Measuring the tourism sustainability of mountain destinations in the Alps

Handbook

November 2021

ALPENKONVENTION
CONVENTION ALPINE
ALPSKA KONVENCIJA
CONVENZIONE DELLE ALPI

IMPRINT

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APPENDIX

ETIS: European Tourism Indicator System
EUSALP: European Union Strategy for the Alpine region
GHG: Greenhouse Gas
GRI: Global Reporting Initiative
INSTO: International Network of Sustainable Tourism Observatories
IUCN: International Union for Conservation of Nature
SDG: Sustainable Development Goal
UN: United Nations
UNESCO: United Nations Educational, Scientific and Cultural Organization
UNWTO: United Nation World Tourism Organization
WHO: World Health Organization

FOREWORD

The Alpine region is one of the areas in Europe that is most exposed to environmental, social and economic challenges. Numerous reports from the Alpine Convention, the IPCC, EUSALP, the governments of the alpine countries and NGOs all warn about the extreme environmental and economic fragility of the region.

The tourism sector is identified by European countries and by institutions such as UNWTO as an important lever for the growth and development of local populations. It has been a significant source of local employment for decades, which is why governments have been supporting the development of this sector. However, the tourism sector – even though it provides jobs and economic development, innovations, and enables meeting between cultures and the safeguarding of heritage – can also create imbalances if its development is poorly integrated into local policies, in particular in places like the alpine valleys where there are strong specific characteristics.

In addition, the present COVID-19 crisis has shown that the Alpine area is very strongly dependent on the good economic health of the tourism sector, as well as on international trade. This crisis is indicative of many aspects of our development model and, just as with any crisis, it can offer opportunities for rethinking and change. It is a chance for our citizens, communities, local authorities and states to commit to a more responsible tourism.

Thus, this document was designed both as a long-term management tool for any alpine tourist destination wishing to measure its sustainable performance and as an instrument to raise awareness and inspire decision-makers who are intent on transforming these opportunities for rebuilding the tourism sector post-COVID-19 into a more sustainable model.

Hubert Vendeville
President of the Steering Committee
CEO of Betterfly Tourism

1. INTRODUCTION

The purpose of this guide is to deliver a list of indicators to measure the sustainability performance of tourism in mountain destinations of the Alps. Several guides and territorial labels exist, but few are specific to the alpine context and very few propose concrete indicators to measure specific sustainability issues in relation to Alpine destinations. This document has therefore been designed to provide a concrete methodology, which can be directly used by mountain resort managers who want to measure the sustainability of tourism projects in the Alps.

In addition to tourist destination managers (local authorities), this guide can be also used by providers of public or private funds who wish to integrate targeted indicators into their application processes so that they can select projects with sustainable criteria.

This guide includes the following information:

- Descriptions of the sustainability issues including a brief background on the context and the list of related indicators. 10 issues are related to the environment, 5 to economic matters and 8 to social and governance topics;
- For each indicator, the following are provided: a short description, proposal and explanation of the formula; the specific section, source and identification of the UN Sustainable Objective Goals to which the indicator can contribute;
- A list of inspiring projects selected by all participating countries. Each example is illustrated by a short description and URL link;
- An Excel file (see appendix) for the direct application of destination measurements. This Excel file contains description of each indicator, sorted by issues.

The 17 United Nation Sustainable Development Goals, source: https://sdgs.un.org/goals

2. HOW TO USE THIS GUIDE AND THE RESOURCES?

This guide and associated Excel File are to be used in a pragmatic way:

- The core of the guide is composed by a list of specific sustainable issues for tourism management in alpine destinations. Each issue is presented over one or two pages. The working group selected accurate information and deliberately kept things brief when explaining the background, key figures and, of course, the specific indicators. The added value of this section is to provide a list of indicators sorted by subject, together with detailed information about the calculation formula and the contribution to UN SDG.
- The working group selected 23 issues and 52 indicators, which is a relatively long list because the working group tried to identify issues covering each type of destination. **To be accurate, we would suggest that each destination only uses issues and indicators that are relevant to its own context**: ski activity (or lack thereof), high or low seasonality, etc.
- The attached Excel file has been created to be used directly by destination managers. This Excel tool provides the list of indicators, with one line per indicator. Its use is free and flexible so that the destination manager can make changes, such as adding a column for each year, deleting unused indicators, or adding a column for comments. The most important aspect is to respect the calculation specifications so that comparisons year after year or between destinations are possible.
- The last part on existing good practices has been written to gather together examples of destinations or projects that are committed to sustainable tourism. The aim of this inspirational selection is to invite other destinations to duplicate successful actions. The description of each example is kept brief but the associated URL links provide more detailed information.
- Finally, for public or private funders, it is possible to use this guide and the list of indicators as a list of potential selection criteria in the application forms and then to monitor these indicators over time to check the performance of the supported projects.

