

**Description**
Evaluate the existence of periodic maintenance procedures to the swimming pool water heating system. Values periodic maintenance, within shorter periods of time, so that the system operates with high efficiency.

**Evaluation/Assessment:** Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N4.1.5.1 | Yes, every year |
| N4.1.5.2 | Yes, on a biennial basis |
| N4.1.5.3 | Yes, at least once in the last 5 years |
| N4.1.5.4 | No |
| N4.1.5.5 | It was not possible to determine (Justify) |

**Data source/support data:**
Maintenance reports.

| Applicability | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Dwelling | Design phase<br>New construction<br>In-use | No |
| Building | | |
| Neighbourhood (Outdoor space) | | |
| **Observations** | Criterions 4.1.3, 4.1.4 and 4.1.5 are only applicable for In-use buildings | |

| **Theme** | **N4.2 Indoor swimming pools** |
|---|---|
| **Criteria** | N4.2.1 What is the temperature difference between the swimming pool air temperature and the water temperature? (indoor swimming pool only) |

**Description**
Assess the temperature difference between the swimming pool air temperature and the water temperature of the indoor swimming pool.

**Evaluation/Assessment:**
Single choice, corresponding to selecting the applicable option.

**Selection options:**

| | |
|---|---|
| N4.2.1.1 | <= 2 oC (recommended temp.) |
| N4.2.1.2 | [2, 3[ oC |
| N4.2.1.3 | > 3 oC |
| N4.2.1.4 | It was not possible to determine (Justify) |

**Data source/support data:**
https://ipdj.gov.pt/documents/20123/0/Recomendacoes-para-Reducao-do-+Consumo-Energetico-e-Hidrico-em-+Instalacoes-Desportivas-20-set-2022.pdf/9c1f6db7-b3db-9e04-8ef8-eeccad202ecb?t=1664302074311

| **Criteria** | N4.2.2 Is the air relative humidity of the interior space between 55-75%? |
|---|---|

**Description**
Assess if the relative humidity inside the interior space of the indoor swimming pool is between the values of 55-75%.

**Evaluation/Assessment:**
Single choice, corresponding to selecting the applicable option.

**Selection options:**

| | |
|---|---|
| N4.2.2.1 | Yes |
| N4.2.2.2 | No |
| N4.2.2.3 | It was not possible to determine (justify) |

**Data source/support data:**
CNQ nº 23/93 Directive.

| Applicability | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household | In-use | No |
| Building | | |
| **Observations/Justification** | | |

| Area | N5 Fixtures |
|---|---|
| Theme | N5.1 Pressure and net head loss |
| Criteria | N5.1.1 What is the value of the water static pressure at the first water end-use point (cold water)? |

**Description**
Assess the value of the water static pressure at the first water end-use point for cold water.

**Evaluation/Assessment:**
Single choice, corresponding to selecting the applicable option.

**Selection options:**

| | |
|---|---|
| N5.1.1.1 | [0.15, 0.3] MPa |
| N5.1.1.2 | [0.125, 0.15[ or ]0.3, 0.45] Mpa |
| N5.1.1.3 | [0.1, 0.125[ or ]0.45, 0,6] Mpa |
| N5.1.1.5 | < 0.1 Mpa or >0,6 Mpa |
| N5.1.1.6 | It was not possible to determine (Justify) |

**Data source/support data:**
Regulatory Decree No. 23/95, of August 23, EPAL building networks manual.

| Criteria | N5.1.2 What is the value of the head loss at the most distant shower head, with the maximum flow? (hot water) |
|---|---|

**Description**
Assess the value of the head loss at the most distant shower head, with the maximum flow for hot water.

**Evaluation/Assessment:**
Single choice, corresponding to selecting the applicable option.

**Selection options:**

| | |
|---|---|
| N5.1.2.1 | < 0.05 MPa |
| N5.1.2.2 | [0.05, 0.1[ MPa |
| N5.1.2.3 | [0.1, 0.15[ MPa |
| N5.1.2.4 | [0.15, 0.2[ Mpa |
| N5.1.2.5 | >= 0.2 MPa |
| N5.1.2.6 | It was not possible to determine (Justify) |

**Data source/support data:**
In situ measurement of flow and pressure.

| Criteria | N5.1.3 What is the value of the head loss at the most distant shower head, with the maximum flow? (cold water) |
|---|---|

**Description**
Assess the value of the head loss at the most distant shower head, with the maximum flow for cold water.

**Evaluation/Assessment:**
Single choice, corresponding to selecting the applicable option.

**Selection options:**

| | |
|---|---|
| N5.1.3.1 | < 0.01 MPa |
| N5.1.3.2 | [0.01, 0.03[ MPa |
| N5.1.3.3 | [0.03, 0.05[ MPa |
| N5.1.3.4 | [0.05, 0.07[ Mpa |
| N5.1.3.5 | >= 0.07 MPa |
| N5.1.3.6 | It was not possible to determine (Justify) |

**Data source/support data:**
In situ measurement of flow and pressure.

| Criteria | N5.1.4 What is the value of the head loss at the last water point with the maximum flow? (cold water) |
|---|---|

**Description**
Assess the value of the head loss at the most distant water point, with the maximum flow for cold water.

**Evaluation/Assessment:**
Single choice, corresponding to selecting the applicable option.

**Selection options:**

| | |
|---|---|
| N5.1.4.1 | < 0.01 MPa |
| N5.1.4.2 | [0.01, 0.03[ MPa |
| N5.1.4.3 | [0.03, 0.05[ MPa |
| N5.1.4.4 | [0.05, 0.07[ Mpa |
| N5.1.4.5 | >= 0.07 MPa |
| N5.1.4.6 | It was not possible to determine (Justify) |

**Data source/support data:**
In situ measurement of flow and pressure.

| **Applicability** | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household | In-use | No |
| Building | | |
| **Observations/Justification** | | |

| Area | N6 Appliances |
|---|---|
| Theme | N6.1 Efficiency of appliances |
| Criteria | N6.1.1 If the dishwasher is from March 2021 onwards, which is the energy label class of the dishwasher? |

**Description**
Identify the energy efficiency class of the of existing dishwashers if manufactured from March 2021 onwards.

**Evaluation/Assessment:**
Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N6.1.1.1 | A |
| N6.1.1.2 | B |
| N6.1.1.3 | C |
| N6.1.1.4 | D |
| N6.1.1.5 | It was not possible to determine (Justify) |

**Data source/support data:**
https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1575537989799&uri=CELEX%3A32019R2017

| Criteria | N6.1.2 If the dishwasher is older than March 2021, which is the energy label class of the dishwasher? |
|---|---|

**Description**
Identify the energy efficiency class of the of existing dishwashers if manufactured before March 2021.

**Evaluation/Assessment:**
Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N6.1.1.1 | A+++ |
| N6.1.1.2 | A++ |
| N6.1.1.3 | A+ |
| N6.1.1.4 | A |
| N6.1.1.5 | It was not possible to determine (Justify) |

**Data source/support data:**
https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1575537989799&uri=CELEX%3A32019R2017

| **Criteria** | N6.1.3 If the washing machine is from March 2021 onwards, which is the energy label class of the washing machine? |
|---|---|

**Description**
Identify the energy efficiency class of the existing washing machines if manufactured from March 2021 onwards.

