DT.1.1.2 CESBA STT GENERIC FRAMEWORK

June 2019
Project partner PP2: iISBE ITALIA R&D

Public use

Program priority: SO2.1 - Establish transnationally integrated low carbon policy instruments
Work package: WP T1
Activity: A.T1.1
Deliverable: D.T1.1.2- CESBA STT Generic Framework
Deliverable Responsible
Andrea Moro - iiSBE Italia R&D

Editing
Elena Bazzan, Andrea Moro – iiSBE Italia R&D

Main Contributors

PP1 - Patrizia Nazio, Silvana Gambino, Silvia Loffredo – Regione Piemonte
PP2 - Andrea Moro, Claudio Capitanio, Elena Bazzan – iiSBE Italia R&D
PP3 - Filippo Dadone, Carlo Palazzoli – Regione Lombardia
PP4 - Etienne Vienot, Laurent Chanussot - RAEE
PP5 - Franco Alberti, Claudio Chiapparini, Claudio Perin, Alessandro Calzavara – Regione del Veneto
PP6 - Franz Rüf, Jodok Rüf, Peter Steurer – Regionalentwicklung Voralberg eGen
PP7 - Sasa Erlih, Eva Jazbec – E-zavod
PP8 - Natalie Essig, Johannes Peter Steidl, Simone Magdolene - MUAS
PP9 - Markus Berchtold-Domig - CESBA
PP11 - Frédéric Corset – EnviroBAT-BDM
PP12 - Peter Droege – Liechtenstein Institute for Strategic Development
## Content

1. Introduction ...................................................................................................................................................................... 4

2. Generic Framework structure and logic ........................................................................................................................... 5
   2.1 Structure of the CESBA STT GF .................................................................................................................................. 6

3. CESBA Alps Assessment Methodology ............................................................................................................................. 9
   3.1 Basic definitions and structure of the SBEMethod ...................................................................................................... 9
   3.2 The assessment procedure in the SBEMethod .......................................................................................................... 11
      3.2.1 Characterization step ...................................................................................................................................... 13
      3.2.2 Normalization step: assignment of a score to indicators’ value ................................................................. 13
      3.2.3 Aggregation step ............................................................................................................................................ 18

4. Information Module: criteria and indicators .................................................................................................................. 23
   4.1 I1- CLIMATE ............................................................................................................................................................. 25
   4.2 I2- LAND .................................................................................................................................................................. 33
   4.3 I3- NATURAL RISKS .................................................................................................................................................. 35
   4.4 I4- DEMOGRAPHY ................................................................................................................................................... 37
   4.5 I5- ENERGY .............................................................................................................................................................. 40

5. Capacity to Act Module: criteria and indicators ............................................................................................................. 41
   5.1 P1- PARTECIPATION AND GOVERNANCE ................................................................................................................ 42

6. Territorial Performance Assessment Module: criteria and indicators ........................................................................... 52
   6.1 A – TERRITORIES AND ENVIRONMENT ................................................................................................................... 61
   6.2 B- ENERGY/RESOURCES CONSUMPTION .............................................................................................................. 104
   6.3 C- INFRASTRUCTURES/SERVICES ........................................................................................................................... 123
   6.4 D- SOCIETY ............................................................................................................................................................ 140
   6.5 E-ECONOMY .......................................................................................................................................................... 160
1 Introduction

CESBA Sustainable Territories Generic Framework is a tool useful to measure the level of sustainability of a territory. It is a generic multicriteria assessment tool that may be used by third parties to develop rating systems at territorial scale fully contextualized to local conditions.

Originally, the idea of the “Generic Framework” was launched in 1996 by the “Green Building Challenge” international research process. The objective was to develop a transnational common building assessment tool able to generate, through a contextualization process, harmonized national and regional rating system.

The advantage of a generic framework consists in the possibility to transnationally share the same assessment methodology and in the same time to preserve the possibility to adapt the system to local conditions reflecting regional priorities and practices. The generic framework acts as a common transnational language. Having the same meaning, the assessment results are comparable. The use of assessment systems in international policies and initiatives is thus facilitated. In 2000 the Green Building Challenge process was renamed Sustainable Building Challenge and since that time it is coordinated by the non-profit organization iiSBE (International Initiative for a Sustainable Built Environment).

Through the collaboration of more than 25 countries, representing all the 5 continents, the main result of the SBC has been the SBTool, a generic framework and relative assessment methodology that generated several national and regional assessment systems as Protocollo ITACA (Italy), Verde (Spain), Total Quality (Austria), SBTool CZ (Czech Republic), SBTool PT (Portugal) and inspired the upgrade of several international standard.

The generic framework approach is perfectly in line with the 9 CESBA principles. It is an open source system co-created through a 25 years long process. It is Holistic, taking in account all the sustainability issues. It is fully contextualizable to regional conditions allowing to assign local weighs and benchmarks to criteria. It allows the comparability of results at transnational level facilitating the use of a common methodological “language”. It is simple to use and developed for mass certification. For this reason, the SBTool has been chosen by CESBA Alps project as reference methodology.

The most innovative and challenging objective of CESBA Alps has been to define the first generic framework at territorial level (CESBA STT Generic Framework). It means a transnational common and generic multicriteria assessment system that Project Partners will use to develop regional harmonized and compatible assessment tools able to rate the level of sustainability of a territory.

The CESBA STT generic framework is the results of the fruitful and strong cooperation of the CESBA Alps project partners. It is at disposal of any regional or territorial administration in the Alpine Space that intends to develop its own sustainability assessment tool. The use of harmonized regional tools will contribute to the common sustainability targets of Alpine regions and will contribute to the implementation of EUSALP targets.

Turin, June 2017.
2 Generic Framework structure and logic

The CESBA Sustainable Territories Generic Framework (CESBA STT GF) is a transnational generic multicriteria assessment system for rating the sustainability performance of any alpine space territory with a size between 50 Km$^2$ and 500 Km$^2$.

“Generic” means that the CESBA STT GF needs to be configured to carry out an assessment on a specific territory. The configuration process consists in the contextualization of the CESBA STT GF to local conditions in the way to reflect the regional sustainability priorities and practices. The contextualization takes place through the selection of the active assessment criteria and the assignment of a weight and a performance scale to them.

Local sustainability priorities are set up assigning a regional weight to the assessment criteria. This aspect is in line with a key CESBA principle: it isn’t possible to set transnational weights valid for all regions because the climatic conditions, the sustainability priorities, the social-economic contexts are different.

The CESBA STT GF also allows to reflect the local practice, regulations, standards and level of advancement in the sustainability field through the possibility to define for each assessment criterion a local performance scale. Following the CESBA principles, it is not proper to assign a transnational minimum reference performance because the conditions in the alpine regions are different.

Despite the different weights and benchmarks of local systems that are derived from the CESBA STT GF, the results produced by them are fully compatible because based on the same transnational methodology. The results produced have the same meaning: the score represents how much a territory is performing with regards to the minimum local acceptable performance. The transitional comparability of assessment results is guaranteed by the CESBA Alps Passport and the CESBA KPIs.

The use of regional systems based on different methodologies would bring to the same confused situation that today still characterizes the assessment systems at building scale. Only in the European Union there are more than 60 systems in use, all producing scores not comparable. A situation that is still confusing the stakeholders of the building sector.

Through the configuration of the CESBA STT GF, the contextualization process, it is possible to produce local assessment tools for rating the sustainability of any territory in the alpine space. Conventionally, the local systems derived from the CESBA STT GF are named “CESBA STT + Region or territory name” (i.e CESBA STT Regione Piemonte, CESBA STT Val Seriana, etc.). The CESBA STT GF is not operational and can’t be used as it is. It needs always to be adapted to local conditions.

The advantage of the Generic Framework principle is that it makes possible to transnationally share the same assessment methodology and approach preserving the possibility to adapt the tool to local conditions. The generic framework is a common transnational language. This aspect is an added value because it facilitates the use of assessment tools in transnational policies and the share of best practices.
2.1 Structure of the CESBA STT GF

The CESBA STT Generic Framework is organized in three modules:

- Information
- Capacity to Act
- Territorial Performance Assessment

The “Information” module provides context related information useful to understand the key characteristics of the territory under assessment. The module is composed by a set of indicators that describe the territory from the point of view of climate, land characteristics, natural risks, demography and renewable energy potential. All these aspects are in general not modifiable and represent an identity card of the territory. The “Information” module doesn’t produce a rating score. The list of indicators included in this module is described in Chapter 4.

The “Capacity to Act” module allows to measure and to score the effectiveness and quality of local policies in terms of participation and governance. It contains 28 criteria. Each of them is associated to an indicator, quantitative or qualitative, that allows to measure the performance reached by the territory. The assessment methodology of the multicriteria tool is described in Chapter 3. Complementary to the indicators of the “Capacity to Act” module is the SHARK methodology that is based on an interview based approach and it is targeted to communities. SHARK is described in Chapter 7.

The “Territorial Performance Assessment” (TPA) module allows to measure the performance reached by a territory with regards to 5 main issues and to give a rating to it. The 5 issues are: Territories and Environment, Energy and Resources, Infrastructures and Services, Society, Economy. The module contains more than 300 assessment criteria and relative indicators organized in 35 categories. All criteria measure an objective performance on the base of a specific assessment
The TPA module basically measures “physical” quantities. This module hasn’t a prescriptive nature but instead it allows to measure the actual sustainability of a territory and its potential future performance on the base of possible scenarios. For this reason, the TPA module is very useful to support decision making processes at territorial level. Its application can make a public authority aware about the actual level of sustainability of the territory and it can support a decision-making process targeted to identify the best strategies to improve its quality. The assessment methodology is the same one of the “Capacity to Act” module and it is described in Chapter 3. The list of criteria of the Territorial Performance Assessment module is described in Chapter 6.

<table>
<thead>
<tr>
<th>Information</th>
<th>Capacity to Act</th>
<th>Territorial Performance Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Context related informations</td>
<td>• Measures the capacity to act of a territorial public administration</td>
<td>• Measures the level of sustainability of the territory</td>
</tr>
<tr>
<td>• Doesn’t produce a score</td>
<td>• Assess the quality of governance and participation of inhabitants</td>
<td>• Produces scores at level of criteria, categories and issues</td>
</tr>
<tr>
<td></td>
<td>• Produces a performance score and gives a rating to the territory</td>
<td>• Gives a rating to the territory</td>
</tr>
<tr>
<td></td>
<td>• It uses quantitative and qualitative indicators</td>
<td>• It is based on quantitative indicators</td>
</tr>
</tbody>
</table>

**Modules of the CESBA STT GF**

From the CESBA STT Generic Framework it is possible to derive harmonized local assessment tools through a contextualization process articulated in 3 steps:

- Selection of the active criteria
- Benchmarking
- Weighting

The first step consists in the selection of the criteria that will be used to carry out the assessment. The criteria are selected from the whole list of the “Capacity to act” and “Territorial Performance Assessment” modules. Each regional authority or third party can freely select the active criteria on the base of its needs and objectives. There isn’t a minimum number of criteria to be selected. The local systems can widely vary from this point of view. Only a core set of criteria, the Key Performance Indicators, are mandatory for all local CESBA STT. The KPIs represent the priority sustainability transnational issues and they allow to compare the key territorial performances in the alpine space through the CESBA Passport. The CESBA KPIs are described in the Deliverable T1.2.1, the Passport in the Deliverable T1.2.2.

The second step, benchmarking, consists in the definition of the scoring scale for each selected criterion. The benchmark is a quantification of the indicator’s value corresponding to the minimum acceptable performance and the one that is considered the best at regional level. Benchmarks can’t be the same at transnational level because the local conditions of each region are different (climate, building practice, standards, level of advancement in the sustainability field, etc.). The scoring scale used in the CESBA STT GF ranges from -1 to 5. Where zero represent the minimum acceptable performance, 5 the excellence, 3 the best practice and -1 a negative performance.
The final step, weighting, consists in the assignment of a weight to each criterion, category and issue. The weight is expressed as a percentage. This process allows to align the assessment tool to local environmental, social and economic priorities. These ones are not the same in all alpine space regions. The contextualisation process take place through the use of a software that corresponds with the Deliverable T1.4.1 and T1.4.2.

Through the CESBA STT Generic Framework all regions in the alpine space can share common assessment methodologies, criteria and indicators. It means to speak the same language. The results of all local assessments will have the same meaning. This aspect will facilitate the transnational cooperation. In the same time, the assignment of local benchmarks and weight allows to reflect the local conditions.
3 CESBA Alps Assessment Methodology

The assessment method adopted in the CESBA STT Generic Framework multicriteria system is the “SBEMethod” (Sustainable Built Environment Method) developed by iiSBE (international initiative for a Sustainable Built Environment). In general, the SBEMethod is a generic multi-criteria analysis methodology for assessing the sustainability of the built environment. Starting from a set of criteria the SBEMethod provides a final score about a building, urban area or territory overall performance.

This assessment methodology is used in the modules “Capacity to Act” and “Territorial Performance Assessment” of the CESBA STT GF. Using this methodology it is possible to give a sustainability rating to a territory.

The sustainability score of the territory under assessment is computed through a mathematical procedure (called assessment procedure) which is articulated in 3 main steps:
- characterization: territory’s performances are quantified through indicators in regard of each criterion;
- normalization: indicator values are adimensionalized and rescaled in a suitable interval, called normalization interval. The normalization consists in the assignment of a score to the indicator’s value;
- aggregation: normalized scores are combined through weighted sums to produce the final concise score.

The main elements of the SBEMethod can be summarized as follows:

1. a set of criteria;
2. a set of indicators, which allow to quantify the territory’s performances with respect to each criterion;
3. a normalization method (scoring system);
4. an aggregation method;
5. a panel of experts who establish and define criteria and indicators. In CESBA Alps, the CESBA Local Committees act as panel of experts.

3.1 Basic definitions and structure of the SBEMethod

The SBEMethod is organized in issues, categories and criteria:

- **Issues**: describe general themes, recognized as relevant for assessing the sustainability of a territory. For instance, the issues of the TPA module are 5: Territories and Environment, Energy and Resources, Infrastructures and Services, Society, Economy. The Capacity to Act module includes only one issue: Participation and Governance

- **Categories**: concern particular aspects of issues. For instance, the issue “Energy and Resources” contains 4 categories: Energy consumptions, Sustainable Energy, Water consumption, Land and building stock use.

- **Criteria**: detail specific aspects of categories. They represent the basic assessment entries used to characterize each territory since the very beginning of the assessment process. For instance, the category “Water consumption” includes 3 criteria: Consumption of water- Human uses, Consumption of water for Agriculture, Winter sports water consumptions.

Issues, categories and criteria are linked in the following sense: each issue includes a variable number of categories (depending from issue to issue), each of them describes a particular aspect of the issue whom it belongs to. The total number of categories in the TPA module is 35, divided in the 5 issues: Territories and Environment (13), Energy and Resources (4), Infrastructures and Services (7), Society (5), Economy (6). Categories include different criteria, each of them describing a particular aspect of the corresponding category. The total number of criteria in the TPA module is 312.
The Capacity to Act module includes one issue, one category and 28 criteria.

Some examples of issues, related categories and criteria from the TPA module are reported below:


Each criterion is combined with a (some) physical quantity(ies). These allow to quantify territory’s performances with regard to each criterion. In the SBEMethod, such quantities are called ‘indicators’. An indicator is a methodology which allows to characterize (not necessarily in numerical terms) the territory’s performance with respect to the corresponding criterion.

In the SBEMethod, qualitative criteria are also present, for which the territory’s performance is provided in terms of a comparison with a certain number of reference scenarios defined within the corresponding indicator.

Some examples of indicators and corresponding criteria from the TPA module are listed below:

- Criterion: Final energy consumptions – Indicator: Energy consumed per inhabitant – Unit of measure: KTEP/inhabitant
- Criterion: Forest area – Indicator: ratio between forested areas and the geographical area considered – Unit of measure:%
- Criterion: Education – Indicator: share of population with at least secondary education – Unit of measure: %

Note that, in principle, several indicators can be associated with the same criterion, as one can define multiple strategies to quantify the territory’s performance in regard to a specific criterion.

In the SBEMethod each criterion is generally associated with a single indicator.
**3.2 The assessment procedure in the SBEMethod**

The main goal of the SBEMethod is to provide a final concise score, which summarizes the overall performance of the territory with respect to all criteria. Such a score is called ‘final score’, and is computed starting from indicator values. The mathematical procedure used to compute the final score is called assessment procedure, and is articulated in three main steps:

- **Step 1**: Characterization: calculation/evaluation of the indicator’s value
- **Step 2**: Normalization: assignment of a score to the indicator's value
- **Step 3**: Aggregation: weighted sum of criteria's scores to calculate the score of categories, issues and the final score
Characterization step. Territory’s performances on each criterion are characterized either by means of a numerical value (if the corresponding indicator represents some physical quantity), or by means of a comparison with some reference scenarios defined by the associated indicator (in the case of qualitative criteria). The output of the characterization step is composed by a set of numerical values (the indicators’ values), each of them representing the territory’s performances in regard to each criterion. The numerical value could for instance correspond to an energy consumption (i.e. kWh/inhabitant).

Normalization step Indicators’ values are adimensionalized and rescaled in a suitable interval called normalization interval. The output of the normalization step is represented by a set of normalized scores, each of them is associated with a criterion. The normalization interval used in CESBA STT GF is from -1 to +5. The mining of scores is:

<table>
<thead>
<tr>
<th>Score</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>The score corresponds to a value of the indicator that is under the minimum acceptable performance.</td>
</tr>
<tr>
<td>0</td>
<td>The score corresponds to a value of the indicator that represents the minimum acceptable performance. It is usually defined on the base of regulations and standards.</td>
</tr>
<tr>
<td>1</td>
<td>The score corresponds to a value of the indicator that represents a minimum increase of performance with regards to the minimum acceptable performance.</td>
</tr>
<tr>
<td>2</td>
<td>The score corresponds to a value of the indicator that represents a substantial increase of performance with to the minimum acceptable performance.</td>
</tr>
<tr>
<td>3</td>
<td>The score corresponds to a value of the indicator that represents a best practice.</td>
</tr>
<tr>
<td>4</td>
<td>The score corresponds to a value of the indicator that represents an improvement towards the best practice level.</td>
</tr>
<tr>
<td>5</td>
<td>The score corresponds to a value of the indicator that represents an excellent and ideal performance.</td>
</tr>
</tbody>
</table>

Aggregation step Normalized scores are combined together (or aggregated) in order to compute the overall performance score. The aggregation step consists if a series of weighted sum.

Input / Outputs of the SBEMethod assessment process.
To describe the assessment method in mathematical terms, in the following, these symbols will be used to denote:

- $A_i$, the i-th issue, $i = 1, \ldots, N_A$, and $N_A$ is the total number of issues included in the SBEMethod. E.g: the third issue will be denoted with the symbol $A_3$.
- $C_{i,j}$, the j-th category in $A_i$, $j = 1, \ldots, N_C^{(i)}$, where $N_C^{(i)}$ is the number of categories included in the i-th issue. E.g: if the third issue contains 5 categories, $N_C^{(3)} = 5$, and the second category is denoted with the symbol $C_{3,2}$.
- $c_{i,j,k}$, the k-th criterion in the j-th category of the i-th issue, $k = 1, \ldots, N_C^{(i,j)}$, and $N_C^{(i,j)}$ is the number of criteria included in $C_{i,j}$. E.g: if the second category includes 7 criteria, $N_C^{(3,2)} = 7$, and the fifth criterion in $C_{3,2}$ is denoted with $c_{3,2,5}$.
- $I_{i,j,k}$, the indicator associated with $c_{i,j,k}$, $k = 1, \ldots, N_C^{(i,j)}$. E.g: the indicator associated with the criterion $c_{3,2,5}$ is denoted with the symbol $I_{3,2,5}$.
- $\hat{s}_{i,j,k}$, the numerical values of $I_{i,j,k}$. E.g: the numerical values of the indicator $I_{3,2,5}$ associated with $c_{3,2,5}$ is denoted with $\hat{s}_{3,2,5}$.

Note: the symbols above indicated are valid for the mathematical description of the multicriteria assessment system. To improve the understandability of the generic framework, in CESBA ALPS STT GF the issues are indicated with a letter in substitution of the number, where 1=A, 2=B, 3=C, 4=D, 5=E. The consequence is that categories are identified by a letter and a number (i.e. A1, C2, D4) and criteria by a letter and two numbers (i.e. A1.3, C2.4, D4.5).

3.2.1 Characterization step

The first step of the analysis is the characterization step. Characterization is performed by assigning a numerical value to each indicator. Such values are determined starting from design data, experimental measures, and through comparison with reference scenarios (in the case of qualitative criteria).

In the CESBA STT F, for each indicator a specific assessment method has been defined to calculate/evaluate its value. The output of the characterization step is represented by the set of data: $\hat{s}_{i,j,k}$, $k = 1, \ldots, N_C^{(i,j)}, j = 1, \ldots, N_C^{(i)}, i = 1, \ldots, N_A$, each of them is associated with a criterion, and represents the numerical values of the corresponding indicator.

3.2.2 Normalization step: assignment of a score to indicators’ value

The normalization steps consist basically in the assignment of a score to the indicators’ value. Due to the diverse nature of criteria, indicator values are characterized by different units of measure and different orders of magnitude. Moreover, indicator values associated with qualitative criteria do not possess any unit of measure as they do not represent any physical quantity. For this reason, indicator values are adimensionalized and rescaled in an interval from -1 to +5 before the aggregation phase.

The normalization method fulfills two basic requirements:

1. indicator values are normalized in the interval [-1, +5], where -1 and +5 are integers, called ‘normalization interval’
2. the better the performance, the higher the normalized score.

Normalized scores are computed by applying suitable functions, called ‘normalization functions’ to indicator values. These modify indicator values and provide normalized scores which fulfill both the previous requirements.
In the following, these symbols will be used to denote:

- $\phi_{i,j,k}$, the normalization function associated with the indicator $I_{i,j,k}$;
- $s_{i,j,k}$, the normalized score associated with the criterion $c_{i,j,k}$.

Each normalization function is defined in different ways depending on the criterion which it is associated with. In the SBEMethod three main kinds of criteria can be distinguished:

- H.I.B. criteria (Higher is Better);
- L.I.B. criteria (Lower is Better);
- Qualitative criteria.

**H.I.B. Criteria (Higher is Better).** All criteria such that the higher the numerical value of the corresponding indicator, the higher the performance level. Since the normalized score must fulfil the requirement “the better the performance, the higher the normalized score”, normalization functions associated with H.I.B. criteria must be increasing functions.

**L.I.B. Criteria (Lower is Better).** All criteria such that the lower the numerical value of the corresponding indicator, the higher the performance level. Normalization functions associated with L.I.B. criteria must be decreasing functions.

**Qualitative criteria.** All criteria such that the normalized score can only attain discrete values in the normalization interval, each of them corresponding to a reference scenario defined by the corresponding indicator. Roughly speaking, the normalized score is computed by comparing the territory’s performance with some reference scenarios which are defined by the indicator associated with the criterion.

### 3.2.2.1 Normalization functions for H.I.B. criteria

In the SBEMethod, normalization functions for H.I.B. criteria are piecewise linear functions defined as follows:

$$
\phi_{i,j,k}(s_{i,j,k}) = \begin{cases} 
  n, & \hat{s}_{i,j,k} \leq \zeta^{(1)}_{i,j,k} \\
  n + (m - n) \frac{\hat{s}_{i,j,k} - \zeta^{(1)}_{i,j,k}}{\zeta^{(2)}_{i,j,k} - \zeta^{(1)}_{i,j,k}}, & \zeta^{(1)}_{i,j,k} < \hat{s}_{i,j,k} \leq \zeta^{(2)}_{i,j,k} \\
  m, & \hat{s}_{i,j,k} > \zeta^{(2)}_{i,j,k}
\end{cases}
$$

(1)
Normalization function of this kind are such that:

- the normalized score is ‘m’, if the indicator value lies below the threshold \( \xi_{i,j,k}^{(1)} \);
- the normalized score is ‘n’, if the indicator value lies above the threshold \( \xi_{i,j,k}^{(2)} \);
- otherwise the normalized score linearly varies in the interval \([\xi_{i,j,k}^{(1)}, \xi_{i,j,k}^{(2)}]\).

**Remark:** Note that the normalization function defined in (1) for a general H.I.B criterion is an increasing function.

The normalization function depends on two parameters: \( \xi_{i,j,k}^{(1)} \) and \( \xi_{i,j,k}^{(2)} \) which vary from criterion to criterion. Such parameters are called benchmarks in the sense that they respectively represent the threshold for the worst (−1) and the best (+5) performance.

If the numerical values of benchmarks are not available, they are computed starting from some reference values, i.e. two normalized scores \( (y' \text{ and } y'') \) are associated with two values \( (x' \text{ and } x'') \) of the corresponding indicator, and benchmarks are recovered by linear extrapolation:

\[
\begin{align*}
\frac{\xi_{i,j,k}^{(1)} - x'}{x'' - x'} &= \frac{n - y'}{y'' - y'} \\
\frac{\xi_{i,j,k}^{(2)} - x'}{x'' - x'} &= \frac{m - y'}{y'' - y'}
\end{align*}
\]
3.2.2.2 Normalization functions for L.I.B. criteria

The same analysis of the previous section can be repeated in the case of normalization function associated with L.I.B. criteria, with the only exception that in this case, the normalization function must be a decreasing function.

\[
\phi_{i,j,k}(\hat{s}_{i,j,k}) = \begin{cases} 
    m, & \hat{s}_{i,j,k} \leq \xi_{i,j,k}^{(1)} \\
    m - (m - n) \frac{\hat{s}_{i,j,k} - \xi_{i,j,k}^{(1)}}{\xi_{i,j,k}^{(2)} - \xi_{i,j,k}^{(1)}}, & \xi_{i,j,k}^{(1)} < \hat{s}_{i,j,k} \leq \xi_{i,j,k}^{(2)} \\
    n, & \hat{s}_{i,j,k} > \xi_{i,j,k}^{(2)}
\end{cases}
\]

Normalization function for a L.I.B. criterion in the case \( n = -1 \) and \( m = 5 \)

Normalization functions of this kind are such that:

- the normalized score is \( m \), if the indicator value lies below the threshold \( \xi_{i,j,k}^{(1)} \);
- the normalized score is \( n \), if the indicator value lies above the threshold \( \xi_{i,j,k}^{(2)} \);
- otherwise, the normalized score linearly varies in the interval \([\xi_{i,j,k}^{(1)}, \xi_{i,j,k}^{(2)}]\).

Remark 2 Note that the normalization function defined in (3) is a decreasing function.

The normalization function depends on two parameters: \( \xi_{i,j,k}^{(1)} \) and \( \xi_{i,j,k}^{(2)} \) which vary from criterion to criterion. Such parameters are called benchmarks in the sense that they respectively represent the threshold for the best (+5) and worst performance (-1).

Also in the present case, if the benchmarks are not available, they are computed by linear extrapolation:

\[
\begin{align*}
\frac{\xi_{i,j,k}^{(1)} - a'}{y'' - y'} &= \frac{m - y'}{y'' - y'} \\
\frac{\xi_{i,j,k}^{(2)} - a'}{y'' - y'} &= \frac{n - y'}{y'' - y'}
\end{align*}
\]
3.2.2.3 Normalization functions for qualitative criteria.

Normalization functions associated with qualitative criteria are defined as follows:

\[
\phi\left(s_{i,j,k}\right) = \begin{cases} 
  s_0, & x = \xi_{i,j,k}^{(0)} \\
  s_1, & x = \xi_{i,j,k}^{(1)} \\
  s_2, & x = \xi_{i,j,k}^{(2)} \\
  \vdots \\
  s_n, & x = \xi_{i,j,k}^{(n)} 
\end{cases}, \quad s_0, s_1, \ldots, s_n \in [n, m]
\]

(5)

the normalized score can only attain discrete values in the normalization interval, each of them associated with a reference scenario (see, fig. 5).

After \(n + 1\) scenarios are defined:

- the normalized score \(s_0\) is associated with the 0-th scenario;
- the normalized score \(s_1\) is associated with the 1-st scenario;
- ...  
- the normalized score \(s_n\) is associated with the \(n\)-th scenario;

Then the territory’s performance is compared with all reference scenarios and the normalized score is assigned depending on the result of such a comparison.

Example of a normalization function for a qualitative criterion in the case \(n = -1, m = 5\)

Once all scenarios are defined, normalization functions associated with qualitative criteria only depend on \(n + 1\) tunable parameters, which are the normalized score associated with each scenario \((s_0, \ldots, s_n)\).
Example:

Criterion “Final energy consumption”

Normalization of the indicator’s value:

- Consumption of energy per inhabitant = 2.24 TEP/inhabitant

Blue dots: represents the minimum acceptable performance (score zero) and the excellent performance (score +5)

Green dot: represents the value of the indicator on the linear performance scale

The results of the normalization for a value of the indicator of 2.24 TEP/inhabitant is a score of 3.0.

3.2.3 Aggregation step

At the end of the normalization step, a new set of data is available, composed of the normalized scores associated with each criterion. Normalized scores are then combined through a series of weighted sums to produce the final score, and this is done in three steps:

- **Aggregation through criteria**: normalized scores associated with all criteria in the same category are aggregated to produce a single score for each category.

- **Aggregation through categories**: normalized score associated with categories in the same issue (these resulting from aggregation through criteria) are further aggregated to produce a single score for each issue.

- **Aggregation through issues**: normalized scores associated with issues (these resulting from aggregation through categories) are aggregated to produce the final concise score.
3.2.3.1 Aggregation through criteria: score of categories

The main goal of aggregation through criteria is to provide a single normalized score for each category. This is computed for each category aggregating the normalized score of all criteria included in that category.

Aggregation is performed by linear aggregation of data through some coefficients, called *weighting factors*. These quantify the relative weight of each criterion with respect to all criteria in the same category.

In the following, these symbols will be used to denote:

- $\omega_{i,j,k}$: the weighting factor associated with the criterion $c_{i,j,k}$ in the category $C_{i,j}$;
- $S_{i,j}$: the normalized score resulting from aggregation of criteria included in the category $C_{i,j}$.

The score $S_{i,j}$ is computed as follows:

$$S_{i,j} = \sum_{k=1}^{N_{c(i,j)}} \omega_{i,j,k} \cdot s_{i,j,k}$$  \hspace{1cm} (6)

Note that the weighting factors defined by fulfill the following properties:

- each weighting factor lies in the interval $[0, 1]$;
- $\sum_{k=1}^{N_{c(i,j)}} \omega_{i,j,k} = 1$

It follows that (6) can be interpreted as a weighted sum of the performance score obtained by the territory in regard of each criterion, i.e. the performance score computed for a given category represents the territory’s average performance with respect to all criteria included in that category.

The result of aggregation through criteria is a set of normalized scores, each of them corresponding to a category.

**Example: calculation of the score for the category D1 Demography**

<table>
<thead>
<tr>
<th>Code</th>
<th>Criterion</th>
<th>Score</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1.1</td>
<td>Employment rate of young people (15-24 years old)</td>
<td>3,1</td>
<td>18%</td>
</tr>
<tr>
<td>D1.2</td>
<td>Employment rate (20-64 years old)</td>
<td>2,2</td>
<td>18%</td>
</tr>
<tr>
<td>D1.3</td>
<td>Balance of migration (immigration flows) over the last 5 years</td>
<td>1,3</td>
<td>18%</td>
</tr>
<tr>
<td>D1.4</td>
<td>Unemployment rate</td>
<td>0,5</td>
<td>18%</td>
</tr>
<tr>
<td>D1.5</td>
<td>Emigration</td>
<td>1,4</td>
<td>10%</td>
</tr>
<tr>
<td>D1.6</td>
<td>Young people neither in employment nor in education or training</td>
<td>3,0</td>
<td>18%</td>
</tr>
</tbody>
</table>

Calculation of the category’s score as weighted sum:

<table>
<thead>
<tr>
<th>Code</th>
<th>Criterion</th>
<th>Score x Weight</th>
<th>Weighted score</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1.1</td>
<td>Employment rate of young people (15-24 years old)</td>
<td>3,1x0,18 =</td>
<td>0,6</td>
</tr>
<tr>
<td>D1.2</td>
<td>Employment rate (20-64 years old)</td>
<td>2,2x0,18 =</td>
<td>0,4</td>
</tr>
<tr>
<td>D1.3</td>
<td>Balance of migration (immigration flows) over the last 5 years</td>
<td>1,3x0,18 =</td>
<td>0,2</td>
</tr>
<tr>
<td>D1.4</td>
<td>Unemployment rate</td>
<td>0,5x0,18 =</td>
<td>0,1</td>
</tr>
<tr>
<td>D1.5</td>
<td>Emigration</td>
<td>1,4x0,10 =</td>
<td>0,1</td>
</tr>
<tr>
<td>D1.6</td>
<td>Young people neither in employment nor in education or training</td>
<td>3,0x0,18 =</td>
<td>0,5</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td>2,0</td>
</tr>
</tbody>
</table>
3.2.3.2 Aggregation through categories

Scores obtained in the previous step are further aggregated to produce a single score for each issue. In the following, these symbols will be used to denote:

- $w_{i,j}$: the weighting factors for each category included in the issue $A_i$;
- $S_{i,j}$: the performance score associated with the $A_i$.

Aggregation through categories is performed for each issue, combining the performance scores of all categories in that issue as follows:

$$S_i = \sum_{j=1}^{N_{c}^{(i)}} w_{i,j} S_{i,j}$$  \hspace{1cm} (7)

$w_{i,j}$ are the ‘categories weighting factors’ which quantify the relative weight of each category with respect to the others in the same issue.

Weighting factors for categories are established by a panel of experts, and fulfill the following properties:

1. each weighting factor lies in the interval $[0, 1]$;
2. $\sum_{j=1}^{N_{c}^{(i)}} w_{i,j} = 1$

Therefore also (7) can be interpreted as a weighted sum, i.e. the final score obtained for each issue represents the average performance of the territory with respect to all categories included in that issue.

Example: calculation of the score for the issue D Society

<table>
<thead>
<tr>
<th>Code</th>
<th>Category</th>
<th>Score</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>Demography</td>
<td>2,0</td>
<td>30%</td>
</tr>
<tr>
<td>D2</td>
<td>Socio-Economic Aspects</td>
<td>1,2</td>
<td>20%</td>
</tr>
<tr>
<td>D3</td>
<td>Cultural aspects</td>
<td>1,5</td>
<td>30%</td>
</tr>
<tr>
<td>D4</td>
<td>Land Use</td>
<td>3,2</td>
<td>10%</td>
</tr>
<tr>
<td>D5</td>
<td>Antropogenic risks</td>
<td>2,7</td>
<td>10%</td>
</tr>
</tbody>
</table>
Calculation of the issue’s score as weighted sum:

<table>
<thead>
<tr>
<th>Code</th>
<th>Category</th>
<th>Score x Weight</th>
<th>Weighted score</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>Demography</td>
<td>2,0 x 0,3</td>
<td>0,6</td>
</tr>
<tr>
<td>D2</td>
<td>Socio-Economic Aspects</td>
<td>1,2 x 0,2</td>
<td>0,2</td>
</tr>
<tr>
<td>D3</td>
<td>Cultural aspects</td>
<td>1,5 x 0,3</td>
<td>0,5</td>
</tr>
<tr>
<td>D4</td>
<td>Land Use</td>
<td>3,2 x 0,1</td>
<td>0,3</td>
</tr>
<tr>
<td>D5</td>
<td>Antropogenic risks</td>
<td>2,7 x 0,1</td>
<td>0,3</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td><strong>1,9</strong></td>
</tr>
</tbody>
</table>

\[ S_i = \sum_{j=1}^{N_i} w_{i,j} S_{i,j} \]

Issue score = sum of the weighted scores = **1,9**

3.2.3.3 Aggregation through issues: overall score of the territory

Finally, scores provided by aggregation through categories are further aggregated to produce the final concise score representing the territory overall performance. The final score is computed as follows:

\[ \sum = \sum_{i=1}^{N_A} W_i S_i \]

where \( W_i \) represent the ‘weighting factors for all issues’ and express the relative influence of each issue on the final score. The weighting factor for each issue is established by a panel of experts and fulfills the following properties:

- Each weighting factor lies in the interval \([0, 1]\);

\[ \sum_{i=1}^{N_A} W_i = 1 \]

Therefore, the final score can also be interpreted as the average performance of the territory with respect to all issues.