3. DESCRIPTIONS OF ISSUES AND INDICATORS

Environmental Issue: Transport and soft mobility

The alpine topography makes travelling to, and around, the territory more complicated than in other parts of Europe. A significant number of railroad infrastructures have been built to facilitate access to Alpine destinations. Transport of passengers and goods is generally by road. Road transport causes a number of impacts on the environment such as air pollution (ozone and particles), GHG emissions, noise, accidents, and traffic jams. Moreover, the flow of tourism activities and travellers can exacerbate the environmental issues during the high season.

Two different types of transport were identified: trans-Alpine transport (from outside the alpine area) and intra-Alpine local transport (inside the alpine area). A good intra-Alpine transport system can have a positive impact on the local economy.

...

The Alpine Convention attaches great importance to the issue of sustainable transport. It has a specific protocol on Transport, the first objective of which is "to pursue a sustainable transport policy which will reduce the negative effects of and risks posed by intra-Alpine and transalpine transport to a level which is not harmful to people, flora and fauna and their environments and habitats". A specific working group of the Alpine Convention is dedicated to transport and the promotion of sustainable transport is also one of the six priorities of the Multiannual Work Programme for 2017-2022.

Indicator	*Description and Methodology*	*Unit*	*Source*	*SDG*
1.1.1 Percentage of tourists and same day visitors using each mode of transport to arrive at the destination (public/private and type)	*Estimation of the flow of visitors by mode of transport provides information for calculating GHG emissions (with estimation of average km) and to reduce this GHG by developing public transport.* *This indicator can be measured by surveying visitors and/or gathering data from private and transport companies, airports, highway companies, and regional governments.*	*%*	*Etis: D.1.1*	 
1.1.2 Percentage of visitors using local/soft mobility/public transport services to get around the destination	*This indicator gives information about the effectiveness of local alternatives to individual car travel. It gives also information on how the local network needs to be adapted and/or work that is*	*%*	*Etis: D.1.1.1*	 

	required to propose an alternative (car sharing, communication, electric bicycles, etc.). *Data can be obtained from the local transport company by comparing low and high season public transport.*			
1.1.3 Carbon intensity by tourist and day visitor travelling to the destination/project	*Carbon intensity expresses the emissions generated by tourists in reaching the destination.* *The calculation of this indicator requires the following data:* *- Average km per mode of transport* *- Percentage of visitors per mode of transport* *- Average GHG emission per transport mode (data available from European/national Environment Agency)* *To determine your carbon intensity, you need to use your CO2 emission factor by type of transport mode, your calculation method and source of information.* *International methodology: https://ghgprotocol.org/*	*Kg CO2 e*	*GRI: G4-EN17 (adapted)*	

Environmental Issues: Management of energy and resources

According to European programmes, the share of renewable energy in terms of total EU energy consumption should reach 32% by 2030. The objective is to become more energy self-sufficient and climate-neutral by increasing the use of renewable energies and improving energy efficiency: this will evidently involve the tourism sector.

The European Union aims to become carbon neutral by 2050 and to have lowered domestic emissions by 80%[1].The main final energy consumption share is related to heating needs (43% of total final energy consumption), the transport sector (32%) and finally the consumption of electricity (25%). It is worth mentioning that almost 80% of the heating demand is satisfied by non-renewable sources, mostly natural gas and to a smaller extent mineral oil. The remaining 20% of heating needs in the EUSALP territory are covered by locally generated power from renewable energy sources, mostly coming from biomass and biofuels. Switzerland[2] has also decided in their 2050 Energy Strategy to reinforce energy efficiency and increase renewable energy. Monaco[3] is also targeting carbon neutral emission by 2050 by changing the energy mix