**Evaluation/Assessment:**
Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N6.1.1.1 | A |
| N6.1.1.2 | B |
| N6.1.1.3 | C |
| N6.1.1.4 | D |
| N6.1.1.5 | It was not possible to determine (Justify) |

**Data source/support data:**
https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1575536811417&uri=CELEX%3A32019R2014

| **Criteria** | N6.1.4 If the washing machine is older than March 2021, which is the energy label class of the washing machine? |
|---|---|

**Description**
Identify the energy efficiency class of the washing machines if manufactured before March 2021.

**Evaluation/Assessment:**
Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N6.1.1.1 | A+++ |
| N6.1.1.2 | A++ |
| N6.1.1.3 | A+ |
| N6.1.1.4 | A |
| N6.1.1.5 | It was not possible to determine (Justify) |

**Data source/support data:**
https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1575536811417&uri=CELEX%3A32019R2014

| **Applicability** | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household | New construction<br>In-use | No |
| Building | | |
| **Observations/Justification** | Criterions N6.1.1 and N6.1.3 are only applicable in New Constructions. | |

| Theme | N6.2 Energy for appliances |
|---|---|
| Criteria | N6.2.1 Are the appliances provided with locally produced renewable energy? |

**Description**
Assess if the electrical appliances are powered with locally produced renewable energy.

**Evaluation/Assessment:**
Percentage, single, corresponding to filling in the adequate percentage in the applicable option.

**Selection options:**

| | |
|---|---|
| N6.2.1.1 | Yes |
| N6.2.1.2 | Partially |
| N6.2.1.3 | No |
| N6.2.1.4 | It was not possible to determine (Justify) |

**Data source/support data:**
In situ observation and technical projects.

| Applicability | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Dwelling<br>Building<br>Neighbourhood (Outdoor space) | Design phase<br>New construction<br>In-use | No |
| **Observations** | | |

| Area | N7 Domestic hot water system (DHW) |
|---|---|
| Theme | N7.1 Pipe insulation |
| Criteria | N7.1.1 Which is the average pipe diameter/insulation thickness ratio? |

**Description**
Assess the average pipe diameter/insulation thickness ratio for the domestic hot water system.

**Evaluation/Assessment:**
Single choice, corresponding to selecting the applicable option.
**Related options:**

| | |
|---|---|
| N7.1.1.1 | < 1.8 |
| N7.1.1.2 | [1.8, 2.3[ |
| N7.1.1.3 | [2.3, 3.0[ |
| N7.1.1.4 | [3.0, 4.0[ |
| N7.1.1.5 | >=4 |
| N7.1.1.6 | No insulation |
| N7.1.1.7 | It was not possible to determine (Justify) |

**Data source/support data:**
Table 14 of Ordinance 138-I/2021.
https://files.dre.pt/1s/2021/07/12602/0001200053.pdf

| Applicability | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household<br>Building | Design phase<br>New construction<br>In-use | No |
| **Observations/Justification** | | |

| Area | N7 Domestic hot water system (DHW) |
|---|---|
| Theme | N7.2 Energy and maintenance for water heating equipment(s)? |
| Criteria | N7.2.1 Which is the energy label class of the water heating equipment(s)? |

**Description**
Identify the energy efficiency class of the water heating system.

**Evaluation/Assessment:**
Percentage, single, corresponding to filling in the adequate percentage in the applicable option.
**Related options:**

| | |
|---|---|
| N7.2.1.1 | A+++ |
| N7.2.1.2 | A++ |
| N7.2.1.3 | A+ |
| N7.2.1.4 | A |
| N7.2.1.5 | B |
| N7.2.1.6 | C |
| N7.2.1.7 | D |
| N7.2.1.8 | It was not possible to determine (Justify) |

| |
|---|
| **Data source/support data:**<br>https://eur-lex.europa.eu/legal-content/PT/TXT/PDF/?uri=CELEX:32012R0622&from=EN<br>https://europump.net/uploads/20111208_EuP_Lot_11_circulators_-_general_explanations_EEI_-_modified_versionV3_1__for_website.pdf |

| **Criteria** | N7.2.2 Is the domestic hot water system provided with locally produced renewable energy? |
|---|---|
| **Description**<br>Assess if the domestic hot water system is powered with locally produced renewable energy. | |
| **Evaluation/Assessment:**<br>Percentage, single, corresponding to filling in the adequate percentage in the applicable option.<br>**Related options:** | |
| N7.2.2.1 | Yes |
| N7.2.2.2 | Partially |
| N7.2.2.3 | No |
| N7.2.2.4 | It was not possible to determine (Justify) |
| **Data source/support data:**<br>In situ observation and technical projects. | |

| **Criteria** | N7.2.3 Is the domestic hot water system regularly maintained? |
|---|---|
| **Description**<br>Assess if the domestic hot water system is regularly maintained. | |
| **Evaluation/Assessment:**<br>Percentage, single, corresponding to filling in the adequate percentage in the applicable option.<br>**Related options:** | |
| N7.2.3.1 | Yes, every year. |
| N7.2.3.2 | Yes, on a biennial basis |
| N7.2.3.3 | Yes, at least once in the last 5 years |
| N7.2.3.4 | No |
| N7.2.3.5 | It was not possible to determine (Justify) |
| **Data source/support data:** Maintenance reports.<br>In situ observation and technical projects. | |

| **Applicability** | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household<br>Building | Design phase<br>New construction<br>In-use | No |
| **Observations/Justification** | | |

| Theme | N7.3 Other energy efficiency equipment |
|---|---|
| Criteria | N7.3.1 Are there any other energy efficiency equipment's for water uses? |

**Description**
Identify if there are any other energy efficiency equipment's for water uses?

**Evaluation/Assessment:**
Single choice, corresponding to selecting the applicable option.
**Related options:**

| | |
|---|---|
| N7.3.1.1 | Yes |
| N7.3.1.2 | No |
| N7.3.1.3 | It was not possible to determine (Justify) |

**Data source/support data:**
In situ verification.

| Applicability | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household<br>Building | Design phase<br>New construction<br>In-use | No |
| **Observations/Justification** | | |

| Area | N8 Domestic hot water system (DHW) |
|---|---|
| Theme | N8.1 Other energy efficiency equipment |
| Criteria | N8.1.1 Does the building have a system to monitor the energy consumption related to: |

**Description**
Assess if the building has a system to monitor the energy consumption related to multiple water systems.

**Evaluation/Assessment:**
Percentage, multiple, corresponding to filling in the adequate percentage in the applicable option.
**Related options:**

| | |
|---|---|
| N8.1.1.1 | Alternative water sources |
| N8.1.1.2 | Water distribution and building networks |
| N8.1.1.3 | Irrigation |
| N8.1.1.4 | Swimming pool |
| N8.1.1.5 | Fixtures |
| N8.1.1.6 | DHW |
| N8.1.1.7 | There is no monitoring system |
| N8.1.1.8 | It was not possible to determine (Justify) |

**Data source/support data:**
In situ verification and technical projects.

| Applicability | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Dwelling<br>Building<br>Neighbourhood (Outdoor space) | Design phase<br>New construction<br>In-use | No |
| **Observations** | | |

## *7.2 Climate Adaptation*

| Area | C1. Local Policies and Strategy |
|---|---|
| Theme | C1.1. Local Climate Adaptation Plan |
| Criteria | **C1.1.1.** Does the municipality of the building define a local climate adaptation plan for the climate risks identified (heat waves, river flooding, coastal flooding, pluvial flooding, water scarcity), for that location? |

**Description**

Verify if the Municipality where the certification project is located has a Local Climate Adaptation Plan to address the climate risks (heat waves, river flooding, coastal flooding, pluvial flooding, water scarcity) identified for that location.

The aim is to gather updated information, per Municipality, on their commitment towards climate adaptation and identify measures/strategies defined to achieve local targets.

**Evaluation/Assessment:** Single choice, corresponding selecting the applicable option. This parameter is not considered for the pilot evaluation.

**Related options:**

| | |
|---|---|
| C1.1.1.1 | Yes |
| C1.1.1.2 | No |
| C1.1.1.3 | It was not possible to determine (Justify) |

**Data source/support data:**

Local Climate Adaptation Strategy

Check also the Covenant of Mayors and check the signatory cities and updated SECAPs – Sustainable Energy and Climate Action Plans.