Example: calculation of the overall score for a territory

<table>
<thead>
<tr>
<th>Code</th>
<th>Issue</th>
<th>Score</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Territories and Environment</td>
<td>3,1</td>
<td>20%</td>
</tr>
<tr>
<td>B</td>
<td>Energy/Resources consumption</td>
<td>0,9</td>
<td>15%</td>
</tr>
<tr>
<td>C</td>
<td>Infrastructures/Services</td>
<td>2,3</td>
<td>10%</td>
</tr>
<tr>
<td>D</td>
<td>Society</td>
<td>1,9</td>
<td>30%</td>
</tr>
<tr>
<td>E</td>
<td>Economy</td>
<td>2,1</td>
<td>30%</td>
</tr>
</tbody>
</table>

Calculation of the issue’s score as weighted sum:
<table>
<thead>
<tr>
<th>Code</th>
<th>Issue</th>
<th>Score x Weight</th>
<th>Weighted score</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>Demography</td>
<td>3,1 × 0,2</td>
<td>0,6</td>
</tr>
<tr>
<td>D2</td>
<td>Socio-Economic Aspects</td>
<td>0,9 × 1,5</td>
<td>1,4</td>
</tr>
<tr>
<td>D3</td>
<td>Cultural aspects</td>
<td>2,3 × 0,1</td>
<td>0,2</td>
</tr>
<tr>
<td>D4</td>
<td>Land Use</td>
<td>1,9 × 0,3</td>
<td>0,6</td>
</tr>
<tr>
<td>D5</td>
<td>Antropogenic risks</td>
<td>2,1 × 0,3</td>
<td>0,6</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>3,4</strong></td>
<td></td>
</tr>
</tbody>
</table>

\[ \sum_{i=1}^{N_A} W_i S_i \]

Territorial score = sum of the weighted scores = 3,4
4 Information Module: criteria and indicators

This module provides context related information useful to understand the key characteristics of the territory under assessment. The module is composed by a set of indicators that describe the territory from the point of view of climate, land characteristics, natural risks, demography and renewable energy potential. All these aspects are in general not modifiable and represent an identity card of the territory. The “Information” module doesn’t produce a rating score.

List of informative criteria:

<table>
<thead>
<tr>
<th></th>
<th>Climate</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1.1</td>
<td>Annual Mean Temperature</td>
</tr>
<tr>
<td>I1.2</td>
<td>Winter Mean Temperature</td>
</tr>
<tr>
<td>I1.3</td>
<td>Summer Mean Temperature</td>
</tr>
<tr>
<td>I1.4</td>
<td>Frost Days</td>
</tr>
<tr>
<td>I1.5</td>
<td>Days of extreme cold</td>
</tr>
<tr>
<td>I1.6</td>
<td>Days of extreme heat</td>
</tr>
<tr>
<td>I1.7</td>
<td>Anomaly of extreme temperatures</td>
</tr>
<tr>
<td>I1.8</td>
<td>Heating Degrees Day (HDD)</td>
</tr>
<tr>
<td>I1.9</td>
<td>Heat Stress Index (HSI)</td>
</tr>
<tr>
<td>I1.10</td>
<td>Wind</td>
</tr>
<tr>
<td>I1.11</td>
<td>Foggy days</td>
</tr>
<tr>
<td>I1.12</td>
<td>Rainfall Index</td>
</tr>
<tr>
<td>I1.13</td>
<td>Meteorological drought</td>
</tr>
<tr>
<td>I1.14</td>
<td>Intense rain events</td>
</tr>
<tr>
<td>I1.15</td>
<td>Consecutive days without rain</td>
</tr>
<tr>
<td>I1.16</td>
<td>Rainfall anomalies</td>
</tr>
<tr>
<td>I1.17</td>
<td>Maximum rainfall</td>
</tr>
<tr>
<td>I1.18</td>
<td>Snowfall</td>
</tr>
<tr>
<td>I1.19</td>
<td>Snow on the ground: days</td>
</tr>
<tr>
<td>I1.20</td>
<td>UV Index</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Land</th>
</tr>
</thead>
<tbody>
<tr>
<td>I2.1</td>
<td>Average slope</td>
</tr>
<tr>
<td>I2.2</td>
<td>Average altitude</td>
</tr>
<tr>
<td>I2.3</td>
<td>Geomorphological Aspects</td>
</tr>
<tr>
<td>I2.4</td>
<td>Geological and Lithological Aspects</td>
</tr>
<tr>
<td>I2.5</td>
<td>Avalanche risk</td>
</tr>
<tr>
<td>I2.6</td>
<td>Protected Wetlands</td>
</tr>
<tr>
<td>I2.7</td>
<td>Area for agriculture</td>
</tr>
<tr>
<td>I2.8</td>
<td>Abandoned areas</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Natural risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>I3.1</td>
<td>Areas in landslide</td>
</tr>
<tr>
<td>I3.2</td>
<td>Seismic activity</td>
</tr>
<tr>
<td>I3.3</td>
<td>Avalanche accidents</td>
</tr>
<tr>
<td>I3.4</td>
<td>Floodable areas</td>
</tr>
<tr>
<td></td>
<td>Demography</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>I4.1</td>
<td>Inhabitant Population</td>
</tr>
<tr>
<td>I4.2</td>
<td>Birth rate</td>
</tr>
<tr>
<td>I4.3</td>
<td>Mortality rate (for a thousand inhabitants)</td>
</tr>
<tr>
<td>I4.4</td>
<td>Inhabitants Density</td>
</tr>
<tr>
<td>I4.5</td>
<td>Fertility Index</td>
</tr>
<tr>
<td>I4.6</td>
<td>Oldness Index</td>
</tr>
<tr>
<td>I4.7</td>
<td>Life expectancy</td>
</tr>
<tr>
<td>I4.8</td>
<td>Share of people &lt; 15 years old</td>
</tr>
<tr>
<td>I4.9</td>
<td>Share of people 15 - 60 years old</td>
</tr>
<tr>
<td>I4.10</td>
<td>Share of people &gt; 60 years old</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>I5.1</td>
<td>Potential of renewable energy</td>
</tr>
</tbody>
</table>
## 4.1 I1- CLIMATE

<table>
<thead>
<tr>
<th>I1</th>
<th>CLIMATE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I.1.1</strong></td>
<td>Annual Mean Temperature</td>
</tr>
<tr>
<td>Intent:</td>
<td>To adopt adaptation measures to climate change</td>
</tr>
<tr>
<td>Indicator:</td>
<td>Annual mean temperature</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>°C</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitored data, statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculation in monitoring procedure of the annual average temperature (°C) of the period considered and the average value of the reference climate period (1991-2010)</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td><a href="http://www.arpa.piemonte.gov.it/reporting/indicatori_on_line/componenti-ambientali/clima_temperatura-media">http://www.arpa.piemonte.gov.it/reporting/indicatori_on_line/componenti-ambientali/clima_temperatura-media</a></td>
</tr>
</tbody>
</table>

| **I.1.2** | Winter Mean Temperature |
| Intent: | To adopt adaptation measures to climate change |
| Indicator: | Winter mean temperature |
| Unit of measure: | °C |
| Information sources: | Monitored data, statistic data |
| Assessment method: | Calculation in monitoring procedure of the winter average temperature (°C) of the period considered and the average value of the reference climate period (1991-2010) |
| Territorial Scale: | All |

| **I.1.3** | Summer Mean Temperature |
| Intent: | To evaluate local winter climate conditions and climate change trends |
| Indicator: | Summer mean temperature |
| Unit of measure: | °C |
| Information sources: | Monitored data, statistic data |
| Assessment method: | Calculation in monitoring procedure of the summer average temperature (°C) of the period considered and the average value of the reference climate period (1991-2010) |
| Territorial Scale: | All |
### I.1.4 Frost Days

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To adopt adaptation measures to climate change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of days with minimum temperature below 0 °C (frost days), anomaly compared to the reference period, number of days without thaw</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number/year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitored data, statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Measurements in monitoring procedure, use of statistic data. Option 1 Verification of number of frost days/with minimum temperature &lt; 0 °C in a year Option 2 Verification of number of frost days/with minimum temperature &lt; 0 °C in a year compared to the reference period Option 3 Verification of number of days maximum temperature &lt; 0 °C without thaw in a year</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
</tbody>
</table>

### I.1.5 Days of extreme cold

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To adopt adaptation measures to climate change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of days with the daily minimum temperature &lt; 90° percentile, anomaly compared to the reference period</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number of extreme cold days/year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitored data, statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Measurements in monitoring procedure, use of statistic data Option 1 Verification of number of days with the daily minimum temperature &lt; 90° percentile in a year Option 2 Verification of number of days with the daily minimum temperature &lt; 90° percentile anomaly compared to the reference period</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
</tbody>
</table>
### I.1.6 Days of extreme heat

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To adopt adaptation measures to climate change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of days with the daily maximum temperature &gt; 90° percentile, anomaly compared to the reference period</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number /year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitored data, statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Measurements in monitoring procedure, use of statistic data, Option 1 Verification of number of days with the daily maximum temperature &gt; 90° percentile in a year, Option 2 Verification of number of days with the daily maximum temperature &gt; 90° percentile anomaly compared to the reference period</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td><a href="http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/clima_giorni-di-caldo-intenso">http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/clima_giorni-di-caldo-intenso</a></td>
</tr>
</tbody>
</table>

### I.1.7 Anomaly of extreme temperatures

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To adopt adaptation measures to climate change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Annual anomaly in extreme temperatures (Tmin), Annual anomaly in extreme temperatures (Tmax)</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>°C</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitored data, statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Measurements in monitoring procedure. Use of statistic data. Calculation of Difference between the Tmin (daily average) of the year and the typical annual mean. Calculation of Difference between the Tmax (daily average) of the year and the typical annual mean</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td><a href="http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/clima_analisi-delle-temperature-estreme">http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/clima_analisi-delle-temperature-estreme</a></td>
</tr>
</tbody>
</table>
### I.1.8 Heating Degrees Day (HDD)

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To adopt adaptation measures to climate change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Degree Days</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>°C</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitored data, statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Measurements in monitoring procedure of external temperature. Calculation of the mean external temperature. Calculation of the summation of the daily difference between the indoor temperature (20°C) and the mean external temperature for the heating period</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
</tbody>
</table>

### I.1.9 Heat Stress Index (HSI)

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To adopt adaptation measures to climate change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>The estimate of the physiological discomfort of the population due to exposure to weather conditions characterized by temperature and air hygroscopic high levels compared to the reference climatology</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number /year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitored data, statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Measurements in monitoring procedure the number of days with HSI&gt;9, use of statistic data Option 1 Verification of the number of days with HSI&gt;9 in a year Option 2 Verification of the number of days with HSI&gt;9 in a year compared to the reference climatology</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
</tbody>
</table>
### I.1.10 Wind

**Intent:** To adopt adaptation measures to climate change

**Indicator:** The annual average speed values and maximum annual gust of last year and the mean values calculated for the anemometer operating period

**Unit of measure:** m/s

**Information sources:** Measured data

**Assessment method:** Measurements in monitoring procedure of the wind speed value. Calculation of the average speed values. Use of statistic data for the calculation of climatological value. The reference values were calculated by averaging the values of average annual speed and maximum gust daily value of each year

**Territorial Scale:** All


### I.1.11 Foggy days

**Intent:** To adopt adaptation measures to climate change

**Indicator:** Number of foggy days per year (visibility < 1000 m for 3 consecutives hours)

**Unit of measure:** Number/year

**Information sources:** Measured data

**Assessment method:** Measurements in monitoring procedure. Verification of number of foggy days per year with visibility < 1000 m for 3 consecutives hours

**Territorial Scale:** All

**Standards or references:** [http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/clima_giorni-di-nebbia](http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/clima_giorni-di-nebbia)

### I.1.12 Rainfall Index

**Intent:** To adopt adaptation measures to climate change

**Indicator:** Annual mean amount of rainfall

**Unit of measure:** mm

**Information sources:** Measured data

**Assessment method:** Monitoring procedure (standard World Meteorological Organization WMO) Measurement of the volume of water flowed on the basin through the spatial information of rainfall measured with rain gauges

**Territorial Scale:** Large

**Standards or references:** [http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/acqua_precipitazioni](http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/acqua_precipitazioni) WMO [https://www.wmo.int/pages/index_en.html](https://www.wmo.int/pages/index_en.html)
### I.1.13 Meteorological drought

<table>
<thead>
<tr>
<th><strong>Intent:</strong></th>
<th>To adopt adaptation measures to climate change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator:</strong></td>
<td>Percentage of the territory that suffered a meteorological drought for more than 3 months in a year</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Measured data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Measurements in monitoring procedure: verification of the territorial area in drought. Calculation of the percentage as a share of the total area</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>Large</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td><a href="http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/clima_indice-di-siccita-meteorologica-spi">http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/clima_indice-di-siccita-meteorologica-spi</a></td>
</tr>
</tbody>
</table>

### I.1.14 Intense rain events

<table>
<thead>
<tr>
<th><strong>Intent:</strong></th>
<th>To adopt adaptation measures to climate change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator:</strong></td>
<td>Number of intense rain events in a year (10 mm / 20 minutes)</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>Number/year</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Measured data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Measurements in monitoring procedure: verification of number of intense rain events in a year (more than 10 mm of rain in 20 minutes)</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td><a href="http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/clima_eventi-temporaleschi-intensi">http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/clima_eventi-temporaleschi-intensi</a></td>
</tr>
</tbody>
</table>

### I.1.15 Consecutive days without rain

<table>
<thead>
<tr>
<th><strong>Intent:</strong></th>
<th>To adopt adaptation measures to climate change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator:</strong></td>
<td>Number of consecutive days without rainfall in a year</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>Number</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Measured data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Measurements in monitoring procedure. Verification of number of consecutive days without rainfall in a year</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>Large</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td><a href="http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/clima_giorni-consecutivi-senza-pioggia-ccd">http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/clima_giorni-consecutivi-senza-pioggia-ccd</a></td>
</tr>
</tbody>
</table>
### I.1.16 Rainfall anomalies

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To adopt adaptation measures to climate change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Difference between the annual rainfall and the typical statistical rainfall (last 10 years)</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>mm</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitored data, statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Measurements in monitoring procedure. Use of statistic data. Verification of the annual rainfall. Verification of the typical statistical rainfall (last 10 years). Calculation of difference between the annual rainfall and the typical statistical rainfall (last 10 years)</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
</tbody>
</table>

### I.1.17 Maximum rainfall

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To adopt adaptation measures to climate change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Annual Maximum level of rainfall in one hour</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>mm</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Measurements in monitoring procedure. Verification of Annual Maximum level of rainfall in one hour.</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>all</td>
</tr>
<tr>
<td>Standards or references:</td>
<td><a href="http://www.arpa.piemonte.gov.it/dati-1">www.arpa.piemonte.gov.it/dati-1</a></td>
</tr>
</tbody>
</table>

### I.1.18 Snowfall

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To adopt adaptation measures to climate change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>HN - Annual Total Snowfall</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>cm</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Measurements in monitoring procedure. HN - Annual Total Snowfall (Quantities of snowfall referring to 12 representative snow metric station in the Piedmont Alps The HN values are calculated as the difference of snow on the ground between consecutive days to ensure temporal and spatial homogeneity of the analysed variables</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td><a href="http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/clima_precipitazioni-nevose">http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/clima_precipitazioni-nevose</a></td>
</tr>
<tr>
<td>I.1.19</td>
<td>Snow on the ground: days</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------</td>
</tr>
<tr>
<td><strong>Intent:</strong></td>
<td>To evaluate local winter climate conditions and climate change trends</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Annual number of days with snow on the ground in relationship with the typical value, increase compared to the reference period. The indicator provides information on the number of days of presence of snow cover, in relation to the seasonal average of the period '81-'10, of 12 representative snow metric station in the Piedmont Alps</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>Number, %</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Measured data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Option 1 Verification of the number of days with snow on the ground. Option 2 Verification of the number of days with snow on the ground. Calculation of average reference period. Calculation of the percentage of increase in relationship with the reference period</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td><a href="http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/clima_giorni-di-permanenza-neve-al-suolo">http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/componenti-ambientali/clima_giorni-di-permanenza-neve-al-suolo</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I.1.20</th>
<th>UV Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent:</strong></td>
<td>To minimize the exposition to non ionising radiation</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Global Solar UV Index</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>UV index</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Measured data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>The indicator evaluates the intensity of solar UV radiation and its effectiveness in causing erythema. It is a number between 1 and 12</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
</tbody>
</table>
### 4.2 I2 - LAND

<table>
<thead>
<tr>
<th>I2</th>
<th>LAND</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.2.1</td>
<td>Average slope</td>
</tr>
<tr>
<td><strong>Intent:</strong></td>
<td>Evaluate the average slope of the territory</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Slope of the territory</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Measured data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Calculate the average slope of the territory</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Regione Lombardia, Geoportal</td>
</tr>
</tbody>
</table>

| I.2.2 | Average altitude |
| **Intent:** | Evaluate the average altitude of the territory |
| **Indicator:** | Altitude of the territory |
| **Unit of measure:** | Meters above sea level |
| **Information sources:** | Measured data |
| **Assessment method:** | Calculate the average altitude of the territory |
| **Territorial Scale:** | All |
| **Standards or references:** | Regione Lombardia, Geoportal |

| I.2.3 | Geomorphological Aspects |
| **Intent:** | To define the landscape sensitivity according to the geomorphological characteristics of the territory |
| **Indicator:** | Morphological units (type, main characters) |
| **Unit of measure:** | n |
| **Information sources:** | Measured data |
| **Assessment method:** | Evaluate morphological units of the territory |
| **Territorial Scale:** | All |
| **Standards or references:** | State of Environment Report and Environmental Indicators - ARPA Piemonte |

| I.2.4 | Geological and Lithological Aspects |
| **Intent:** | To define the dominant matrix of the shaping of the landscape |
| **Indicator:** | Lithological character |
| **Unit of measure:** | - |
| **Information sources:** | Qualitative data |
| **Assessment method:** | Evaluate lithological character |
| **Territorial Scale:** | All |
| **Standards or references:** | State of Environment Report and Environmental Indicators - ARPA Piemonte |
## I.2.5 Avalanche risk

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Avalanche area</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>ha</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Studies</td>
</tr>
</tbody>
</table>

**Assessment method:** Mapped avalanches are the product of an integrated study conducted both by photo interpretation and by territory surveys through the investigation area with the support of witnesses and archive data searches (parish, forest, communal, editorial archives).

Work is carried out on three integrated levels:
- Locating the avalanche sites by photo-interpretation of summer aerofotograms;
- Execution of extensive land surveys throughout investigated territory and collected oral testimonies;
- Integration of land data with historical information.

This product is updated by the Nivometeo Center of the ARPA of Bormio (SO).

**Territorial Scale:** All

**Standards or references:** Regione Lombardia, Geoportal, Map Localization Probable Avalanche

## I.2.6 Protected Wetlands

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To improve biodiversity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Distribution of natural and artificial wetlands on the territory</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
</tbody>
</table>

**Assessment method:** Survey of the geographic data at regional and local level. The data comes from the reconnaissance, analysis, evaluation and systematization of the available geographic information useful for the project, both at regional and local level.

**Territorial Scale:** All


## I.2.7 Area for agriculture

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To measure the correlation between space usages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Percentage of area for agriculture</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
</tbody>
</table>

**Assessment method:** Calculate the percentage of area for agriculture

**Territorial Scale:** All

**Standards or references:** Marktbericht Landwirtschaft, maps of the municipalities
### I.2.8 Abandoned areas

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To revitalize and reclaim abandoned areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Surface of abandoned areas (only for anthropized area)</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the ratio between the abandoned areas and total geographical area</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>SIMON – Systema Informativo Monitoraggio PGT - Monitoring Informatic System for Territorial Governance Plans of Lombardy Municipalities</td>
</tr>
</tbody>
</table>

### 4.3 I3- NATURAL RISKS

#### I3 NATURAL RISKS

<table>
<thead>
<tr>
<th>I.3.1 Areas in landslide</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent:</strong></td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
</tr>
<tr>
<td>Section</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>I.3.2</td>
</tr>
<tr>
<td>Intent:</td>
</tr>
<tr>
<td>Indicator:</td>
</tr>
<tr>
<td>Unit of measure:</td>
</tr>
<tr>
<td>Information sources:</td>
</tr>
<tr>
<td>Assessment method:</td>
</tr>
<tr>
<td>Territorial Scale:</td>
</tr>
<tr>
<td>Standards or references:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Avalanche accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>To protect inhabitants from natural risks</td>
</tr>
<tr>
<td>Indicator:</td>
<td>Number of avalanche accidents, people caught in the accident, number of victims</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number/year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
</tbody>
</table>
| Assessment method: | Measurements in monitoring procedure.  
Option 1  
Verification of the number avalanche accidents.  
Option 2  
Verification of the number of people caught in the accident.  
Option 3  
Verification of the number of victims |
| Territorial Scale: | Large |
| Standards or references: | [Link](http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/pressioni-ambientali/rischi-naturali_incidenti-e-vittime-da-valanga) |

<table>
<thead>
<tr>
<th>Section</th>
<th>Floodable areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>To protect inhabitants from natural risks</td>
</tr>
<tr>
<td>Indicator:</td>
<td>The indicator provides information about the areas affected by flooding and alluvionament by the primary and secondary network</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>km²; %</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitored data</td>
</tr>
</tbody>
</table>
| Assessment method: | Option 1  
Verification of the floodable area (Km²)  
Option 2  
Verification of the floodable area (Km²). Calculation of the percentage of the floodable area in relationship to the provincial area. |
| Territorial Scale: | All |
| Standards or references: | [Link](http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/pressioni-ambientali/rischi-naturali_aree-soggette-a-dinamiche-fluviali) |
## 4.4 I4- DEMOGRAPHY

### I.4.1 Inhabitant Population

- **Intent:** Evaluate the number of people living in a selected territory surface
- **Indicator:** Human density
- **Unit of measure:** n/km²
- **Information sources:** Statistic data
- **Assessment method:** Calculate the ratio between people living in the selected territory and the total municipal area
- **Territorial Scale:** All
- **Standards or references:** ISTAT, Municipal civil registry offices, CSTB - Urban Morphology Laboratory

### I.4.2 Birth rate

- **Intent:** To assess the growth / decline of the population
- **Indicator:** Birth rate per thousand inhabitants
- **Unit of measure:** number/1.000 inhabitants
- **Information sources:** Statistic data on population
- **Assessment method:** Verification of the number of live births in a year in a territory. Verification of the number of inhabitants living in the territory. Calculation of the ratio between number of live births in a year per 1.000 inhabitants
- **Territorial Scale:** All
- **Standards or references:** http://www.ruparpiemonte.it/infostat/filtri.jsp?idReport=MA_TAB_VA

### I.4.3 Mortality rate (for a thousand inhabitants)

- **Intent:** To assess the growth / decline of the population
- **Indicator:** Mortality rate per thousand inhabitants
- **Unit of measure:** number/1.000 inhabitants
- **Information sources:** Statistic data on population (number of deaths per thousand inhabitants)
- **Assessment method:** Verification of the number of inhabitants living in the territory. Calculation of the ratio between number of deaths in a year per 1.000 inhabitants
- **Territorial Scale:** All
- **Standards or references:** http://www.ruparpiemonte.it/infostat/filtri.jsp?idReport=MA_TAB_VA
### I.4.4 Inhabitants Density

**Intent:** To know the inhabitants density of the territory

**Indicator:** Number of inhabitants per area

**Unit of measure:** number/Km²*year

**Information sources:** Statistic data on population

**Assessment method:** Verification of the number of inhabitants in a year in a territory. Calculation of the ratio between number of inhabitants per area

**Territorial Scale:** All

**Standards or references:** [http://www.ruparpiemonte.it/infostat/filtri.jsp?idReport=MA_TAB_V](http://www.ruparpiemonte.it/infostat/filtri.jsp?idReport=MA_TAB_V)

### I.4.5 Fertility Index

**Intent:** To know the demographic trend

**Indicator:** Ratio between number of live births and women of childbearing age

**Unit of measure:** number/number

**Information sources:** Statistic data on population, MADEsmart

**Assessment method:** Verification of the number of live births in a year in a territory. Verification of the number of women of childbearing age (between 15 and 49 years) living in the territory. Calculation of the ratio between number of live births in a year and the number of women of childbearing age

**Territorial Scale:** All


### I.4.6 Oldness Index

**Intent:** To estimate the aging degree of the population

**Indicator:** Ratio between old (>65) and young (<14) inhabitants

**Unit of measure:** number/number*year

**Information sources:** Statistic data on population, MADEsmart

**Assessment method:** Verification of the number of inhabitant( >65 years) in a year in a territory. Verification of the number of number of inhabitant (< 14 year) living in the territory. Calculation of the ratio between the number of inhabitant (> 65 years) and the number of number of inhabitant (< 14 year)childbearing age

**Territorial Scale:** All

### I.4.7 Life expectancy

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To show the health state of the population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Life expectancy at birth</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number of years</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistical data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculations based on Life tables that show intensity of dying and age distribution. Calculated values are comparable in time and space</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Statistical Office of Republic of Slovenia, Eurostat, Statistical Offices</td>
</tr>
</tbody>
</table>

### I.4.8 Share of people < 15 years old

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To monitor the share of people in young age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Percent of people younger than 15 years old</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistical data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Check via statistic office the number of people younger than 15 and relate them to the total number of people in the municipality</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small / Municipality or part of Municipality</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Statistic office</td>
</tr>
</tbody>
</table>

### I.4.9 Share of people 15 - 60 years old

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To monitor the share of people in the age between 15 and 60 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Percent of people between 15 and 60 years old</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistical data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Check via statistic office the number of people between 15 and 60 years old and relate them to the total number of people in the municipality</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small / Municipality or part of municipality</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Statistic office</td>
</tr>
</tbody>
</table>

### I.4.10 Share of people > 60 years old

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To monitor the share of people in old age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Percent of people older than 60 years</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistical data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Check via statistic office the number of people older than 60 years and relate them to the total number of people in the municipality</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small / Municipality or part of municipality</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Statistic office</td>
</tr>
</tbody>
</table>
## 4.5 I5- ENERGY

<table>
<thead>
<tr>
<th>I5</th>
<th>ENERGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.5.1</td>
<td>Potential of renewable energy</td>
</tr>
</tbody>
</table>

| Intent:                      | Ideal utilization of renewable energy sources                         |
| Indicator:                   | Renewable energy potentially available and utilisable                 |
| Unit of measure:             | MWh / km² a                                                            |
| Information sources:         | Calculated data                                                        |
| Assessment method:           | Identification of renewable energy sources (accessible, economically   |
|                              | reasonable), scenario planning with established energy technology      |
| Territorial Scale:           | All                                                                    |
| Standards or references:     | German renewable potential Atlas: [https://unendlich-viel-energie.de/](https://unendlich-viel-energie.de/media/file/319.Potenzialatlas_2_Auflage_Online.pdf) |
|                              | Wind and Solar-Atlas, Renewable energy potential investigations        |
5 Capacity to Act Module: criteria and indicators

The “Capacity to Act” module is useful to evaluate the effectiveness and quality of local policies and processes in terms of participation and governance. It contains 28 criteria. Each of them is associated to an indicator, quantitative or qualitative, that allows to measure the performance reached by the territory.

On the base of indicators’ value, the Capacity to Act module produces performance scores and rating. The assessment method is described in Chapter 3 “CESBA Alps Assessment Methodology”.

<table>
<thead>
<tr>
<th>P1</th>
<th>Participation and governance</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1.1</td>
<td>Integration of energy issues in planning documents</td>
</tr>
<tr>
<td>P1.2</td>
<td>Land use policy tools against urban sprawl and urban scattering</td>
</tr>
<tr>
<td>P1.3</td>
<td>Public participation processes</td>
</tr>
<tr>
<td>P1.4</td>
<td>Social climate</td>
</tr>
<tr>
<td>P1.5</td>
<td>Sustainable urban planning</td>
</tr>
<tr>
<td>P1.6</td>
<td>Territorial tools to support sustainable construction</td>
</tr>
<tr>
<td>P1.7</td>
<td>Territorial policy with clear objectives</td>
</tr>
<tr>
<td>P1.8</td>
<td>Sustainable construction assessment system</td>
</tr>
<tr>
<td>P1.9</td>
<td>Involvement of local actors in the local governance and activities</td>
</tr>
<tr>
<td>P1.10</td>
<td>Monitoring of the satisfaction of buildings users</td>
</tr>
<tr>
<td>P1.11</td>
<td>Disaster preparedness</td>
</tr>
<tr>
<td>P1.12</td>
<td>Climate change adaption</td>
</tr>
<tr>
<td>P1.13</td>
<td>Use of recycled materials</td>
</tr>
<tr>
<td>P1.14</td>
<td>Use of eco/local/recycled materials</td>
</tr>
<tr>
<td>P1.15</td>
<td>Rate of sustainable development training for the elected Representatives and communities employees</td>
</tr>
<tr>
<td>P1.16</td>
<td>Information and communication campaigns for large audience</td>
</tr>
<tr>
<td>P1.17</td>
<td>Support to eco/local material value chain</td>
</tr>
<tr>
<td>P1.18</td>
<td>Ensuring/Securing drinking water sources</td>
</tr>
<tr>
<td>P1.19</td>
<td>Compensation and storage of CO2</td>
</tr>
<tr>
<td>P1.20</td>
<td>Protection from natural hazards</td>
</tr>
<tr>
<td>P1.21</td>
<td>Waste prevention or cascading use</td>
</tr>
<tr>
<td>P1.22</td>
<td>Electric vehicles / Infrastructures</td>
</tr>
<tr>
<td>P1.23</td>
<td>Organisation of energy networks</td>
</tr>
<tr>
<td>P1.24</td>
<td>Public support to local economy</td>
</tr>
<tr>
<td>P1.25</td>
<td>Actions of promotion of the social and solidarity economy</td>
</tr>
<tr>
<td>P1.26</td>
<td>Energy improvement of the building stock of modest people</td>
</tr>
<tr>
<td>P1.27</td>
<td>Ensuring/Securing quality of cultural landscape</td>
</tr>
<tr>
<td>P1.28</td>
<td>Air quality monitoring stations</td>
</tr>
</tbody>
</table>
## 5.1 P1- PARTICIPATION AND GOVERNANCE

<table>
<thead>
<tr>
<th>P1</th>
<th>PARTICIPATION AND GOVERNANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.1.1</td>
<td>Integration of energy issues in planning documents</td>
</tr>
<tr>
<td></td>
<td><strong>Intent:</strong> To encourage the integration of energy issues in the legal planning documents</td>
</tr>
<tr>
<td></td>
<td><strong>Indicator:</strong> Public lighting and urban furniture consumption</td>
</tr>
<tr>
<td></td>
<td><strong>Unit of measure:</strong> kWh/inhabitant</td>
</tr>
<tr>
<td></td>
<td><strong>Information sources:</strong> Monitored data from the distribution grid and energy supplier, and general census for the population data (provided by the national institute for statistic INSEE for France)</td>
</tr>
<tr>
<td></td>
<td><strong>Assessment method:</strong> Energy consumption for public lighting and urban furnitures / total number of inhabitant</td>
</tr>
<tr>
<td></td>
<td><strong>Territorial Scale:</strong> Small</td>
</tr>
<tr>
<td></td>
<td><strong>Standards or references:</strong> State Department on energy and housing, Regional scheme for energy efficiency (SRCAE in French) Local energy and climate planning documents (PCET in France equivalent to SEAP - sustainable energy action plan)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P.1.2</th>
<th>Land use policy tools against urban sprawl and urban scattering</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Intent:</strong> To preserve natural area and landscape</td>
</tr>
<tr>
<td></td>
<td><strong>Indicator:</strong> Already built up areas and areas to be urbanised</td>
</tr>
<tr>
<td></td>
<td><strong>Unit of measure:</strong> ha/inhabitant</td>
</tr>
<tr>
<td></td>
<td><strong>Information sources:</strong> Local land use master plan and INSEE data from the general census for the population data (provided by the national institute for statistic INSEE for France)</td>
</tr>
<tr>
<td></td>
<td><strong>Assessment method:</strong> (Already built up areas + areas to be urbanised in planning documents)/total number of inhabitants</td>
</tr>
<tr>
<td></td>
<td><strong>Territorial Scale:</strong> Small</td>
</tr>
<tr>
<td></td>
<td><strong>Standards or references:</strong> Studies from the local urban agency of Marseille AGAM</td>
</tr>
</tbody>
</table>
### P.1.3 Public participation processes

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Strengthening public participation/commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of people who participate in processes</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Evaluate, through survey with questions about commitment in associations/clubs, etc., people committing in associations related to the total number of inhabitants</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
</tbody>
</table>

**Questionnaire done by governmental institutions**

### P.1.4 Social climate

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To show the democratic development and the development of relations in society</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Trust in institutions</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistical data (based on surveys)</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Surveying with question about trust for several national and European institutions. Three possible answers - Tend to trust, Tend not to trust, Don't know</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Eurobarometer</td>
</tr>
</tbody>
</table>

### P.1.5 Sustainable urban planning

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the sustainability of the urban planning and management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of documents of urban planning that include sustainable development aspects in a practical and prospective vision</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Collection of documents</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>List of urban documents existing on a territory. : 1 point for each significant document</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>CCL CESBA ALPS</td>
</tr>
</tbody>
</table>
### P.1.6 Territorial tools to support sustainable construction

**Intent:**
To assess the capacity to act of the territory in the field of sustainable construction

**Indicator:**
Number of projects using a territorial assistance service dedicated to sustainable construction: Local energy agency, advisory service for municipalities, advisory service for private owners

**Unit of measure:**
Number

**Information sources:**
Advisory services annual reports

**Assessment method:**
Collect and analyse the assistance services annual report. If possible separate private and public buildings.