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
1.2.1 Total energy consumption from non-renewable sources in MWh including fuel types used for tourism activities	*This indicator gives information about the consumption of each type of energy, and the total energy consumption of all tourism activities in the destination. It reveals many issues: dependence on fossil fuel energy, emergence of renewable energy sources, total energy needs. Easy to estimate for a company (with annual balance), this indicator is more difficult to assess for a destination because data gathering in relation to the private sector is difficult.* *Calculate the amount of energy from non-renewable resources.* *International methodology:* *https://www.globalreporting.org - Energy consumption within the organization*	*MWh*	*GRI: G4-EN3*	
1.2.2 Energy intensity ratio (per visitor)	*Energy Intensity reveals amount of kWh needed per single day visitor to the destination. That provides comparable*	*kWh/visitor*	*GRI: G4-EN5*	

[1]https://www.alpine-region.eu/sites/default/files/uploads/activity/449/attachments/eusalp_energy_survey_2017.pdf

[2] https://www.bfe.admin.ch/bfe/fr/home/politik/energiestrategie-2050.exturl.html/aHR0cHM6Ly9wdWJkYi5iZmUuYWRtaW4uY2gvZnIvcHVibGljYX/Rpb24vZG93bmxvYWQvODk5Mw==.html

[3] https://transition-energetique.gouv.mc/La-transition-energetique-en-quelques-mots

	information for the year after for one destination, and can be used for comparing on a destination by destination basis since the scope of the analysis is identical (cf. 1.2.1 indicator) *Total energy consumption at the destination divided by number of single day visitors* *International methodology:* *https://www.globalreporting.org - Energy intensity*			
1.2.3 Annual amount of energy consumed from renewable sources (Mwh) as a percentage of overall energy consumption	*This indicator reveals the level of dependency on fossil fuels at the tourism destination.* *Renewable energy consumption attributable to tourism divided by total energy consumption*	*%*	*Etis: D.6.1.2*	 
1.2.4 Amount of reductions in energy consumption achieved as a direct result of conservation and efficiency initiatives	*This indicator is related to concrete actions implemented at the destination. It gives a total of the amount of kWh saved by tourism activity actions and provides figures to assess the efficiency and relevance of actions.* *Total energy reduction estimated from consolidation of actions at the destination*	*MWh*	*GRI:G4-EN6*	

Environmental Issue: Snowmaking and the management of large facilities

"The impact of snow scarcity is manageable until at least 2050, with 45% snowmaking coverage"[4]. This inevitably leads to questions about using artificial snow. For example, in France, 25 million m^3 per year are used to produce snow[5]. Losses are estimated to be between 10% and 30%, caused by evaporation and seepage during the change of state. For every 1 ºC increase in temperature, the snowline rises by about 150 metres.

The declaration of the XVI Alpine Conference on integrated and sustainable water management in the Alps mentions several levers to take into account: "fair and economical use of water resources (connecting different networks, finding alternative sources, using water-efficient and water-saving techniques); including a sustainable use of water for artificial snowmaking in ski resorts; the implementation of appropriate strategies and plans to address conflicts regarding water uses, and the inclusion of this theme in the working plan of the next biennium"[6].

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
1.3.1 Total amount of water and consumption levels of ski utilities in producing snow, separated by source (tap water / water depository / other)	*Artificial snow production at ski utilities requires the use of water. Ski resorts can use water storage or other sources for this. This indicator gives information about the total amount of water dedicated to snow production, separated by type of storage or sources. That provides figures that can be monitored year after year to measure the 'water cost' of snow making and the indirect impact of global warming.* *Ask snow producers (or water suppliers) about the amount of water stored and/or consumed (tap water, other) solely for the purposes of snow making.* *International methodology:* *https://www.globalreporting.org* *Water consumption*	*m3*	*GRI-G4-EN8 (adapted)*	

[4] Agrawala, S (ed.) 2007, Climate change in the European Alps: adapting winter tourism and natural hazards management, Organisation for Economic Cooperation and Development, Pris

[5] http://www.domaines-skiables.fr/fr/smedia/filer_private/72/b2/72b2fbef-3ffb-452c-98e7-bcd957b72f07/la-neige-de-culture-cest-quoi.pdf

[6] https://www.alpconv.org/fileadmin/user_upload/Organization/AC/XVI/ACXVI_WaterDeclaration_en.pdf