**Practical examples:**

For Lisbon city, consider the following data source: https://www.lisboa.pt/fileadmin/cidade_temas/ambiente/qualidade_ambiental/EMMAC/EMAAC_2017.pdf

| Applicability | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household<br>Building<br>Neighbourhood (Outdoor space) | Design phase<br>New construction<br>In-use | NO |
| **Observations/Justification** | C1.1 is not considered for the pilot assessment. Corresponds to complementary data on the pilots under evaluation. No evidence of this theme is required. | |

| Theme | C1.2. Local Climate Adaptation Plan |
|---|---|
| Criteria | **C1.2.1.** What is the periodicity for monitoring and reviewing the region Master Plan to ensure it remains relevant and properly operational? |

**Description:**
Verify if the Municipality where the certification project is located periodically monitors the execution of its Local Climate Adaptation Plan.
The aim is to ensure that the Local Climate Adaptation Plan remains relevant and is properly operational.

**Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option. This parameter is not considered for the pilot evaluation.

**Related options:**

| | |
|---|---|
| C1.2.1.1 | <3 years |
| C1.2.1.2 | [3, 6[ years |
| C1.2.1.3 | > 6 years |
| C1.2.1.4 | It was not possible to determine (Justify) |

**Data source/support data:**
Local Climate Adaptation Strategy

**Practical examples:**
For Lisbon city, consider the following data source: https://www.lisboa.pt/fileadmin/cidade_temas/ambiente/qualidade_ambiental/EMMAC/EMAAC_2017.pdf

| Applicability | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household<br>Building<br>Neighbourhood (Outdoor space) | Design phase<br>New construction<br>In-use | NO |
| **Observations/Justification** | C1.2 is not considered for the pilot assessment. Corresponds to complementary data on the pilots under evaluation. No evidence of this theme is required. | |

| Theme | C1.3. Local Climate Adaptation Plan |
|---|---|
| Criteria | **C1.3.1.** Does the region own and implement a critical infrastructure (e.g. water supply, energy supply) plan or strategy? |

**Description:** Verify if the Local Climate Adaptation Plan developed for the Municipality where the certification project is located considers the existing critical water infrastructure. Aims at verifying if the Municipality developed a specific plan for the management of the critical water infrastructure.

**Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option. This parameter is not considered for the pilot evaluation.

**Related options:**

| | |
|---|---|
| C1.3.1.1 | Yes, for both water and energy critical infrastructures |
| C1.3.1.2 | Yes, for water or energy critical infrastructures |
| C1.3.1.3 | No |
| C1.3.1.4 | It was not possible to determine (Justify) |

**Data source/support data:**
Local Climate Adaptation Strategy

**Practical examples:**
For Lisbon city, consider the following data source: https://www.lisboa.pt/fileadmin/cidade_temas/ambiente/qualidade_ambiental/EMMAC/EMAAC_2017.pdf

| Applicability | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household<br>Building<br>Neighbourhood (Outdoor space) | Design phase<br>New construction<br>In-use | NO |
| **Observations/Justification** | C1.3 is not considered for the pilot assessment. Corresponds to complementary data on the pilots under evaluation. No evidence of this theme is required. | |

| Area | C2. Project Area |
|---|---|
| Theme | C2.1. Mapping climate risks - Coastal flooding |
| Criteria | **C2.1.1.** What was the level of coastal flooding risk identified for the project area? |

**Description:** Verify if the Municipality where the certification project is located mapped the risk of coastal flooding for that location.
It is intended to assess if the risk of coastal flooding has been mapped for the project location and in that case if it is possible to determine the risk level.

**Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option.

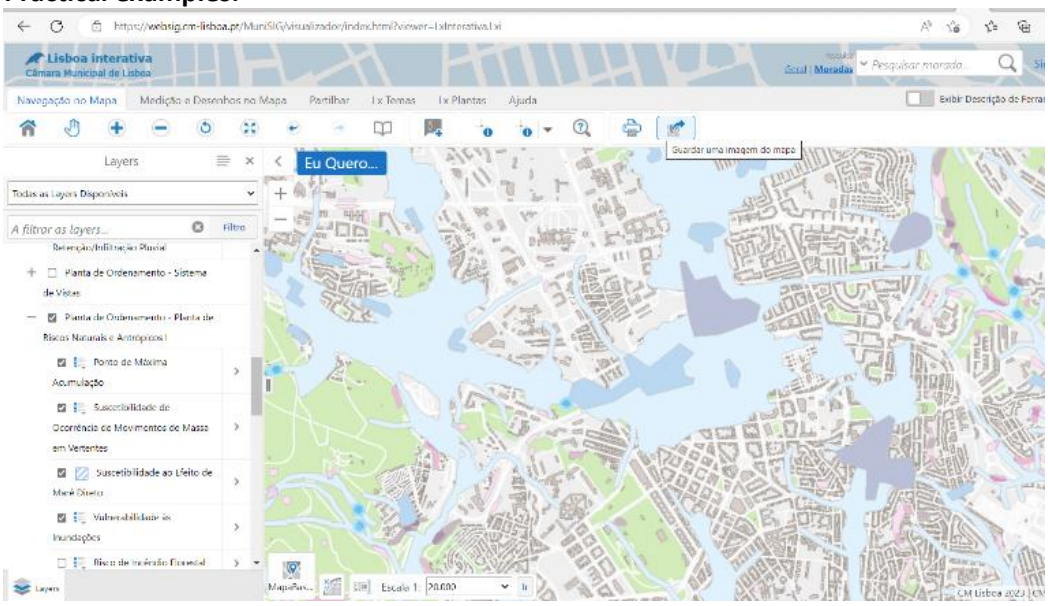
**Related options:**

| | |
|---|---|
| C2.1.1.1 | Null or negligible |
| C2.1.1.2 | Low |
| C2.1.1.3 | Moderate |
| C2.1.1.4 | High |
| C2.1.1.5 | It was not possible to determine (Justify) |

**Data source/support data:**

- Lisbon city - https://websig.cm-lisboa.pt/MuniSIG/visualizador/index.html?viewer=LxInterativa.Lxi
- Remain territory: Susceptibility chart for flood and coastal flooding, National Risk Assessment

**Practical examples:**




| Applicability | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household | Design phase<br>New construction<br>In-use | YES |
| Building | | |
| Neighbourhood (Outdoor space) | | |
| **Observations/Justification** | Analysis of the Local Adaptation Plan for the pilot location and consultation of relevant technical documentation | |

| Theme | **C2.2.** Mapping climate risks - Floods |
|---|---|
| **Criteria** | **C2.2.1.** What was the level of flooding risk identified for the project area? |

**Description:** Verify if the Municipality where the certification project is located mapped the flooding risk for that location.
It is intended to assess if the risk of floods has been mapped for the project location and in that case if it is possible to determine the risk level.

**Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option.

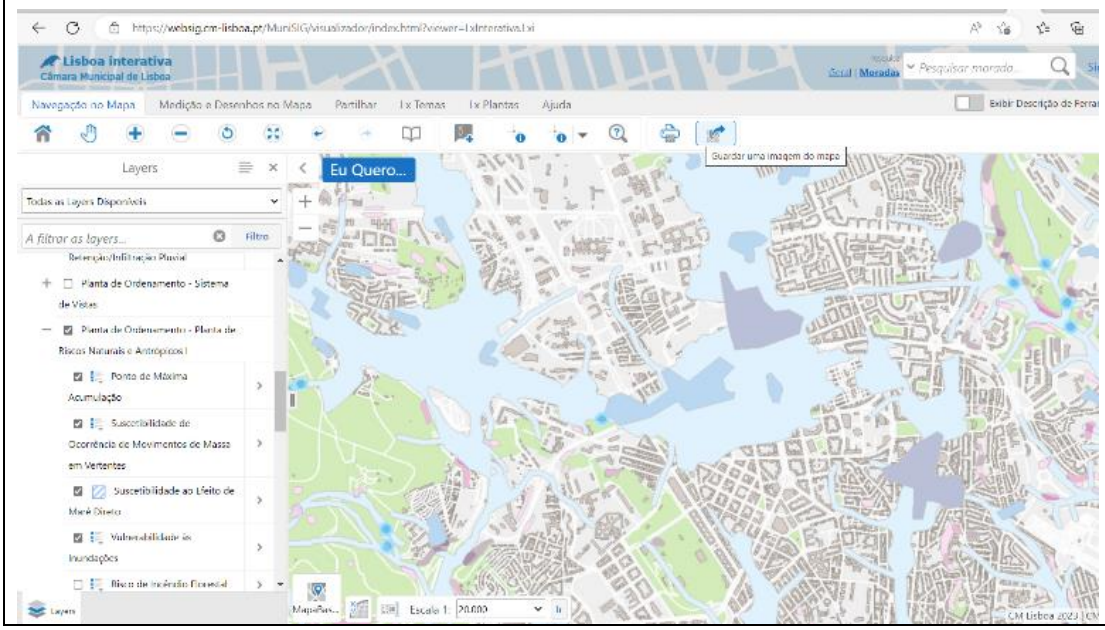
**Related options:**

| | |
|---|---|
| C2.2.1.1 | Null or negligible |
| C2.2.1.2 | Low |
| C2.2.1.3 | Moderate |
| C2.2.1.4 | High |
| C2.2.1.5 | It was not possible to determine (Justify) |

**Data source/support data:**

- Lisbon city - https://websig.cm-lisboa.pt/MuniSIG/visualizador/index.html?viewer=LxInterativa.Lxi
- Remain territory: Susceptibility chart for flood and coastal flooding, National Risk Assessment

**Practical examples:**




| **Applicability** | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household | Design phase<br>New construction<br>In-use | YES |
| Building | | |
| Neighbourhood (Outdoor space) | | |
| **Observations/Justification** | Analysis of the Local Adaptation Plan for the pilot location and consultation of relevant technical documentation | |

| Theme | C2.3. Mapping climate risks - Droughts |
|---|---|
| Criteria | **C2.3.1.** What was the level of drought risk identified for the project area, (SPI index, 12 month integration)? |

**Description:** Verify if the Municipality where the certification project is located mapped the drought risk for that location.
It is intended to assess if the drought risk applies to that location and if it was considered in the elaboration of Local Climate Adaptation Plan.

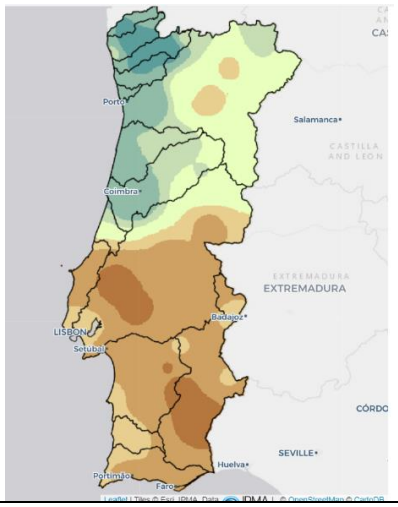
**Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option.

**Related options:**

| | |
|---|---|
| C2.3.1.1 | > -0.49 |
| C2.3.1.2 | -0.50 a -0.99 |
| C2.3.1.3 | -1.00 a -1.49 |
| C2.3.1.4 | -1.50 a -1.99 |
| C2.3.1.5 | <-2,00 |
| C2.3.1.6 | It was not possible to determine (Justify) |

**Data source/support data:**
https://www.ipma.pt/pt/oclima/observatorio.secas/spi/monitorizacao/servico.situacaoatual/

**Practical examples:**




| | | |
|---|---|---|
| ≥2.00 | chuva extrema | 2.3 |
| 1.50 a 1.99 | chuva severa | 4.4 |
| 1.00 a 1.49 | chuva moderada | 9.2 |
| 0.99 a 0.50 | chuva fraca | 15.0 |
| 0.49 a -0.49 | normal | 38.2 |
| -0.50 a -0.99 | seca fraca | 15.0 |
| -1.00 a -1.49 | seca moderada | 9.2 |
| -1.50 a -1.99 | seca severa | 4.4 |
| ≤ - 2.00 | seca extrema | 2.3 |

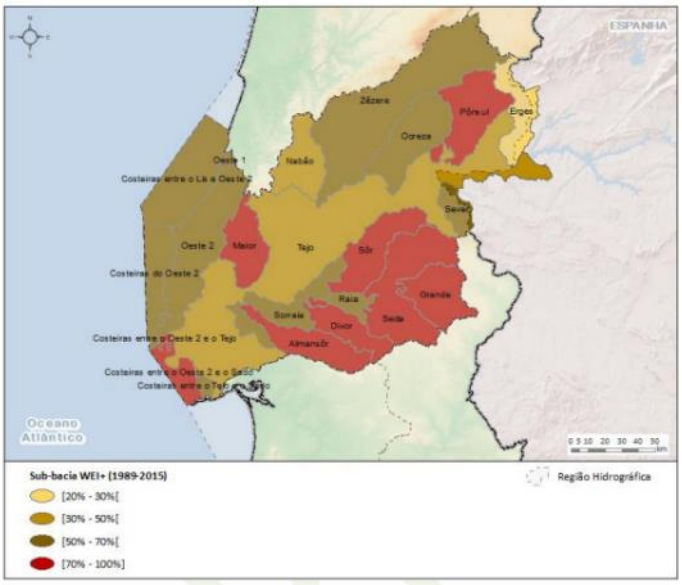
| Criteria | **C2.3.2.** What is the Water Scarcity (WEI+) index for the project hydrographic region? |
|---|---|

**Description:** Verify if the Municipality where the certification project is located has calculated the water scarcity index (WEI+) for that location.
It is intended to assess if water scarcity constitutes an issue for that location and enable an adequate response to mitigate it.

**Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option.

**Related options:**

| | |
|---|---|
| C2.3.2.1 | > 40% |
| C2.3.2.2 | [20%, 40[% |
| C2.3.2.3 | [10%, 20[% |
| C2.3.2.4 | < 10% |
| C2.3.2.5 | It was not possible to determine (Justify) |

| |
|---|
| **Data source/support data:** European Climate Adaptation Platform Climate-ADAPT - https://climate-adapt.eea.europa.eu/en/knowledge/tools/urban-adaptation |
| **Practical examples:**<br>  <br><br>**WEI+ por sub-bacia para o período 1989-2015, na RH** |

| **Applicability** | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household | Design phase<br>New construction<br>In-use | YES |
| Building | | |
| Neighbourhood (Outdoor space) | | |
| **Observations/Justification** | Analysis of the Local Adaptation Plan for the pilot location and consultation of relevant technical documentation | |

| **Theme** | **C2.4. Mapping climate risks - Heat Waves** |
|---|---|
| **Criteria** | **C2.4.1.** What was the level of heat wave risk identified for the project area (ºC)? |

**Description:** Verify if the Municipality where the certification project is located mapped the risk of a heat wave for that location.
It is intended to assess if the risk of heat wave applies to that location and if it was considered in the elaboration of Local Climate Adaptation Plan.

**Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option.

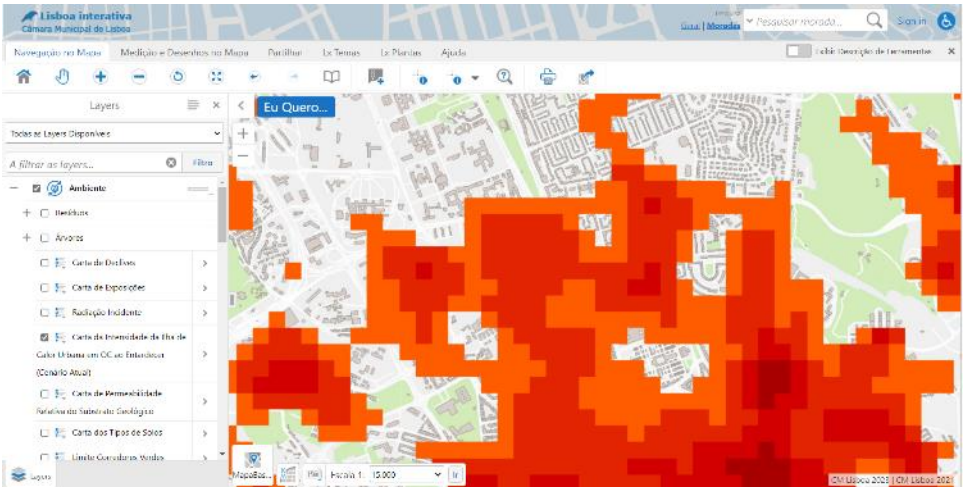
**Related options:**

| | |
|---|---|
| C2.4.1.1 | <1,5 |
| C2.4.1.2 | 1,6 - 2,0 |
| C2.4.1.3 | 2,1 - 2,5 |
| C2.4.1.4 | 2,6 - 3,0 |
| C2.4.1.5 | 3,1 - 3,5 |
| C2.4.1.6 | 3,6 - 4,0 |
| C2.4.1.7 | 4,1 - 4,5 |

| | |
|---|---|
| C2.4.1.8 | It was not possible to determine (Justify) |

**Data source/support data:**
Lisbon city: https://websig.cm-lisboa.pt/MuniSIG/visualizador/index.html?viewer=LxInterativa.Lxi

**Practical examples:**




| **Applicability** | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household | Design phase<br>New construction<br>In-use | YES |
| Building | | |
| Neighbourhood (Outdoor space) | | |
| **Observations/Justification** | Analysis of the Local Adaptation Plan for the pilot location and consultation of relevant technical documentation | |

| **Theme** | **C2.5. Fresh water supply sources** |
|---|---|
| **Criteria** | **C2.5.1.** Is there more than one fresh water supply source which can supply at least 20% of potable water demand for the project area? |

**Description:** Verify for the area correspondent to the certification project location if there are at least two water supply sources able to supply at least 20% of the water demand.
It intends to assess if for that location there is redundancy in terms of water supply sources. As it can be relevant in the scenario of water scarcity.

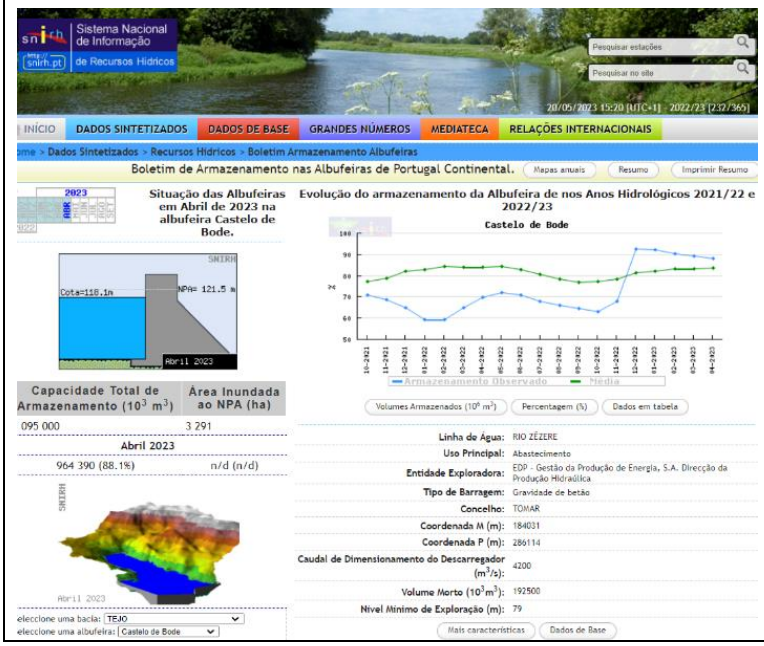
**Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option.

**Related options:**

| | |
|---|---|
| C2.5.1.1 | Yes |
| C2.5.1.2 | No |
| C2.5.1.3 | It was not possible to determine (Justify) |

**Data source/support data:**
Lisbon city: https://www.epal.pt/EPAL/menu/%C3%A1gua/sistema-de-abasteciment

**Practical examples:**




| **Criteria** | **C2.5.2.** What is the distance of the project's main fresh water supply source (dam/groundwater)? |
|---|---|
| **Description:** Determine the distance between the certification project location and the main water supply source. To be able to better evaluate the risk related to this parameter, which could eventually compromise water supply for that location. | |
| **Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option.<br><br>**Related options:**<br>C2.5.2.1 <50 Km<br>C2.5.2.2 [100, 50[ Km<br>C2.5.2.3 >=100 Km<br>C2.5.2.4 It was not possible to determine (Justify) | |
| **Data source/support data:**<br>Water Management Utilities | |

| **Applicability** | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household<br>Building<br>Neighbourhood (Outdoor space) | Design phase<br>New construction<br>In-use | YES |
| **Observations/Justification** | Consultation of technical documentation concerning the hydrographic region in which the pilot is located | |

| Theme | C2.6. Non-potable water |
|---|---|
| Criteria | C2.6.1. Is there, in the project region, sources of non-potable water which can supply non-potable uses of the project? |

**Description:** Verify for the area correspondent to the certification project location if there are sources of non-potable water that can supply non-potable uses of the project.
It intends to assess if for that location there is the possibility of ensuring non-potable water for non-potable uses. As it can be relevant in the scenario of water scarcity.

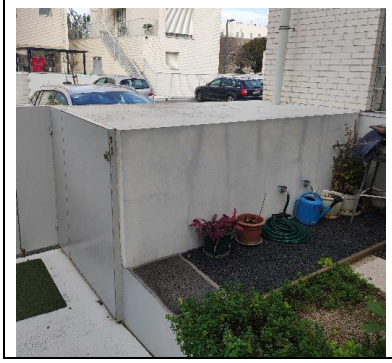
**Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option.

**Related options:**

| | |
|---|---|
| C2.6.1.1 | Yes |
| C2.6.1.2 | Partially |
| C2.6.1.3 | No |
| C2.6.1.4 | It was not possible to determine (Justify) |

**Data source/support data:** On-site verification/Project pieces and/or studies on the pilot

**Practical examples:**



| Applicability | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household<br>Building<br>Neighbourhood (Outdoor space) | Design phase<br>New construction<br>In-use | YES |
| **Observations/Justification** | Consultation of technical documentation concerning the hydrographic region in which the pilot is located | |

| Area | C3. Project Response |
|---|---|
| Theme | C3.1. Regional climate risk adaptation |
| Criteria | **C3.1.1.** Does the project area benefit from previously installed climate adaptation solutions? |

**Description:** Verify the implementation of climate adaptation solutions to minimize/mitigate climate change effects in the certification project location, according to what has been defined in the correspondent Local Adaptation Plan.
It intends to assess if the municipality where the pilot is located is aware of climate risks identified for that location and has already implemented effective measures to minimise it.