**Territorial Scale:**
Large

**Standards or references:**
CLER TEPOS (French network for the energy transition, Working group for positive energy territories)

### P.1.7 Territorial policy with clear objectives

**Intent:**
To assess the translation of the political view in policies

**Indicator:**
Policies with clear objectives and evaluation monitoring: Energy Positives Territory approach, Sustainable Energy Actions Plans, Local and planning codes

**Unit of measure:**
Y/N

**Information sources:**
Collection of significant Local policies

**Assessment method:**
Evaluate the number of territorial policies, 0 point if no

**Territorial Scale:**
Large

**Standards or references:**
CLER TEPOS (French network for the energy transition, Working group for positive energy territories)

### P.1.8 Sustainable construction assessment system

**Intent:**
To assess the capacity to act of the territory in the field of sustainable construction

**Indicator:**
Projects using a sustainable assessment system

**Unit of measure:**
%

**Information sources:**
Assessment system monitoring and statistics of projects (construction/renovation authorizations)

**Assessment method:**
Divide the number of projects in construction phase per year by the number of assessed projects => 1 point per percent

**Territorial Scale:**
All

**Standards or references:**
HQ²R
### P.1.9 Involvement of local actors in the local governance and activities

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the involvement of citizens and SME's to the local life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Citizens and SME's involved in awareness actions</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data (list of actions and participants)</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of citizens and SME's involved in awareness actions (if possible separate the number of participants in public, private and citizen involvement categories)</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Livre HQE²R</td>
</tr>
</tbody>
</table>

### P.1.10 Monitoring of the satisfaction of buildings users

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the building users satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Vacancy in main homes</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Local/regional statistics, studies</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Standardised method to evaluate the vacancy of houses</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>CCL CESBA ALPS</td>
</tr>
</tbody>
</table>

### P.1.11 Disaster preparedness

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Ensuring disaster relief knowledge in municipality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Annual participants of a municipality in a disaster relief training</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>inhabitants / 1000 inhabitants *a</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Evaluate the annual participants of a municipality in a disaster relief training over 1000 inhabitants, using record course participants</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Government Safety Website, Training program: <a href="https://www.vorarlberg.at/vorarlberg/sicherheit_inneres/sicherheit/landeswarnzentrale/weitereinformationen/lwz_landeswarnzentrale_/katastrophenschutz/schulungs-undkursaktivita.htm">https://www.vorarlberg.at/vorarlberg/sicherheit_inneres/sicherheit/landeswarnzentrale/weitereinformationen/lwz_landeswarnzentrale_/katastrophenschutz/schulungs-undkursaktivita.htm</a> Training program information, municipality records</td>
</tr>
</tbody>
</table>
### P.1.12 Climate change adaption

**Intent:**
To deal with climate change and plan and track measures early enough to protect inhabitants but also to use chances

**Indicator:**
Number of measures municipalities track

**Unit of measure:**
x measures / 1000 inhabitants

**Information sources:**
Calculated data

**Assessment method:**
Calculate the number of measures municipalities track through Record tracked measures

**Territorial Scale:**
All

**Standards or references:**
Government climate change adaption action plan:
https://www.vorarlberg.at/vorarlberg/umwelt_zukunft/umwelt/natur-undumweltschutz/weitereinformationen/klimaschutz/aktionsplanklimawandelanp.htm
Municipalities climate change adaption track plan

### P.1.13 Use of recycled materials

**Intent:**
To assess the efforts made on the territory to promote the use of recycled materials in the building sector

**Indicator:**
Number of policies and actions toward sustainable buildings that includes a specific part to promote recycled materials

**Unit of measure:**
Number

**Information sources:**
Urban codes, buildings assessment tools, call for tenders recommendations

**Assessment method:**
List of the policies and actions possible on a territory and their detailed content: 1 point for each policy or territorial action that includes a significant part dedicated to the promotion of recycled material

**Territorial Scale:**
All

**Standards or references:**
HQE²R, ISDIS

### P.1.14 Use of eco/local/recycled materials

**Intent:**
To assess the efforts made on the territory to promote the use of ecological and local materials in the building sector

**Indicator:**
Number of policies and actions towards sustainable buildings that includes a specific part to promote local and ecological materials

**Unit of measure:**
Number

**Information sources:**
Urban codes, buildings assessment tools, call for tenders recommendations

**Assessment method:**
List of the policies and actions possible on a territory and their detailed content: Analyse of the documents searching for significant elements => 1 point for each policy or territorial action that includes a promotion of local and ecological materials

**Territorial Scale:**
All

**Standards or references:**
CCL CESBA ALPS
<table>
<thead>
<tr>
<th><strong>P.1.15</strong></th>
<th><strong>Rate of sustainable development training for the elected Representatives and communities employees</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent:</strong></td>
<td>To inform and raise awareness of local authorities from representatives to technicians on sustainable development</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Training of local authorities on sustainable development</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Human resources services of local authorities, sustainable development services of local authorities, local training institute for local authorities</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>( \left( \frac{\text{number of trained agents and elected representatives}}{\text{total number of agents and representatives}} \right) \times 100 )</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Local Energy and Climate Action Plan (PCAET in French equivalent to SEAP - sustainable energy action plan) and Agenda 21</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>P.1.16</strong></th>
<th><strong>Information and communication campaigns for large audience</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent:</strong></td>
<td>To promote and raise awareness of inhabitants on sustainable development</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Information campaigns</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>Number of events organised on sustainable development by local authorities and their partners</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Local authorities, partners (local energy agencies...)</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Sum of all sustainable development related events for the public</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>Large</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Regional scheme for energy (SRCAE) and local energy and climate action plan (PCAET in French equivalent to SEAP - sustainable energy action plan) and Agenda 21</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>P.1.17</strong></th>
<th><strong>Support to eco/local material value chain</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent:</strong></td>
<td>To assess the promotion of eco/local materials and their value chain</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Actions carried out to increase the value chain of eco/local products</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>Number</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Calculated data (collection of local actions)</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>List of possible actions. Evaluation of the significance of the actions. ( \Rightarrow ) 1 point per significant action</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>Large</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Verdura</td>
</tr>
</tbody>
</table>
### P.1.18 Ensuring/securing drinking water sources

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Sustainable usage/treatment of drinking water sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Drinking water sources with a protection zone</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of drinking water sources with (sufficiently dimensioned) in relation to protection zone</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Governmental water management: <a href="https://www.vorarlberg.at/vorarlberg/wasser_energie/wasser/wasserwirtschaft/weitereinformationen/service/publikationen/fachberichte/wasserwirtschafts-strateg.htm">https://www.vorarlberg.at/vorarlberg/wasser_energie/wasser/wasserwirtschaft/weitereinformationen/service/publikationen/fachberichte/wasserwirtschafts-strateg.htm</a> Water management report</td>
</tr>
</tbody>
</table>

### P.1.19 Compensation and storage of CO2

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To lower CO2 concentration in the atmosphere</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>CO2 compensated or stored by public sector and enterprise alliances through set measures or payment</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>t CO2 / inhabitant</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the tons of CO2 compensated or stored by public sector and enterprise alliances through set measures or payment related to total number of inhabitants, using standardized CO2 compensation calculation</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Governmental funded climate protection organisation: <a href="https://www.climateaustria.at/projekte.html">https://www.climateaustria.at/projekte.html</a> Climate protection project record</td>
</tr>
</tbody>
</table>

### P.1.20 Protection from natural hazards

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To keep death toll and number of injuries as low as possible in case of natural hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Share of people living in “HQ-territory”</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of households in natural hazard zones related to flood zone (HQ zone) times the registered people in the household</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Hazard zone plan: <a href="https://www.bmlfuw.gv.at/forst/oesterreich-wald/raumplanung/gefahrenzonenplan.html">https://www.bmlfuw.gv.at/forst/oesterreich-wald/raumplanung/gefahrenzonenplan.html</a> Natural hazard plan</td>
</tr>
</tbody>
</table>
### P.1.21 Waste prevention or cascading use

| Intent: | To assess how a community performs in terms of waste avoidance and therefore reduces the need of waste treatment facilities / landfills |
| Indicator: | Mass of waste per person and year; share of waste used for up-/re-/down-cycling |
| Unit of measure: | Kg/year; % |
| Information sources: | Statistic data |
| Assessment method: | Statistical values of environment division, compare to previous year, evaluate set measures (like prevention/reuse-initiatives, trainings etc), set new measures |
| Territorial Scale: | Large |

### P.1.22 Electric vehicles / Infrastructures

| Intent: | To reduce emissions / resource consumption from transportation |
| Indicator: | Number of projects |
| Unit of measure: | Number |
| Information sources: | Measured data |
| Assessment method: | Calculate the number of projects (public electricity stations, regional mobility management, shared spaces...) |
| Territorial Scale: | All |
| Standards or references: | Deutsche Gesellschaft Nachhaltiges Bauen - Nutzungsprofil Stadtquartiere, Plans of the municipalities |

### P.1.23 Organisation of energy networks

| Intent: | To assess the sustainable planning and management of the energy networks: electricity, gas and district heating |
| Indicator: | Sustainable planification |
| Unit of measure: | Y/N |
| Information sources: | Planification documents for gas, electricity and district heating networks |
| Assessment method: | Analyse of the planification documents searching for significant sustainable criteria. For example priority to renewable production for district heating operation or complementarity/competition between networks study or planification includes a decreasing consumption perspective or planification includes a RES production potential study or biogaz injection in gas network => Y/N for electricity, gas or heating networks |
| Territorial Scale: | Large |
| Standards or references: | CLER TEPOS (French network for the energy transition, Working group for positive energy territories) |
### P.1.24 Public support to local economy

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To maintain local economy through services provided by local authorities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Multi services facilities</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Unit</td>
</tr>
<tr>
<td>Information sources:</td>
<td>data or statistic from local authorities</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Number of cities providing multiservices facilities for companies / total number of cities</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Agenda 21</td>
</tr>
</tbody>
</table>

### P.1.25 Actions of promotion of the social and solidarity economy

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the dynamic of the territory to reduce its vulnerability and mobilize its internal resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Study or monitoring</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Subsidies and list of actions carried out on the territory</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Collection of significant initiatives and actions in the field of social and solidarity economy. 1 point for each significant action</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>CCL CESBA ALPS</td>
</tr>
</tbody>
</table>

### P.1.26 Energy improvement of the building stock of modest people

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the efforts of the territory to reduce fuel poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Dwellings of modest people renovated</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of housing renovation project with subsidies for modest people (list of policies and subsidies concerning modest people)</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Cera (Regional Economic observatory in Rhône Alps), local monitoring, statistics, subsidies form state, counties and local authorities</td>
</tr>
</tbody>
</table>
### P1.27 Ensuring/securing quality of cultural landscape

<table>
<thead>
<tr>
<th><strong>Intent:</strong></th>
<th>To preserve quality of cultural landscape</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator:</strong></td>
<td>Number of measures to preserve quality of cultural landscape</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>x measures / 1000 people</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Statistic data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Evaluate the number of measures to preserve quality of cultural landscape, recording cultural landscape preservation measures</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>Large</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Funds for cultural landscape: <a href="https://www.vorarlberg.at/vorarlberg/seiten/foerderungen/kulturlandschaft.htm">https://www.vorarlberg.at/vorarlberg/seiten/foerderungen/kulturlandschaft.htm</a></td>
</tr>
</tbody>
</table>

### P1.28 Air quality monitoring stations

<table>
<thead>
<tr>
<th><strong>Intent:</strong></th>
<th>To monitoring the quality of the air</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator:</strong></td>
<td>Monitoring air quality</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>n</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Measured data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Evaluate the number of monitoring station of the air quality in the territory (number per 100.000 inhabitants)</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>ISTAT Statistical National Institute (Italy)</td>
</tr>
</tbody>
</table>
6 Territorial Performance Assessment Module: criteria and indicators

The “Territorial Performance Assessment” (TPA) module allows to measure the performance reached by a territory with regards to 5 main issues:

- A - Territories and Environment
- B - Energy and Resources
- C - Infrastructures and Services
- D – Society
- E - Economy.

The module contains 312 assessment criteria and relative indicators organized in 35 categories. All criteria measure an objective performance on the base of a specific assessment method.

On the base of indicators’ value, the TPA module produces performance scores and ratings at the level of criteria, categories and issues. The assessment method is described in Chapter 3 “CESBA Alps Assessment Methodology”.

List of criteria:

<table>
<thead>
<tr>
<th>A</th>
<th>TERRITORIES AND ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Land</td>
</tr>
<tr>
<td>A1.1</td>
<td>Vulnerability of the landscape-environ. system due to the fragmentation produced by linear infrastructure</td>
</tr>
<tr>
<td>A1.2</td>
<td>Fragmentation Index</td>
</tr>
<tr>
<td>A1.3</td>
<td>Forest Area</td>
</tr>
<tr>
<td>A1.4</td>
<td>Soil erosion by water</td>
</tr>
<tr>
<td>A1.4 bis</td>
<td>Soil erosion by water</td>
</tr>
<tr>
<td>A1.5</td>
<td>Quarries</td>
</tr>
<tr>
<td>A1.6</td>
<td>CO2 sequestration through bio-sequestration</td>
</tr>
<tr>
<td>A1.7</td>
<td>Carbon storage in forest</td>
</tr>
<tr>
<td>A1.8</td>
<td>Carbon Storage in soil</td>
</tr>
<tr>
<td>A1.9</td>
<td>Re-naturalization of quarries</td>
</tr>
<tr>
<td>A2</td>
<td>Water Quality</td>
</tr>
<tr>
<td>A2.1</td>
<td>Environmental State of Watercourses</td>
</tr>
<tr>
<td>A2.2</td>
<td>Surface water bodies (rivers and lakes): ecological status</td>
</tr>
<tr>
<td>A2.3</td>
<td>Surface water bodies (rivers and lakes): chemical status</td>
</tr>
<tr>
<td>A2.4</td>
<td>Good ecological status: surface water bodies (rivers and lakes)</td>
</tr>
<tr>
<td>A2.5</td>
<td>Groundwater: punctual chemical status</td>
</tr>
<tr>
<td>A2.6</td>
<td>Groundwater: GWB chemical status</td>
</tr>
<tr>
<td>A2.7</td>
<td>Good GWB chemical status: Groundwater</td>
</tr>
<tr>
<td>A2.8</td>
<td>Surface water quality: ecological status</td>
</tr>
<tr>
<td>A2.9</td>
<td>Water quality in rivers</td>
</tr>
<tr>
<td>A3</td>
<td>Nature and Biodiversity</td>
</tr>
<tr>
<td>----</td>
<td>------------------------</td>
</tr>
<tr>
<td>A3.1</td>
<td>Green Infrastructure</td>
</tr>
<tr>
<td>A3.2</td>
<td>Woodland</td>
</tr>
<tr>
<td>A3.3</td>
<td>Areas of natural interest</td>
</tr>
<tr>
<td>A3.4</td>
<td>Any wetlands</td>
</tr>
<tr>
<td>A3.5</td>
<td>Habitats in Natura 2000</td>
</tr>
<tr>
<td>A3.6</td>
<td>Amphibian species</td>
</tr>
<tr>
<td>A3.7</td>
<td>Fish species</td>
</tr>
<tr>
<td>A3.8</td>
<td>Sustainable Forestry</td>
</tr>
<tr>
<td>A3.9</td>
<td>Ecological network</td>
</tr>
<tr>
<td>A3.10</td>
<td>Endangered species</td>
</tr>
<tr>
<td>A3.11</td>
<td>Fragmentation of natural and semi-natural areas</td>
</tr>
<tr>
<td>A3.12</td>
<td>Ecological diversity</td>
</tr>
<tr>
<td>A3.13</td>
<td>Distribution of woodland plant species</td>
</tr>
<tr>
<td>A3.14</td>
<td>Target species</td>
</tr>
<tr>
<td>A3.15</td>
<td>Common bird index</td>
</tr>
<tr>
<td>A3.16</td>
<td>HNV farming</td>
</tr>
<tr>
<td>A3.17</td>
<td>Degree of implementation of the ecological network</td>
</tr>
<tr>
<td>A3.18</td>
<td>Distribution of wood species</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A4</th>
<th>Landscape</th>
</tr>
</thead>
<tbody>
<tr>
<td>A4.1</td>
<td>Panoramic roads and historical paths</td>
</tr>
<tr>
<td>A4.2</td>
<td>Panoramic and scenic view points</td>
</tr>
<tr>
<td>A4.3</td>
<td>Areas available for construction</td>
</tr>
<tr>
<td>A4.4</td>
<td>UNESCO Sites</td>
</tr>
<tr>
<td>A4.5</td>
<td>Geosites</td>
</tr>
<tr>
<td>A4.6</td>
<td>Protected cultural heritage</td>
</tr>
<tr>
<td>A4.7</td>
<td>Protected Landscape heritage</td>
</tr>
<tr>
<td>A4.8</td>
<td>Protected Natural heritage</td>
</tr>
<tr>
<td>A4.9</td>
<td>Traditional Agriculture elements</td>
</tr>
<tr>
<td>A4.10</td>
<td>Index of landscape visibility</td>
</tr>
<tr>
<td>A4.11</td>
<td>Landscape perception variation</td>
</tr>
<tr>
<td>A4.12</td>
<td>Landscape heritage conservation status</td>
</tr>
<tr>
<td>A4.13</td>
<td>Protected cultural goods in good conservation status</td>
</tr>
<tr>
<td>A4.14</td>
<td>Landscape heritage in good conservation status</td>
</tr>
<tr>
<td>A4.15</td>
<td>Natural heritage in good conservation status</td>
</tr>
<tr>
<td>A4.16</td>
<td>Protected Cultural heritage in use or accessible</td>
</tr>
<tr>
<td>A4.17</td>
<td>Protected Landscape heritage managed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A5</th>
<th>Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>A5.1</td>
<td>Urban solid waste production (not separed)</td>
</tr>
<tr>
<td>A5.2</td>
<td>Separate collection of waste</td>
</tr>
<tr>
<td>A5.3</td>
<td>Special waste management</td>
</tr>
<tr>
<td>A5.4</td>
<td>Production of special waste (not dangerous)</td>
</tr>
<tr>
<td>A5.5</td>
<td>Production of special waste (dangerous)</td>
</tr>
<tr>
<td>A5.6</td>
<td>Recycled share of produced waste</td>
</tr>
<tr>
<td>A5.7</td>
<td>Tourism impact on waste</td>
</tr>
</tbody>
</table>
### Effluents

- A6.1 Nitrogen concentration in groundwater
- A6.2 Phytosanitary vulnerability

### Contaminated Land

- A7.1 Decontaminated sites
- A7.2 Density of contaminated sites
- A7.3 Contaminated land with regards to inhabitants

### Emissions

- A8.1 Greenhouse gas emissions
- A8.2 GHG emission from energetic processes: mobility
- A8.3 GHG emission from energetic processes: tertiary sector
- A8.4 GHG emission from energetic processes: residential sector
- A8.5 GHG emission from energetic processes: industrial sector
- A8.6 GHG emission from energetic processes: agricultural sector
- A8.7 Emissions of ozone-depleting substances
- A8.8 Emissions of acidifying substances
- A8.9 Emissions of photo-oxidants
- A8.10 GHG emission from energetic processes: waste
- A8.11 Residual CO2 Compensation capacity by bio-sequestration

### Quality of air

- A9.1 Exposure to air pollution
- A9.2 Air quality - Concentration of PM2.5
- A9.3 Air quality - Concentration of O3
- A9.4 Air quality - Concentration of Benzo(a)pyren B(a)P
- A9.5 Asbestos roofing
- A9.6 Asbestos concentration in the outdoor air
- A9.7 Exposure to air pollution

### Exposure to non ionising radiation

- A10.1 Exposure to ELF Electromagnetic emissions
- A10.2 Exposure to RF-MV Electromagnetic emissions

### Exposure to ionising radiations

- A11.1 Indoor exposure to Radon
- A11.2 Cesium 137 concentration

### Exposure to noise

- A12.1 Exposure of households to noise
- A12.2 Exposure to traffic noise
- A12.3 Exposure to and annoyance by traffic noise

### Industrial hazards

- A13.1 High risk plants and factories
- A13.2 Monitoring of High risk plants and factories
<table>
<thead>
<tr>
<th>B</th>
<th>ENERGY/RESOURCES CONSUMPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>Energy Consumptions</td>
</tr>
<tr>
<td>B1.1</td>
<td>Final Energy Consumption</td>
</tr>
<tr>
<td>B1.2</td>
<td>Final Energy consumptions: tertiary sector</td>
</tr>
<tr>
<td>B1.3</td>
<td>Final Energy consumption: residential sector</td>
</tr>
<tr>
<td>B1.4</td>
<td>Final Energy consumptions: industrial sector</td>
</tr>
<tr>
<td>B1.5</td>
<td>Final Energy consumptions: agricultural sector</td>
</tr>
<tr>
<td>B1.6</td>
<td>Final Energy consumptions: mobility</td>
</tr>
<tr>
<td>B1.7</td>
<td>Energy consumption of public buildings</td>
</tr>
<tr>
<td>B1.8</td>
<td>Primary Energy Consumption</td>
</tr>
<tr>
<td>B1.9</td>
<td>Petroleum products sold</td>
</tr>
<tr>
<td>B1.10</td>
<td>Electric Energy consumptions: tertiary sector</td>
</tr>
<tr>
<td>B1.11</td>
<td>Electric Energy consumption: residential sector</td>
</tr>
<tr>
<td>B1.12</td>
<td>Electric Energy consumptions: industrial sector</td>
</tr>
<tr>
<td>B1.13</td>
<td>Electric Energy consumptions: agricultural sector</td>
</tr>
<tr>
<td>B1.14</td>
<td>Electric Energy consumptions: mobility sector</td>
</tr>
<tr>
<td>B1.15</td>
<td>Electric Energy consumptions in urban areas</td>
</tr>
<tr>
<td>B1.16</td>
<td>Thermal energy consumption: private buildings</td>
</tr>
<tr>
<td>B1.17</td>
<td>Thermal energy consumption: public buildings</td>
</tr>
<tr>
<td>B1.18</td>
<td>Thermal energy consumption: industrial buildings</td>
</tr>
<tr>
<td>B1.19</td>
<td>Winter sports energy consumption</td>
</tr>
<tr>
<td>B1.20</td>
<td>Degree of renewable energy consumed</td>
</tr>
<tr>
<td>B1.21</td>
<td>Efficiency in energy use in existing residential buildings</td>
</tr>
<tr>
<td>B1.21 bis</td>
<td>Efficiency in energy use in existing residential buildings</td>
</tr>
<tr>
<td>B1.22</td>
<td>Efficiency in energy use in existing non residential buildings</td>
</tr>
<tr>
<td>B1.22 bis</td>
<td>Efficiency in energy use in existing non residential buildings</td>
</tr>
<tr>
<td>B1.23</td>
<td>Energy certified building stock</td>
</tr>
<tr>
<td>B1.24</td>
<td>Energy Shift in progress</td>
</tr>
<tr>
<td>B2</td>
<td>Sustainable energy</td>
</tr>
<tr>
<td>B2.1</td>
<td>Renewable energy locally produced</td>
</tr>
<tr>
<td>B2.2</td>
<td>Production Power by Wind</td>
</tr>
<tr>
<td>B2.3</td>
<td>Production Power by Water</td>
</tr>
<tr>
<td>B2.4</td>
<td>Heat by Biomass</td>
</tr>
<tr>
<td>B2.5</td>
<td>Heat by solar thermal sources</td>
</tr>
<tr>
<td>B2.6</td>
<td>Heat by geothermal sources</td>
</tr>
<tr>
<td>B2.7</td>
<td>Energetic balance of primary energy</td>
</tr>
<tr>
<td>B2.8</td>
<td>PV production</td>
</tr>
<tr>
<td>B2.9</td>
<td>Biogas production</td>
</tr>
<tr>
<td>B2.10</td>
<td>Energy productivity</td>
</tr>
<tr>
<td>B3</td>
<td>Water Consumption</td>
</tr>
<tr>
<td>B3.1</td>
<td>Consumption of water</td>
</tr>
<tr>
<td>B3.2</td>
<td>Consumption of water – Human uses</td>
</tr>
<tr>
<td>B3.3</td>
<td>Consumption of water for Agriculture– Non human uses</td>
</tr>
<tr>
<td>B3.4</td>
<td>Winter sports water consumption</td>
</tr>
<tr>
<td>B3.5</td>
<td>Consumption of water for industry - non human uses</td>
</tr>
<tr>
<td>B4</td>
<td>Land and building stock use</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------------------------------------------------</td>
</tr>
<tr>
<td>B4.1</td>
<td>Efficiency in the use of existing residential building</td>
</tr>
<tr>
<td>B4.2</td>
<td>Efficiency in the use of existing non residential building</td>
</tr>
<tr>
<td>B4.3</td>
<td>Artificial land consumption</td>
</tr>
<tr>
<td>B4.4</td>
<td>Consumption of soil resulting from sealing</td>
</tr>
<tr>
<td>B4.5</td>
<td>Level of settlement</td>
</tr>
<tr>
<td>B4.6</td>
<td>Intensity of land use</td>
</tr>
<tr>
<td>B4.7</td>
<td>Vulnerability of agricultural soil</td>
</tr>
<tr>
<td>B4.8</td>
<td>Urbanized area</td>
</tr>
<tr>
<td>B4.9</td>
<td>Urbanisable area</td>
</tr>
<tr>
<td>B4.10</td>
<td>Land consumption</td>
</tr>
<tr>
<td>B4.11</td>
<td>Sprawl</td>
</tr>
<tr>
<td>B4.12</td>
<td>Impact area of land use</td>
</tr>
<tr>
<td>B4.13</td>
<td>Land consumption by infrastructures</td>
</tr>
<tr>
<td>B4.14</td>
<td>Index of reversible soil consumption</td>
</tr>
<tr>
<td>B4.15</td>
<td>Index of total soil consumption</td>
</tr>
<tr>
<td>B4.16</td>
<td>Recycled share of construction waste</td>
</tr>
<tr>
<td>B4.17</td>
<td>Building renovation rate</td>
</tr>
<tr>
<td>B4.18</td>
<td>Demolition of degraded buildings</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C</th>
<th>INFRASTRUCTURES/SERVICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>Mobility</td>
</tr>
<tr>
<td>C1.1</td>
<td>Access to public transportation</td>
</tr>
<tr>
<td>C1.2</td>
<td>Performance of the public transport</td>
</tr>
<tr>
<td>C1.3</td>
<td>Quality of walkways for pedestrian use</td>
</tr>
<tr>
<td>C1.4</td>
<td>Car ownership</td>
</tr>
<tr>
<td>C1.5</td>
<td>Transport on demand service</td>
</tr>
<tr>
<td>C1.6</td>
<td>Electricity dispensing systems</td>
</tr>
<tr>
<td>C1.7</td>
<td>Methane fuel dispensing systems</td>
</tr>
<tr>
<td>C1.8</td>
<td>Number of dispensing systems</td>
</tr>
<tr>
<td>C1.9</td>
<td>Road Safety</td>
</tr>
<tr>
<td>C1.9 bis</td>
<td>Road Safety</td>
</tr>
<tr>
<td>C1.10</td>
<td>Linear infrastructures for mobility</td>
</tr>
<tr>
<td>C1.11</td>
<td>Modal split of public transport</td>
</tr>
<tr>
<td>C1.11 bis</td>
<td>Modal split of public transport</td>
</tr>
<tr>
<td>C1.12</td>
<td>Critical infrastructures</td>
</tr>
<tr>
<td>C1.13</td>
<td>Car sharing</td>
</tr>
<tr>
<td>C1.14</td>
<td>Social tariff and gratuity and free of charge transportation</td>
</tr>
<tr>
<td>C1.15</td>
<td>Share of electric mobility</td>
</tr>
<tr>
<td>C1.16</td>
<td>Sustainable touristic mobility for cultural goods</td>
</tr>
<tr>
<td>C1.17</td>
<td>Public transport demand</td>
</tr>
<tr>
<td>C1.18</td>
<td>Cycling pathways</td>
</tr>
<tr>
<td>C1.19</td>
<td>Access to commonly used services</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C2</th>
<th>Leisure Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2.1</td>
<td>Free time facilities</td>
</tr>
<tr>
<td>C2.2</td>
<td>Leisure- and recreation-space for settlement area</td>
</tr>
<tr>
<td>C2.2 bis</td>
<td>Leisure- and recreation-space for settlement area</td>
</tr>
<tr>
<td>C3</td>
<td>Health services</td>
</tr>
<tr>
<td>----</td>
<td>----------------</td>
</tr>
<tr>
<td>C3.1</td>
<td>Coverage ratio of emergency services</td>
</tr>
<tr>
<td>C3.2</td>
<td>Number of doctors in the territory</td>
</tr>
<tr>
<td>C3.3</td>
<td>Housing for elderly people</td>
</tr>
<tr>
<td>C3.4</td>
<td>Medical provision</td>
</tr>
<tr>
<td>C3.5</td>
<td>Access to health services</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C4</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>C4.1</td>
<td>Presence of a school transport vehicles</td>
</tr>
<tr>
<td>C4.2</td>
<td>Educational farms</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C5</th>
<th>Efficiency of infrastructures</th>
</tr>
</thead>
<tbody>
<tr>
<td>C5.1</td>
<td>District heating density</td>
</tr>
<tr>
<td>C5.2</td>
<td>District heating network</td>
</tr>
<tr>
<td>C5.3</td>
<td>Efficiency in the distribution of water for human consumption</td>
</tr>
<tr>
<td>C5.4</td>
<td>Flexible energy capacity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C6</th>
<th>Information and communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>C6.1</td>
<td>Broadband supply</td>
</tr>
<tr>
<td>C6.1 bis</td>
<td>Broadband supply</td>
</tr>
<tr>
<td>C6.2</td>
<td>Cell phone connection</td>
</tr>
<tr>
<td>C6.3</td>
<td>Ultra-wide band supply</td>
</tr>
<tr>
<td>C6.4</td>
<td>Digital divide</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C7</th>
<th>Basis-Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>C7.1</td>
<td>Sewerage connection degree</td>
</tr>
<tr>
<td>C7.2</td>
<td>Sewerage system size</td>
</tr>
<tr>
<td>C7.3</td>
<td>Sewerage system condition</td>
</tr>
<tr>
<td>C7.4</td>
<td>Street lighting network size</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D</th>
<th>SOCIETY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>Demography</td>
</tr>
<tr>
<td>D1.1</td>
<td>Population balance</td>
</tr>
<tr>
<td>D1.2</td>
<td>Balance of migration (immigration flows) over the last 5 years</td>
</tr>
<tr>
<td>D1.3</td>
<td>Emigration</td>
</tr>
<tr>
<td>D1.4</td>
<td>Young people neither in employment nor in education or training</td>
</tr>
<tr>
<td>D1.5</td>
<td>Population growth</td>
</tr>
<tr>
<td>D1.6</td>
<td>Migration balance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D2</th>
<th>Socio-Economic Aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>D2.1</td>
<td>Accessibility of disabled people to social housing</td>
</tr>
<tr>
<td>D2.2</td>
<td>Evaluation of the fuel poverty</td>
</tr>
<tr>
<td>D2.3</td>
<td>Poverty and social exclusion</td>
</tr>
<tr>
<td>D2.4</td>
<td>Quality of life - Satisfaction</td>
</tr>
<tr>
<td>D2.5</td>
<td>Rate of reported robberies</td>
</tr>
<tr>
<td>D2.6</td>
<td>Commuter balance</td>
</tr>
<tr>
<td>D2.7</td>
<td>Satisfaction with time distribution</td>
</tr>
<tr>
<td>D2.8</td>
<td>Urban/ rural classification</td>
</tr>
<tr>
<td>D2.9</td>
<td>Share of social housing in the territory</td>
</tr>
<tr>
<td>D2.10</td>
<td>Part of unacceptable and substandard housing in the territory</td>
</tr>
<tr>
<td>D2.11</td>
<td>Social water tariff</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>D2.12</td>
<td>Wage differences between women and men</td>
</tr>
<tr>
<td>D2.13</td>
<td>Recipients of economic social assistance</td>
</tr>
<tr>
<td>D2.14</td>
<td>Education</td>
</tr>
<tr>
<td>D2.15</td>
<td>Environmental education</td>
</tr>
<tr>
<td>D2.16</td>
<td>Level of school dropout</td>
</tr>
<tr>
<td>D2.17</td>
<td>Rate of university graduate</td>
</tr>
<tr>
<td>D2.18</td>
<td>Rate of high school graduate</td>
</tr>
<tr>
<td>D2.19</td>
<td>Occupation by gender</td>
</tr>
<tr>
<td>D2.19 bis</td>
<td>Occupation by gender</td>
</tr>
<tr>
<td>D2.20</td>
<td>Gross Income</td>
</tr>
<tr>
<td>D2.21</td>
<td>Affordability of residential rental or cost levels</td>
</tr>
<tr>
<td>D2.22</td>
<td>Property of the population and economic security</td>
</tr>
<tr>
<td>D2.23</td>
<td>Improvement of the building stock of lower income people</td>
</tr>
<tr>
<td>D2.24</td>
<td>Early leavers from education and training</td>
</tr>
<tr>
<td>D2.25</td>
<td>Poverty and social exclusion</td>
</tr>
<tr>
<td>D2.26</td>
<td>Employment rate of young people (15-24 years old)</td>
</tr>
<tr>
<td>D2.27</td>
<td>Unemployment rate</td>
</tr>
<tr>
<td>D2.28</td>
<td>Employment rate (15-64 years old)</td>
</tr>
<tr>
<td>D2.28 bis</td>
<td>Employment rate (15-64 years old)</td>
</tr>
<tr>
<td>D2.29</td>
<td>Design for All</td>
</tr>
<tr>
<td>D2.30</td>
<td>Accessibility of protected cultural goods</td>
</tr>
<tr>
<td>D2.31</td>
<td>Accessibility of protected landscape heritage</td>
</tr>
<tr>
<td>D2.32</td>
<td>Accessibility of protected natural heritage</td>
</tr>
<tr>
<td>D2.33</td>
<td>Share of secondary residences</td>
</tr>
<tr>
<td><strong>D3</strong></td>
<td>Cultural aspects</td>
</tr>
<tr>
<td>D3.1</td>
<td>Degree of promotion of the cultural offer of the State Institutes</td>
</tr>
<tr>
<td>D3.2</td>
<td>Degree of diffusion of theatre and musical shows</td>
</tr>
<tr>
<td>D3.3</td>
<td>Cultural institutions</td>
</tr>
<tr>
<td>D3.4</td>
<td>Public libraries</td>
</tr>
<tr>
<td>D3.5</td>
<td>Cultural heritage enhancement</td>
</tr>
<tr>
<td><strong>D4</strong></td>
<td>Land Use</td>
</tr>
<tr>
<td>D4.1</td>
<td>Plan of land use</td>
</tr>
<tr>
<td>D4.2</td>
<td>Green urban areas</td>
</tr>
<tr>
<td>D4.3</td>
<td>Public civic and leisure spaces</td>
</tr>
<tr>
<td><strong>D5</strong></td>
<td>Antropogenetic risks</td>
</tr>
<tr>
<td>D5.1</td>
<td>Forest fire risk</td>
</tr>
<tr>
<td>D5.1 bis</td>
<td>Forest fire risk</td>
</tr>
<tr>
<td>D5.2</td>
<td>Location of territory relative to zones of fire risk</td>
</tr>
<tr>
<td>D5.3</td>
<td>Risk to occupants and facilities from earthquake</td>
</tr>
<tr>
<td>D5.4</td>
<td>Population exposed to landslide risk</td>
</tr>
<tr>
<td>D5.5</td>
<td>Population exposed to flood risk</td>
</tr>
<tr>
<td>D5.6</td>
<td>Population exposed to industrial risk</td>
</tr>
<tr>
<td>D5.7</td>
<td>Territory exposed to environmental risks (fire, earthquake, landslide, flood, industrial risk etc)</td>
</tr>
<tr>
<td>D5.8</td>
<td>Population exposed to natural risks</td>
</tr>
<tr>
<td>D5.8 bis</td>
<td>Population exposed to natural risks</td>
</tr>
<tr>
<td>D5.9</td>
<td>Exposure to natural hazards</td>
</tr>
<tr>
<td>E</td>
<td>ECONOMY</td>
</tr>
<tr>
<td>----</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>E1</td>
<td>Local Economy</td>
</tr>
<tr>
<td>E1.1</td>
<td>Use of local materials</td>
</tr>
<tr>
<td>E1.2</td>
<td>Companies with social/environmental certification</td>
</tr>
<tr>
<td>E1.3</td>
<td>Renovation and redevelopment of settlement for production activities abandoned</td>
</tr>
<tr>
<td>E1.4</td>
<td>Cover organic meals served in the canteen</td>
</tr>
<tr>
<td>E1.5</td>
<td>Budget of RES enterprises</td>
</tr>
<tr>
<td>E1.6</td>
<td>Employment in Energy improvement of the building stock</td>
</tr>
<tr>
<td>E1.7</td>
<td>Employment in RES enterprises</td>
</tr>
<tr>
<td>E1.8</td>
<td>Development of local label</td>
</tr>
<tr>
<td>E1.9</td>
<td>Local currencies for local economic systems</td>
</tr>
<tr>
<td>E1.10</td>
<td>Local added value</td>
</tr>
<tr>
<td>E1.11</td>
<td>Labour migration</td>
</tr>
<tr>
<td>E1.12</td>
<td>Train business to sustainable development</td>
</tr>
<tr>
<td>E1.13</td>
<td>Green Public Procurement</td>
</tr>
<tr>
<td>E1.14</td>
<td>Local forest wood supply chain</td>
</tr>
<tr>
<td>E1.15</td>
<td>Promotion of the building sector</td>
</tr>
<tr>
<td>E1.16</td>
<td>Voluntary Carbon Market by forest management</td>
</tr>
<tr>
<td>E1.17</td>
<td>Assessed sustainable standard</td>
</tr>
<tr>
<td>E1.18</td>
<td>Rate of households with potential economic hardship</td>
</tr>
<tr>
<td>E1.19</td>
<td>Business creation dynamics</td>
</tr>
<tr>
<td></td>
<td>E2 Actions for Innovation</td>
</tr>
<tr>
<td>E2.1</td>
<td>Gross enrolment in the Company Register</td>
</tr>
<tr>
<td>E2.2</td>
<td>Training of handcrafts, SMEs incubators</td>
</tr>
<tr>
<td>E2.3</td>
<td>Research and Development</td>
</tr>
<tr>
<td>E2.4</td>
<td>Financial fund for energy saving in SMEs</td>
</tr>
<tr>
<td>E2.5</td>
<td>Involvement of citizens and SMEs to the local life, through local networks, partnerships, etc.</td>
</tr>
<tr>
<td>E3</td>
<td>Tourism</td>
</tr>
<tr>
<td>E3.1</td>
<td>Tourism rate</td>
</tr>
<tr>
<td>E3.2</td>
<td>Tourist accommodation capacity</td>
</tr>
<tr>
<td>E3.3</td>
<td>Floating population</td>
</tr>
<tr>
<td>E3.4</td>
<td>Tourist attractions</td>
</tr>
<tr>
<td>E3.5</td>
<td>Bed occupancy rate</td>
</tr>
<tr>
<td>E3.6</td>
<td>Summer tourism</td>
</tr>
<tr>
<td>E3.7</td>
<td>Touristic cycling pathways</td>
</tr>
<tr>
<td>E3.8</td>
<td>Seasonal staff accommodation</td>
</tr>
<tr>
<td>E3.9</td>
<td>Ski lifts</td>
</tr>
<tr>
<td>E3.10</td>
<td>Agritourism farmhouses</td>
</tr>
<tr>
<td>E3.11</td>
<td>Mountain huts</td>
</tr>
<tr>
<td>E3.12</td>
<td>Touristic flux</td>
</tr>
<tr>
<td>E3.13</td>
<td>Average stay of tourists</td>
</tr>
<tr>
<td>E3.14</td>
<td>Touristic pressure</td>
</tr>
<tr>
<td>E3.14 bis</td>
<td>Touristic pressure</td>
</tr>
<tr>
<td>E3.15</td>
<td>Presence of paths used for tourism</td>
</tr>
<tr>
<td>E3.16</td>
<td>Sustainable tourism</td>
</tr>
<tr>
<td>E3.17</td>
<td>Sustainable tourism offer</td>
</tr>
<tr>
<td>E3.18</td>
<td>Occupation rate of tourist accommodation facilities</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>E3.19</td>
<td>Average stay of tourists during summer season</td>
</tr>
<tr>
<td>E3.20</td>
<td>Average stay of tourists during winter season</td>
</tr>
</tbody>
</table>

### E4  Agriculture

<table>
<thead>
<tr>
<th>E4.1</th>
<th>Relevance of intensive agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>E4.2</td>
<td>Organic farming</td>
</tr>
<tr>
<td>E4.3</td>
<td>Economic relevance of agriculture</td>
</tr>
<tr>
<td>E4.4</td>
<td>Agricultural population</td>
</tr>
<tr>
<td>E4.5</td>
<td>Circular economy and short food systems</td>
</tr>
<tr>
<td>E4.6</td>
<td>Agricultural autonomy potential</td>
</tr>
<tr>
<td>E4.7</td>
<td>Field (arable) share of agriculture area</td>
</tr>
<tr>
<td>E4.8</td>
<td>Agricultural products of quality</td>
</tr>
<tr>
<td>E4.9</td>
<td>Food self-sufficiency</td>
</tr>
<tr>
<td>E4.10</td>
<td>Genetic diversity in agriculture</td>
</tr>
<tr>
<td>E4.11</td>
<td>Biologically cultivated area</td>
</tr>
<tr>
<td>E4.12</td>
<td>Use of pesticides</td>
</tr>
<tr>
<td>E4.13</td>
<td>Use of fertilizers</td>
</tr>
</tbody>
</table>

### E5  Industry

<table>
<thead>
<tr>
<th>E5.1</th>
<th>Area for industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>E5.2</td>
<td>Industrial Local Units</td>
</tr>
<tr>
<td>E5.3</td>
<td>Efficient use of the industrial areas</td>
</tr>
<tr>
<td>E5.4</td>
<td>Economic relevance of industry</td>
</tr>
<tr>
<td>E5.5</td>
<td>Resource productivity</td>
</tr>
</tbody>
</table>

### E6  Trade commerce

<table>
<thead>
<tr>
<th>E6.1</th>
<th>Import/export of food products and beverages</th>
</tr>
</thead>
<tbody>
<tr>
<td>E6.2</td>
<td>Settlements without grocery stores</td>
</tr>
</tbody>
</table>
### 6.1 A – TERRITORIES AND ENVIRONMENT

#### A1 Land

**A.1.1 Vulnerability of the landscape-environ. system due to the fragmentation produced by linear infrastructure**

| Intent: | To reduce the vulnerability of the landscape-environmental system due to the fragmentation produced by linear infrastructure |
| Indicator: | Fragmentation caused by roads |
| Unit of measure: | km/km² |
| Information sources: | Calculated data |
| Assessment method: | Option 1: Calculate the ratio between the extraurban area (natural and agricultural) and the length of roads (and other linear infrastructures) in that area  
Option 2: Calculate the ratio between the extraurban area (natural and agricultural) and the length of roads without the tunnel sections and viaduct (and other linear infrastructures) in that area |
| Territorial Scale: | All |
| Standards or references: | Environmental Report of Territorial Regional Plan of Lombardy |

**A.1.2 Fragmentation Index**

| Intent: | To reduce the vulnerability of the landscape-environmental system due to the fragmentation produced by linear infrastructure |
| Indicator: | Fragmentation caused by roads and other mobility linear infrastructures |
| Unit of measure: | m/Km² |
| Information sources: | Calculated data |
| Assessment method: | Calculate the summation of the lengths of roads (and other linear infrastructures) for type, without the tunnel sections and viaduct in the extraurban area (m).  
Calculate the extraurban area (natural and agricultural) (Km²)  
Calculate ratio between the summation and the extraurban area (m/Km²)  
Calculate  
\[ IFI = \frac{\sum (oi \times li)}{A} (m/km²) \]  
With:  
li = length of roads (and other linear infrastructures) for type, without the tunnel sections and viaduct in the extraurban area (natural and agricultural)  
oi= ecosystemic occlusion coefficients of infrastructures types  
A = extraurban area (natural and agricultural) considered |
The coefficient $o_i$ allows to get the weighting of the lengths of the infrastructural segments calibrated on their occlusion character, in particular an attribution based on a comparative estimate of that character for the different types of infrastructures has been used (in relation to the different types of environmental occlusion that each category achieves against of the wildlife without any further indications at individual species level):

- $o_1=1$ (or 100%) Level 1 - Highways, beltways and railways (generally total occlusions due to the presence of side fences);
- $o_2=0.7$ (or 70%) Level 2 - State and regional roads, generally with high traffic volume (pronounced occlusion caused by acoustic disturbance and permanent flow of vehicles);
- $o_3=0.5$ (or 50%) Level 3 - Provincial roads, usually with medium traffic volume (moderate occlusion capacity due to disturbance conditions);
- $o_4=0.3$ (or 30%) Level 4 - Municipal roads, generally with traffic volumes varying from day to day, from very high to very low, but with a relationship with local morphology favourable in terms of occlusion.