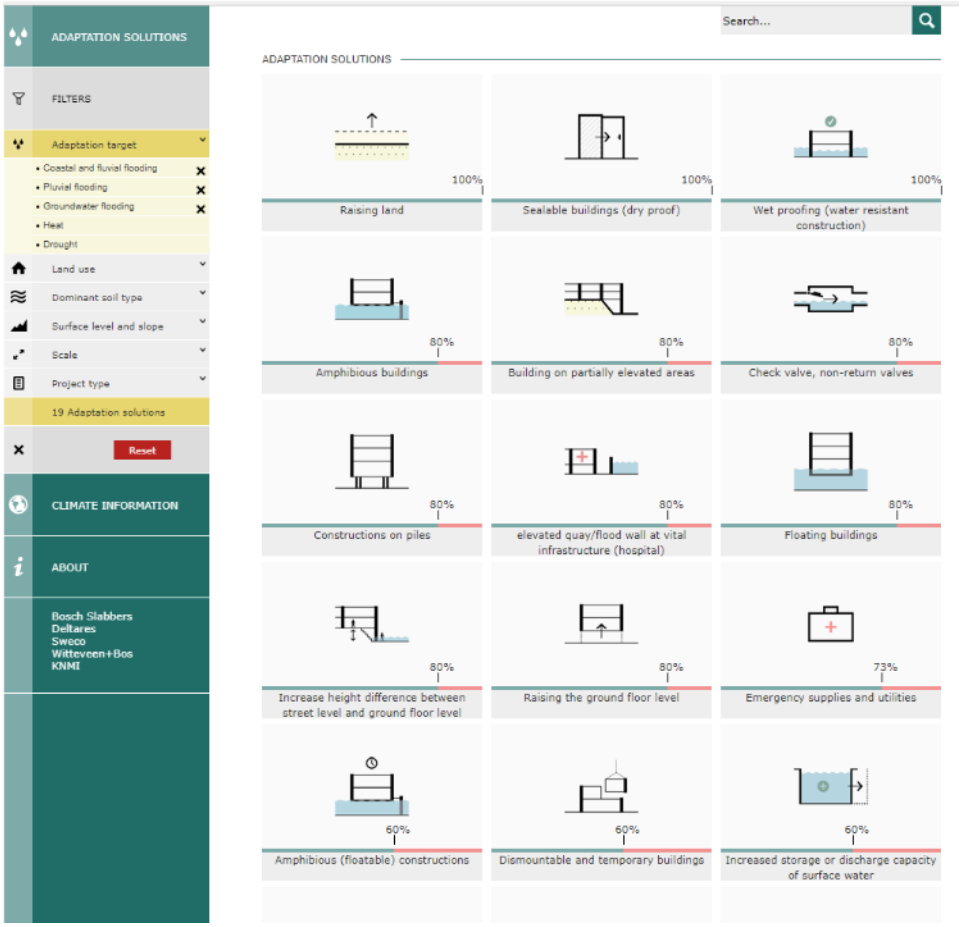
**Evaluation/Assessment:** Percentage of climate adaptation solutions implemented, that can consist of a single option or several options.

**Related options:**

| | |
|---|---|
| C3.1.1.1 | Yes, solutions which cover all the necessary adaptations to minimise/mitigate the climate change effects of the region. |
| C3.1.1.2 | Yes, solutions which partially cover the necessary adaptations to minimise/mitigate the climate change effects of the region. |
| C3.1.1.3 | No |
| C3.1.1.4 | It was not possible to determine (Justify) |

**Data source/support data:** Adaptive Solutions (climateapp.org)

**Practical examples:**



| Applicability | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household | Design phase<br>New construction<br>In-use | YES |
| Building | | |
| Neighbourhood (Outdoor space) | | |
| **Observations/Justification** | Verify the Local Adaptation Plan for the pilot location and the project pieces. Visual inspection | |

| **Theme** | **C3.2. Project climate risks adaptation** |
|---|---|
| **Criteria** | **C3.2.1.** Does the local climate adaptation plan, or the project implemented measures to minimise/mitigate coastal flooding? |

**Description:** Verify the implementation of mitigation measures related with the risk of coastal flooding in the certification project location, according to what has been defined in the Local Adaptation Plan for that location. It intends to assess if the municipality where the pilot is located or the project itself have considered this specific climate risk and the effective measures have been taken to minimise it.

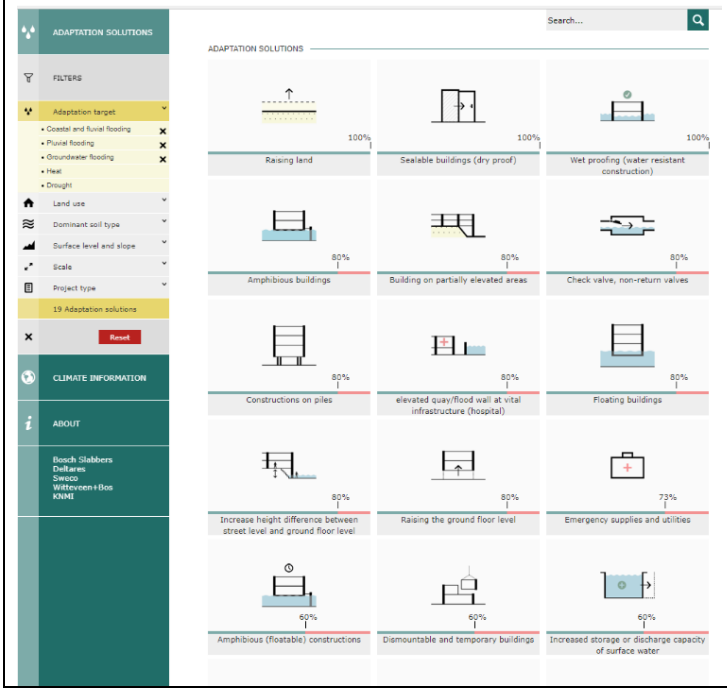
**Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option.

**Related options:**

| | |
|---|---|
| C3.2.1.1 | Yes, are implemented the most adequate solutions |
| C3.2.1.2 | Yes, are implemented partially adequate solutions |
| C3.2.1.3 | No |
| C3.2.1.4 | It was not possible to determine (Justify) |

**Data source/support data:** [Adaptive Solutions (climateapp.org)]

**Practical examples:**



| Criteria | **C3.2.2.** Does the local climate adaptation plan, or the project implemented measures to minimise/mitigate floods? |
|---|---|

**Description:** Verify the implementation of mitigation measures related with the risk of floods in the pilot location, according to what has been defined in the Local Adaptation Plan for that location. It intends to assess if municipality where the pilot is located or the project itself have considered this specific climate risk and the effective measures have been taken to minimise it.

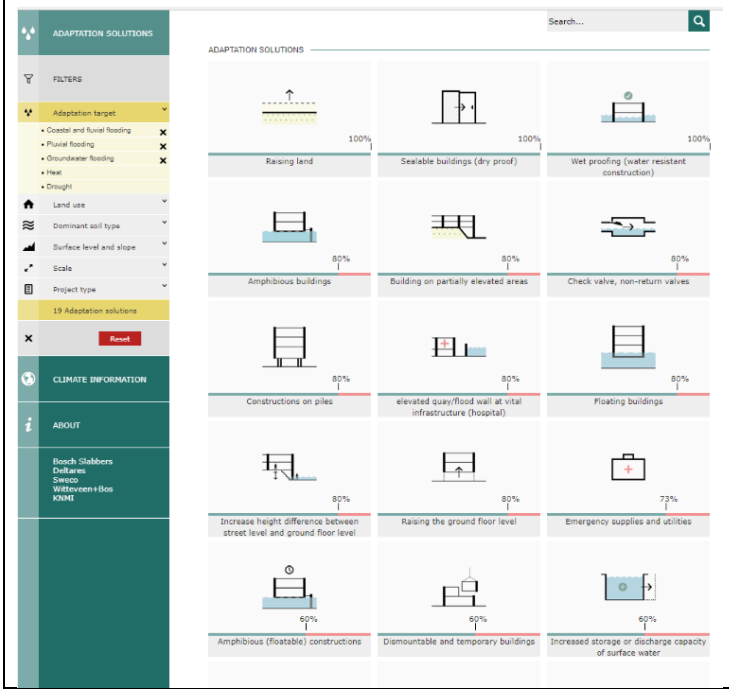
**Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option.