**Territorial Scale:**
- Calculate the extraurban area (natural and agricultural) (Km2)

**Standards or references:**
- Calculate ratio between the summation and the extraurban area (m/Km2)

### A.1.3 Forest Area

**Intent:** To assess the extension of forested areas

**Indicator:** Forested areas

**Unit of measure:** %

**Information sources:** Calculated data

**Assessment method:** Calculate the ratio between forested areas and the geographical area considered

**Territorial Scale:** All

**Standards or references:** Lombardy Region, database of land use (DUSAF)

### A.1.4 Soil erosion by water

**Intent:** To reduce soil erosion by water

**Indicator:** Soil loss rate by water

**Unit of measure:** tons/ha/year

**Information sources:** Calculated data

**Assessment method:** Use models and simulation

**Territorial Scale:** All

**Standards or references:** JRC, http://esdac.jrc.ec.europa.eu/content/soil-erosion-water-rusle2015
### A.1.4 bis Soil erosion by water

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce soil erosion by water and measure the effectiveness of forests &amp; other landscapes to prevent erosion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Ratio of land under high soil erosion risk as classified by the relevant authority</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Ratio of land under high soil erosion risk divided by the total territory area</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>National</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Environment Statistics, Office of Statistics, National Government of Liechtenstein</td>
</tr>
</tbody>
</table>

### A.1.5 Quarries

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To valorise and protect natural heritage and landscape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Quarry area, for active and abandoned quarries</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the ratio between quarries areas and the geographical area considered</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Geoportal, Quarries register of Lombardy</td>
</tr>
</tbody>
</table>
### A.1.6 CO2 sequestration through bio-sequestration

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To increase the carbon sequestration in the Alpine Space by extending the area use for cropland, permanent grassland, forestry, vineyards, orchards and wetlands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Carbon storage across the landscape</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>teqCO2/ha</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the CO2-Sequestration potential as the sum of products of area and carbon sequestration ratio for the different land types including area covered with cropland, permanent grassland, forestry, vineyard, orchard and wetland.</td>
</tr>
</tbody>
</table>

\[ \sum_{\text{Area}} [\text{ha}] \times \text{Carbon sequestration ratio}_i [\text{teqCO2/ha}] \]

Where Ratios of carbon sequestration per hectare:
- Cropland: 188 teqCO2/ha
- Permanent grassland: 298 teqCO2/ha
- Forestry: 285 teqCO2/ha
- Vineyard: 126 teqCO2/ha
- Orchard: 173 teqCO2/ha
- Wetlands: 40 teqCO2/ha

<table>
<thead>
<tr>
<th>Territorial Scale:</th>
<th>All</th>
</tr>
</thead>
</table>
### A.1.7 Carbon storage in forest

<table>
<thead>
<tr>
<th>Component</th>
<th>Intent</th>
<th>Indicator</th>
<th>Unit of measure</th>
<th>Information sources</th>
<th>Assessment method</th>
<th>Territorial Scale</th>
<th>Standards or references</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent</strong></td>
<td>To adopt mitigation and adaptation measures to climate change</td>
<td><strong>Indicator</strong></td>
<td><strong>Unit of measure</strong></td>
<td><strong>Information sources</strong></td>
<td><strong>Assessment method</strong></td>
<td><strong>Territorial Scale</strong></td>
<td><strong>Standards or references</strong></td>
</tr>
<tr>
<td><strong>Indicator</strong></td>
<td>Carbon storage in forest</td>
<td>Carbon storage in forest</td>
<td>ton of CO2 equivalents</td>
<td>Models and simulation data</td>
<td>Evaluation of CO2 storage in forest using the historical series derived from the National Inventory of Emissions, which is carried out each five years form ISPRA and regularly updated to ensure comparability of data</td>
<td>All</td>
<td><a href="https://isprambiente.gov.it/it">https://isprambiente.gov.it/it</a></td>
</tr>
<tr>
<td><strong>Unit of measure</strong></td>
<td>Carbon storage in forest</td>
<td>Carbon storage in forest</td>
<td>ton of CO2 equivalents</td>
<td>Models and simulation data</td>
<td>Evaluation of CO2 storage in forest using the historical series derived from the National Inventory of Emissions, which is carried out each five years form ISPRA and regularly updated to ensure comparability of data</td>
<td>All</td>
<td><a href="https://systemapiemonte.it/cms/privati/ambientye-eenergia/servizi/474-irea-inventario-regionale-delle-emissioni-inatmosfera">https://systemapiemonte.it/cms/privati/ambientye-eenergia/servizi/474-irea-inventario-regionale-delle-emissioni-inatmosfera</a></td>
</tr>
<tr>
<td><strong>Information sources</strong></td>
<td>Models and simulation data</td>
<td>Models and simulation data</td>
<td>ton of CO2 equivalents</td>
<td>Models and simulation data</td>
<td>Evaluation of CO2 storage in forest using the historical series derived from the National Inventory of Emissions, which is carried out each five years form ISPRA and regularly updated to ensure comparability of data</td>
<td>All</td>
<td><a href="https://isprambiente.gov.it/it">https://isprambiente.gov.it/it</a></td>
</tr>
<tr>
<td><strong>Assessment method</strong></td>
<td>Models and simulation data</td>
<td>Models and simulation data</td>
<td>ton of CO2 equivalents</td>
<td>Models and simulation data</td>
<td>Evaluation of CO2 storage in forest using the historical series derived from the National Inventory of Emissions, which is carried out each five years form ISPRA and regularly updated to ensure comparability of data</td>
<td>All</td>
<td><a href="https://systemapiemonte.it/cms/privati/ambientye-eenergia/servizi/474-irea-inventario-regionale-delle-emissioni-inatmosfera">https://systemapiemonte.it/cms/privati/ambientye-eenergia/servizi/474-irea-inventario-regionale-delle-emissioni-inatmosfera</a></td>
</tr>
<tr>
<td><strong>Territorial Scale</strong></td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references</strong></td>
<td>Models and simulation data</td>
<td>Models and simulation data</td>
<td>ton of CO2 equivalents</td>
<td>Models and simulation data</td>
<td>Evaluation of CO2 storage in forest using the historical series derived from the National Inventory of Emissions, which is carried out each five years form ISPRA and regularly updated to ensure comparability of data</td>
<td>All</td>
<td>All</td>
</tr>
</tbody>
</table>

### A.1.8 Carbon Storage in soil

<table>
<thead>
<tr>
<th>Component</th>
<th>Intent</th>
<th>Indicator</th>
<th>Unit of measure</th>
<th>Information sources</th>
<th>Assessment method</th>
<th>Territorial Scale</th>
<th>Standards or references</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent</strong></td>
<td>To adopt mitigation and adaptation measures to climate change</td>
<td><strong>Indicator</strong></td>
<td><strong>Unit of measure</strong></td>
<td><strong>Information sources</strong></td>
<td><strong>Assessment method</strong></td>
<td><strong>Territorial Scale</strong></td>
<td><strong>Standards or references</strong></td>
</tr>
<tr>
<td><strong>Indicator</strong></td>
<td>Carbon Storage in soil</td>
<td>Carbon Storage in soil</td>
<td>ton/ha</td>
<td>Models and simulation data. The available data regarding the soils of the Piedmont Region are resident in the Pedological Information System</td>
<td>IPLA (Wood and Environment Italian Institute) uses a comprehensive regional information base for carbon stocks in soil and forests, built with data from the Regional Forest Inventory and the Piedmont Soil Sheet on scale 1: 250,000, both made on behalf of the Piedmont Region. Regarding carbon dioxide absorption and carbon dioxide monitoring and control, IPLA has been managing a CO2 monitoring station based on Eddy Covariance’s techniques since 2002 on behalf of the Piedmont Region</td>
<td>All</td>
<td>IPLA (Wood and Environment Italian Institute): <a href="https://ipla.org/">https://ipla.org/</a> . Regarding carbon dioxide absorption and carbon dioxide monitoring and control: international network (project Carboeurope) and national (Carboitaly project)</td>
</tr>
<tr>
<td><strong>Unit of measure</strong></td>
<td>Carbon Storage in soil</td>
<td>Carbon Storage in soil</td>
<td>ton/ha</td>
<td>Models and simulation data. The available data regarding the soils of the Piedmont Region are resident in the Pedological Information System</td>
<td>IPLA (Wood and Environment Italian Institute) uses a comprehensive regional information base for carbon stocks in soil and forests, built with data from the Regional Forest Inventory and the Piedmont Soil Sheet on scale 1: 250,000, both made on behalf of the Piedmont Region. Regarding carbon dioxide absorption and carbon dioxide monitoring and control, IPLA has been managing a CO2 monitoring station based on Eddy Covariance’s techniques since 2002 on behalf of the Piedmont Region</td>
<td>All</td>
<td>IPLA (Wood and Environment Italian Institute): <a href="https://ipla.org/">https://ipla.org/</a> . Regarding carbon dioxide absorption and carbon dioxide monitoring and control: international network (project Carboeurope) and national (Carboitaly project)</td>
</tr>
<tr>
<td><strong>Information sources</strong></td>
<td>Models and simulation data</td>
<td>Models and simulation data</td>
<td>ton/ha</td>
<td>Models and simulation data. The available data regarding the soils of the Piedmont Region are resident in the Pedological Information System</td>
<td>IPLA (Wood and Environment Italian Institute) uses a comprehensive regional information base for carbon stocks in soil and forests, built with data from the Regional Forest Inventory and the Piedmont Soil Sheet on scale 1: 250,000, both made on behalf of the Piedmont Region. Regarding carbon dioxide absorption and carbon dioxide monitoring and control, IPLA has been managing a CO2 monitoring station based on Eddy Covariance’s techniques since 2002 on behalf of the Piedmont Region</td>
<td>All</td>
<td>IPLA (Wood and Environment Italian Institute): <a href="https://ipla.org/">https://ipla.org/</a> . Regarding carbon dioxide absorption and carbon dioxide monitoring and control: international network (project Carboeurope) and national (Carboitaly project)</td>
</tr>
<tr>
<td><strong>Assessment method</strong></td>
<td>Models and simulation data</td>
<td>Models and simulation data</td>
<td>ton/ha</td>
<td>Models and simulation data. The available data regarding the soils of the Piedmont Region are resident in the Pedological Information System</td>
<td>IPLA (Wood and Environment Italian Institute) uses a comprehensive regional information base for carbon stocks in soil and forests, built with data from the Regional Forest Inventory and the Piedmont Soil Sheet on scale 1: 250,000, both made on behalf of the Piedmont Region. Regarding carbon dioxide absorption and carbon dioxide monitoring and control, IPLA has been managing a CO2 monitoring station based on Eddy Covariance’s techniques since 2002 on behalf of the Piedmont Region</td>
<td>All</td>
<td>IPLA (Wood and Environment Italian Institute): <a href="https://ipla.org/">https://ipla.org/</a> . Regarding carbon dioxide absorption and carbon dioxide monitoring and control: international network (project Carboeurope) and national (Carboitaly project)</td>
</tr>
<tr>
<td><strong>Territorial Scale</strong></td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references</strong></td>
<td>Models and simulation data</td>
<td>Models and simulation data</td>
<td>ton/ha</td>
<td>Models and simulation data. The available data regarding the soils of the Piedmont Region are resident in the Pedological Information System</td>
<td>IPLA (Wood and Environment Italian Institute): <a href="https://ipla.org/">https://ipla.org/</a> . Regarding carbon dioxide absorption and carbon dioxide monitoring and control: international network (project Carboeurope) and national (Carboitaly project)</td>
<td>All</td>
<td>All</td>
</tr>
</tbody>
</table>

### A.1.9 Re-naturalization of quarries

<table>
<thead>
<tr>
<th>Component</th>
<th>Intent</th>
<th>Indicator</th>
<th>Unit of measure</th>
<th>Information sources</th>
<th>Assessment method</th>
<th>Territorial Scale</th>
<th>Standards or references</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent</strong></td>
<td>To valorize and protect natural heritage and landscape</td>
<td><strong>Indicator</strong></td>
<td><strong>Unit of measure</strong></td>
<td><strong>Information sources</strong></td>
<td><strong>Assessment method</strong></td>
<td><strong>Territorial Scale</strong></td>
<td><strong>Standards or references</strong></td>
</tr>
<tr>
<td><strong>Indicator</strong></td>
<td>Environmental and territorial recomposition of quarries</td>
<td>Environmental and territorial recomposition of quarries</td>
<td>%</td>
<td>Data of the Veneto Region (PRAC, Direzione Difesa del Suolo) and IDT (<a href="https://idt2.regione.veneto.it/">https://idt2.regione.veneto.it/</a>)</td>
<td>Percentage of the re-naturalized or reconstituted quarry areas / total area of quarry areas</td>
<td>All</td>
<td>PRAC (Regional Plan of Quarry Activities), Direzione Regionale Difesa del Suolo</td>
</tr>
<tr>
<td><strong>Unit of measure</strong></td>
<td>Environmental and territorial recomposition of quarries</td>
<td>Environmental and territorial recomposition of quarries</td>
<td>%</td>
<td>Data of the Veneto Region (PRAC, Direzione Difesa del Suolo) and IDT (<a href="https://idt2.regione.veneto.it/">https://idt2.regione.veneto.it/</a>)</td>
<td>Percentage of the re-naturalized or reconstituted quarry areas / total area of quarry areas</td>
<td>All</td>
<td>PRAC (Regional Plan of Quarry Activities), Direzione Regionale Difesa del Suolo</td>
</tr>
<tr>
<td><strong>Information sources</strong></td>
<td>Data of the Veneto Region (PRAC, Direzione Difesa del Suolo) and IDT (<a href="https://idt2.regione.veneto.it/">https://idt2.regione.veneto.it/</a>)</td>
<td>Data of the Veneto Region (PRAC, Direzione Difesa del Suolo) and IDT (<a href="https://idt2.regione.veneto.it/">https://idt2.regione.veneto.it/</a>)</td>
<td>%</td>
<td>Data of the Veneto Region (PRAC, Direzione Difesa del Suolo) and IDT (<a href="https://idt2.regione.veneto.it/">https://idt2.regione.veneto.it/</a>)</td>
<td>Percentage of the re-naturalized or reconstituted quarry areas / total area of quarry areas</td>
<td>All</td>
<td>PRAC (Regional Plan of Quarry Activities), Direzione Regionale Difesa del Suolo</td>
</tr>
<tr>
<td><strong>Assessment method</strong></td>
<td>Percentage of the re-naturalized or reconstituted quarry areas / total area of quarry areas</td>
<td>Percentage of the re-naturalized or reconstituted quarry areas / total area of quarry areas</td>
<td>%</td>
<td>Data of the Veneto Region (PRAC, Direzione Difesa del Suolo) and IDT (<a href="https://idt2.regione.veneto.it/">https://idt2.regione.veneto.it/</a>)</td>
<td>Percentage of the re-naturalized or reconstituted quarry areas / total area of quarry areas</td>
<td>All</td>
<td>PRAC (Regional Plan of Quarry Activities), Direzione Regionale Difesa del Suolo</td>
</tr>
<tr>
<td><strong>Territorial Scale</strong></td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references</strong></td>
<td>PRAC (Regional Plan of Quarry Activities), Direzione Regionale Difesa del Suolo</td>
<td>PRAC (Regional Plan of Quarry Activities), Direzione Regionale Difesa del Suolo</td>
<td>All</td>
<td>PRAC (Regional Plan of Quarry Activities), Direzione Regionale Difesa del Suolo</td>
<td>Percentage of the re-naturalized or reconstituted quarry areas / total area of quarry areas</td>
<td>All</td>
<td>PRAC (Regional Plan of Quarry Activities), Direzione Regionale Difesa del Suolo</td>
</tr>
</tbody>
</table>
### A2 Water Quality

#### A.2.1 Environmental State of Watercourses

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent:</strong></td>
<td>To assess the quality of the surface water resources</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Relationship between the data relating to the Ecological State and data relating to the presence of chemical pollutants</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>Index</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Qualitative data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Evaluate the Ecological State of water crossing the Ecological State and the Chemical State</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>Small - Large</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Territorial Monitoring Plan of Piedmont Region, Italian D.lgs 3 April 2006, n. 152 &quot;Environmental Regulation&quot;</td>
</tr>
</tbody>
</table>
### A.2.2 Surface water bodies (rivers and lakes): ecological status

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To improve water quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Evaluation of the ecological status of surface water body</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Index</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Data analysis process: verification of the ecological status by the integrated assessment indices for rivers and lakes determined on the basis of the evaluation of the worse data in three year for operative monitoring and in one year for Supervisory monitoring and the verification of the Environmental Quality Standards (EQS) for specific pollutants. The confirmation of the High Quality State is provided by hydromorphological parameters</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>State of Environment Report and Environmental Indicators - ARPA Piemonte. <a href="http://relazione.ambiente.piemonte.gov.it/2016/it">http://relazione.ambiente.piemonte.gov.it/2016/it</a>; European Directive 2000/60/CE (WFD), Directive 2008/105/CE, Directive 2009/90/CE, Italian Legislative Decree 152/06, Decree 131/2008, Decree 17 July 2009, Italian Legislative Decree 219/10, Decree 260/10. Indices for rivers: ICMi (Intercalibration Common Metric Index), IBMR (Macrophyte Biological Index for Rivers), ISECI, (Fish Community Ecological Status), LIMeco (Pollution level by Macroindicators of the ecological status: oxygen, ammoniacal nitrogen, nitrate nitrogen, total phosphorus), STAR_ICMi (Standardisation of River Classification _ intercalibration Multimetric Index). Indices for lakes: ICF (Phytoplankton total index), LFI (Lake Fish Index), MTIspecies (Macrophytes Trophic Index species) /MacroIMMI (Macrophytes Italian MultiMetrics Index), LTLeCo (TSI - Trophic State Index: trophic level by Total phosphorus, transparency and dissolved oxygen) Indices for rivers: ICMi (Intercalibration Common Metric Index), IBMR (Macrophyte Biological Index for Rivers), ISECI, (Fish Community Ecological Status), LIMeco (Pollution level by Macroindicators of the ecological status: oxygen, ammoniacal nitrogen, nitrate nitrogen, total phosphorus), STAR_ICMi (Standardisation of River Classification _ intercalibration Multimetric Index). Indices for lakes: ICF (Phytoplankton total index), LFI (Lake Fish Index), MTIspecies (Macrophytes Trophic Index species) /MacroIMMI (Macrophytes Italian MultiMetrics Index), LTLeCo (TSI - Trophic State Index: trophic level by Total phosphorus, transparency and dissolved oxygen)</td>
</tr>
</tbody>
</table>
### A.2.3  Surface water bodies (rivers and lakes): chemical status

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To improve water quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Evaluation of the chemical status of surface water body</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Index</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>The Chemical Status Assessment has been defined at European level on the basis of a list of 33 + 8 hazardous or priority hazardous substances for which European Environmental Quality Standards (SQAs). The Chemical State may be Good / Not Good</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
</tbody>
</table>

### A.2.4  Good ecological status: surface water bodies (rivers and lakes)

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To achieve the EU “good ecological status” objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Percentage of surface water bodies in good ecological status</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate for each surface water bodies the ecological status, with regulatory reference to the WFD Directive 2000/60/CE (WFD),(Annex V of WFD); Verify the number of surface water bodies that reach at least &quot;good&quot; (which is the target of the directive). The percentage of surface water body area in good state (ecological status) shall be calculated as the area of surface water bodies (rivers and lakes) in at least good state (numerator) divided by the total area of surface water bodies (denominator). The result shall then be multiplied by 100 and expressed as a percentage.</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
</tbody>
</table>
### A.2.5 Groundwater: punctual chemical status

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To improve water quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Evaluation of the punctual chemical quality of groundwater as a groundwater body (GWB)</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Index</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitored data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Index assess the chemical quality of groundwater at the single point of monitoring. The Chemical Status is determined on the basis of Environmental Quality Standards (SQAs) for pesticides and nitrates defined at European level</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
</tbody>
</table>

### A.2.6 Groundwater: GWB chemical status

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To improve water quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Evaluation of the chemical quality of groundwater as a groundwater body (GWB)</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Index</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitored data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Monitoring ARPA Piemonte on groundwater bodies; The Chemical Status is not good when the percentage of area under the monitoring points was not good detailed chemical exceeds 20% of the total area of the GWB</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
</tbody>
</table>
### A.2.7 Good GWB chemical status: Groundwater

| Intent: | To achieve the EU “good chemical status” objective |
| Indicator: | Percentage of groundwater bodies in good chemical status |
| Unit of measure: | % |
| Information sources: | Calculated data |

**Assessment method:**
- Calculate for each groundwater bodies the chemical status, with regulatory reference to the WFD Directive 2000/60/CE (WFD), (Annex V of WFD) and Directive 2006/118/EC;
- Verify the number of groundwater bodies that reach "good" (which is the target of the directive);
- The percentage of groundwater body area in good state (chemical status) shall be calculated as the area of groundwater bodies in good state (numerator) divided by the total area of groundwater bodies (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

\[
\text{Percentage of GWB in good state} \left[ \% \right] = \frac{\text{Number of GWB in good state}}{\text{Total number of GWB}} \times 100
\]

**Territorial Scale:** All

**Standards or references:**

### A.2.8 Surface water quality: ecological status

| Intent: | To evaluate quality (biological, physico-chemical, hydromorphological) of watercourse that has good influence on life of different animal species |
| Indicator: | Ecological quality of watercourse |
| Unit of measure: | % |
| Information sources: | Monitored data |

**Assessment method:**
- Calculate the percentage of watercourses that meet the requirements for ecological good state

**Territorial Scale:** All

**Standards or references:**
- Slovenian Environmental Agency, National Water Quality monitoring
### A.2.9 Water quality in rivers

<table>
<thead>
<tr>
<th><strong>Intent:</strong></th>
<th>To assess the quality of water resource evaluating the biochemical oxygen demand in rivers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator:</strong></td>
<td>The mean annual five-day biochemical oxygen demand in rivers, as an average of all data from available measuring stations</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>milligrams of O2 per litre</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Measured data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Measure the amount of oxygen required by aerobic microorganisms to decompose organic matter in a water sample over a period of five days in the dark at 20 °C and is expressed as mg O2/L</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>UN global list of SDG indicators, EUROSTAT <a href="http://ec.europa.eu/eurostat/tgm/table.do?tab=table&amp;init=1&amp;plugin=1&amp;pcode=tsdnr330&amp;language=en">http://ec.europa.eu/eurostat/tgm/table.do?tab=table&amp;init=1&amp;plugin=1&amp;pcode=tsdnr330&amp;language=en</a>, EEA</td>
</tr>
</tbody>
</table>

### A3 NATURE AND BIODIVERSITY

#### A.3.1 Green Infrastructure

<table>
<thead>
<tr>
<th><strong>Intent:</strong></th>
<th>To tackle biodiversity loss, to increase ecosystem resilience to climate change, to preserve the ecosystem services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator:</strong></td>
<td>Percentage of Green Infrastructures Areas on the total territory</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Data banks, Measured data, GIS data</td>
</tr>
</tbody>
</table>
| **Assessment method:** | "Calculation of the following areas excluding overlapping defined in the corresponding criteria of Generic Framework:
- Woodland
- Areas of natural interest
- Any wetlands
- Habitat in Natura 2000
- Ecological network
- Green urban areas
- HNV Farming
Calculate the of percentage of Green urban areas over the total area

\[
\text{Percentage of green infrastructure} \left[\%\right] = \frac{\text{Green infrastructure area} \left[\text{m}^2\right]}{\text{Total area of the territory} \left[\text{m}^2\right]} \times 100
\]

| **Territorial Scale:** | All |
| **Standards or references:** | EEA Technical report No 18/2011Green infrastructure and territorial cohesion. The concept of green infrastructure and its integration into policies using monitoring systems https://www.eea.europa.eu/publications/green-infrastructure-and-territorial-cohesion Data banks provided by Regional Institution, Measured data, GIS data, Corine Land Cover, Land use/cover areas frame survey (LUCAS) |
### A.3.2 Woodland

**Intent:** To improve sustainable forestry  
**Indicator:** Percentage of the territory covered by managed forest areas  
**Unit of measure:** %  
**Information sources:** Monitored data provided by Regional Institution  
**Assessment method:** Verification of managed forest area (ha). Verification of total forest area (ha). Calculation of percentage of managed forest area as share of total forest area  
**Territorial Scale:** All  
**Standards or references:** Piedmont Region - Territorial Plans Forestry (PFT)  
http://www.systemapiemonte.it/cms/privati/territorio/servizi/526-systema-informativo-forestale-regionale

### A.3.3 Areas of natural interest

**Intent:** To improve biodiversity (concerning Sic, ZPS, national-regional-provincial protected areas)  
**Indicator:** Percentage between natural areas and geographical area  
**Unit of measure:** %  
**Information sources:** Data banks provided by Regional Institution  
**Assessment method:** Natural area calculation. Geographical area calculation. Percentage between natural area and geographical area  
**Territorial Scale:** All  
**Standards or references:** State of Environment Report and Environmental Indicators - ARPA Piemonte:  

### A.3.4 Any wetlands

**Intent:** To improve biodiversity  
**Indicator:** Density of protected wetlands/geographical area  
**Unit of measure:** n/m²; ha/ha  
**Information sources:** Data banks provided by Regional Institution  
**Assessment method:** Option 1: Calculate the number of wetlands in the geographical area  
Option 2: Calculate the wetlands area (ha) in a territorial area (ha)  
**Territorial Scale:** All  
**Standards or references:** State of Environment Report and Environmental Indicators - ARPA Piemonte:  
### A.3.5  Habitats in Natura 2000

**Intent:** To assess protected habitats  
**Indicator:** Protected habitats in Natura 2000  
**Unit of measure:** %  
**Information sources:** Calculated data  
**Assessment method:** Calculation of the ratio between protected habitats in Natura 2000 and the geographical area considered  
**Territorial Scale:** All  
**Standards or references:** Standard form of Natura 2000 sites

### A.3.6  Amphibian species

**Intent:** To protect and regenerate domestic amphibian species, and to maintain biodiversity  
**Indicator:** Domestic amphibian species types  
**Unit of measure:** Number  
**Information sources:** Statistic data on native amphibian species  
**Assessment method:** Verification of the number of native amphibian species types  
**Territorial Scale:** Small  
**Standards or references:** Department for the Environment, Government of Liechtenstein

### A.3.7  Fish species

**Intent:** To protect domestic fish species, and to maintain biodiversity  
**Indicator:** Domestic fish species  
**Unit of measure:** Number  
**Information sources:** Statistic data on domestic fish species  
**Assessment method:** Verification of the number of domestic fish species types  
**Territorial Scale:** Small  
**Standards or references:** Department for the Environment, Government of Liechtenstein

### A.3.8  Sustainable Forestry

**Intent:** To preserve the ecosystem  
**Indicator:** Forest land certified  
**Unit of measure:** %  
**Information sources:** Measured data  
**Assessment method:** Calculate the forest land certified over the total forest land  
**Territorial Scale:** All  
**Standards or references:** BMUB - Indikatorenbericht biologische Vielfalt 2014; PEFC, FSC and Naturland Certification, Nationwide Red Lists, Nature conservation associations
### A.3.9 Ecological network

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To restore ecological connectivity between protected areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Area dedicated to ecological network</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the area dedicated to ecological network compared to the area of the municipality. Ecological network is composed by priority areas for biodiversity, all national and regional parks, Natura 2000 sites, corridors, ecological passages, ganglia</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>SIMON – Systema Informativo Monitoraggio PGT - Monitoring Informatic System for Territorial Governance Plans of Lombardy Municipalities, Natura 2000 sites, municipal plan</td>
</tr>
</tbody>
</table>

### A.3.10 Endangered species

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To preserve the ecosystem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Selected groups of species in the Red List Categories</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the percentage of species of selected groups of species in the Red List Categories</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>BMUB - Indikatorenbericht biologische Vielfalt 2014; Nationwide Red Lists, Nature conservation associations</td>
</tr>
</tbody>
</table>

### A.3.11 Fragmentation of natural and semi-natural areas

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Evaluation of the fragmentation of natural/semi-natural lands, measuring the disintegration of the countryside (categories are forests, pasture, agricultural mosaics, semi-natural land, inland waters and wetlands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Spread of artificial and/or agricultural surfaces into previously 'core natural/semi-natural' landscapes</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data, GIS data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the quadratic mean between the mean values of the patch size of a given area between two dates</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>European Environment Agency Indicators, ISPRA database &quot;Corine Land Cover 2000&quot;</td>
</tr>
</tbody>
</table>
### A.3.12 Ecological diversity

| Intent: | To assess the structural consistency and vulnerability level, compared to the transformations induced by territorial landscape-planning processes, ensuring the richness of the types of landscape elements (habitats) that characterizes the environmental mosaic of each kind of landscape |
| Indicator: | Real diversity (H) of each type of landscape / maximum theoretical Diversity (Hmax), calculated using the Shannon formula |
| Unit of measure: | Adimensional Index |
| Information sources: | Forest map and data on land use |
| Assessment method: | Calculate the value of ecological diversity of each landscape (Shannon formula). Index, variable from 0 to 1 |
| Territorial Scale: | Large |
| Standards or references: | Territorial Landscape Plan - Piedmont Region: [http://www.regione.piemonte.it/territorio/pianifica/nuovo_ptr.htm](http://www.regione.piemonte.it/territorio/pianifica/nuovo_ptr.htm) |

### A.3.13 Distribution of woodland plant species

| Intent: | To preserve the biodiversity |
| Indicator: | Number of consistent species as a share of potential vegetation of a woodland area |
| Unit of measure: | % |
| Information sources: | Monitored data provided by Regional Institution |
| Assessment method: | Index target value |
| Territorial Scale: | All |
| Standards or references: | SIFOR sistema informativo forestale regionale [http://www.systemapiemonte.it/popalfa/indaginiPFT/indexCategoriaForestali.do](http://www.systemapiemonte.it/popalfa/indaginiPFT/indexCategoriaForestali.do) |

### A.3.14 Target species

| Intent: | To protect biodiversity |
| Indicator: | Ecological and relevant types (amphibians, lepidoptera, …) |
| Unit of measure: | Species number / territorial area * year |
| Information sources: | Monitored data by Regional Institution |
| Assessment method: | Calculate the number of species in the analysed area |
| Territorial Scale: | All |
| Standards or references: | Piedmont Region - Direttiva Habitat; EEA (European Environment Agency) Report - The IRENA indicator Report |
### A.3.15 Common bird index

**Intent:** To evaluate the agricultural ecosystems under particular pressure

**Indicator:** The population status (abundance and diversity) of all common birds in the EU

**Unit of measure:** % (year 1990 = 100)

**Information sources:** Monitored data

The source data used for this indicator are provided by the European Bird Census Council (EBCC) and its Pan-European Common Bird Monitoring Scheme (PECBMS) programme

**Assessment method:** Calculate the population abundance and the diversity of a selection of common bird species associated with specific habitats. Rare species are excluded. Three groups of bird species are represented: common farmland species, common forest species and all common bird species which include the farmland species, the forest species and a further common species (generalists, as opposed to the farmland and forest specialists)

**Territorial Scale:** All

**Standards or references:** European Commission, Eco-Innovation Observatory, UN global list of SDG indicators, EUROSTAT (online data code: tsdnr100) [http://ec.europa.eu/eurostat/tgm/table.do?tab=table&plugin=1&language=en&pcod=tsdnr100](http://ec.europa.eu/eurostat/tgm/table.do?tab=table&plugin=1&language=en&pcod=tsdnr100)

### A.3.16 HNV farming

**Intent:** To the preserve and enhancement of biodiversity, habitats and ecosystems dependent on agriculture and of traditional rural landscapes

**Indicator:** Percentage of Utilised Agricultural Area farmed to generate High Nature Value (HNV)

**Unit of measure:** %

**Information sources:** Measured data (EU data sets, agricultural census, species and habitat databases, GIS, specific sampling surveys, RDP monitoring data)

**Assessment method:** "Calculate (hectares) the HNV farmland areas (Type 1, Type 2, Type 3)  
Calculate (hectares) the total UAA (Utilised Agricultural Area)  
Calculate the percentage of HNV Farming over the total UAA Area"

**Territorial Scale:** Calculate (hectares) the total UAA (Utilised Agricultural Area)

The data sources for estimation of HNV farming are many and varied, and currently depend on the methods selected by the Member State authorities. Analysis relies principally on national/regional data, but also includes use of some EU data sets.