**Related options:**

| | |
|---|---|
| C3.2.2.1 | Yes, are implemented the most adequate solutions |
| C3.2.2.2 | Yes, are implemented partially adequate solutions |
| C3.2.2.3 | No |
| C3.2.2.4 | It was not possible to determine (Justify) |

**Data source/support data:** [Adaptive Solutions (climateapp.org)]

**Practical examples:**




| Criteria | **C3.2.3.** Does the local climate adaptation plan, or the project implemented measures to minimise/mitigate droughts? |
|---|---|

**Description:** Verify the implementation of mitigation measures related with the risk of droughts in the pilot location, according to what has been defined in the Local Adaptation Plan for that location. It intends to assess if municipality where the pilot is located or the project itself have considered this specific climate risk and the effective measures have been taken to minimise it.

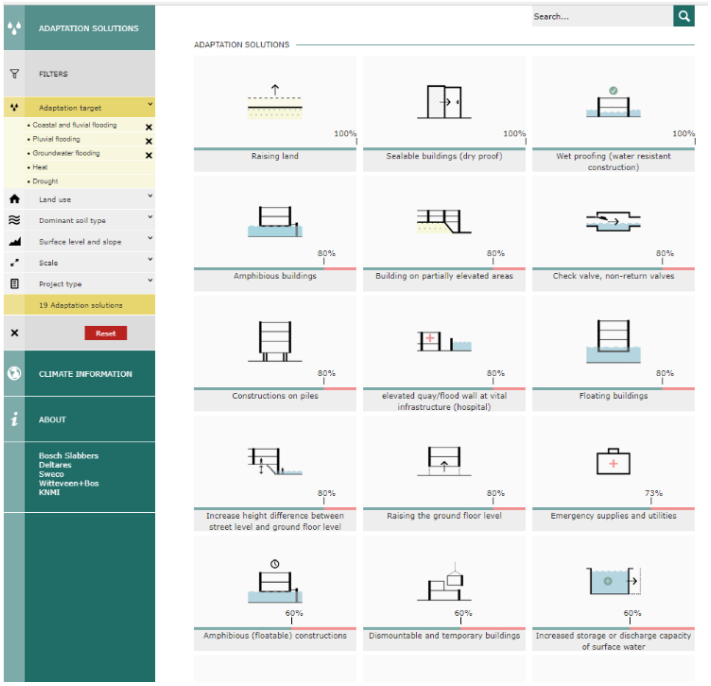
**Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option.

**Related options:**

| | |
|---|---|
| C3.2.3.1 | Yes, are implemented the most adequate solutions |
| C3.2.3.2 | Yes, are implemented partially adequate solutions |
| C3.2.3.3 | No |
| C3.2.3.4 | It was not possible to determine (Justify) |

**Data source/support data:** Adaptive Solutions (climateapp.org)

**Practical examples:**




| **Criteria** | **C3.2.4.** Does the local climate adaptation plan, or the project implemented measures to minimise/mitigate heat waves? |
|---|---|

**Description:** Verify the implementation of mitigation measures related with the risk of heat waves in the pilot location, according to what has been defined in the Local Adaptation Plan for that location. It intends to assess if the municipality where the pilot is located or the project itself have considered this specific climate risk and the effective measures have been taken to minimise it.

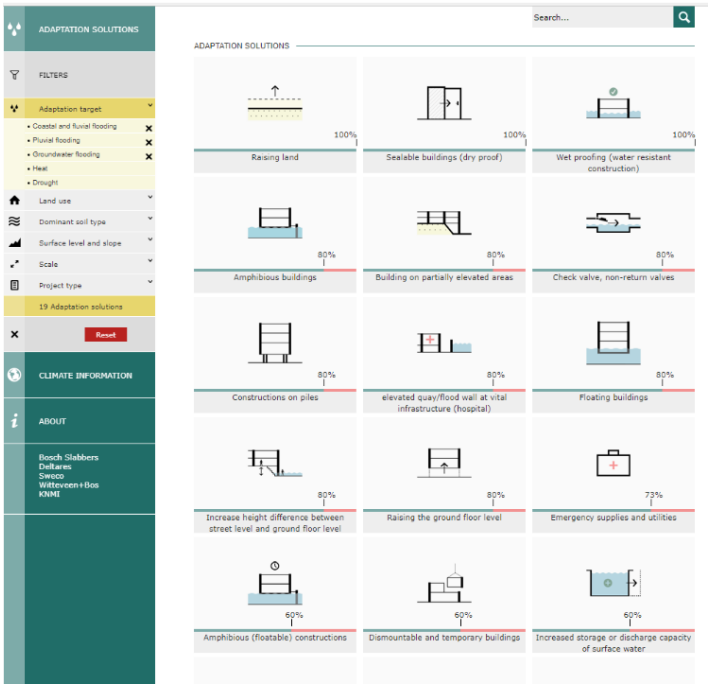
**Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option.

**Related options:**

| | |
|---|---|
| C3.2.4.1 | Yes, are implemented the most adequate solutions |
| C3.2.4.2 | Yes, are implemented partially adequate solutions |
| C3.2.4.3 | No |
| C3.2.4.4 | It was not possible to determine (Justify) |

**Data source/support data:** Adaptive Solutions (climateapp.org)

**Practical examples:**




| **Applicability** | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household<br>Building<br>Neighbourhood (Outdoor space) | Design phase<br>New construction<br>In-use | YES |
| **Observations/Justification** | Verify the Local Adaptation Plan for the pilot location and the project pieces | |

| **Theme** | **C3.3. Planted areas that include native plants; low water/drought tolerant plants or rain gardens in the pilot planted areas** |
|---|---|
| **Citeria** | **C3.3.1.** What percentage of the project planted area includes: native plants; low water/drought tolerant plants or rain gardens? |

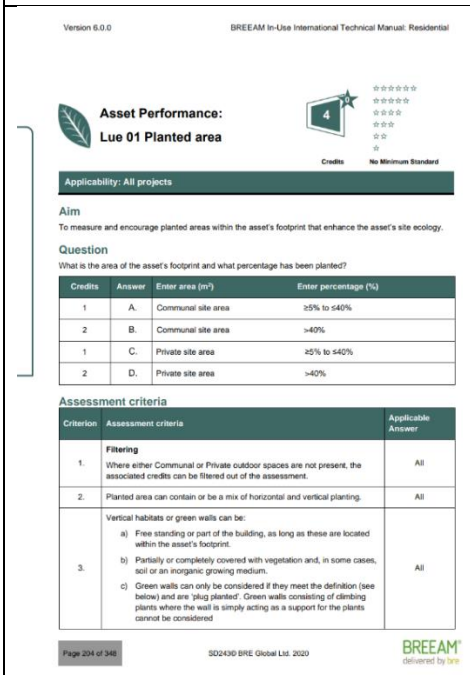
**Description:** Determine the percentage of native plants, low water/drought tolerant plants or rain gardens in the project planted areas. It intends to guarantee the presence of green areas with lower water needs when compared to other plants. In other words, minimise the water demand allocated to existing green areas.

**Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option.

**Related options:**

| | |
|---|---|
| C3.3.1.1 | >80 % |
| C3.3.1.2 | [50, 80[ % |
| C3.3.1.3 | <50 % |
| C3.3.1.4 | It was not possible to determine (Justify) |

**Data source/support data:** BREEAM In-Use International Technical Manual: Residential



Version 6.0.0 BREEAM In-Use International Technical Manual: Residential

**Asset Performance:**
**Lue 01 Planted area**

4 Credits — No Minimum Standard

**Applicability: All projects**

**Aim**

To measure and encourage planted areas within the asset's footprint that enhance the asset's site ecology.

**Question**

What is the area of the asset's footprint and what percentage has been planted?

| Credits | Answer | Enter area (m²) | Enter percentage (%) |
|---|---|---|---|
| 1 | A. | Communal site area | ≥5% to ≤40% |
| 2 | B. | Communal site area | >40% |
| 1 | C. | Private site area | ≥5% to ≤40% |
| 2 | D. | Private site area | >40% |

**Assessment criteria**

| Criterion | Assessment criteria | Applicable Answer |
|---|---|---|
| 1. | **Filtering**<br>Where either Communal or Private outdoor spaces are not present, the associated credits can be filtered out of the assessment. | All |
| 2. | Planted area can contain or be a mix of horizontal and vertical planting. | All |
| 3. | Vertical habitats or green walls can be:<br>a) Free standing or part of the building, as long as these are located within the asset's footprint.<br>b) Partially or completely covered with vegetation and, in some cases, soil or an inorganic growing medium.<br>c) Green walls can only be considered if they meet the definition (see below) and are 'plug planted'. Green walls consisting of climbing plants where the wall is simply acting as a support for the plants cannot be considered | All |

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| **Applicability** | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household<br>Building<br>Neighbourhood (Outdoor space) | Design phase<br>New construction<br>In-use | YES |
| **Observations/Justification** | Analysis of the project pieces (outdoor spaces/green areas) | |

| **Theme** | **C3.4 Water fit for purpose** |
|---|---|
| **Criteria** | **C3.4.1.** What is the % of drinking water being used for irrigation, cleaning, firefighting, or other non-potable uses? |

**Description:** Determine the percentage of native plants, low water/drought tolerant plants or rain gardens in the project planted areas. It intends to guarantee the presence of green areas with lower water needs when compared to other plants. In other words, minimise the water demand allocated to existing green areas.

**Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option.

**Related options:**

| | |
|---|---|
| C3.4.1.1 | <20 % |
| C3.4.1.2 | [20, 50[ % |
| C3.4.1.3 | [50, 80[ % |
| C3.3.1.4 | >80 % |
| C3.3.1.5 | It was not possible to determine (Justify) |

**Data source/support data:** On-site verification/Project pieces and/or studies on the pilot

| Criteria | **C3.4.2.** What is the % of climate independent water source, in the project area? |
|---|---|

**Description:** Determine the percentage of climate independent water sources available in the pilot area. It intends to quantify the percentage of recycled water, desalinated seawater, among others in the project location.

**Evaluation/Assessment:** Single choice, corresponding to selecting the applicable option.

**Related options:**

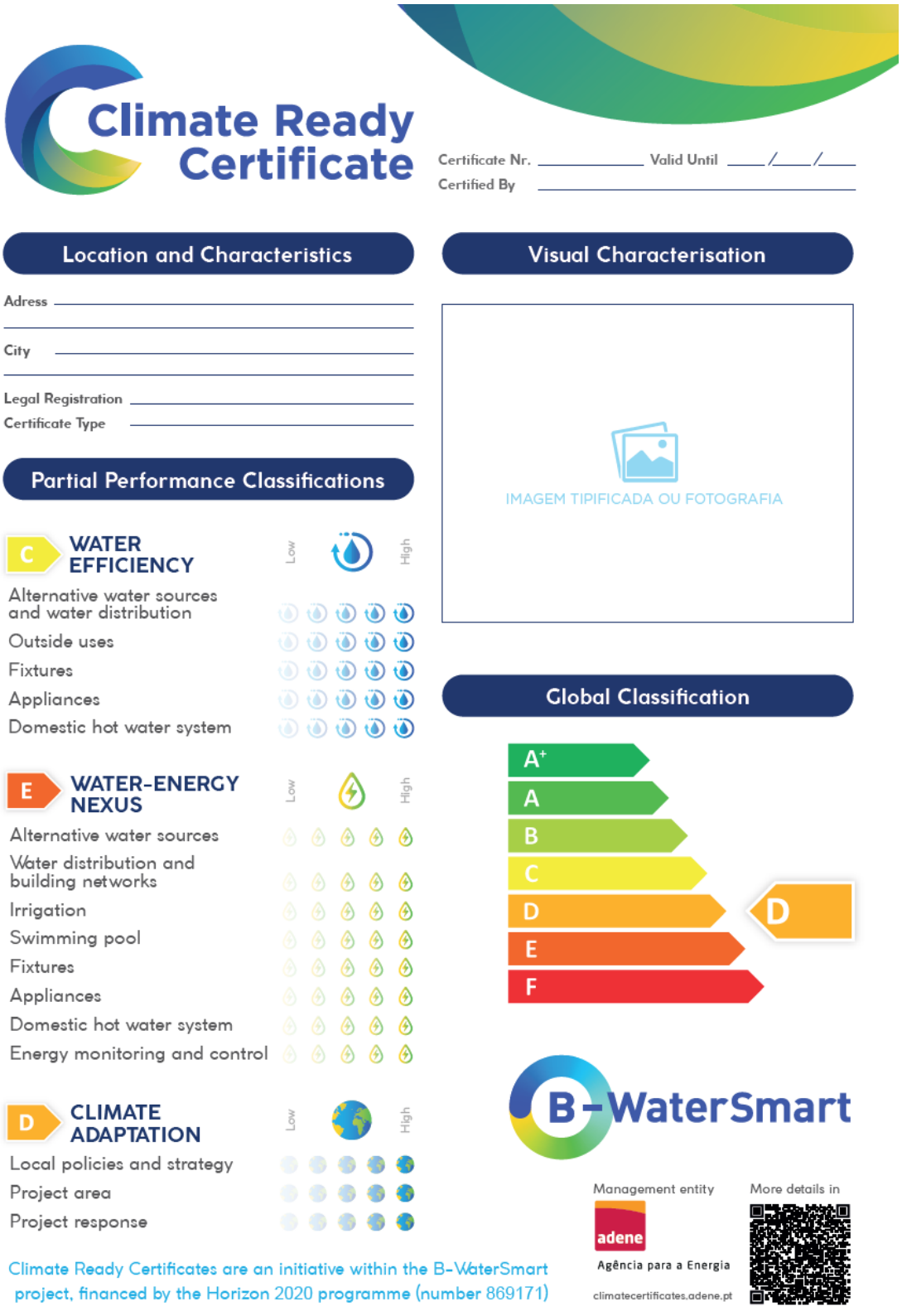
| | |
|---|---|
| C3.4.2.1 | >=80 % |
| C3.4.2.2 | [50, 80[ % |
| C3.4.2.3 | [20, 50[ % |
| C3.4.2.4 | <20 % |
| C3.4.2.5 | It was not possible to determine (Justify) |

**Data source/support data:** On-site verification

| **Applicability** | | |
|---|---|---|
| **Typology** | **Maturity** | **Mandatory** |
| Household | Design phase<br>New construction<br>In-use | YES |
| Building | | |
| Neighbourhood (Outdoor space) | | |
| **Observations/Justification** | On-site verification | |

# 8. Climate Ready Certificate

The Climate Ready Certificate is composed by two pages, the front page is divided into four main sections: location and characteristics, partial performance classifications, visual characterisation, and global classification.



Location and characteristics, presents the address and typology (building, household or neighbourhood) of the object of certification. Visual characterisation is a space dedicated to present a photography that best illustrates the certification subject.

Partial performance classifications and global classification are the sections dedicated to present the results of the certification, the foremost is divided into the three categories of evaluation, Water Efficiency, Water-Energy Nexus and Climate Adaptation. For each theme in each category a visual characterization that shows how well the certificate subject performed is shown with the use of symbols, with more symbols meaning a higher classification. The global classification is the overall final assessment.

The second page presents an overview of the strengths and opportunities. This page lists for each category under evaluation a list of strengths, themes where the building performed best, and a list of opportunities, themes where the building performed worst.