<table>
<thead>
<tr>
<th>A.3.17</th>
<th>Degree of implementation of the ecological network</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>To restore ecological connectivity between protected areas</td>
</tr>
<tr>
<td>Indicator:</td>
<td>Degree of implementation of the ecological network</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data on Regional data bank</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Not yet available. This indicator is still under development. It will measure connectivity with respect to obstacles from patches built on the land use map (for target species Directives - not Birds D.).</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Direzione Commissioni Valutazioni - UO Commissioni VAS VINCA NUVV</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A.3.18</th>
<th>Distribution of wood species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>Value biodiversity of woods and resilient biotopes</td>
</tr>
<tr>
<td>Indicator:</td>
<td>Density of softwood species in relation to the forest area</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>number / km²</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Local land and water administration</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculation of the average number of species on the over whole forest area, then divided by the total area of the region</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td></td>
</tr>
<tr>
<td>Standards or references:</td>
<td>-</td>
</tr>
</tbody>
</table>
### A4 LANDSCAPE

#### A.4.1 Panoramic roads and historical paths

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To valorise and protect cultural and natural heritage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Presence of panoramic roads and historical paths</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>km; km/ha; km/geographical area</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Information data of Landscape Regional Plan</td>
</tr>
</tbody>
</table>
| Assessment method: | Option 1: Calculate the length of panoramic roads and historical paths  
Option 2: Calculate the ratio between the length of panoramic roads and historical paths on the territory  
Option 3: Calculate the ratio between the length of panoramic roads and historical paths on the geographical area |
| Territorial Scale: | All |
| Standards or references: | Geoportal of Lombardy Region |

#### A.4.2 Panoramic and scenic view points

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To valorise and protect cultural and natural heritage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Presence of panoramic and scenic view points</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>number; number/ha; number/geographical area</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Information data of Landscape Regional Plan</td>
</tr>
</tbody>
</table>
| Assessment method: | Option 1: Calculate the number of panoramic and scenic view points  
Option 2: Calculate the ratio between the number of panoramic and scenic view points on the territory  
Option 3: Calculate the ratio between the number of panoramic and scenic view points on the geographical area |
| Territorial Scale: | All |
| Standards or references: | Geoportal of Lombardy Region |

#### A.4.3 Areas available for construction

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Share of areas available for construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Areas available for construction on total territory</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistical data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the area available for construction on total territory</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Slovenian Environmental Agency, CLC (CORINE Land Cover), Ministry of environment and spatial planning, Municipality data, MKO, Register of agricultural and forest land</td>
</tr>
</tbody>
</table>
### A.4.4 UNESCO Sites

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To valorise and protect cultural and natural heritage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Presence of Unesco sites</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of UNESCO sites on the territory</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>UNESCO, Geoportal of Lombardy Region, Landscape Regional Plan</td>
</tr>
</tbody>
</table>

### A.4.5 Geosites

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To valorise and protect cultural and natural heritage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Presence of geosites</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of geosites on the territory</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Geoportal of Lombardy Region, Landscape Regional Plan</td>
</tr>
</tbody>
</table>

### A.4.6 Protected cultural heritage

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To valorise and protect cultural and natural heritage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Percentage of protected cultural goods</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Data banks</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>The percentage of protected cultural goods in good state shall be calculated as the number of protected cultural goods in good state (numerator) divided by the total number of protected cultural goods (denominator). The result shall be multiplied by 100 and expressed as a percentage. $\frac{\text{Number of protected cultural goods in good state}}{\text{Total number of protected cultural goods}} \times 100$</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Geoportal of Lombardy Region, Ministry of cultural goods data banks</td>
</tr>
</tbody>
</table>
### A.4.7 Protected Landscape heritage

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To valorize and protect natural areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Percentage of protected landscape</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Data banks, Calculation</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>The percentage of protected landscape area that is good state shall be calculated as the area of landscapes protected by national, regional legislation, protection instruments deriving from territorial and urban planning and landscape under special planning control that is good state (numerator) divided by the total area of protected landscape (denominator). The result shall be multiplied by 100 and expressed as a percentage.</td>
</tr>
</tbody>
</table>
    
\[
\frac{\text{Area of protected landscapes in good state [km}^2\text{]}}{\text{Area of protected landscapes [km}^2\text{]}} \times 100
\]
| Territorial Scale: | All |

### A.4.8 Protected Natural heritage

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To valorize and protect natural areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Percentage of protected natural areas</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Data banks, Calculation</td>
</tr>
</tbody>
</table>
| Assessment method: | Calculate the total area of protected natural areas on the territory, without overlapping, taking in account all the types of instruments of natural goods protection which at various institutional levels addressed to natural areas:  
- National Parks  
- Regional and interregional natural parks  
- Natural reserves  
- Special protection zones  
- Special storage areas  
- Wetlands of international interest  
- Other protected natural areas  
- Terrestrial and Marine Reconnaissance Areas  
Calculate the percentage surface of protected natural areas compared to the territorial area. |
| Territorial Scale: | All |
| Standards or references: | Italian Ministry of Environment - Natural Protected Areas National FrameworkLaw  
http://www.minambiente.it/pagina/classificazione-delle-aree-naturali-protette |
### A.4.9 Traditional agriculture elements

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To preserve the rural areas' landscape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Density of the natural and anthropogenic signs such as characteristic structures, terraces, rows, etc. of the agricultural mosaic in relation to the agricultural area</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>number/ha; m/ha</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Data Bank (GIS) provided by Local and Regional Institutions</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Option 1: Verification of the number (n) of rural elements. Verification of territorial area - UAA (useful agricultural area) - (ha). Calculation of the ratio between the number of elements and the territorial area (n/ha). Option 2: Verification of length in meter (m) of rural elements. Verification of territorial area - UAA (useful agricultural area) - (ha). Calculation of the ratio between meter (m) of rural elements and the territorial area - UAA (useful agricultural area) - (ha) (m/ha).</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small</td>
</tr>
</tbody>
</table>

### A.4.10 Index of landscape visibility

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To preserve the landscape quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Density of routes and panoramic view point enjoyed by public</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>n/ha; m/ha</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Data Bank (GIS) provided by Local and Regional Institutions</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Option 1 Verification of the number (n) of panoramic view point. Verification of territorial area (ha). Calculation of the ratio between the number of panoramic view point and the territorial area (n/ha) Option 2 Verification of meter (m) of panoramic routes. Verification of territorial area (ha). Calculation of the ratio between meter (m) of panoramic routes and the territorial area (m/ha).</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Charter of visual sensitivity at the regional level, from the viewpoint surveyed in the Regional Landscape Plan and a visual depth of 5 km. <a href="http://relazione.ambiente.piemonte.gov.it/2016/it/territorio/statopaesaggio">http://relazione.ambiente.piemonte.gov.it/2016/it/territorio/statopaesaggio</a></td>
</tr>
</tbody>
</table>
### A.4.11 Landscape perception variation

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Evaluate the impact of Regional Landscape Plan on different values that contribute to the complex evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Quality value of landscape perception</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Quality value</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data, Data banks</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Derived data</td>
</tr>
<tr>
<td>Quality value:</td>
<td>Low, medium, high (prevalence of negative transformations, prevalence of unchanged situations, prevalence of positive transformations)</td>
</tr>
<tr>
<td>Comparison between subsequent observations from 50 viewpoints evenly distributed on the regional territory</td>
<td></td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Territorial Landscape Plan - Piedmont Region: <a href="http://www.regione.piemonte.it/territorio/paesaggio/">http://www.regione.piemonte.it/territorio/paesaggio/</a></td>
</tr>
</tbody>
</table>

### A.4.12 Landscape heritage conservation status

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Calculate the integrity of the protection instruments value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Quality value</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Quality value</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data, Data banks</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Derivated data</td>
</tr>
<tr>
<td>Quality value:</td>
<td>Low, medium -low, medium, medium-high, high</td>
</tr>
<tr>
<td>The evaluation is carried out by verifying the permanence of the values identified in the protection decree and the compromise factors that occurred after the date of the decree</td>
<td></td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Territorial Landscape Plan - Piedmont Region: <a href="http://www.regione.piemonte.it/territorio/paesaggio/">http://www.regione.piemonte.it/territorio/paesaggio/</a> Ministerial Decrees and Declarations of outstanding public interest- MIBACT database</td>
</tr>
<tr>
<td>A.4.13</td>
<td>Protected cultural goods in good conservation status</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td><strong>Intent:</strong></td>
<td>To improve the integrity of the protected cultural goods</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Percentage of protected cultural goods in good conservation status with respect to the total number</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Statistic data, Data banks</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Calculate the number of protected goods (immovable properties) on the territory, taking into account all the types of instruments of cultural goods protection which at various institutional levels addressed to the goods: singular protected goods for artistic, architectural, monumental, historical and traditional interest, and for archaeological relevance. Calculate the number of cultural goods in good conservation status: assessment method qualitative, by comparing the real status with that resulting from the instruments of cultural goods protection: Quality value: Low, medium -low, medium, medium-high, high Good conservation status = medium, medium-high, high Calculate the percentage of protected cultural goods in good conservation status compared to the total number of protected cultural goods.</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Territorial Landscape Plan - Piedmont Region: <a href="http://www.regione.piemonte.it/territorio/paesaggio/">http://www.regione.piemonte.it/territorio/paesaggio/</a> Ministerial Decrees and Declarations of outstanding public interest- MIBACT database</td>
</tr>
</tbody>
</table>
### Landscape heritage in good conservation status

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To improve the integrity of the protected landscape heritage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Percentage of protected landscape heritage in good conservation status with respect to the total landscape protected areas</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data, Data banks</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the total area of protected landscape on the territory, without overlapping, taking into account all the types of instruments of landscape goods protection which at various institutional levels addressed to landscape: landscape areas protected for their historical, archaeological, traditional, rural, naturalistic and aesthetic/visual importance, including historical centres and settlements, archaeological areas, Unesco Sites and Unesco Biosphere Reserves. Calculate the areas in good conservation status: assessment method qualitative, by comparing the real status with that resulting from the instruments of landscape protection: Quality value: Low, medium-low, medium, medium-high, high Good conservation status = medium, medium-high, high Calculate the percentage surface of protected landscape areas in good conservation status compared to the total protected landscape areas.</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>&quot;Territorial Landscape Plan - Piedmont Region: <a href="http://www.regione.piemonte.it/territorio/paesaggio/">http://www.regione.piemonte.it/territorio/paesaggio/</a> Ministerial Decrees and Declarations of outstanding public interest- MIBACT database Managing associations or bodies of landscape areas &quot;</td>
</tr>
</tbody>
</table>
### A.4.15 Natural heritage in good conservation status

<table>
<thead>
<tr>
<th><strong>Intent:</strong></th>
<th>To improve the integrity of the protected natural heritage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>Percentage of protected natural heritage in good conservation status with respect to the total natural protected areas</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Statistic data, Data banks</td>
</tr>
</tbody>
</table>
| **Assessment method:** | Calculate the total area of protected natural areas on the territory, without overlapping, taking in account all the types of instruments of natural goods protection which at various institutional levels addressed to natural areas:  
- National Parks  
- Regional and interregional natural parks  
- Natural reserves  
- Special protection zones  
- Special storage areas  
- Wetlands of international interest  
- Other protected natural areas  
- Terrestrial and Marine Reconnaissance Areas  
Calculate the areas in good conservation status: assessment method qualitative, by comparing the real status with that resulting from the instruments of natural areas protection: Quality value: Low, medium -low, medium, medium-high, high, referred to the protected natural heritage as defined in A4.9 Good conservation status = medium, medium-high, high  
Calculate the percentage surface of protected natural areas in good conservation status compared to the total protected areas. |
| **Territorial Scale:** | All |
| **Standards or references:** | Territorial Landscape Plan - Piedmont Region: http://www.regione.piemonte.it/territorio/paesaggio/  
Ministerial Decrees and Declarations of outstanding public interest- MIBACT database  
Managing associations or bodies of Natural areas |
### A.4.16 Protected Cultural heritage in use or accessible

| Intent: | To valorize and protect cultural heritage. Thus the intent will be to assess the use (private or public) of the assets (which guarantees its conservation). |
| Indicator: | Level of used / accessible cultural heritage (Cultural heritage not abandoned) |
| Unit of measure: | % |
| Information sources: | Calculated data - Territorial information system of the municipality |
| Assessment method: | Percentage of the municipal area on which historical and cultural assets are currently used or accessible (prerequisite for their conservation) on the total municipal area occupied by cultural heritage assets |
| Territorial Scale: | All |
| Standards or references: | Territorial information system of the municipality |

### A.4.17 Protected Landscape heritage managed

| Intent: | To valorize and protect landscape heritage through management and accessibility that guarantees a good state of conservation |
| Indicator: | Percentage of Protected Landscape heritage managed |
| Unit of measure: | % |
| Information sources: | Calculated data - Municipality (regional, provincial) data banks |
| Assessment method: | Calculate the percentage of surface of protected landscape heritage managed on total surface of protected landscape heritage of the territory. "Managed" include initiatives for restauration, maintenance, valorization etc. |
| Territorial Scale: | All |
| Standards or references: | Municipality (regional, provincial) data banks |
### A.5 WASTE

#### A.5.1 Urban solid waste production (not separated)

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce the waste production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Annual total amount of waste</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Kg/inhabitant year; tons/year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Option 1</td>
</tr>
<tr>
<td></td>
<td>Verification of total amount of waste (kg) (mixed municipal waste + separate collection of waste + other waste) in a year in a territory. Verification of the number of inhabitants living in the territory. Calculation of the ratio between total amount of waste in a year and the number of inhabitants.</td>
</tr>
<tr>
<td></td>
<td>Option 2</td>
</tr>
<tr>
<td></td>
<td>Verification of total amount of waste (ton) in a year in a territory (tons/year)</td>
</tr>
</tbody>
</table>

**Territorial Scale:** All  
**Standards or references:** EUROSTAT, Regional Environment Protection Agency (ARPA Piemonte) - State of Environment Report and environmental indicators, Legal framework (ITA- EU): DLgs 152/06, DLgs 205/10 (implementation of the Directive 2008/98/EC)

#### A.5.2 Separate collection of waste

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To incentive the separate collection of waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Separate waste collection</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Kg/inhabitant year; %</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Option 1</td>
</tr>
<tr>
<td></td>
<td>Verification of total amount of separate waste collection (kg) in a year in a territory. Verification of the number of inhabitants living in the territory. Calculation of the ratio between total amount of separate waste collection in a year and the number of inhabitants (Kg/inhabitant year). Check the achievement of the separate waste collection objectives by legal framework.</td>
</tr>
<tr>
<td></td>
<td>Option 2</td>
</tr>
<tr>
<td></td>
<td>Verification of total amount of separate waste collection (ton) in a year in a territory (tons/year). Verification of total amount of waste (ton) in a year in a territory. Calculation of the percentage of total amount of separate waste collection in a year in relationship to of total amount of waste (ton) in a year in a territory. Check the achievement of the separate waste collection objectives by legal framework</td>
</tr>
</tbody>
</table>

**Territorial Scale:** All  
**Standards or references:** [https://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/pressioni-ambientali/rifiuti_raccolta-differenziata](https://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/pressioni-ambientali/rifiuti_raccolta-differenziata)
### A.5.3 Special waste management

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To incentive waste recycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Total amount of special waste recycled or reused in a year (recovered waste, incinerated waste, special waste in landfill, special waste with other treatment) into the regional territory</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>kTons/year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitored data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Verification of total amount of recovered waste in a year. Verification of the total amount of incinerated waste in a year. Verification of the total amount of special waste in landfill in a year. Verification of the total amount of special waste with other treatment in a year. Calculation of the total amount of special waste</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td><a href="https://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/presioni-ambientali/rifiuti_gestione-rifiuti-speciali">https://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/presioni-ambientali/rifiuti_gestione-rifiuti-speciali</a></td>
</tr>
</tbody>
</table>

### A.5.4 Production of special waste (not dangerous)

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To minimize special waste production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Amount of special waste per inhabitant, not dangerous (old appliances, from commercial activities, construction and demolition waste etc.) in a territory</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Ktons/year; tons/inhabitant year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitored data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Option 1 Verification of total amount of special not dangerous waste in a year (Ktons/year) Option 2 Verification of total amount of special not dangerous waste in a year (ton). Verification of the number of inhabitants living in the territory. Calculation of the ratio between total amount of special not dangerous waste in a year and the number of inhabitants (ton/inhabitant year)</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td><a href="https://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/presioni-ambientali/rifiuti_produzione-rifiuti-speciali-non-pericolosi">https://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/presioni-ambientali/rifiuti_produzione-rifiuti-speciali-non-pericolosi</a></td>
</tr>
</tbody>
</table>
### A.5.5 Production of special waste (dangerous)

**Intent:** To minimize waste production

**Indicator:** Amount of special waste per inhabitant, dangerous (i.e. batteries)

**Unit of measure:** Ktons/year; tons/inhabitant year

**Information sources:** Monitored data

**Assessment method:**
- **Option 1**
  - Verification of total amount of special dangerous waste in a year (Ktons/year).
- **Option 2**
  - Verification of total amount of special dangerous waste in a year (ton). Verification of the number of inhabitants living in the territory. Calculation of the ratio between total amount of special dangerous waste in a year and the number of inhabitants (ton/inhabitant year).

**Territorial Scale:** All

**Standards or references:** [https://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/pressioni-ambientali/rifiuti_produzione-rifiuti-speciali-pericolosi](https://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/pressioni-ambientali/rifiuti_produzione-rifiuti-speciali-pericolosi)

### A.5.6 Recycled share of produced waste

**Intent:** To increase the separated collection of waste

**Indicator:** Recycling rate

**Unit of measure:** %

**Information sources:** Measured data

**Assessment method:**
- The recycled share of produced solid waste shall be calculated as the amount of recycled solid waste in tons (numerator) divided by the total amount of solid waste produced in the territory in tons (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

**Territorial Scale:** All

**Standards or references:** ISO 37120:2014-05: Sustainable development of communities – Indicators for city services and quality of life (2014-05)

### A.5.7 Tourism impact on waste

**Intent:** Identify the contribution of the tourism sector to the production of municipal waste

**Indicator:** Tourism impact on waste

**Unit of measure:** %

**Information sources:** Measured data

**Assessment method:** Calculate the kg production of waste per inhabitant per year

**Territorial Scale:** All

**Standards or references:** United Nations Environment Programme (UNEP)
### A6.1 Nitrogen concentration in groundwater

| Intent: | To minimise nitrate content in groundwater |
| Indicator: | Annual mean values of nitrate concentration at several selected sites or nitrate concentration in groundwater |
| Unit of measure: | mg/l |
| Information sources: | Calculated data |
| Assessment method: | Measuring the annual maximum value of nitrate concentration at selected sites, then calculating the annual mean value overall based on these measurements |
| Territorial Scale: | Small / All |
| Standards or references: | Department for the Environment, Government of Liechtenstein, data provided by Arpa Piemonte |

### A6.2 Phytosanitary vulnerability

| Intent: | To minimise water pollution |
| Indicator: | Phytosanitary concentration in surface aquifer and groundwater |
| Unit of measure: | µg/L |
| Information sources: | Monitored data |
| Assessment method: | Monitoring procedure to verifying that the Phytosanitary concentration is below the value (Average annual value <1µg/L for each active substances; Average annual value for total phytosanitary <0,5 µg/L |
| Territorial Scale: | All |
### A7 | CONTAMINATED LAND

#### A.7.1 Decontaminated sites

| Intent: | To reduce the contamination of soil |
| Indicator: | Decontaminated sites over the total contaminated area |
| Unit of measure: | % |
| Information sources: | Monitored data |
| Assessment method: | Calculate the ratio between the surface of decontaminated sites and the total contaminated area |
| Territorial Scale: | All |
| Standards or references: | Geoportal of Lombardy Region |

#### A.7.2 Density of contaminated sites

| Intent: | To reduce the contamination of soil |
| Indicator: | Number of contaminated sites with regards to the territory |
| Unit of measure: | n/1.000 Km²; % |
| Information sources: | Data Banks |
| Assessment method: | Option 1: Verification of the number of contaminated sites. Calculation of the ratio between number of contaminated sites and the territorial area (n/1.000 Km²) Option 2: Verification of the total extension of contaminated sites. Calculation of the percentage of extension of contaminated sites in relationship to the territorial area (%) |
| Territorial Scale: | Large |
## A.7.3 Contaminated land with regards to inhabitants

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce the contamination of soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of contaminated sites with regards inhabitants</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>n/10.000 inhabitants; m²/inhabitants</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Data Banks</td>
</tr>
</tbody>
</table>
| Assessment method: | Option 1
Verification of the number of contaminated sites. Verification of the number of inhabitants living in the territory. Calculation of the ratio between number of contaminated sites and each 10,000 inhabitants.
Option 2
Verification of the total extension of contaminated sites. Verification of the number of inhabitants living in the territory. Calculation of the ratio between the total extension of contaminated sites and the number of inhabitants living in the territory (n/inhabitant) |
| Territorial Scale: | All                                                                      |
| Standards or references: | https://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/pressioni-ambientali/siti-contaminati_siti-rispetto-alla-popolazione-e-alla-superficie |

## A8 EMISSIONS

### A.8.1 Greenhouse gas emissions

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce the emissions of greenhouse gases in total man-made emissions contributing to global warming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Annual CO₂-equivalent emissions (CO₂, N₂O, CH₄, HFCs, PFCs, NF₃, SF₆)</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>t CO₂ equivalent/inh.*a</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>The greenhouse gas emissions per capita shall be calculated as the total amount of greenhouse gases in tons (t CO₂-equivalent units) generated over the calendar year within the region (numerator) divided by the territory’s total population (denominator). The result shall be expressed as the total greenhouse gas emissions per capita in t CO₂ equivalent/inh.*a.</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>UN global list of SDG indicators, EUROSTAT <a href="http://ec.europa.eu/eurostat/tgm/table.do?tab=table&amp;init=1&amp;plugin=1&amp;pcodet=2020_30&amp;language=en">http://ec.europa.eu/eurostat/tgm/table.do?tab=table&amp;init=1&amp;plugin=1&amp;pcodet=2020_30&amp;language=en</a>. The source data is provided by the European Environment Agency (EEA). It is based on the EU’s annual GHG inventory reports to the United Nations Framework Convention on Climate Change (UNFCCC)</td>
</tr>
</tbody>
</table>
### A.8.2 GHG emission from energetic processes: mobility

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To minimize the amount of CO2-equivalent emissions from all energy used for mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Annual CO2-equivalent emissions (CO2, N2O, CH4)</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Tons/year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Estimated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Model and simulation to estimate the emissions of various pollutants at municipal, provincial and regional level for different types of activities. The classification used is the one adopted in the framework of inventories EMEP - CORINAIR</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Piedmont Region-Regional inventory of emissions into the atmosphere: <a href="http://www.systemapiemonte.it/fedwinemar/elenco.jsp">http://www.systemapiemonte.it/fedwinemar/elenco.jsp</a></td>
</tr>
</tbody>
</table>

### A.8.3 GHG emission from energetic processes: tertiary sector

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To minimize the amount of CO2-equivalent emissions from all energy used in the tertiary sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Annual CO2-equivalent emissions (CO2, N2O, CH4)</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Tons/year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Estimated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Model and simulation to estimate the emissions of various pollutants at municipal, provincial and regional level for different types of activities. The classification used is the one adopted in the framework of inventories EMEP - CORINAIR</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Piedmont Region-Regional inventory of emissions into the atmosphere: <a href="http://www.systemapiemonte.it/fedwinemar/elenco.jsp">http://www.systemapiemonte.it/fedwinemar/elenco.jsp</a></td>
</tr>
</tbody>
</table>

### A.8.4 GHG emission from energetic processes: residential sector

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To minimize the amount of CO2-equivalent emissions from all energy used in the residential sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Annual CO2-equivalent emissions (CO2, N2O, CH4)</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Tons/year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Estimated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Model and simulation to estimate the emissions of various pollutants at municipal, provincial and regional level for different types of activities. The classification used is the one adopted in the framework of inventories EMEP - CORINAIR</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Piedmont Region-Regional inventory of emissions into the atmosphere: <a href="http://www.systemapiemonte.it/fedwinemar/elenco.jsp">http://www.systemapiemonte.it/fedwinemar/elenco.jsp</a></td>
</tr>
</tbody>
</table>
### A.8.5 GHG emission from energetic processes: industrial sector

| Intent: | To minimize the amount of CO2-equivalent emissions from all energy used in the industrial sector |
| Indicator: | Annual CO2-equivalent emissions (CO2, N2O, CH4) |
| Unit of measure: | Tons/year |
| Information sources: | Estimated data |
| Assessment method: | Model and simulation to estimate the emissions of various pollutants at municipal, provincial and regional level for different types of activities. The classification used is the one adopted in the framework of inventories EMEP - CORINAIR |
| Territorial Scale: | All |
| Standards or references: | Piedmont Region-Regional inventory of emissions into the atmosphere: http://www.systemapiemonte.it/fedwinemar/elenco.jsp |

### A.8.6 GHG emission from energetic processes: agricultural sector

| Intent: | To minimize the amount of CO2-equivalent emissions from all energy used in the agricultural sector |
| Indicator: | Annual CO2-equivalent emissions (CO2, N2O, CH4) |
| Unit of measure: | Tons/year |
| Information sources: | Estimated data |
| Assessment method: | Model and simulation to estimate the emissions of various pollutants at municipal, provincial and regional level for different types of activities. The classification used is the one adopted in the framework of inventories EMEP - CORINAIR |
| Territorial Scale: | All |
| Standards or references: | Piedmont Region-Regional inventory of emissions into the atmosphere: http://www.systemapiemonte.it/fedwinemar/elenco.jsp |

### A.8.7 Emissions of ozone-depleting substances during facility operations

| Intent: | To minimize Ozone Depletion from leakage of CFC-11 equivalent |
| Indicator: | CFC-11 equivalent, in gm per m² per yr |
| Unit of measure: | gm / m² per yr |
| Information sources: | Contract documents and equipment specifications |
| Assessment method: | Evaluate the predicted emission of CFC-11 equivalent, based on the amount and type of refrigerants in the building, in gm per year |
| Territorial Scale: | All |
| Standards or references: | SBTTool iiSBE International |
### A.8.8 Emissions of acidifying emissions during facility operations

| Intent: | To minimize the production of atmospheric emissions from building operations that may result in acidification |
| Indicator: | SO2 Equiv. per year in kg. per unit net area |
| Unit of measure: | Kg. / m² per yr |
| Information sources: | Contract documents and equipment specifications, or EPD |
| Assessment method: | Evaluate SO2 equivalent per year in kg. per unit net area |
| Territorial Scale: | All |
| Standards or references: | SBTool iiSBE International |

### A.8.9 Emissions leading to photo-oxidants during facility operations

| Intent: | To minimize the production of atmospheric emissions from building operations that may result in photo-oxidants |
| Indicator: | Ethene equivalent per year in gm per net unit area |
| Unit of measure: | gm./m² per yr |
| Information sources: | Contract documents and equipment specifications, or EPD |
| Assessment method: | Evaluate ethene equivalent per year in gm per net unit area |
| Territorial Scale: | All |
| Standards or references: | SBTool iiSBE International |

### A.8.10 GHG emission from energetic processes: waste

| Intent: | "To minimize the amount of CO2-equivalent emissions from all energy used in the waste processing sector" |
| Indicator: | Annual CO2-equivalent emissions (CO2, N2o, CH4) |
| Unit of measure: | CO2 equivalent (kt)/year |
| Information sources: | Estimated data |
| Assessment method: | Calculate the annual CO2-equivalent emissions from four source categories: solid waste disposal; biological treatment of solid waste; incineration and open burning of waste; and wastewater treatment and discharge |
| Territorial Scale: | All |
| Standards or references: | Technical standards in the waste sector of Liechtenstein correspond to Swiss standards. Switzerland’s country specific methodology and/or emission factors are usually adopted. Wherever available, country specific data have been used, e.g. activity data for unmanaged waste disposal sites or for the estimation of CH4 from wastewater treatment. Source: Liechtenstein’s Greenhouse Gas Inventory |
### A.8.11 Residual CO2 Compensation capacity by bio-sequestration

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To implement climate mitigation strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Residual CO2 compensation capacity through bio-sequestration, by comparing the CO2 storage capacity with the local emission scenario</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data: Corine landcover, INEMAR</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>&quot;Calculate the CO2-Sequestration potential as the sum of products</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>of area and carbon sequestration ratio for the different land types including area covered with cropland, permanent grassland, forestry, vineyard, orchard and wetland.</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>$\Sigma \text{Areai [ha]} \times \text{Carbon sequestration ratio [teqCO2/ha]}$</td>
</tr>
</tbody>
</table>
## A9 QUALITY OF AIR

### A.9.1 Exposure to air pollution

| Intent: | Ensure that the annual average concentration of the particulate in the atmosphere (microscopic particles having a diameter less than 10 mm) is within the limit value for human health |
| Indicator: | Counting of the daily limit of PM10 exceedances |
| Unit of measure: | d |
| Information sources: | Monitoring plan |
| Assessment method: | The exposure to air pollution shall be represented by the number of days, which have exceeded the daily limit of Particulate Matter (PM10) concentration throughout one year. |
| Territorial Scale: | All |

### A.9.1 bis Exposure to air pollution

| Intent: | Ensure that the annual average concentration of the particulate in the atmosphere (microscopic particles having a diameter less than 10 mm) is within the limit value for human health |
| Indicator: | Counting of the daily limit of PM10 exceedances |
| Unit of measure: | Number |
| Information sources: | http://www.arpa.veneto.it/arpavinforma/indicatori-ambientali/indicatori_ambientali/atmosfera/qualita-dellaria/livelli-di-concentrazione-di-polveri-fini-pm10/view |
| Assessment method: | ARPAV - number of exceedances of the daily Limit Value (VL) in the year per station (50 μg / m3 not to be exceeded more than 35 times / year, equal to 0.10), normalized with respect to the number of days of detection / year |
| Territorial Scale: | All |
| Standards or references: | ARPAV - Regional Agency for the prevention and environmental protection of the Veneto region |

### A.9.2 Air quality - Concentration of PM2.5

| Intent: | Respecting law limits of pollutant concentration - PM2.5 |
| Indicator: | Annual average concentration |
| Unit of measure: | μg/m3 |
| Information sources: | Measured data |
| Assessment method: | Consider annual average concentration statistic based on the data measured by the nearest detection unit to the territory (law limits for PM2.5: max 25 μg/m3 as annual average) |
| Territorial Scale: | All |
| Standards or references: | ARPA - Regional Agency for environment protection, INEMAR - INventario EMissioni Aria, Regional Environmental Agencies |
### A.9.3 Air quality - Concentration of O3

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Respecting law limits of pollutant concentration - O3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Days of exceedances of law limits for O3 - target value for human health</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Consider the number of days of exceedances of law limits for O3, statistic based on the data measured by the nearest detection unit to the territory (120 μg/m³ as 8 hours average, max 25 times for year)</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>ARPA - Regional Agency for environment protection, INEMAR - INventario EMissioni Aria, Regional Environmental Agencies</td>
</tr>
</tbody>
</table>

### A.9.4 Air quality - Concentration of Benzo(a)pyren B(a)P

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Respecting law limits of pollutant concentration - B(a)P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Annual average concentration B(a)P</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>ng/m³</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the annual average concentration of B(a)P, statistic based on the data measured by the nearest detection unit to the territory (law limits for B(a)P: max 1 ng/m³ as annual average)</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>ARPA - Regional Agency for environment protection, INEMAR - INventario EMissioni Aria, Regional Environmental Agencies</td>
</tr>
</tbody>
</table>

### A.9.5 Asbestos roofing

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Reducing risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Surface of asbestos roofing</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>m²; m²/km²</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Option 1: Calculate the surface of asbestos roofing Option 2: Calculate the surface of asbestos roofing in the area</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>ARPA LOMBARDY - Regional Agency for environment protection, Regional Environmental Agencies</td>
</tr>
</tbody>
</table>
### A.9.6 Asbestos concentration in the outdoor air

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To protect inhabitant’s health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Concentration of fibers in the air</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number / liter</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>The indicator evaluates the presence of asbestos fibers in the collected air sample. The amount of aerodispersed fiber is measured by correlating the number of fibers to the volume of air sampled. The fibers are counted in the laboratory in electronic microscopy because it is the only technique capable of recognizing asbestos from other fibers and distinguishing the type of asbestos on the membrane</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td><a href="https://www.arpa.piemonte.gov.it/reporting/indicatori_on_line/pressioni-ambientali/amianto_concentrazione-di-fibre-aerodisperse">https://www.arpa.piemonte.gov.it/reporting/indicatori_on_line/pressioni-ambientali/amianto_concentrazione-di-fibre-aerodisperse</a></td>
</tr>
</tbody>
</table>

### A.9.7 Exposure to air pollution

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Evaluate the concentration of the particulate in the atmosphere</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Urban population exposure to air pollution by particulate matter</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>µg/m³</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the concentration of PM10 and PM2.5</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>UN global list of SDG indicators, EUROSTAT <a href="http://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&amp;plugin=1&amp;pcode=tsdph370&amp;language=en">http://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&amp;plugin=1&amp;pcode=tsdph370&amp;language=en</a>, the data is updated annually by the European Environment Agency (EEA) assisted by the Topic Centre on Air Pollution and Climate Change Mitigation (ETC/ACM)</td>
</tr>
</tbody>
</table>
### A.10 Exposure to Non Ionising Radiation

#### A.10.1 Exposure to ELF Electromagnetic emissions

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To minimize the exposition of inhabitants to ELF magnetic fields</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Extension of high voltage electric lines</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Km/Km²</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Verification of high voltage electric lines length (km). Verification of area (km²). Calculation of the ratio between length (km) and area (km²)</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
</tbody>
</table>

#### A.10.2 Exposure to RF-MV Electromagnetic emissions

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To minimize the exposition of inhabitants to high frequency electromagnetic fields</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Density of telecommunications installations</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>number/Km²</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Verification of telecommunications installations number (n). Verification of area (km²). Calculation of the ratio between number (n) and area (km²)</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td><a href="https://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/pressioni-ambientali/radiazioni-non-ionizzanti_densita-impianti-telecomunicazione">https://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/pressioni-ambientali/radiazioni-non-ionizzanti_densita-impianti-telecomunicazione</a></td>
</tr>
</tbody>
</table>
## A11 Exposition to Ionising Radiation

### A.11.1 Indoor exposure to Radon

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce the exposition to ionising radiation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Radon (Rn-222) concentration in the indoor air</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Becquerel / m³</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitoring data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Monitoring network</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>State of Environment Report and Environmental Indicators - ARPA Piemonte monitoring data</td>
</tr>
</tbody>
</table>

### A.11.2 Cesium 137 concentration

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce the exposition to ionising radiation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Concentration of Cesium 137 in the environment</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Becquerel / m² (Bq/m²)</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Ratio between a Cesium concentration (Bq) in a square metre (m²) of soil</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small</td>
</tr>
<tr>
<td>Standards or references:</td>
<td><a href="https://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/pressioni-ambientali/radiazioni-ionizzanti-_reti-monitoraggio-concentrazione-attivita-cesio137-in-matrici-ambientali">https://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/pressioni-ambientali/radiazioni-ionizzanti-_reti-monitoraggio-concentrazione-attivita-cesio137-in-matrici-ambientali</a></td>
</tr>
</tbody>
</table>
**A.12 EXPOSURE TO NOISE**

### A.12.1 Exposure of households to noise

**Intent:** To reduce the exposure of settlements to noise caused by traffic, industry or agriculture

**Indicator:** Share of exposed households over the total households

**Unit of measure:** %

**Information sources:** Public statistics, Measurements

**Assessment method:** The percentage of exposed residential area shall be calculated by mapping the noise level $L_{den}$ (day-evening-night) likely to cause annoyance as given in ISO 1996-2:1987, identifying the areas of the region where $L_{den}$ is greater than 55 dB(A) and dividing these exposed areas by the total area residential areas. The result shall then be multiplied by 100 and expressed as a percentage.

**Territorial Scale:** All


### A.12.2 Exposure to traffic noise

**Intent:** To assess the share of population exposed to the excess noise

**Indicator:** Exposure to traffic noise

**Unit of measure:** Number; %

**Information sources:** Calculated data

**Assessment method:** Option 1: Calculate the number of people exposed to excess noise

**Territorial Scale:** Large


### A.12.3 Exposure to and annoyance by traffic noise

**Intent:** Highlight numbers of people remain exposed to high levels of noise from rail and aircraft

**Indicator:** Share of population exposed to different traffic noise levels

**Unit of measure:** %

**Information sources:** Measured data

**Assessment method:** Estimate the percentage of population exposed to different road traffic noise levels

**Territorial Scale:** All

### A13 INDUSTRIAL RISKS

#### A.13.1 High risk plants and factories

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce dangerous substances into the environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of high risk plants and factories/geographical area</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number/area (km² or ha)</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Verification of the number of high risk plants and factories. Verification of territorial area. Calculation of the ratio between the number of high risk plants and factories and the territorial area</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
</tbody>
</table>

#### A.13.2 Monitoring of High risk plants and factories

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce dangerous substances into the environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of controls of high risk plants and factories/geographical area</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number/area (m² or ha)</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Verification of the number of controls of high risk plants and factories. Verification of geographical area. Calculation of the ratio between the number of controls of high risk plants and factories and the geographical area</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
</tbody>
</table>
### 6.2 B- ENERGY/RESOURCES CONSUMPTION

<table>
<thead>
<tr>
<th>B1</th>
<th>ENERGY CONSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B.1.1</strong></td>
<td>Final Energy Consumption</td>
</tr>
</tbody>
</table>

| Intent: | To reduce final energy consumptions |
| Indicator: | Final Energy consumption per capita |
| Unit of measure: | kWh/inh.*a |
| Information sources: | Consumption data provided by the distribution system operators or official statistics; the territorial surface and the number of inhabitants comes from the competent public authorities |
| Assessment method: | The final energy consumption per capita shall be calculated as the final energy consumption in kWh/a caused by households, (numerator) divided by the territory’s total population (denomin) |
| Territorial Scale: | All (difficult to estimate in small scale) |

| **B.1.2** | Final Energy consumptions: tertiary sector |

| Intent: | To reduce final energy consumptions in the tertiary sector |
| Indicator: | Energy consumed in the tertiary sector |
| Unit of measure: | ktep / employed |
| Information sources: | Consumption data provided by the distribution system operators or official statistics; employed in the sector from Unioncamere |
| Assessment method: | ktep consumed in tertiary sector / employed in tertiary sector; Calculation of the ratio |
| Territorial Scale: | All (difficult to estimate in small scale) |
| Standards or references: | Unioncamere (Chambers of Commerce Union), OECD, IEA, EUROSTAT, Energy Statistics Manual, 2005 |

| **B.1.3** | Final Energy consumption: residential sector |

| Intent: | To reduce final energy consumptions in the residential sector |
| Indicator: | Energy consumed in the residential sector |
| Unit of measure: | ktep/mq ; ktep/inhabitant |
| Information sources: | Consumption data provided by the distribution system operators or official statistics; the surface of housing and the number of inhabitants comes from the competent public authorities |
| Assessment method: | Option 1: Verification of the final energy consumption by residential sector (ktep). Verification of the houses residential surface in the territory (mq). Calculation of the ratio between the final residential consumption and residential surface. Option 2: Verification of the final energy consumption by residential sector (ktep). Verification of the number of inhabitants living in the territory (n°). Calculation of the ratio between the final residential consumption and inhabitants. |
| Territorial Scale: | All |
| Standards or references: | OECD, IEA, EUROSTAT, Energy Statistics Manual, 2005 |
### B.1.4 Final Energy consumptions: industrial sector

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce final energy consumptions in the industrial sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Energy consumed in the industrial sector</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>ktep / employed</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Consumption data provided by the distribution system operators or official statistics; employed in the sector from Unioncamere</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculation of the ratio ktep consumed in industrial sector / employed in industrial sector</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All (difficult to estimate in small scale)</td>
</tr>
</tbody>
</table>

### B.1.5 Final Energy consumptions: agricultural sector

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce final energy consumptions in the agricultural sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Energy consumed in the agricultural sector</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>ktep / employed</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Consumption data provided by the distribution system operators or official statistics; employed in the sector from Regional Statistical Office</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculation of the ratio ktep consumed in agricultural sector / employed in agricultural sector</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All (difficult to estimate in small scale)</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>OECD, IEA, EUROSTAT, Energy Statistics Manual, 2005</td>
</tr>
</tbody>
</table>

### B.1.6 Final Energy consumptions: mobility

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce final energy consumptions for mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Energy consumed for mobility</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>ktep / inhabitant</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Consumption data provided by the distribution system operators or official statistics; and the number of inhabitants comes from the competent public authorities</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculation of the ratio ktep (a conversion is necessary for the various fuels) consumed in transport sector (only private mobility, it's difficult to calculate the contribution of public transport) / inhabitants (it is also necessary to calculate the equivalent inhabitants, as in the case of tourists)</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All (difficult to estimate in small scale)</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>OECD, IEA, EUROSTAT, Energy Statistics Manual, 2005</td>
</tr>
</tbody>
</table>
### B.1.7 Energy consumption of public buildings

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce energy consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Energy consumption of public buildings over the total consumption in the territory</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the energy consumption of public buildings over the total consumption in the territory</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Technical standard, Database of the national electricity grid, municipality guidelines</td>
</tr>
</tbody>
</table>

### B.1.8 Primary energy consumption

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To decrease the amount of consumed primary energy in the Alpine Space. To mitigate or defer global warming and avoid dangerous climate change.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Primary energy consumption per capita</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>kWh/inh.*a</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>The primary energy consumption per capita shall be calculated as the primary energy consumption in kWh/a caused by households, trade and commerce, industry and agriculture (numerator) divided by the territory’s total population (denominator).</td>
</tr>
<tr>
<td></td>
<td>[ \sum_{i=1}^{4} \text{Primary energy consumption}_i \text{ [kWh/a]} \div \text{Territory’s total population [inh.]} ]</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
</tbody>
</table>

### B.1.9 Petroleum products sold

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Energy Saving and CO2 emissions reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Quantity of petroleum products sold</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Tons/year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data by National Ministry</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Verification of final petroleum products sold in a year</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td><a href="http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/uso-delle-risorse/energia_vendita-di-prodotti-petroliferi">http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/uso-delle-risorse/energia_vendita-di-prodotti-petroliferi</a></td>
</tr>
</tbody>
</table>
### B.1.10 Electric Energy consumptions: tertiary sector

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce energy consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Average energy consumption per capita per year in tertiary sector</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>MWh / employed in tertiary sector</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Data provided by the Manager of the national electricity grid, and Unioncamere for employed in tertiary sector; in the touristic areas you may need to take account of population equivalent</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculation of energy consumption per capita per year in tertiary sector</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Unioncamere (Chambers of Commerce Union), OECD, IEA, EUROSTAT, Energy Statistics Manual, 2005</td>
</tr>
</tbody>
</table>

### B.1.11 Electric Energy consumption: residential sector

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce energy consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Average energy consumption per capita per year</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>MWh / inhabitants</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Data provided by the Manager of the national electricity grid, municipality or other public administration for number of inhabitants; in the touristic areas you may need to take account of population equivalent</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculation of the average energy consumption per capita per year</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>OECD, IEA, EUROSTAT, Energy Statistics Manual, 2005</td>
</tr>
</tbody>
</table>

### B.1.12 Electric Energy consumptions: industrial sector

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce energy consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Average energy consumption per capita per year in industrial sector</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>MWh / employed in industrial sector</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Data provided by the Manager of the national electricity grid, and Unioncamere for employed in industrial sector</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculation of the average energy consumption per capita per year in industrial sector</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Unioncamere (Chambers of Commerce Union), OECD, IEA, EUROSTAT, Energy Statistics Manual, 2005</td>
</tr>
</tbody>
</table>
### B.1.13 Electric Energy consumptions: agricultural sector

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce energy consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Average energy consumption per capita per year in agricultural sector</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>MWh / employed in agricultural sector</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Data provided by the Manager of the national electricity grid, and Regional Statistical Office for employed in agricultural sector</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the average energy consumption per capita per year in agricultural sector</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All (difficult to estimate in small scale)</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Unioncamere (Chambers of Commerce Union), OECD, IEA, EUROSTAT, Energy Statistics Manual, 2005</td>
</tr>
</tbody>
</table>

### B.1.14 Electric Energy consumptions: mobility sector

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce energy consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Energy consumption per charging points per year</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>MWh / charging points</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitored data provided by the Regional platform for electric mobility</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Ratio between energy consumption (MWh) and number of charging points</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Regional Electric Mobility Platform: <a href="http://www.regione.piemonte.it/trasporti/mobilitaElettrica.htm">http://www.regione.piemonte.it/trasporti/mobilitaElettrica.htm</a></td>
</tr>
</tbody>
</table>

### B.1.15 Electric Energy consumptions in urban areas

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce energy consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Energy consumption per capita per year</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Kwh /person year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data provided by the Manager of the national electricity grid, municipality</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Use of statistic data</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
</tbody>
</table>

### B.1.16 Thermal energy consumption: private buildings

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce energy consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Average thermal energy consumption per m2 in private buildings</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>kWh / m2</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Data provided by the fuel distributors and local administration</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Conversion of the calorific value of all fuels in kWh and division with the total square meters of residential surfaces</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>OECD, IEA, EUROSTAT, Energy Statistics Manual, 2005</td>
</tr>
</tbody>
</table>
### B.1.17 Thermal energy consumption: public buildings

| Intent: | To reduce energy consumption |
| Indicator: | Average thermal energy consumption per m² in public buildings |
| Unit of measure: | kWh / m² |
| Information sources: | Data provided by the fuel distributors and local administration |
| Assessment method: | Conversion of the calorific value of all fuels in kWh and division with the total square meters of public buildings |
| Territorial Scale: | All |
| Standards or references: | OECD, IEA, EUROSTAT, Energy Statistics Manual, 2005 |

### B.1.18 Thermal energy consumption: industrial buildings

| Intent: | To reduce energy consumption |
| Indicator: | Average thermal energy consumption per m² in industrial buildings |
| Unit of measure: | kWh / m² |
| Information sources: | Data provided by the fuel distributors and local administration |
| Assessment method: | Conversion of the calorific value of all fuels in kWh and division with the total square meters of industrial buildings |
| Territorial Scale: | All |
| Standards or references: | OECD, IEA, EUROSTAT, Energy Statistics Manual, 2005 |

### B.1.19 Winter sports energy consumption

| Intent: | To assess the impact of coping strategy of winter resorts |
| Indicator: | Energy consumption of winter sports activities |
| Unit of measure: | kWh/season |
| Information sources: | Local authorities and managing companies |
| Assessment method: | kWh of energy consumption for winter resorts activities (ski lift and artificial snow production) |
| Territorial Scale: | Small |
| Standards or references: | Regional energy and climate plan (SRCAE); local energy and climate plan (PCET) |

### B.1.20 Degree of renewable energy consumed

| Intent: | To measure how extensive the use of renewable energy is |
| Indicator: | Share of renewable energy in gross final energy consumption |
| Unit of measure: | % |
| Information sources: | Measured data |
| Assessment method: | \[
\frac{\text{Renewable final energy consumption [kWh/a]}}{\text{Total final energy consumption [kWh/a]}} \times 100
\]
| Territorial Scale: | All |
| Standards or references: | UN global list of SDG indicators, EUROSTAT, Directive 2009/28/EC on the promotion of the use of energy from renewable sources, Statistic Institutes |
### B.1.21 Efficiency in energy use in existing residential buildings

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To promote an efficient energy use by the existing residential building stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of energy efficient buildings as a share of exiting residential building stock</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data, Regional Data banks</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculation of percentage of the numbers of energy efficient buildings in relationship with the exiting residential building stock</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>ISTAT (National Statistic Institute) for exiting residential building stock; Piedmont Region (energy efficiency classes to consider: A1, A2, A3, A4) for numbers of energy efficient buildings</td>
</tr>
</tbody>
</table>

### B.1.21 bis Efficiency in energy use in existing residential buildings

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To promote an efficient energy use by the existing residential building stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of energy efficient buildings as a share of energy certified residential building stock</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Veneto Region, Direzione Ricerca innovazione ed energia, <a href="https://venet-energia-edifici.regione.veneto.it/VeNet/statistiche.php">https://venet-energia-edifici.regione.veneto.it/VeNet/statistiche.php</a></td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculation of percentage of the numbers of energy efficient buildings (class B + class A or higher) in relationship with the number of certified residential building</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Decreto 26 giugno 2015: Adeguamento del Decreto del Ministro dello Sviluppo Economico, 26 giugno 2009</td>
</tr>
</tbody>
</table>

### B.1.22 Efficiency in energy use in existing non residential buildings

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To promote an efficient energy use by the existing non residential building stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of energy efficient buildings as a share of exiting not residential building stock</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data, Regional Data banks</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculation of percentage of the numbers of energy efficient buildings in relationship with exiting not residential building stock</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>ISTAT (National Statistic Institute) for exiting non residential building stock; Piedmont Region (energy efficiency classes to consider: A1, A2, A3, A4) for numbers of energy efficient buildings</td>
</tr>
</tbody>
</table>
### B.1.22 bis Efficiency in energy use in existing non residential buildings

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To promote an efficient energy use by the energy certified non residential building stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of energy efficient buildings as a share of energy certified non residential buildings</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td><a href="https://venet-energia-edifici.regione.veneto.it/VeNet/statistiche.php">https://venet-energia-edifici.regione.veneto.it/VeNet/statistiche.php</a></td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculation of percentage of energy efficient buildings (class B + class A or higher) on certified (with APE) not residential building stock (for building we intend the certified units, not all the construction; we consider only subjected commercial and directional units). In the construction of the data only the buildings with APE, the energy performance certificate, are taken into consideration (sum of 2015-last years)</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Decreto 26 giugno 2015: Adeguamento del Decreto del Ministro dello Sviluppo Economico, 26 giugno 2009</td>
</tr>
</tbody>
</table>

### B.1.23 Energy certified building stock

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To encourage energy certification (APE) of households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Share of energy certified households (with APE) on total households</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Veneto Region, Direzione Ricerca innovazione ed energia, <a href="https://venet-energia-edifici.regione.veneto.it/VeNet/statistiche.php">https://venet-energia-edifici.regione.veneto.it/VeNet/statistiche.php</a></td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate (number of assessed households / total number of households) * 100</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Decreto 26 giugno 2015: Adeguamento del Decreto del Ministro dello Sviluppo Economico, 26 giugno 2009</td>
</tr>
</tbody>
</table>

### B.1.24 Energy Shift in progress

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To measure the changes in mind-set and behaviour of inhabitants concerning their shift in behaviour patterns and habits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>activities/yr</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>n</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Regiomanagement, Teamstaff from mayor. This criterion is considered as an experiment only. It might be changed in the next period. However, it is just to find out if it is possible to describe and understand social trends such as this at all.</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Survey: asking the regiomanagement how many activities took place in on period</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small and large scale</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>No standards</td>
</tr>
</tbody>
</table>
## B2 SUSTAINABLE ENERGY
### B.2.1 Renewable energy locally produced

**Intent:** To assess the level of renewable energy production compared to the consumption and then the level of 'autonomy' of the territory.

**Indicator:**
- Option 1: RES production (kWh/year) compared to global energy consumption (final kWh/year)
- Option 2: Total RE produced as % of the total energy demand / self-sufficiency

**Unit of measure:** %

**Information sources:** Measured data

**Assessment method:** Collection of data established with official calculation method for RES production and energy consumption
- Option 1:
  - Collection of data established with official calculation method for RES production and energy consumption.
  - Calculation of the ratio between RES production (kWh/year) and global energy consumption (final kWh/year)
- Option 2:
  - Calculation of the ratio between total RE produced AND total energy demand / self-sufficiency

**Territorial Scale:** Large

**Standards or references:** OREGES, SNDD, SOEs, CLER TEPOS (French network for the energy transition, Working group for positive energy territories), SEAP ALPS, French Regional observatory of energy consumption and GES emissions

### B.2.2 Production Power by Wind

**Intent:** To improve the share of renewable energy

**Indicator:** Total amount of power produced by wind

**Unit of measure:** MWh / km²; TEP/Km²; TEP/inhabitant

**Information sources:** Statistic data

**Assessment method:** Calculate the total amount of power produced by wind in the area

**Territorial Scale:** All

**Standards or references:** Database of the manager of the national electricity grid, municipality guidelines

### B.2.3 Production Power by Water

**Intent:** To improve the share of renewable energy

**Indicator:** Total amount of power produced by water

**Unit of measure:** MWh / km²; TEP/Km²; TEP/inhabitant

**Information sources:** Statistic data

**Assessment method:** Calculate the total amount of power produced by water in the area

**Territorial Scale:** All

**Standards or references:** Database of the manager of the national electricity grid, municipality guidelines
### B.2.4 Heat by Biomass

<table>
<thead>
<tr>
<th><strong>Intent:</strong></th>
<th>To improve the share of renewable energy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator:</strong></td>
<td>Total amount of heat produced by biomass</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>MWh / km²; TEP/Km2; TEP/inhabitant</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Statistic data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Calculate the total amount of power produced by biomass in the area</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td></td>
</tr>
</tbody>
</table>

### B.2.5 Heat by solar thermal sources

<table>
<thead>
<tr>
<th><strong>Intent:</strong></th>
<th>To improve the share of renewable energy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator:</strong></td>
<td>Total amount of heat produced by sun</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>MWh / km²</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Statistic data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Calculate the total amount of power produced by sun in the area</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Database of the manager of the national heating grid, municipality guidelines</td>
</tr>
</tbody>
</table>

### B.2.6 Heat by geothermal sources

<table>
<thead>
<tr>
<th><strong>Intent:</strong></th>
<th>To improve the share of renewable energy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator:</strong></td>
<td>Total amount of heat produced by geothermal sources</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>MWh / km²</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Statistic data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Calculate the total amount of power produced by geothermal sources in the area</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Database of the manager of the national heating grid, municipality guidelines</td>
</tr>
</tbody>
</table>

### B.2.7 Energetic balance of primary energy

<table>
<thead>
<tr>
<th><strong>Intent:</strong></th>
<th>To evaluate energy self-sufficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator:</strong></td>
<td>Percentage of exported energy in relationship with imported energy</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Statistic data provided by Manager of the national electricity grid</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Use of statistic data</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Piedmont Region - Energetic Regional Plan: <a href="http://www.regione.piemonte.it/energia/pianoEnergReg.htm">http://www.regione.piemonte.it/energia/pianoEnergReg.htm</a> ENEA (Italian national Agency for new technologies, energy and sustainable economic development)</td>
</tr>
</tbody>
</table>
### B.2.8 PV production

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the level of PV electricity production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>PV electricity production</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>kWh/year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitoring and statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the PV production with a collection of data established with official calculation method and units</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>OREGES, Indicateurs du DD pour les territoires SNDD, SOEs, SEAP ALPS</td>
</tr>
</tbody>
</table>

### B.2.9 Biogas production

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the level of biogas production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Biogas production</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>kWh/year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitoring and statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the biogas production with a collection of data established with official calculation method and units</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>OREGES, Indicators SNDD, SOEs, SEAP ALPS</td>
</tr>
</tbody>
</table>

### B.2.10 Energy productivity

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To promote efficient energy systems able to reduce the energy used to provide services and products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Amount of economic output that is produced per unit of energy used</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>€ / kg of oil equivalent</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>The indicator results from the division of the gross domestic product (GDP) by the gross inland consumption of energy for a given calendar year. It measures the productivity of energy consumption. For the calculation of energy productivity Eurostat uses the GDP either in the unit of EUR in chain-linked volumes to the reference year 2010 at 2010 exchange rates or in the unit PPS (Purchasing Power Standard). The unit EUR in chain linked volumes allows observing the energy productivity trends over time in a single geographic area, whereas the unit PPS allows to compare countries for the same year. The gross inland consumption of energy is calculated as the sum of the gross inland consumption of five energy types: coal, electricity, oil, natural gas and renewable energy sources. Since GDP is measured in million EUR or million PPS and gross inland consumption in thousand tonnes of oil equivalent, energy productivity is available in both EUR per kg of oil equivalent and PPS per kg of oil equivalent.</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>UN global list of SDG indicators, EUROSTAT (online data code: t2020_rd310) <a href="http://ec.europa.eu/eurostat/tgm/table.do?tab=table&amp;init=1&amp;plugin=1&amp;pcode=t2020_rd310&amp;language=en">http://ec.europa.eu/eurostat/tgm/table.do?tab=table&amp;init=1&amp;plugin=1&amp;pcode=t2020_rd310&amp;language=en</a></td>
</tr>
</tbody>
</table>
### B3 WATER CONSUMPTION

#### B.3.1 Consumption of water

<table>
<thead>
<tr>
<th>Intent</th>
<th>To reduce water consumptions for all uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Consumption of water per capita</td>
</tr>
<tr>
<td>Unit of measure</td>
<td>m³/inh.*a</td>
</tr>
<tr>
<td>Information sources</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method</td>
<td>Household water consumption [m³/a] Territory’s total population [inh.]</td>
</tr>
<tr>
<td>Territorial Scale</td>
<td>Large</td>
</tr>
</tbody>
</table>

#### B.3.2 Consumption of water – Human uses

<table>
<thead>
<tr>
<th>Intent</th>
<th>To reduce water consumptions for human uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Annual water consumption per inhabitant</td>
</tr>
<tr>
<td>Unit of measure</td>
<td>m3/inhabitant year</td>
</tr>
<tr>
<td>Information sources</td>
<td>Statistic data</td>
</tr>
<tr>
<td>Assessment method</td>
<td>Use of statistic data Calculation of the ratio between water consumption (human use) (m3) and the number of inhabitants (m3/inhabitant year)</td>
</tr>
<tr>
<td>Territorial Scale</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references</td>
<td><a href="https://www.arpa.piemonte.gov.it/reporting/indicatori_on_line/componenti-ambientali/acqua_consumo-acqua-potabile">https://www.arpa.piemonte.gov.it/reporting/indicatori_on_line/componenti-ambientali/acqua_consumo-acqua-potabile</a> ISTAT (National Institute for statistic)</td>
</tr>
</tbody>
</table>

#### B.3.3 Consumption of water for Agriculture – Non human uses

<table>
<thead>
<tr>
<th>Intent</th>
<th>To reduce water consumptions in Agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Annual water consumption per Km2 of agricultural areas</td>
</tr>
<tr>
<td>Unit of measure</td>
<td>m3/Km2</td>
</tr>
<tr>
<td>Information sources</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method</td>
<td>Calculate water consumed for the irrigation of areas intended for Agriculture purposes</td>
</tr>
<tr>
<td>Territorial Scale</td>
<td>All</td>
</tr>
</tbody>
</table>
### B.3.4 Winter sports water consumption

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the impact of coping strategy of winter resorts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Water consumption of winter sports activities</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>m³/season</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Local authorities and managing companies</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the total m³ of water consumed for the production of artificial snow</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Regional energy and climate plan (SRCAE); local energy and climate plan (PCET)</td>
</tr>
</tbody>
</table>

### B.3.5 Consumption of water for industry - non human uses

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce water consumption by industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Daily water consumption by industry</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>m³/working day</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate water consumed by the industrial sector per year in cubic metres divided by the total number of working days</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Environment Statistics, Office of Statistics, National Government of Liechtenstein</td>
</tr>
</tbody>
</table>
### B4 LAND AND BUILDING STOCK USE

#### B.4.1 Efficiency in the use of existing residential building

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To promote an efficient use of the existing residential building stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Ratio between the total estimated area of not occupied residential buildings and the total area of residential buildings in the territory</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
</tbody>
</table>
| Assessment method: | \[
\frac{\text{Number of Vacant dwellings}}{\text{Total number of dwellings \([m^2]\)]} \times 100
\]
| Territorial Scale: | Small |

#### B.4.2 Efficiency in the use of existing non residential building

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To promote an efficient use of the existing non residential building stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Ratio between the total estimated area of not occupied non residential buildings and the total area of non residential buildings in the territory</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
</tbody>
</table>
| Assessment method: | \[
\frac{\text{Vacant floor area of non-residential buildings \([m^2]\)}}{\text{Total floor area of non-residential buildings \([m^2]\)}} \times 100
\]
| Territorial Scale: | Small |

#### B.4.3 Artificial land consumption

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce land consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Urbanized area</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the total artificial area with its subunits of total built-up area and total artificial non-built-up area divided by the total area</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>EUROSTAT, ISPRA; Lucas; SIMON – Systema Informativo Monitoraggio PGT - Monitoring Informatic System for Territorial Governance Plans of Lombardy Municipalities, Data provided by municipalities - Corine Land Cover</td>
</tr>
</tbody>
</table>
### B.4.4 Consumption of soil resulting from sealing

| **Intent:** | To reduce land consumption |
| **Indicator:** | Sealed area |
| **Unit of measure:** | % |
| **Information sources:** | Statistic data provided by municipalities |
| **Assessment method:** | It considers the areas with sealed soil for an evaluation of compromission of ecological function of the soil: Sealed area / total area |
| **Territorial Scale:** | All |
| **Standards or references:** | Corine Land Cover; ISPRA (National Institute for Environmental Protection and Research – Italy): http://www.sinanet.isprambiente.it/it/sia-ispra/download-mais/consumo-di-suolo/dati-nazionali-regionali-provinciali-e-comunali Lucas; SIMON – Systema Informativo Monitoraggio PGT - Monitoring Informatic System for Territorial Governance Plans of Lombardy Municipalities (LOMBARDIA) |

### B.4.5 Level of settlement

| **Intent:** | To measure the attractiveness as living location |
| **Indicator:** | Average number of dwellings per km² |
| **Unit of measure:** | ∑ dwelling / km² |
| **Information sources:** | Measured data |
| **Assessment method:** | Option 1: Addition of all dwellings of the geographical area and calculate the sum Option 2: Divide through the number of km² the geographical area has |
| **Territorial Scale:** | All |
| **Standards or references:** | Bayerische Verwaltung für Ländliche Entwicklung - Vitalitäts-Check 2.0 zur Innenentwicklung für Dörfer und Gemeinden Leitfaden |

### B.4.6 Intensity of land use

| **Intent:** | To reduce land consumption |
| **Indicator:** | Intensity of land use |
| **Unit of measure:** | m²/inhabitant |
| **Information sources:** | Measured data |
| **Assessment method:** | Urbanized area [m²] Territory’s total population [inh.] |
| **Territorial Scale:** | All |
### B.4.7 Vulnerability of agricultural soil

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce the impact on agricultural system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Fertile soil consumption</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the surface of fertile soil consumed over the total area. Assess how new urbanisations subtract soils useful to agricultural production, evaluated by land capability classification (I, II, III classes of land capability)</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>ERSA, Territorial Regional Plan, Piedmont Region - Monitoring soil Consumption: <a href="http://www.regione.piemonte.it/territorio/pianifica/sostenibilita.htm">http://www.regione.piemonte.it/territorio/pianifica/sostenibilita.htm</a></td>
</tr>
</tbody>
</table>

### B.4.8 Urbanized area

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce land consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Urbanized area</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the ratio between the areas already built (different from natural or agricultural soil) and total municipal area</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>ISPRA; Lucas; SIMON – Systema Informativo Monitoraggio PGT - Monitoring Informatic System for Territorial Governance Plans of Lombardy Municipalities</td>
</tr>
</tbody>
</table>

### B.4.9 Urbanisable area

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce land consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Urbanisable area</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the sum of areas with new urbanization previsions foreseen in Municipal Urban Plan which are not already built and total municipal area</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Regional law 31/2014, Territorial Regional Plan of Lombardy, SIMON – Systema Informativo Monitoraggio PGT - Monitoring Informatic System for Territorial Governance Plans of Lombardy Municipalities</td>
</tr>
</tbody>
</table>
### B.4.10 Sprawl

| Intent: | To reduce land consumption |
| Indicator: | Urbanized dispersion index |
| Unit of measure: | % |
| Information sources: | Calculated data |
| Assessment method: | Calculate the following formula $(SUD + SUR / SU) * 100$ where: $SUD =$ Discontinuous urbanized area (mq) $SUR =$ Surface scattered urbanisation (mq) $SU =$ total urbanized area (mq) |
| Territorial Scale: | All |

### B.4.11 Land consumption

| Intent: | To reduce land consumption |
| Indicator: | Land consumption |
| Unit of measure: | % |
| Information sources: | Calculated data |
| Assessment method: | Calculate the ratio between the sum of Urbanized area and Urbanisable area over the total municipal area |
| Territorial Scale: | All |
| Standards or references: | Regional law 31/2014, Territorial Regional Plan of Lombardy, SiMON – Systema Informativo Monitoraggio PGT - Monitoring Informatic System for Territorial Governance Plans of Lombardy Municipalities |

### B.4.12 Impact area of land use

<p>| Intent: | To reduce land consumption |
| Indicator: | Impact area of land use |
| Unit of measure: | % |
| Information sources: | Monitored and estimated data provided by Region / Municipalities |
| Assessment method: | Calculate the impact of area already built (different from natural or agricultural soil) to assest the compromission of the territory. Verification of the urbanized area (ha) with a buffer. Verification of territorial area (ha). Calculation urbanized area as a share of total area. |
| Territorial Scale: | All |
| Standards or references: | Piedmont Region - Monitoring soil Consumption: <a href="http://www.regione.piemonte.it/territorio/pianifica/sostenibilita.htm">http://www.regione.piemonte.it/territorio/pianifica/sostenibilita.htm</a> |</p>
<table>
<thead>
<tr>
<th>B.4.13</th>
<th><strong>Land consumption by infrastructures</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent:</strong></td>
<td>To reduce land consumption</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Land consumption by infrastructures</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Monitored and estimated data provided by Region / Municipalities</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Calculate infrastructure area. Verification of territorial area (ha). Calculation land consumption by infrastructure area as a share of total area.</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Piedmont Region - Monitoring soil Consumption: <a href="http://www.regione.piemonte.it/territorio/pianifica/sostenibilita.htm">http://www.regione.piemonte.it/territorio/pianifica/sostenibilita.htm</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B.4.14</th>
<th><strong>Index of reversible soil consumption</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent:</strong></td>
<td>To reduce land consumption</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Reversible soil consumption</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Monitored and estimated data provided by Region / Municipalities</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Assess land consumption due to the reversible uses (quarries, urban parks, sports facilities, photovoltaic plants ...) within a given territory. Calculate the reversible soil consumption area (ha). Verification of territorial area (ha). Calculation reversible soil consumption area as a share of total area</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Piedmont Region - Monitoring soil Consumption: <a href="http://www.regione.piemonte.it/territorio/pianifica/sostenibilita.htm">http://www.regione.piemonte.it/territorio/pianifica/sostenibilita.htm</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B.4.15</th>
<th><strong>Index of total soil consumption</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent:</strong></td>
<td>To reduce land consumption</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Total soil consumption</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Monitored and estimated data provided by Region / Municipalities</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Assess total land consumption (sum of urbanized area, infrastructural area, reversible soil consumption area). Calculate the urbanized area, the infrastructural area, the reversible soil consumption area. Sum the urbanized area, the infrastructural area, the reversible soil consumption area,(ha). Verification of territorial area (ha). Calculation total soil consumption area as a share of total area.</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Piedmont Region - Monitoring soil Consumption: <a href="http://www.regione.piemonte.it/territorio/pianifica/sostenibilita.htm">http://www.regione.piemonte.it/territorio/pianifica/sostenibilita.htm</a></td>
</tr>
</tbody>
</table>
### B.4.16 Recycled share of construction waste

| Intent: | To promote further use and renovation of buildings instead of demolition. To encourage selective deconstruction instead of conventional demolition. To support high quality recycling of building materials at the end of the life cycle |
| Indicator: | Percentage of recycled construction waste |
| Unit of measure: | % |
| Information sources: | Calculated data |
| Assessment method: | \[ \frac{\text{Amount of recycled construction waste [t]}}{\text{Total amount of construction waste [t]}} \times 100 \] |
| Territorial Scale: | All |

### B.4.17 Building renovation rate

| Intent: | To encourage the renovation of buildings to a certain energy standard |
| Indicator: | Share of buildings renovated in a given year to a certain energy standard |
| Unit of measure: | % |
| Information sources: | Calculated data |
| Assessment method: | Calculate number of buildings renovated in a year to a stipulated energy standard/ total of number of buildings in the territory * 100 |
| Territorial Scale: | All |
| Standards or references: | Berichte und Anträge (BuA) der Regierung an den Landtag Liechtenstein |

### B.4.18 Demolition of degraded buildings

| Intent: | Evaluating urban reuse / renewal policies |
| Indicator: | Degraded buildings demolished |
| Unit of measure: | % |
| Information sources: | Municipal data bank; Direzione Regionale Pianificazione Territoriale - UO Urbanistica |
| Assessment method: | Calculation of the percentage of the volume demolished on the total volume of the buildings declared degraded |
| Territorial Scale: | All |
| Standards or references: | Veneto Region, Regional Law 14/2017 and subsequent amendments and additions |
### C.1.1 Access to public transportation

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To measure the development of public transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of public transport stops in the territory</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number; number per km²</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Option 1: Calculate the number of public transport stops</td>
</tr>
<tr>
<td></td>
<td>Option 2: Calculate the density of public transport stops in the area</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Maps of public transportation, Deutsche Gesellschaft Nachhaltiges Bauen - Nutzungsprofil Büro und Verwaltungsgebäude</td>
</tr>
</tbody>
</table>

### C.1.2 Performance of the public transport

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To improve accessibility to public transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of public transport stops in the area</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number of stops/km²</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Number of public transport stops Territory's urbanized area [Km²]</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
</tbody>
</table>

### C.1.3 Quality of walkways for pedestrian use

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the extent and quality of walkways for occupants and users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Type and extent of secured walkways in the project (walkways sheltered from rain, snow or excess sunshine, etc.)</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number and Extension</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Through a desk analysis evaluate the typology and extent of secured walkways</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>SBTool iiSBE International</td>
</tr>
</tbody>
</table>
### C.1.4 Car ownership

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce the number of cars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of personal automobiles</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>car/person</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of personal automobiles for inhabitants</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Automobile Public Register, Public Car record Book of the municipalities</td>
</tr>
</tbody>
</table>

### C.1.5 Transport on demand service

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To decrease the use of individual car</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of existing lines</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the sum of the existing lines</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Study from State agency CEREMA, local authorities responsible for transport organisation and non for profit organisation of the social sector organising transport on demand service</td>
</tr>
</tbody>
</table>

### C.1.6 Electricity dispensing systems

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Increase services for inhabitants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Electricity dispensing systems</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number/km2</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of electricity dispensing systems in the analysed area</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Open Data Lombardia, Economic development General Direction</td>
</tr>
</tbody>
</table>

### C.1.7 Methane fuel dispensing systems

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Increase services for inhabitants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Methane fuel dispensing systems</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number; number/inhabitants; number/km2</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Open Data Lombardia</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Option 1: Calculate the number of methane fuel dispensing systems for vehicles for public use</td>
</tr>
<tr>
<td></td>
<td>Option 2: Calculate the number of methane fuel dispensing systems for vehicles per inhabitants</td>
</tr>
<tr>
<td></td>
<td>Option 3: Calculate the number of methane fuel dispensing systems for vehicles per area</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Open Data Lombardia, Economic development General Direction</td>
</tr>
</tbody>
</table>
### C.1.8 Number of dispensing systems

| Intent: | Increase services for inhabitants |
| Indicator: | Fuel dispensing systems |
| Unit of measure: | Number; number/inhabitants; number/km² |
| Information sources: | Open Data Lombardia |
| Assessment method: | Option 1: Calculate the number of fuel dispensing systems  
Option 2: Calculate the number of fuel dispensing systems per inhabitants  
Option 3: Calculate the number of fuel dispensing systems per area |
| Territorial Scale: | All |
| Standards or references: | Regione Lombardia, Economic development General Direction |

### C.1.9 Road Safety

| Intent: | To assess the Plan’s ability to help reduce accident rates through rationalization forecasts, upgrading and safety of the road network delegated to provincial and local plans |
| Indicator: | Recognition in the five years of monitoring, of the number of road accidents, by measuring the change in the number of traffic accidents in reference to the regional territory |
| Unit of measure: | n ; n/km ; n/inhabitants |
| Information sources: | Monitored data |
| Assessment method: | Evaluate data processing in the monitoring five year period |
| Territorial Scale: | All |
| Standards or references: | Data from the Regional Road Safety Monitoring Center |

### C.1.9 bis Road Safety

| Intent: | To assess the Plan’s ability to help reduce accident rates through rationalization forecasts, upgrading and safety of the road network delegated to provincial and local plans |
| Indicator: | Annual injury rate |
| Unit of measure: | % |
| Information sources: | Regional Road Safety Monitoring Center |
| Assessment method: | Annual injury rate (dead + injured in road accidents / inhabitants) |
| Territorial Scale: | All |
| Standards or references: | Data from the Regional Road Safety Monitoring Center |
### C.1.10 Linear infrastructures for mobility

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To promote a sustainable mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Linear development of roads and railway network</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Km</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Data banks</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Verification of Km of roads and railways in a provincial area</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
</tbody>
</table>

### C.11 Modal split of public transport

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To determine ratio of public transport to other motorised forms of transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Modal split of public passenger transport</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
</tbody>
</table>
| Assessment method:     | \[
\frac{\text{Distance travelled by public transport [pkm]}}{\text{Total distance travelled [pkm]}} \times 100
\] |
| Territorial Scale:     | All                                                                       |

### C.11 bis Modal split of public transport

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To determine ratio of public transport to other motorised forms of transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Modal split of public passenger transport</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>ISTAT Census, Municipal analysis</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the percentage share of the public mode of transport in total inland transport, considering &quot;systematic mobility&quot; (daily movements for study or work) that use buses, coaches and trains on total of daily movements for study or work.</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>ISTAT Census</td>
</tr>
</tbody>
</table>
### C.1.12 Critical infrastructures

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce the number of critical infrastructures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of critical infrastructures</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Data available from Regions</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of critical infrastructures. They are essential elements for the maintenance of vital functions of society, health, safety and economic and social welfare of citizens. Their disruption or destruction would have a significant impact due to a failure to maintain these functions</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>COUNCIL DIRECTIVE 2008/114/EC</td>
</tr>
</tbody>
</table>

### C.1.13 Car sharing

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To decrease the use of individual car</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of car sharing users or share in total journeys</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%; number</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
</tbody>
</table>
| Assessment method:            | Option 1: Calculate the sum of car shared journeys over the total number of journeys  
                                      Option2: Calculate the number of car shared journeys |
| Territorial Scale:            | Small to medium                                 |
| Standards or references:      | Local authorities responsible for transport organisation and non for profit organisation of the social sector organising transport on demand service |

### C.1.14 Social tariff and gratuity and free of charge transportation

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To ease the access to public transports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Existence of social tariff</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Sum of social tariffs or free of charge options</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Study on transports (plan de déplacements in France), local authorities responsible for transport organisation</td>
</tr>
</tbody>
</table>
### C.1.15 Share of electric mobility

| Intent: To promote electric mobility. To reduce emission of greenhouse and other harmful gases through vehicle traffic |
| Indicator: Percentage of electric vehicles |
| Unit of measure: % |
| Information sources: Calculated data |
| Assessment method: Calculate \( \frac{\text{number of registered electric vehicles}}{\text{number of registered vehicles}} \times 100 \) |
| Territorial Scale: All |

### C.1.16 Sustainable touristic mobility for cultural goods

| Intent: To track and improve the use of traffic reducing, environmentally-friendly (soft mobility) |
| Indicator: Percentage of tourists and same day visitors using local/soft mobility/public transport services to get around the destination (territorial area) |
| Unit of measure: % |
| Information sources: Transportation reports, Visitor Survey |
| Assessment method: Calculate the total number of tourists and same day visitors using local/soft mobility/public transport services to get around the destination

Calculate the total number of tourists and same day visitors using local/soft mobility/public transport services to get around the destination

\[ \frac{\text{total number of tourists and same day visitors using local/soft mobility/public transport services to get around the destination}}{\text{total number of tourists and same day visitors}} \times 100 = \% \text{ of tourists and same day visitors using local/soft mobility/public transport services to get around the destination} \] |
| Territorial Scale: All |
| Standards or references: EU, European Tourism Indicators System for sustainable destination management http://ec.europa.eu/growth/sectors/tourism/offer/sustainable/indicators_it |
### C.1.17 Public transport demand

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To measure the public transportation demand and efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Occupancy rate on total capacity of the public transport lines</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Transport enterprises</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Occupancy rate on total capacity of the public transport lines (Annual number of passenger of public transport on total capacity of public transport)</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>ISTAT Statistic Glossary</td>
</tr>
</tbody>
</table>

### C.1.18 Cycling pathways

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Improve cycling in cities and suburban areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Cycling pathways in the area</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Km/Inhabitants</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data on Municipal data bank</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the sum of continuous kilometres of cycling routes over inhabitants (1 km of unidirectional cycling pathway is counted as 0.5 Km)</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>National and local law</td>
</tr>
</tbody>
</table>

### C.1.19 Access to commonly used services

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Increase services for inhabitants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Average time to access services closer to home</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Minutes</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistical data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the average time needed to access services closer to home</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Official statistics data bases</td>
</tr>
</tbody>
</table>
## C2 LEISURE SERVICES

### C.2.1 Free time facilities

| Intent: | To measure the provided local amenities |
| Indicator: | Number of youth clubs/association |
| Unit of measure: | Number |
| Information sources: | Measured data |
| Assessment method: | Information office of the municipality, maps \((\sum \text{youth clubs-association} / \text{number of youth (0-18 years)} \times 1000)\) |
| Territorial Scale: | All |
| Standards or references: | Bayerische Verwaltung für Ländliche Entwicklung - Vitalitäts-Check 2.0 zur Innenentwicklung für Dörfer und Gemeinden Leitfaden |

### C.2.2 Leisure- and recreation-space for settlement area

| Intent: | To monitor how much near-natural recreation area is provided for the people |
| Indicator: | Area of developed near-natural recreation space |
| Unit of measure: | ha developed near-natural recreation area / 1,000 inhabitants |
| Information sources: | Calculated data |
| Assessment method: | Calculate the sum of the area (ha) for footpaths in forests and on meadows plus the area for public garden and lawn etc. etc. (all public and developed space surrounded by nature) divided by the number of thousand inhabitants of the municipality \((2,400 	ext{ people} = 2.4 \text{ thousand people})\) |
| Territorial Scale: | Medium |
| Standards or references: | https://www.lustat.ch/indikatoren/staedtevergleich/kultur-und-freizeit/erholungsraum Municipal zoning plan, municipality statistic Institute |

### C.2.2 bis Leisure- and recreation-space for settlement area

| Intent: | To monitor how much sport and near-natural recreation area is provided for the people |
| Indicator: | Area of developed near-natural recreation space |
| Unit of measure: | sq.m./ inhabitant |
| Information sources: | Calculated data - Municipal data bank |
| Assessment method: | Calculate the sq.m/inhabitant of sport and recreational areas |
| Territorial Scale: | All |
| Standards or references: | Veneto regional law lr 11/2004 |
### C.3 HEALTH SERVICES

#### C.3.1 Coverage ratio of emergency services

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the ease of access for a potential development on the site to emergency police, fire or health services in the neighbourhood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Coverage ratio of emergency services</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
</tbody>
</table>
| Assessment method:                                                        | 25 points if there is civil protection  
25 points if there are health services  
25 points if there are firefighters  
25 points if there are police forces  
full points if they are within the territorial unit, reduced to two-thirds within close proximity, reduced to one third if distant. |
| Territorial Scale:                                                        | All                                                                                                                                                                                   |
| Standards or references:                                                  | Local government planning department                                                                                                                                                   |

#### C.3.2 Number of doctors in the territory

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the accessibility to healthcare</th>
</tr>
</thead>
</table>
| Indicator:                                                                 | Doctors presence on the territory  
Unit of measure:                                                            | n / inhabitant                                                                                                                  |
| Information sources:                                                      | Calculated data                                                                                                                                                             |
| Assessment method:                                                        | Calculate the number of doctors for inhabitants                                                                                                                                  |
| Territorial Scale:                                                        | Small                                                                                                                                                                      |
| Standards or references:                                                  | Regional health agency depending from the State Department (ARS in France) to get the number of doctors, National statistic institute responsible for the general population census (INSEE in France) |

#### C.3.3 Housing for elderly people

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To measure the availability of housing for elderly people</th>
</tr>
</thead>
</table>
| Indicator:                                                                 | Places in old people’s home  
Unit of measure:                                                            | Number                                                                                                                          |
| Information sources:                                                      | Measured data                                                                                                                                                             |
| Assessment method:                                                        | (∑ existing beds / Inhabitant) * 1000  
Existing beds in: assisted living homes for seniors, nursing homes for seniors                                                                 |
| Territorial Scale:                                                        | All                                                                                                                                                                          |
| Standards or references:                                                  | Municipality's maps for institutions for assisted living or nursing homes of the municipality                                                                      |
## C.3.4 Medical provision

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To measure the medical care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Available beds in hospital per inhabitants</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>( \left( \sum \text{existing beds} / \text{Inhabitant} \right) \times 100 )</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Open Data Lombardia, Welfaret General Direction, Data from hospitals of the municipality</td>
</tr>
</tbody>
</table>

## C.3.5 Access to health services

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Increase health services for inhabitants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Share of the population more than 20 minutes away from at least one of the local health services</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistical data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the share of the population more than 20 minutes away from at least one of the local health services.</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td></td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Official statistics data bases</td>
</tr>
<tr>
<td>C4</td>
<td>EDUCATION</td>
</tr>
<tr>
<td>----</td>
<td>-----------</td>
</tr>
<tr>
<td>C.4.1</td>
<td>Presence of a school transport vehicles</td>
</tr>
<tr>
<td></td>
<td>Intent: To ensure the presence of the school transport vehicles in the area</td>
</tr>
<tr>
<td></td>
<td>Indicator: Presence of the school transport vehicles</td>
</tr>
<tr>
<td></td>
<td>Unit of measure: %</td>
</tr>
<tr>
<td></td>
<td>Information sources: Measured data</td>
</tr>
<tr>
<td></td>
<td>Assessment method: Calculate the percentage of students transported by a school transport vehicles on the total number of students</td>
</tr>
<tr>
<td></td>
<td>Territorial Scale: Small</td>
</tr>
<tr>
<td></td>
<td>Standards or references: Urban Plan for Sustainable Mobility</td>
</tr>
</tbody>
</table>

| C.4.2 | Educational farms |
| | Intent: Increase environmental friendly culture |
| | Indicator: Educational farms on total farms |
| | Unit of measure: % |
| | Information sources: Calculated data |
| | Assessment method: Calculate the number of educational farms over the total number of farms in the area. Educational farms are farms engaged in educating the public, especially for school groups and young people within their school and extracurricular activities. Regionally accredited companies are included in the Network of Educational Farms |
| | Territorial Scale: All |
| | Standards or references: Regione Lombardia. Agriculture General Direction |
### C5 EFFICIENCY OF INFRASTRUCTURES

#### C.5.1 District heating density

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To save energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Proportion of connected segments of district heating in the territory</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number/km</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Use of statistics on local energy provider's data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of connected households related to km of district heating network</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Technical standard, Database of the national district heating grid</td>
</tr>
</tbody>
</table>

#### C.5.2 District heating network

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To save energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Proportion of people that have district heating compared to all of the inhabitants</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Use of statistics on local energy provider's data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the proportion of people that have district heating compared to all of the inhabitants</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Technical standard, Database of the national district heating grid</td>
</tr>
</tbody>
</table>

#### C.5.3 Efficiency in the distribution of water for human consumption

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce water consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Water delivered over the total introduced into distribution networks</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the percentage of delivered water to the total water introduced into municipal distribution networks</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Data provided by ISTAT, National Institute for Statistics</td>
</tr>
<tr>
<td>C.5.4</td>
<td>Flexible energy capacity</td>
</tr>
<tr>
<td>--------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Intent:</td>
<td>To shave energy demand peaks</td>
</tr>
<tr>
<td>Indicator:</td>
<td>Ratio of potential capacity over energy demand</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Data from energy providers and small generation systems installed in the area</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>The total potential capacity is calculated as the sum of all the energy stored in the non-peak hours and the shifted load (i.e., surplus from surrounding buildings/areas). The potential capacity is divided by the hourly energy consumed in the area during peak load areas, and multiplied by 100 to obtain a percentage value.</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>From NewTREND Project D2.2</td>
</tr>
<tr>
<td>C6</td>
<td>INFORMATION AND COMMUNICATION</td>
</tr>
<tr>
<td>------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>C.6.1</td>
<td>Broadband supply</td>
</tr>
<tr>
<td></td>
<td><strong>Intent:</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Indicator:</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Unit of measure:</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Information sources:</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Assessment method:</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Territorial Scale:</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Standards or references:</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C.6.1 bis</th>
<th>Broadband supply</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent:</strong></td>
<td>To measure the dwelling with access to broadband supply</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Share of households with a linkage to broadband &gt; 30 Mbps</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>&quot;MISE - Strategic Plan Ultra Wide Band</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td><a href="http://bandaultralarga.italia.it/mappa-bul/regione/veneto/5/comune/feltre/25021/">http://bandaultralarga.italia.it/mappa-bul/regione/veneto/5/comune/feltre/25021/</a></td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>Calculate the share of households with a broadband connection &gt; 30 Mbps / ∑ households in the community</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>All</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C.6.2</th>
<th>Cell phone connection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent:</strong></td>
<td>To ensure comprehensive cell phone connection</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Number of cell phone connections in the area</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>Number/km² ; %</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Statistic data, measurement, maps by government or service provider</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Option 1: Number of cell phone connections in the area Option 2 Area covered by the service on the total considered area</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Mobile phone network, Global System for Mobile Communications (GSM)</td>
</tr>
</tbody>
</table>
### C.6.3 Ultra-wide band supply

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To measure the dwelling with access to Ultra-wide band supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Households with a linkage to Ultra-wide band &gt; 100 Mbps</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the percentage of households with a linkage to Ultra-wide band &gt; 100 Mbps related to the ( \sum ) households in the community</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Ministry of Economic Development, Infratel Italia (Italy)</td>
</tr>
</tbody>
</table>

### C.6.4 Digital divide

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To improve the digital divide, information access and communication in the rural areas of the Alpine Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Percentage of internet connections in the territory</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate (number of internet connections in the territory / territory's total households) * 100</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
</tbody>
</table>
### C.7.1 Sewerage connection degree

**Intent:** To measure the connection degree households to the waste water system

**Indicator:** Degree of connection to the waste water system

**Unit of measure:** %

**Information sources:** Calculated data

**Assessment method:** Calculate the number of households connected to the system divided by the total number of households of the municipality

**Territorial Scale:** All

**Standards or references:**
- Waste water system manager / waste water system plan and municipality statistics

### C.7.2 Sewerage system size

**Intent:** To monitor / compare how much sewage pipe (and therefor highly costs) is needed for the waste water of the people

**Indicator:** Length of sewage pipe needed per household

**Unit of measure:** m/n

**Information sources:** Calculated data

**Assessment method:** Calculate the total system length of sewage pipe divided by number of households

**Territorial Scale:** All

**Standards or references:**
- Waste water system manager, waste water system plan and municipality statistics
### C.7.3 Sewerage system condition

| Intent: | To monitor how much of the waste water system (and therefore highly costs) has to be replaced soon |
| Indicator: | Share of system older than 30 years |
| Unit of measure: | % |
| Information sources: | Calculated data |
| Assessment method: | Calculate the length of the waste water system which is older than 30 years divided by the total length of the waste water system |
| Territorial Scale: | All |
| Standards or references: | https://www.publicconsulting.at/fileadmin/user_upload/media/umweltfoerderung/Dokumente_Betriebe/Wasser_Betriebe/Studien_Wasserwirtschaft/Branchenbild_2016.pdf Waste water system manager, waste water system plan and municipality statistics |

### C.7.4 Street lighting network size

| Intent: | To monitor / compare the size (points of light) of the street lighting network |
| Indicator: | Points of light |
| Unit of measure: | % |
| Information sources: | Calculated data |
| Assessment method: | Calculate the number of points of light for street lighting divided by the number of inhabitants |
| Territorial Scale: | Medium |
| Standards or references: | Infrastructure manager, plan of streets and municipality statistics |
## D1 DEMOGRAPHY

### D.1.1 Population balance

| Intent: | To monitor the balance between emigration and immigration |
| Indicator: | Emigration and immigration flows |
| Unit of measure: | Inh. |
| Information sources: | Calculated data |
| Assessment method: | Population balance [inh.] = Positive development of inhabitants - Negative development of inhabitants |
| Territorial Scale: | All |

### D.1.2 Balance of migration (immigration flows) over the last 5 years

| Intent: | To monitor the compatibility of immigration |
| Indicator: | Number of immigrants |
| Unit of measure: | Number |
| Information sources: | Statistic data |
| Assessment method: | \( \left( \frac{\sum \text{immigrants}}{\text{Inhabitant}} \right) \times 1000 \) Calculate that for the last 5 years includes EU immigrants |
| Territorial Scale: | All |
| Standards or references: | Statistical Institutes |

### D.1.3 Emigration

| Intent: | To monitor the degree of emigration |
| Indicator: | Number of emigrants (per 1,000 inhabitants and year) |
| Unit of measure: | \( n / 1,000 \) inhabitants in the year YYYY |
| Information sources: | Calculated data |
| Assessment method: | Calculate the number of people in the resident registration database who deregistered their place of residence from a certain municipality in the year YYYY |
| Territorial Scale: | Small |
| Standards or references: | Measured data, Bayerische Verwaltung für Ländliche Entwicklung - Vitalitäts-Check 2.0 zur Innenentwicklung für Dörfer und Gemeinden Leitfaden, Resident registration or Municipality |
### D.1.4 Young people neither in employment nor in education or training

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the unemployment situation of young people on the territory including the unemployed and the &quot;inactive&quot; young people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Percentage of NEET young people (aged 18-24 years) on the whole population in the relevant age class</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistics data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the percentage of NEET people aged 18-24 years (unemployed young people + inactive young people) on the whole population in the relevant age class</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Data from the EU Labour Force Survey (EU LFS), EUROSTAT <a href="http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=edat_lfse_20&amp;lang=en">http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=edat_lfse_20&amp;lang=en</a></td>
</tr>
</tbody>
</table>

### D.1.5 Population growth

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Ensuring the peopling through demographic stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Population growth</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>% (percentage increase / decrease)</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Municipal data bank - Veneto Region (for example: <a href="http://statistica.regione.veneto.it/jsp/popolazionedemog.jsp?anno=2016&amp;x2=5">http://statistica.regione.veneto.it/jsp/popolazionedemog.jsp?anno=2016&amp;x2=5</a></td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Comparison of a twenty-year demographic series: percentage increase / decrease of the current value compared to the most populated year</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Municipal statistic office</td>
</tr>
</tbody>
</table>

### D.1.6 Migration balance

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Evaluate the weight of immigration on demographic trends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Contribution of migrations in the demographic trend</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data - Municipal statistic office</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Immigrants + emigrants / immigrants + emigrants + born + dead</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Municipal statistic office</td>
</tr>
</tbody>
</table>
### D2 SOCIO-ECONOMIC ASPECTS

#### D.2.1 Accessibility of disabled people to social housing

| Intent: | To assess that the policies ensure the mixité of population |
| Indicator: | Percentage of social housing accessible to disabled people |
| Unit of measure: | % |
| Information sources: | Measured data |
| Assessment method: | Calculate the percentage of social housing accessible to disabled people |
| Territorial Scale: | All |
| Standards or references: | CCL CESBA ALPS |

#### D.2.2 Evaluation of the fuel poverty

| Intent: | To assess the level of fuel poverty on the territory and with it, economic fragility and dependence to energy prices |
| Indicator: | People spending more than the Local Reference Value of income in energy bills, building and transport |
| Unit of measure: | % |
| Information sources: | Local/regional statistics, studies |
| Assessment method: | Calculate the percentage by national standardised method to evaluate the revenue and the energy expenditure |
| Territorial Scale: | Large |
| Standards or references: | CCL CESBA ALPS |

#### D.2.3 Poverty and social exclusion

| Intent: | To assess the state of people’s well being |
| Indicator: | The at-risk-of-poverty rate is the percentage of persons living in households in which disposable income (including social transfers and pensions) is below the at-risk-of-poverty threshold (60% of median of disposable income of all households) |
| Unit of measure: | % |
| Information sources: | Statistical data. |
| Assessment method: | \[
\text{Number of inhabitants below threshold [inh.]} \div \text{Territory’s total population [inh.]} \times 100
\]
| Territorial Scale: | Large |
### D.2.4 Quality of life - Satisfaction

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the opinion of inhabitants about their well being</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Life satisfaction</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistical data (via surveys)</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Evaluate life satisfaction measuring the subjective level of general satisfaction of the population (belongs among the most important expressions of the well-being of individuals). Showing share of satisfied people (very satisfied /satisfied)</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Regulation (EC) nr. 1177/2003, Eurobarometer, EU SILC</td>
</tr>
</tbody>
</table>

### D.2.5 Rate of reported robberies

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the urban security and crime prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Reported robberies</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>n / inhabitants</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of robberies reported over 10,000 inhabitants</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Data provided by ISTAT, National Institute for Statistics</td>
</tr>
</tbody>
</table>

### D.2.6 Commuter balance

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To monitor the balanced relation of working and living</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Percentage of employed out of the Municipality</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the percentage of employed out of the Municipality over the total employed</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Bayerische Verwaltung für Ländliche Entwicklung - Vitalitäts-Check 2.0 zur Innenentwicklung für Dörfer und Gemeinden Leitfaden</td>
</tr>
</tbody>
</table>
### D.2.7 Satisfaction with time distribution

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To find about the inhabitants opinion about their use of time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Satisfaction with distribution of time</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Measured data (Index)</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistical gathered data (via surveys)</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Evaluate the satisfaction of adults with distribution of time between work and other things in life. The average assessment is on the scale from 0 (very dissatisfied) to 10 (very satisfied)</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Methodology by European Social Survey (ESS)</td>
</tr>
</tbody>
</table>

### D.2.8 Urban/rural classification

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To show the urban/rural nature of areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Share of population living in urban/rural areas</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistical data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of people living in urban/rural areas divided by all inhabitants</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Statistical Office of Republic of Slovenia</td>
</tr>
</tbody>
</table>

### D.2.9 Share of social housing in the territory

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To ease access to social housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Share of social housing</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>(Number of social housing/total housing stock) *100</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>State Department for housing (MEDDE/DGALN/DHUP for France as regard to respect to social housing law), National statistic institute (INSEE - FILOCOM in France) for large scale</td>
</tr>
</tbody>
</table>

### D.2.10 Part of unacceptable and substandard housing in the territory

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess unfit housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Share of unfit housing</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>(number of unfit housing/total stock)*100</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>State Department for housing (MEDDE/DGALN/DHUP for France and data from the ORTHI tool or PPPI provided by ANAH)</td>
</tr>
<tr>
<td>D.2.11</td>
<td>Social water tariff</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Intent:</td>
<td>To ease access to a public first necessity good</td>
</tr>
<tr>
<td>Indicator:</td>
<td>Percentage of population covered by a social tariff</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>(population of cities covered by a social tariff/total population)*100</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>State Department for environment, energy and sea, national association for local authorities and public service concession, general census from national institute of statistic (INSEE in France)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D.2.12</th>
<th>Wage differences between women and men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>To maintain gender equality in the labour market</td>
</tr>
<tr>
<td>Indicator:</td>
<td>Median wage of women to that of men</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the ratio of the median wage of women to that of men</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Data provided by Lohnstatistik, Landesverwaltung Liechtenstein, Statistik Liechtenstein - Indikatoren für eine nachhaltige Entwicklung 2016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D.2.13</th>
<th>Recipients of economic social assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>To control poverty</td>
</tr>
<tr>
<td>Indicator:</td>
<td>Clients of the total population</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the percentage of the clients of the total population</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Data provided by Amt für Soziale Dienste, Rechenschaftsbericht der Regierung, Landesverwaltung Liechtenstein, Statistik Liechtenstein - Indikatoren für eine nachhaltige Entwicklung 2016</td>
</tr>
</tbody>
</table>
### D.2.14 Education

**Intent:** To analyse the rate of population with at least secondary education (important for wellbeing)

**Indicator:** Population with at least secondary education

**Unit of measure:** %

**Information sources:** Statistical data

**Assessment method:** Calculate the percentage of the population with at least secondary education divided by all inhabitants

**Territorial Scale:** All

**Standards or references:** Statistical Office of Republic of Slovenia

### D.2.15 Environmental education

**Intent:** Percentage of schools with environmental education / graduates served

**Indicator:** Population with environmental/sustainability education

**Unit of measure:** %

**Information sources:** Statistical data

**Assessment method:** Calculate the percentage of population with at least environmental education divided by total number of inhabitants

**Territorial Scale:** All


### D.2.16 Level of school dropout

**Intent:** To minimize the school dropout in the territory for elementary and low high school

**Indicator:** School dropouts rates

**Unit of measure:** %

**Information sources:** Measured data

**Assessment method:** Calculate the ratio between school dropout and the total number of students

**Territorial Scale:** All

**Standards or references:** Data provided by ISTAT, National Institute for Statistics (Italy)

### D.2.17 Rate of university graduate

**Intent:** Evaluate the educational level

**Indicator:** Rate of university graduate

**Unit of measure:** %

**Information sources:** Measured data

**Assessment method:** Calculate the number of university graduate over the total inhabitants

**Territorial Scale:** Small

**Standards or references:** Data provided by ISTAT, National Institute for Statistics (Italy)
### D.2.18 Rate of high school graduate

<table>
<thead>
<tr>
<th><strong>Intent:</strong></th>
<th>Evaluate the educational level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator:</strong></td>
<td>Rate of high school graduate</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Measured data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Calculate the number of high school graduate over the total inhabitants</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>Small</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Data provided by ISTAT, National Institute for Statistics (Italy)</td>
</tr>
</tbody>
</table>

### D.2.19 Occupation by gender

<table>
<thead>
<tr>
<th><strong>Intent:</strong></th>
<th>Pursuit of occupations corresponding to training and competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator:</strong></td>
<td>Employed women compared to the total number of employed persons in the territory</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Statistic data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>[ \frac{\text{Number of employed women}}{\text{Total number of employed persons}} \times 100 ]</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
</tbody>
</table>

### D.2.19 bis Occupation by gender

<table>
<thead>
<tr>
<th><strong>Intent:</strong></th>
<th>Promote gender equality</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator:</strong></td>
<td>Employed women compared to the total active female population</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>ISTAT– National Institute of Statics <a href="http://ottomilacensus.istat.it/comune/025/025021/">http://ottomilacensus.istat.it/comune/025/025021/</a></td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Calculate the number of employed women in the territory (numerator) divided by the active female population (denominator). The result shall then be multiplied by 100 and expressed as a percentage</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>ISTAT– National Institute of Statics</td>
</tr>
</tbody>
</table>
### D.2.20 Gross Income

| Intent: To increase income for habitants |
| Indicator: Per capita gross income (or Economic Value Added, EVA) |
| Unit of measure: Euro/inhabitant |
| Information sources: Statistic data |
| Assessment method: Total gross disposable income [€] Territory’s total population [inh.] |
| Territorial Scale: Large |

### D.2.21 Affordability of residential rental or cost levels

| Intent: To assess whether rents or costs of residential units in the Design will be affordable for the target market |
| Indicator: Affordability of residential occupancies relative to average income |
| Unit of measure: % |
| Information sources: Measured data |
| Assessment method: Calculate the total occupancy cost (rental or total charges and upkeep of a purchased unit) as a percentage of modal household income in the area |
| Territorial Scale: All |
| Standards or references: SBTool iiSBE International |

### D.2.22 Property of the population and economic security

| Intent: To monitor the economic situation, larger consumption has a positive impact on well-being |
| Indicator: Household financial assets per capita |
| Unit of measure: € per capita |
| Information sources: Monitored data |
| Assessment method: Calculate the household financial assets per capita that cover all financial assets available to households |
| Territorial Scale: Large |
| Standards or references: Eurostat, Statistical Office of Republic of Slovenia, Bank of Slovenia, Methodology by the European System of National and Regional Accounts (ESA 2010) |
### D.2.23 Improvement of the building stock of lower income people

| Intent: | To assess the efforts of the territory to reduce fuel poverty |
| Indicator: | Number of dwellings of modest people renovated |
| Unit of measure: | Number |
| Information sources: | Local monitoring, statistics, subsidies form state, counties and local authorities |
| Assessment method: | Calculate the number of housing renovation project with subsidies for lower income people per year using list of policies and subsidies concerning modest people |
| Territorial Scale: | Large |
| Standards or references: | Cera (Regional Economic observatory in Rhône Alps) |

### D.2.24 Early leavers from education and training

| Intent: | To limit social exclusion and poverty risk, to ease the access in the labour market |
| Indicator: | Share of early leavers from education and training |
| Unit of measure: | % |
| Information sources: | Statistical data |
| Assessment method: | Percentage of the population aged 18–24 with at most lower secondary education and who were not in further (formal or non-formal) education or training during the last four weeks preceding the survey. Lower secondary education refers to ISCED (International Standard Classification of Education) 2011 level 0–2 for data from 2014 onwards and to ISCED 1997 level 0–3C short for data up to 2013. The indicator is based on the data from the EU Labour Force Survey (EU LFS). |
| Territorial Scale: | All |
| Standards or references: | UN global list of SDG indicators, EUROSTAT (online data code: edat_lfse_02) |

### D.2.25 Poverty and social exclusion

| Intent: | To assess the state of people's well being |
| Indicator: | The at-risk-of-poverty rate |
| Unit of measure: | % |
| Information sources: | Statistical data. |
| Assessment method: | Percentage of persons living in households in which disposable income (including social transfers and pensions) is below the at-risk-of-poverty threshold (60% of median of disposable income of all households). Data and Methods of EU regulations, EU SILC Methodology |
| Territorial Scale: | Large |
### D.2.26 Employment rate of young people (15-24 years old)

| Intent: | Assess the youth employment situation |
| Indicator: | People employed aged 15-24 years |
| Unit of measure: | % |
| Information sources: | Measured data |
| Assessment method: | Calculate the percentage of people employed aged 15-24 years on the whole population in the relevant age class |
| Territorial Scale: | All |
| Standards or references: | Data provided by ISTAT, National Institute for Statistics (Italy) |

### D.2.27 Unemployment rate

| Intent: | To reduce unemployment |
| Indicator: | Employed people (15-64 years old) rate on the whole population in the relevant age class |
| Unit of measure: | % |
| Information sources: | Calculated data |
| Assessment method: | Calculate the Territory’s employment rate as the number of employed inhabitants [inh.] over the total labor force [inh.] |
| Territorial Scale: | Large |
| Standards or references: | Data provided by ISTAT, National Institute for Statistics, Census or interviews to families, EUROSTAT [http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&amp;pcode=t2020_10&amp;plugin=1](http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&amp;pcode=t2020_10&amp;plugin=1) |

### D.2.28 Employment rate (15-64 years old)

| Intent: | To increase the employment rate among the working-age population and monitor the economic growth of the territory |
| Indicator: | Territory’s unemployment rate |
| Unit of measure: | % |
| Information sources: | Statistic data |
| Assessment method: | \( \frac{\text{Number of Unemployed Inhabitants [inh.]} \times 100}{\text{Total labor force [inh.]}} \) |
| Territorial Scale: | All |
### D.2.28 bis  Employment rate (15-64 years old)

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To reduce unemployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Employed people (15-64 years old) rate on the whole population in the relevant age class</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Assessment method:</td>
<td><a href="https://statistica.provincia.belluno.it/index.php/home-stat">https://statistica.provincia.belluno.it/index.php/home-stat</a></td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Calculate the Territory’s employment rate as the number of unemployed inhabitants [inh.] over the total labour force [inh.]</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>All</td>
</tr>
</tbody>
</table>

### D.2.29  Design for All

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To increase the number of public accessible space, including buildings, parks and squares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Share of accessible buildings and squares</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Number of public buildings ISO 21542 [\frac{\text{Number of public buildings}}{\text{Total number of public buildings}}]</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>ISO 21542:2011-12: Building construction - Accessibility and usability of the built environment (2011-12)</td>
</tr>
</tbody>
</table>

### D.2.30  Accessibility of protected cultural goods

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To improve inclusive growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Percentage of cultural goods accessible to people with disabilities</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Data banks, Municipality</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of protected goods (immovable properties) on the territory, taking into account all the types of instruments of cultural goods protection which at various institutional levels addressed to the goods: singular protected goods for artistic, architectural, monumental, historical and traditional interest, and for archaeological relevance. Calculate the percentage (%) of protected goods accessible to people with disabilities on the total amount</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Managing associations or bodies EU, European Tourism Indicators System for sustainable destination management <a href="http://ec.europa.eu/growth/sectors/tourism/offer/sustainable/indicators_it">http://ec.europa.eu/growth/sectors/tourism/offer/sustainable/indicators_it</a></td>
</tr>
</tbody>
</table>
### D.2.31 Accessibility of protected landscape heritage

<table>
<thead>
<tr>
<th><strong>Intent:</strong></th>
<th>To improve inclusive growth</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator:</strong></td>
<td>Percentage of protected landscape goods accessible to people with disabilities</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Data banks, Municipality</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Calculate the total number of protected landscape on the territory, taking into account all the types of instruments of landscape goods protection which at various institutional levels addressed to landscape: landscape areas protected for their historical, archaeological, traditional, rural, naturalistic and aesthetic/visual importance, including historical centres and settlements, archaeological areas, Unesco Sites and Unesco Biosphere Reserves. Calculate the percentage (%) of protected landscape areas accessible to people with disabilities on the total amount.</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>&quot;Managing associations or bodies EU, European Tourism Indicators System for sustainable destination management <a href="http://ec.europa.eu/growth/sectors/tourism/offer/sustainable/indicators_it">http://ec.europa.eu/growth/sectors/tourism/offer/sustainable/indicators_it</a>&quot;</td>
</tr>
</tbody>
</table>
### D.2.32 Accessibility of protected natural heritage

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To improve inclusive growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Percentage of natural goods accessible to people with disabilities</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Data banks, Municipality</td>
</tr>
</tbody>
</table>
| Assessment method:               | Calculate the total number of protected natural areas on the territory taking into account all the types of instruments of natural goods protection which at various institutional levels addressed to natural areas:  
  - National Parks  
  - Regional and interregional natural parks  
  - Natural reserves  
  - Special protection zones  
  - Special storage areas  
  - Wetlands of international interest  
  - Other protected natural areas  
  - Terrestrial and Marine Reconnaissance Areas  
  Calculate the percentage (%) of protected natural areas accessible to people with disabilities on the total amount. |
| Territorial Scale:               | All                         |
| Standards or references:         | "Managing associations or bodies EU, European Tourism Indicators System for sustainable destination management  
http://ec.europa.eu/growth/sectors/tourism/offer/sustainable/indicators_it" |

### D.2.33 Share of secondary residences

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To show the population fluctuations according to touristic seasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Rate of secondary residences</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the ratio between the number of secondary residences and the total number of residences</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>INSEE, France</td>
</tr>
</tbody>
</table>
## D3 CULTURAL ASPECTS

### D.3.1 Degree of promotion of the cultural offer of the State Institutes

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Dissemination of cultural activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Visitors of the State Institutes of Antiquities and Art</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>n</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of paying visitors of the State Institutes of Antiquities and Art as compared to those non-paying</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Data provided by ISTAT, National Institute for Statistics</td>
</tr>
</tbody>
</table>

### D.3.2 Degree of diffusion of theatre and musical shows

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Dissemination of theatre and musical activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Diffusion of theatre and musical activities</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>n / 100 inhabitants</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of tickets sold for theatre and musical activities every 100 inhabitants</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Data provided by ISTAT, National Institute for Statistics</td>
</tr>
</tbody>
</table>

### D.3.3 Cultural institutions

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To compare the development of the territories in culture sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Cultural capital</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Nr. of cultural institutions per inhabitants</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistical data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of cultural institutions divided by all inhabitants and multiplied by 10.000</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Statistical Office of Republic of Slovenia</td>
</tr>
</tbody>
</table>

### D.3.4 Public libraries

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Increase services for inhabitants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of public libraries on inhabitants</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number/inhabitants</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of public libraries in the territory related to the inhabitants</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Open Data Lombardia, Lombardy Region Culture Direction</td>
</tr>
<tr>
<td><strong>D.3.5</strong></td>
<td><strong>Cultural heritage enhancement</strong></td>
</tr>
<tr>
<td>-----------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td><strong>Intent:</strong></td>
<td>To promote local cultural heritage</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Patrimony open to public</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Calculated data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Calculate the number of sites opened to public over the total number of sites of interest</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>Small</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Regional inventory for cultural patrimony, Local authorities and touristic offices, general inventory for cultural patrimony produced by the regional Council</td>
</tr>
</tbody>
</table>
## D4 LAND USE

### D.4.1 Plan of land use

| Intent: | To raise awareness for the need of gentle use of land |
| Indicator: | Housing and traffic area compared (resp. In relation) to area used for eco-friendly food production and recreation |
| Unit of measure: | % |
| Information sources: | Calculated data |
| Assessment method: | Calculate the housing and traffic area in relation to the sum of agriculture, recreation, housing and traffic area. Evaluate the development / change compared to the previous year |
| Territorial Scale: | Small |
| Standards or references: | Geographic information system (GIS) database, Municipal Plan of land use |

### D.4.2 Green urban areas

| Intent: | To reduce diminishing of the urban green areas |
| Indicator: | Urban green areas |
| Unit of measure: | % |
| Information sources: | Measured data |
| Assessment method: | Measured the percentage of surface of urban green areas divided by total urban area |
| Territorial Scale: | Small |
| Standards or references: | EU project GREENKEYS, Slovenian legislation about the content of land use plans, Land use Plans made by municipality |

### D.4.3 Public civic and leisure spaces

| Intent: | To measure the area of public spaces available in the territory |
| Indicator: | Amount of urban public spaces (squares, gardens, parks etc.) in the territory |
| Unit of measure: | % |
| Information sources: | Calculated data |
| Assessment method: | Calculate the amount of public space, including built public spaces such as squares etc., and leisure spaces such as urban parks and gardens, over the total territory area |
| Territorial Scale: | All |
| Standards or references: | Liechtenstein Environmental Indicators, Office of Statistics, National Government of Liechtenstein |
### D5 ANTROPOGENETIC RISKS

#### D.5.1 Forest fire risk

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Reducing risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Forest surface in different levels of fire risk</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Models and simulation</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the ratio between the forest area in different levels of fire risk related to the total municipal area. The risk of forest fires takes into consideration the probability of the occurrence of fire and also the vulnerability of the territory</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Regione Lombardia. Civil Protection Direction, PRIM - integrated risk mitigation regional programme</td>
</tr>
</tbody>
</table>

#### D.5.1 bis Forest fire risk

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Reducing risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Forest surface affected by fires</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Provincial Emergency Plan for Forest Fire Risk, or Municipal and Regional data bank (for example: <a href="http://webgis.provincia.belluno.it/index.php/view/map/?repository=mappe&amp;project=geoistat">http://webgis.provincia.belluno.it/index.php/view/map/?repository=mappe&amp;project=geoistat</a>)</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Percentage of forest area affected by fires on total forest area</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Provincial Emergency Plan for Forest Fire Risk (Piano di Emergenza provinciale Rischio Incendi Boschivi)</td>
</tr>
</tbody>
</table>

#### D.5.2 Location of territory relative to zones of fire risk

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the risk of the project site being subject to forest or bush fires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Presence of areas of high fire risk</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>m</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the distance from areas of high fire risk</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Site analysis report, local government planning department, environmental agencies, non government organization, SBTool iiSBE International</td>
</tr>
</tbody>
</table>
### D.5.3 Risk to occupants and facilities from earthquake

| Intent: | To assess the risk to live and property of potential earthquake events |
| Indicator: | Risk from earthquake |
| Unit of measure: | Index |
| Information sources: | Estimate of the probability |
| Assessment method: | Evaluate the predicted ability of structures to withstand the effects of foreseeable earthquake events and the probability of injury or death or property damage in case of earthquake event foreseeable within a 100-year time frame |
| Territorial Scale: | Large |
| Standards or references: | Technical documents about emergency measures, local planning and/or emergency measures organisations, SBTool iiSBE International |

### D.5.4 Population exposed to landslide risk

| Intent: | To limit the risk of landslides in populated areas |
| Indicator: | Exposure to landslide risk |
| Unit of measure: | inhabitants/km² |
| Information sources: | Measured data |
| Assessment method: | Evaluate the number of inhabitants per km² exposed to landslide risk, for classes |
| Territorial Scale: | All |
| Standards or references: | Data provided by ISTAT, National Institute for Statistics |

### D.5.5 Population exposed to flood risk

| Intent: | Limit the risk of floods in populated areas |
| Indicator: | Exposure to flood risk |
| Unit of measure: | inhabitants/km² |
| Information sources: | Measured data |
| Assessment method: | Evaluate the number of inhabitants per km² exposed to floods risk, for classes |
| Territorial Scale: | All |
| Standards or references: | Data provided by ISTAT, National Institute for Statistics |

### D.5.6 Population exposed to industrial risk

| Intent: | Limit the risk of industrial in populated areas |
| Indicator: | Inhabitants per km² exposed to industrial risk for classes |
| Unit of measure: | inhabitants/km² |
| Information sources: | Models and simulation data provided by Regional and National Institution |
| Assessment method: | Calculate the number of inhabitants exposed to industrial risk in the analysed area |
| Territorial Scale: | All |
| Standards or references: | http://www.regione.piemonte.it/ambiente/siar/sist_informatico.htm |
### D.5.7 Territory exposed to environmental risks (fire, earthquake, landslide, flood, industrial risk etc)

| Intent: | Limit the environmental risks due to fire, earthquake, landslide, flood, industrial risk in populated areas |
| Indicator: | Inhabitants exposed to environmental risks |
| Unit of measure: | inhabitants/km² |
| Information sources: | Statistic data |
| Assessment method: | Evaluate the number of inhabitants per km² exposed to environmental risks |
| Territorial Scale: | All |
| Standards or references: | Data provided by ISTAT, National Institute for Statistics (Italian) |

### D.5.8 Population exposed to natural risks

| Intent: | Limit the natural risks in populated areas |
| Indicator: | Inhabitants exposed to natural risks |
| Unit of measure: | inhabitants/km² |
| Information sources: | Measured data |
| Assessment method: | Calculate the number of inhabitants per km² exposed to natural risks (fire, landslide, flood) |
| Territorial Scale: | All |
| Standards or references: | Data provided by ISTAT, National Institute for Statistics |

### D.5.8 bis Population exposed to natural risks

| Intent: | To reduce the population exposed to natural risks |
| Indicator: | Inhabitants exposed to natural risks |
| Unit of measure: | % |
| Information sources: | Municipal Plan of Civil Protection; www.geoviewer.isprambiente.it |
| Assessment method: | Percentage given by the ratio between the number of inhabitants exposed to landslides (P3, P4) + number of inhabitants exposed to floods (P3, P4) out of the total population |
| Territorial Scale: | All |
| Standards or references: | Deliberations of the Regional Council DGR n. 573 del 10/03/2003, DGR 3315 del 21/12/2010 |

### D.5.9 Exposure to natural hazards

| Intent: | Prevent the natural risks in the territory |
| Indicator: | Number of natural disasters reported by municipalities of the territory |
| Unit of measure: | number |
| Information sources: | Measured data |
| Assessment method: | Calculate the annual number of natural disasters reported by municipalities of the territory |
| Territorial Scale: | |
| Standards or references: | Official data bases |
### 6.5 E-ECONOMY

<table>
<thead>
<tr>
<th>E1</th>
<th>LOCAL ECONOMY</th>
</tr>
</thead>
<tbody>
<tr>
<td>E.1</td>
<td>Use of eco/local materials</td>
</tr>
<tr>
<td><strong>Intent:</strong></td>
<td>To assess the use of local material and their value chain</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Value of eco/local products produced or sold on the territory</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>Euros/year ; % GDP</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Studies, survey, data from producers, sellers</td>
</tr>
</tbody>
</table>
| **Assessment method:** | Option 1: Collect data (production and value) from local producers (minimum the more significant of them) related to the corresponding year  
Option 2: Calculate the Gross Domestic Product |
| **Territorial Scale:** | Large |
| **Standards or references:** | Cera (Regional Economic observatory in Rhône Alps) |

<table>
<thead>
<tr>
<th>E.1.2</th>
<th>Companies with social/environmental certification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent:</strong></td>
<td>To stimulate sustainability in businesses</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Level of coverage of certified activities</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Calculated data by National accreditation agency and accreditation offices</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Number of companies with environmental/social certification on total number of enterprises</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Accredia for Italy, Unioncamere (Chambers of Commerce Union), ISO 9001, ISO 14001, EMAS, OHSAS 18001</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E.1.3</th>
<th>Renovation and redevelopment of settlement for production activities abandoned</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent:</strong></td>
<td>To promote actions, projects and retraining programs in settlements for productive activities decommissioned</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Promotion of production activities decommissioned</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Measured data</td>
</tr>
</tbody>
</table>
| **Assessment method:** | \((S1 / S2) \times 100\)  
\[ S1 = \text{surface of the settlements for productive activities decommissioned subject of redevelopment} \]  
\[ S2 = \text{total area of the settlements for productive activities decommissioned} \] |
| **Territorial Scale:** | All |
| **Standards or references:** | Data provided by ISTAT, National Institute for Statistics |
### E.1.4 Cover organic meals served in the canteen

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To develop organic agriculture and local food system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Cover ratio of local and organic meals served in canteen</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data, public market data for local authorities, accountancy data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>(number of local and organic meals served / total number meals) * 100</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Department for agriculture, food industry and forest</td>
</tr>
</tbody>
</table>

### E.1.5 Budget of RES enterprises

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the budget impact of RES sector on local economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Budget of RES sector enterprises</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Euros/year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Economic statistics, survey</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>List of society concerned. Collection of their annual budget.</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Cera (Regional Economic observatory in Rhône Alps), ECO Obs</td>
</tr>
</tbody>
</table>

### E.1.6 Employment in Energy improvement of the building stock

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the employment impact of local building sector activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of employees of building sector companies</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number; %</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Economic statistics, survey</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Option 1: List of companies of the building sector on the territory, collection of their number of employees</td>
</tr>
<tr>
<td></td>
<td>Option 2: Calculate the number of employees of building sector companies over the total number of employed</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Cera (Regional Economic observatory in Rhône Alps), ECO obs, SEAP Alps</td>
</tr>
</tbody>
</table>
### Employment in RES enterprises

**Intent:** To assess the employment impact of RES sector activity

**Indicator:** Number of employees of RES sector enterprises

**Unit of measure:** Number; %

**Information sources:** Economic statistics, survey

**Assessment method:**
- **Option 1:** List of society of the RES production sector on the territory, collection of their number of employees
- **Option 2:** Calculate the number of the RES production sector over the total number of employed

**Territorial Scale:** Large

**Standards or references:** Cera (Regional Economic observatory in Rhône Alps), Eco obs

### Development of local label

**Intent:** To promote local companies and social links

**Indicator:** Local labels

**Unit of measure:** Qualitative data

**Information sources:** Chamber of Commerce (CCI), Known labels groups (ex for France: Bistrot de Pays, Maison de Pays)

**Assessment method:** Listing the labels (name of labels)

**Territorial Scale:** All

**Standards or references:** Regional council

### Local currencies for local economic systems

**Intent:** To support local companies and social links

**Indicator:** Number of euro-equivalent circulating local currency

**Unit of measure:** Euro-equivalent

**Information sources:** Calculated data

**Assessment method:** (amount of local currency) * (exchange rate to euro)

**Territorial Scale:** Small

**Standards or references:** Agenda21, Association in charge of local currency development

### Local added value

**Intent:** To monitor the regional / local added value

**Indicator:** Local added value per inhabitant

**Unit of measure:** € / inhabitant

**Information sources:** Calculated data

**Assessment method:** Calculate local added value per inhabitant using local economics report

**Territorial Scale:** Medium and Large

**Standards or references:** http://www.regionale-wertschoepfung.info/index.php?tpl=page&id=42&lng=de

Local economics report
### E.1.11 Labour migration

**Intent:** To monitor rate of labour force migration of active inhabitants  
**Indicator:** Labour migration index  
**Unit of measure:** %  
**Information sources:** Monitored data  
**Assessment method:** To monitor index of labour force migration of active inhabitants by municipality of work place in comparison to all labour active (without farmers) by municipality of residence in percentage  
**Territorial Scale:** All  
**Standards or references:** Statistical offices, SURS Slovenian, Statistical Register of Employment

### E.1.12 Train business to sustainable development

**Intent:** To develop skills of energy efficiency and renewables systems' installers on the territory  
**Indicator:** Labelised installers (“RGE” for France)  
**Unit of measure:** Number  
**Information sources:** Calculated data  
**Assessment method:** Number of labelised installers  
**Territorial Scale:** Large  
**Standards or references:** Department for environment, energy and sea and their regional services, official registration data from the Department for environment, energy and sea and their regional services

### E.1.13 Green Public Procurement

**Intent:** To increase sustainability of goods and services in the public administration  
**Indicator:** Percentage of GPP value in relationship with the total public expenditure for goods, services and works per year  
**Unit of measure:** %  
**Information sources:** Monitored data provided by Regional Institution  
**Assessment method:** Verification of the achievement of GPP target value as share of total public expenditure  
**Territorial Scale:** All  
**Standards or references:** EU GPP Legal and policy Framework: http://ec.europa.eu/environment/gpp/index_en.htm  
Italian GPP Legal and policy Framework: DM 24/12/2015 (Minimum Environmental Criteria) and National Action Plan: http://www.minambiente.it/pagina/gpp-acquisti-verdi
## E.1.14 Local forest wood supply chain

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To increase the forest wood use at local level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Calculate the ratio between the forest wood volume produced at local level and the road length to carry the wood to final use</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>m³/km</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the forest wood volume produced at local level and the road length to carry the wood to final use</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Forestry consortium</td>
</tr>
</tbody>
</table>

## E.1.15 Promotion of the building sector

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the economic impact of building sector on local economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Turnover of local building sector companies</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Euros/year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Economic statistics, survey</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculation of the sum of the incomes of building sector companies on the territory related to the year</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Cera (Regional Economic observatory in Rhône Alps), Eco Obs</td>
</tr>
</tbody>
</table>

## E.1.16 Voluntary Carbon Market by forest management

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To increase local green economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Voluntary Carbon Market by forest management</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number/area</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitored data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Verification of the number of credits. Verification of the extension area</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
</tbody>
</table>
### E.1.17 Assessed sustainable standard

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To encourage the design, construction, and retrofit of buildings that utilize green building practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Share of assessed buildings</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
</tbody>
</table>
| Assessment method: | \[
\frac{\text{Number of assessed buildings}}{\text{Total number of buildings}} \times 100
\] |
| Territorial Scale: | All |

### E.1.18 Rate of households with potential economic hardship

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the state of people's well-being, Contrast to poverty and social hardship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Rate of households with potential economic hardship, Households with potential economic hardship</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Percentage ratio between the number of families with children with the reference person aged up to 64 in which no employee is occupied or withdrawn from work and the total household</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>ISTAT– National Institute of Statics</td>
</tr>
</tbody>
</table>
### E.1.19 Business creation dynamics

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Evaluate economic momentum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of business creations</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>number</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of business created in a year</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Official data base</td>
</tr>
</tbody>
</table>
## E2 ACTIONS FOR INNOVATION

### E.2.1 Gross enrolment in the Company Register

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>Promote productivity and development</td>
</tr>
<tr>
<td>Indicator:</td>
<td>New companies registered</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>n</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the number of new companies registered at 31/12 of the year</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Data provided by ISTAT, National Institute for Statistics</td>
</tr>
</tbody>
</table>

### E.2.2 Training of handcrafts, SMEs incubators

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>To assess the development of local skills in the sustainable construction</td>
</tr>
<tr>
<td>Indicator:</td>
<td>Qualified people</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Qualification monitoring data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the percentage of qualified people, verify significance of the data</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Cera (Regional Economic observatory in Rhône Alps), Eco Obs</td>
</tr>
</tbody>
</table>

### E.2.3 Research and Development

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>To measure knowledge based economy and its development</td>
</tr>
<tr>
<td>Indicator:</td>
<td>Index of employment in Research &amp; Development</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistical data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Share of employees in R&amp;D compared to all labour force</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Eurostat, Statistical Office of Republic of Slovenia, Statistical Offices</td>
</tr>
</tbody>
</table>

### E.2.4 Financial fund for energy saving in SMEs

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent:</td>
<td>To promote energy savings in SMEs</td>
</tr>
<tr>
<td>Indicator:</td>
<td>Implementation of an energy saving fund</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Euros/GDP</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the total amount of money put in the fund over the gross domestic product</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Local Climate and Energy Plan (PCET), national institute for statistics (INSEE)</td>
</tr>
<tr>
<td>E.2.5</td>
<td>Involvement of citizens and SMEs to the local life, through local networks, partnerships, etc.</td>
</tr>
<tr>
<td>-------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Intent:</td>
<td>To assess the financial engagement/participation of citizens and enterprises in local funds/society</td>
</tr>
<tr>
<td>Indicator:</td>
<td>Capital raised by local collective investment funds</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Euros</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Studies, survey, data from local funds and citizen organisations</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the capital raised by local collective investment funds (crowd funding, citizen organisations...) using list of local funds/organisation</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>HQE²R</td>
</tr>
</tbody>
</table>
### E.3 TOURISM

#### E.3.1 Tourism rate

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To increase touristic presences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Touristic rate</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Days/inhabitant; number/100,000 inhabitants; total tourist nights / (inhabitants x 365 days); attendance (number of nights spent by tourists) / kmq surface of the territory</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data</td>
</tr>
</tbody>
</table>
| Assessment method: | Option 1: Days spent (by italians and strangers) in the whole accommodation system, per inhabitant  
Option 2: Calculate the number of tourists over 100,000 inhabitants  
Option 3: Calculate total tourist nights related to inhabitants per 365 days  
Option 4: Evaluate the attendance (number of nights spent by tourists) related to the kmq surface of the territory |
| Territorial Scale: | Large (province) |
| Standards or references: | ISTAT, National Institute for Statistics |

#### E.3.2 Tourist accommodation capacity

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To assess the tourism carrying capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Tourist accommodation capacity</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Beds per 1,000 inhabitants</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Evaluate tourist accommodation capacity as the number of beds per 1,000 inhabitants</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>ISTAT, National Institute for Statistics</td>
</tr>
</tbody>
</table>

#### E.3.3 Floating population

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To estimate the modification in the population living in a municipality due to touristic presences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Overnight staying population in a municipality</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>n. equivalent inhabitants</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data</td>
</tr>
</tbody>
</table>
| Assessment method: | Calculate the overnight staying population in a municipality. It doesn't include inhabitants, but it includes people staying in hotel, camping, second homes. An equivalent inhabitant is:  
- for second homes 1 inhabitant is 1eq.inhabitant;  
- for hotel/campings 1 occupied bed is 1eq. Inhabitant. |
<p>| Territorial Scale: | All |
| Standards or references: | SIMON – Sistema Informativo Monitoraggio PGT - Monitoring Informatic System for Territorial Governance Plans of Lombardy Municipalities |</p>
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E.3.4</td>
<td><strong>Tourist attractions</strong></td>
</tr>
<tr>
<td><strong>Intent:</strong></td>
<td>To measure the free time facilities for tourists</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Number of tourist attractions</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>Number/km²</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Measured data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Calculate the number of tourist attractions per km2 (a tourist attraction is a place of interest)</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Municipal tourism portals</td>
</tr>
<tr>
<td>E.3.5</td>
<td><strong>Bed occupancy rate</strong></td>
</tr>
<tr>
<td><strong>Intent:</strong></td>
<td>To measure the vacantness of beds</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Bed occupancy rate</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Measured data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Bed occupancy rate = ( \frac{\text{booking days}}{(\text{amount of beds} \times \text{almanac days})} \times 100 )</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Municipal tourism portals, Statistical Institutes</td>
</tr>
<tr>
<td>E.3.6</td>
<td><strong>Summer tourism</strong></td>
</tr>
<tr>
<td><strong>Intent:</strong></td>
<td>To develop summer tourism attractiveness to compensate decrease of winter attractiveness</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Summer tourism revenue share</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Calculated data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>( \frac{\text{summer tourism revenue}}{\text{winter tourism revenue}} )</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>touristic syndicates, chamber of ski professional</td>
</tr>
<tr>
<td>E.3.7</td>
<td><strong>Touristic cycling pathways</strong></td>
</tr>
<tr>
<td><strong>Intent:</strong></td>
<td>To develop summer tourism attractiveness to compensate decrease of winter attractiveness</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Touristic cycling pathways of bike routes in the land area</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>km / km²</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Calculated data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Calculate the sum of continuous kilometres of touristic cycling routes over the km² of land area</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Study on mobility (ORT, regional observatory on transports), State department responsible for roads and local authorities, touristic syndicates, local authorities</td>
</tr>
</tbody>
</table>
### E.3.8 Seasonal staff accommodation

| Intent: | To tackle housing access for seasonal staff |
| Indicator: | Pressure of seasonal staff on housing |
| Unit of measure: | % |
| Information sources: | Calculated data |
| Assessment method: | Calculate the seasonal staff population over the total population |
| Territorial Scale: | Small |
| Standards or references: | National statistic studies from general census (INSEE for France) and dedicated studies on seasonal |

### E.3.9 Ski lifts

| Intent: | Increase tourism |
| Indicator: | Capacity of ski lifts |
| Unit of measure: | Number of passengers/hour |
| Information sources: | Calculated data |
| Assessment method: | Calculate the number of passengers that can be carried by ski lift per hour |
| Territorial Scale: | All |
| Standards or references: | Open Data Lombardia, Regione Lombardia. Sport and Youngs Direction, Ski resort operators |

### E.3.10 Agritourism farmhouses

| Intent: | Increase tourism |
| Indicator: | Number of agritourism farmhouses |
| Unit of measure: | Number |
| Information sources: | Measured data |
| Assessment method: | Calculate the presence of agritourism farmhouses in the territory |
| Territorial Scale: | All |
| Standards or references: | Open Data Lombardia, Regione Lombardia. Agriculture Direction |

### E.3.11 Mountain huts

| Intent: | Increase tourism |
| Indicator: | Number of mountain huts |
| Unit of measure: | Number |
| Information sources: | Measured data |
| Assessment method: | Calculate the presence of mountain huts in the territory |
| Territorial Scale: | All |
| Standards or references: | Open Data Lombardia, Regione Lombardia. Sport and Youngs Direction |
### E.3.12 Touristic flux

**Intent:** To develop a sustainable tourism

**Indicator:** Number of arrivals in the area; number of nights spent by tourists in accommodation establishments (potential touristic environmental pressures)

**Unit of measure:** Arrivals/year; number of nights spent/year

**Information sources:** Monitored data provided by Regional Institution

**Assessment method:** Option 1: number of arrival in a year; Option 2: number of nights spent in a year

**Territorial Scale:** All

**Standards or references:** State of Environment Report and Environmental Indicators - ARPA Piemonte:
http://www.arpa.piemonte.gov.it/reporting/indicatori-on_line/uso-delle-risorse/turismo_movimenti-turistici

### E.3.13 Average stay of tourists

**Intent:** To develop a sustainable tourism

**Indicator:** The indicator estimates the average stay of tourists in a territory

**Unit of measure:** Number of nights/number of tourists

**Information sources:** Monitored data provided by Regional Institution

**Assessment method:** Ratio between the number of tourists and the number of nights spent in the territory

**Territorial Scale:** All

**Standards or references:** State of Environment Report and Environmental Indicators - ARPA Piemonte:

### E.3.14 Touristic pressure

**Intent:** To develop a sustainable tourism

**Indicator:** The indicator estimates the touristic pressure in a territory

**Unit of measure:** Number of arrivals/inhabitants; Number of Tourists/inhabitants; Number of Tourists/Km2

**Information sources:** Monitored data provided by Regional Institution

**Assessment method:** Option 1: Ratio between the number of arrivals and the inhabitants; Option 2: Ratio between the number of tourists and the inhabitants; Option 3: Ratio between the number of tourists and territorial area

**Territorial Scale:** All

**Standards or references:** State of Environment Report and Environmental Indicators - ARPA Piemonte:
### E.3.14 bis  | Touristic pressure

| Intent: | To develop a sustainable tourism |
| Indicator: | The indicator estimate the touristic pressure in a territory and on related services |
| Unit of measure: | Sq.m/ab |
| Information sources: | Municipal and Regional data base |
| Assessment method: | The indicator estimate the touristic pressure in a territory on related services (Floating population (arrives/365) + inhabitants / by the value of C2.4 Public Services space for settlement area) |

### E.3.15  | Presence of paths used for tourism

| Intent: | Promote pedestrian tourism activity |
| Indicator: | Extension of trails/paths used for tourism |
| Unit of measure: | km / km2 |
| Information sources: | Measured data |
| Assessment method: | Calculate the length (Km) of trails/paths used for tourism in the area (km2) |

### E.3.16  | Sustainable tourism

| Intent: | To improve the sustainable management of touristic destinations. To measure sustainability management processes in the touristic sector. To monitor the performance and progress over time |
| Indicator: | Tourism enterprises/establishments using a voluntary certification/labelling for environmental/quality/sustainability and/or Corporate Social Responsibility |
| Unit of measure: | % |
| Information sources: | Calculated data |
| Assessment method: | \[
\frac{\text{Number of tourism enterprises using certification}}{\text{Total number of tourism enterprises}} \times 100 \]

### Standards or references:

- Regione Veneto, Direzione Turismo
- Sustainable Tourism Plan
### E.3.17 Sustainable tourism

**Intent:**
To improve the sustainable management of touristic destinations helping to measure sustainability management processes and to monitor their performance and progress over time.

**Indicator:**
Tourism enterprises/establishments using a voluntary certification/labelling for environmental/quality/sustainability and/or Corporate Social Responsibility.

**Unit of measure:**
%

**Information sources:**
Municipal and Regional data base

**Assessment method:**
Calculate the number of tourism enterprises using a voluntary certification for the environmental quality over the total number of tourism enterprises in the area. Only companies that offer overnight accommodation are to be considered (tourist companies in the strict sense).

**Territorial Scale:**
All

**Standards or references:**
Certification Organisations + local standards

---

### E.3.18 Occupation rate of tourist accommodation facilities

**Intent:**
Measure the efficiency of the tourism sector.

**Indicator:**
Occupation rate of tourist accommodation facilities

**Unit of measure:**
%

**Information sources:**
Municipal and Regional data base

**Assessment method:**
Total Overnight stays / (total number of beds in touristic accommodations * 365)

**Territorial Scale:**
All

**Standards or references:**
Regione Veneto, Direzione Turismo

---

### E.3.19 Average stay of tourists during summer season

**Intent:**
To develop a sustainable tourism.

**Indicator:**
Average stay of tourists in the territory during summer

**Unit of measure:**
number of nights

**Information sources:**
Monitored and calculated data

**Assessment method:**
Calculation of the average stay during summer season

**Territorial Scale:**

**Standards or references:**
### E.3.20 Average stay of tourists during winter season

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To develop a sustainable tourism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Average stay of tourists in the territory during winter</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>number of nights</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Monitored and calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculation of the average stay during winter season</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td></td>
</tr>
<tr>
<td>Standards or references:</td>
<td></td>
</tr>
</tbody>
</table>
### E4 AGRICULTURE

#### E.4.1 Relevance of intensive agriculture

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To measure the relevance of intensive agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of agricultural operations</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number; Number/ha</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data</td>
</tr>
</tbody>
</table>
| Assessment method: | Option 1: Calculate the number of agricultural operations  
Option 2: Calculate the number of agricultural operations over the local reference area |
| Territorial Scale: | All |
| Standards or references: | Bayerische Verwaltung für Ländliche Entwicklung - Vitalitäts-Check 2.0 zur Innenentwicklung für Dörfer und Gemeinden Leitfaden |

#### E.4.2 Organic farming

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To measure the relevance of the traditional agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Share of area for organic farming</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Statistic data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Cultivation area under organic farming ( \frac{km^2}{km^2} ) * 100</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
</tbody>
</table>

#### E.4.3 Economic relevance of agriculture

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To measure the economic relevance of agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Agricultural employed</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Measured data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the percentage of agricultural employed on total employed ( \frac{\Sigma \text{people working in the agriculture}}{\text{total employed}} ) * 100</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Bayerische Verwaltung für Ländliche Entwicklung - Vitalitäts-Check 2.0 zur Innenentwicklung für Dörfer und Gemeinden Leitfaden</td>
</tr>
</tbody>
</table>
### E.4.4 Agricultural population

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To maintain agriculture on the territory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Evolution of the number of farmers</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>(value of the year-value of years before)/(value of the year)*100</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Agreste document, Official registration data of farmers from the State Department (DRAAF in France)</td>
</tr>
</tbody>
</table>

### E.4.5 Circular economy and short food systems

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To support local agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of short food systems projects, sales (volume) of short food systems</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number; kg/year</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Option 1: Calculate the number of short food systems projects Option 2: Calculate the volume of short food systems over the year</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Statistic data State Department for agriculture and forestry (DRAAF in France), on &quot;Short food systems&quot;, &quot;direct sale from the farm&quot;, &quot;Maisonde pays&quot;</td>
</tr>
</tbody>
</table>

### E.4.6 Agricultural autonomy potential

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To maintain agriculture on the territory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Agricultural area per inhabitant</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>ha/inhabitant</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the area dedicated to agriculture/inhabitant</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Small to medium</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Official registration data of farmers from the State Department (DRAAF in France) and general census provided by national institute for statistic (INSEE)</td>
</tr>
</tbody>
</table>
### E.4.7 Field (arable) share of agriculture area

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To monitor the share of the field (arable) agriculture area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Area of field over the total</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the area of field (arable) agriculture area divided by total (field and grassland) agriculture area, using statistic agriculture</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td><a href="https://www.vorarlberg.at/pdf/agrarstrukturerhebung2014.pdf">https://www.vorarlberg.at/pdf/agrarstrukturerhebung2014.pdf</a></td>
</tr>
</tbody>
</table>

### E.4.8 Certified agricultural products

<table>
<thead>
<tr>
<th>Intent:</th>
<th>Production of agricultural products of quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Number of agricultural products of quality</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>Number</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>It considers: Protected Designation of Origin (PDO), Protected Geographical Indication (PGI), Quality Wine Produced in a Specified Region (QWPSR), Traditional Speciality Guaranteed (TSG), etc</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>All</td>
</tr>
<tr>
<td>Standards or references:</td>
<td>Regione Lombardia, DG Agriculture, Ministry of agriculture</td>
</tr>
</tbody>
</table>

### E.4.9 Food self-sufficiency

<table>
<thead>
<tr>
<th>Intent:</th>
<th>To determine how much food is being produced regionally / consumed that is regionally produced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator:</td>
<td>Consumption of locally produced food</td>
</tr>
<tr>
<td>Unit of measure:</td>
<td>%</td>
</tr>
<tr>
<td>Information sources:</td>
<td>Calculated data</td>
</tr>
<tr>
<td>Assessment method:</td>
<td>Calculate the amount of food consumption of the residents (from consumer-statistic or calculations) related to the production of agriculture from agriculture statistics</td>
</tr>
<tr>
<td>Territorial Scale:</td>
<td>Large</td>
</tr>
<tr>
<td>E.4.10</td>
<td>Genetic diversity in agriculture</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td><strong>Intent:</strong></td>
<td>To preserve the ecosystem</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Proportion of local endangered breeds</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Measured data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Calculate the proportion of local endangered breeds (Horse, cattle, pig, sheep and goat)</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>BMUB - Indikatorenbericht biologische Vielfalt 201, 4Nationwide Red Lists, Nature conservation associations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E.4.11</th>
<th>Biologically cultivated area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent:</strong></td>
<td>Increase biologically cultivated area</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Proportion of biologically cultivated areas</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Calculated data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Calculate the area of biologically cultivations (near-natural habitats, meadows, scattered areas and hedges with herbaceous trees) over the total land area</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Standards or references:</strong></td>
<td>Data provided Amt für Umwelt, Landesverwaltung Liechtenstein, Umweltindikatoren 2014 - Umweltstatistik 2014</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E.4.12</th>
<th>Use of pesticides</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent:</strong></td>
<td>To promote a sustainable Agriculture</td>
</tr>
<tr>
<td><strong>Indicator:</strong></td>
<td>Amount of pesticides used per agricultural area</td>
</tr>
<tr>
<td><strong>Unit of measure:</strong></td>
<td>Kg/hectar</td>
</tr>
<tr>
<td><strong>Information sources:</strong></td>
<td>Statistical data</td>
</tr>
<tr>
<td><strong>Assessment method:</strong></td>
<td>Calculate the ratio between kg of pesticides and Useful Agricultural Area (UAA)</td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong></td>
<td>Large</td>
</tr>
<tr>
<td><strong>E.4.13</strong> Use of fertilizers</td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Intent:</strong> To promote a sustainable Agriculture</td>
<td></td>
</tr>
<tr>
<td><strong>Indicator:</strong> Amount of fertilizers used per agricultural area</td>
<td></td>
</tr>
<tr>
<td><strong>Unit of measure:</strong> Kg/hectar</td>
<td></td>
</tr>
<tr>
<td><strong>Information sources:</strong> Statistical data</td>
<td></td>
</tr>
<tr>
<td><strong>Assessment method:</strong> Calculate the ratio between kg of fertilizers and Useful Agricultural Area (UAA)</td>
<td></td>
</tr>
<tr>
<td><strong>Territorial Scale:</strong> Large</td>
<td></td>
</tr>
</tbody>
</table>
### E5 Industry

#### E.5.1 Area for industry

**Intent:** To measure the correlation between space usages

**Indicator:** Percentage of area for industry

**Unit of measure:** %

**Information sources:** Measured data

**Assessment method:** Calculate the percentage of area for industry

**Territorial Scale:** All

**Standards or references:** Land development plan, municipality’s maps

#### E.5.2 Industrial Local Units

**Intent:** To improve local industrial economy

**Indicator:** Density of industrial activities in the territory

**Unit of measure:** Number/Km²

**Information sources:** Statistical data provided by Regional Institution

**Assessment method:** Verification of the number of industrial activities. Verification of the territorial area (km²). Calculation of the ratio between the number of industrial activities and the territorial area

**Territorial Scale:** Large

**Standards or references:** State of Environment Report and Environmental Indicators - ARPA Piemonte: http://www.arpa.piemonte.gov.it/reporting/indicatori_on_line/uso-delle-risorse/industria_unita-locali

#### E.5.3 Efficient use of the industrial areas

**Intent:** To measure the efficient use of the industrial areas

**Indicator:** Degree of use of industrial territorial infrastructure

**Unit of measure:** %

**Information sources:** Calculated data by public authorities with specific competence

**Assessment method:** Square meters of industrial areas actually occupied (not only available or abandoned etc.) related to the total square meters of industrial areas identified by the territorial plan

**Territorial Scale:** All

**Standards or references:** National rules on land use planning
### E.5.4 Economic relevance of industry

| Intent: To measure the economic relevance of industry |
| Indicator: Industrial employed |
| Unit of measure: % |
| Information sources: Measured data |
| Assessment method: Calculate the industrial employed on the total ($\frac{\sum \text{people working in the industry}}{\text{total employed}}$) * 100 |
| Territorial Scale: All |
| Standards or references: Data provided by ISTAT, National Institute for Statistics |

### E.5.5 Resource productivity

<p>| Intent: To promote sustainable production to allow economies to grow while reducing their ecological footprints |
| Indicator: Amount of GDP generated by each kg of material consumed |
| Unit of measure: € / kg |
| Information sources: Statistical data |
| Assessment method: The indicator relates what an economy produces in terms of gross domestic product (GDP) to the materials it uses based on its domestic material consumption (DMC). It is expressed by the amount of GDP generated per unit of material consumed in the geographical area, i.e. GDP/DMC in EUR per kg. The indicator ‘domestic material consumption’ (DMC) is based on the Economy-wide Material Flow Accounts (EWMFA). The theory of EW-MFA includes compilations of the overall material inputs into the geographical area, the changes of material stock within the economy and the material outputs to other economies or to the environment. EW-MFA covers all solid, gaseous, and liquid materials, except water and air. Water included in products is included. |
| Territorial Scale: Large |
| Standards or references: EUROSTAT (online data code: tsdpc100) <a href="http://ec.europa.eu/eurostat/tgm/table.do?tab=table&amp;init=1&amp;language=en&amp;pcode=tsdpc100&amp;plugin=1">http://ec.europa.eu/eurostat/tgm/table.do?tab=table&amp;init=1&amp;language=en&amp;pcode=tsdpc100&amp;plugin=1</a> |</p>
<table>
<thead>
<tr>
<th>E6</th>
<th>TRADE COMMERCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>E.6.1</td>
<td>Import/export of food products and beverages</td>
</tr>
</tbody>
</table>

| Intent: | Promote the internationalization, productivity and development |
| Indicator: | Trade of food products and beverages |
| Unit of measure: | % |
| Information sources: | Measured data |
| Assessment method: | Total import of food products and beverages compared to the export of them |
| Territorial Scale: | All |
| Standards or references: | Data provided by ISTAT, National Institute for Statistics |

| E.6.2 | Settlements without grocery stores |

| Intent: | To reduce the number of settlements without grocery stores |
| Indicator: | Number of settlements without grocery stores |
| Unit of measure: | % |
| Information sources: | Calculated data |
| Assessment method: | Calculate the ratio between the number of settlements without grocery stores and the total number of settlements (little, medium and large grocery stores) |
| Territorial Scale: | All |
| Standards or references: | Open Data Lombardia, Regione Lombardia - DG economical development, commerce association |