1.3.2 Total amount of energy consumption to produce snow and ski utilities by source (electricity from grid, from renewable energy, etc.)	*Artificial snow production needs energy. This indicator gives information about the total amount of energy dedicated to snow production by type of source. The figures can be monitored year after year to measure the 'energy cost' of snow making and the indirect impact of global warming.* *Ask snow producers (or energy suppliers) about the amount of energy consumed (by type of energy) solely for the purposes of snow making.* *International methodology:* *https://www.globalreporting.org* *Energy consumption within the organisation*	*MWh*	*GRI: G4-EN3 (adapted)*	
1.3.3 Total days of natural snow reliability in 10, 20 and 30 years' time	*Climate forecasting studies can estimate the probabilities of natural snow at the ski resorts. These studies indicate the percentage of resorts that can remain open without artificial snow, with artificial snow and those that will not be able to open in 10, 20, and 30 years taking into account the local climate forecast. These studies can deliver conclusions about strategic decisions about artificial snow investment and the economic activities of the station.*	*%*	*Creation of the working group*	

Environmental Issue: Protection of natural heritage and remarkable and ordinary biodiversity

Alpine flora has already been impacted by several causes, such as impact of human activities (loss of preserved lands) and the impact of global warming[7].

Today, protected areas cover almost 30% of the Alpine convention territory, but with various levels of protection and an imbalance between altitude zones (the most strongly protected areas being at a high altitude). In Europe, 25% of animals are at risk of extinction, even common species. The EU Birds and Habitats Directives[8] requires the establishment of a strict protection regime for all wild European bird species and other endangered species listed in Annex IV of the Habitats Directive. From 2 October 2020, and within five years, each member of the ski areas in France should have an environmental inventory of natural areas concerned. For instance, an issue noticed in the Alpine mountains concerns birds; they collide with ski lift cables. But more generally, fauna and flora habitats are affected by tourist infrastructure and disturbance from the presence of tourists.

Moreover, Alpine regions are particularly impacted by global warming, which leads species to move to higher altitudes, and that is sometimes no longer possible. Specialised plants growing at the highest altitude have been replaced by species from a lower altitude, which are more competitive. In this context, the EU regulation II43/2014 on the prevention and spread of invasive alien species needs to be implemented[9].

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
1.4.1 Percentage of destination area in km² that is designated for protection	*This indicator reveals the division between urbanisation areas and protected areas. Protected areas help biodiversity conservation, but there are different levels of protected areas, as explained by the UICN classification. This indicator proposes to indicate the total surface area of protected areas as per the UICN classification* *The surface area of the destination is considered to be a protected natural area as per UICN classification (zones Ia, Ib, II, III, IV, V, VI) substrates to total surface of the destination (km2) x 100* *This % can be determined by classification UICN rank (Ia, Ib, II, III, IV, V, VI)*	*%*	*Etis: D.7.1* *UICN natural zones ranking*	

[7] https://www.eea.europa.eu/themes/regions/the-alpine-region/biodiversity-energy-water/biodiversity-energy-and-water/topics

[8] https://ec.europa.eu/environment/nature/info/pubs/docs/brochures/nat2000/en.pdf

[9] https://www.alpconv.org/en/home/news-publications/publications-multimedia/detail/climate-action-plan-20/

1.4.2 Percentage of destination covered by a biodiversity management and monitoring plan	*Biodiversity management shows territorial support in place to protect the environment* *Destination's surface covered by biodiversity management divided by total surface of the destination (km2) x 100*	*%*	*Etis: D.7.1.2* *Information available for local urbanisation plan*	
1.4.3 Total number of IUCN Red list species and national conservation species with habitats in areas affected by project operations, by level of extinction risk (critically endangered, endangered, vulnerable, near threatened, least concern)	*This disclosure helps to identify where its activities represent a threat to endangered plant and animal species.* *Information is available from biodiversity management.* *Different levels of risks: critically endangered, endangered, vulnerable, at risk of threat, of little concern.* *International methodology:* *https://www.globalreporting.org* *IUCN Red List species and national conservation list species with habitats in areas affected by operations*	*Number*	*GRI: G4-EN14*	

Environmental Issue: Action against the artificialisation and degradation of natural ecosystems				
In spatial planning[10], a number of rules take into consideration the loading capacity of the territory, the soil waterproofing, and the respect of landscapes; several countries have a "Net Zero Artificialisation" objective. However, decision makers should integrate an environmental approach to urbanism for all constructions and encourage inhabitants to participate in these projects. *In this guide, it is proposed that the artificialisation of soils is defined in the same way as it has been defined by France: a phenomenon consisting of the transformation of natural, agricultural or forest soil through development operations that may result in partial or total waterproofing, in order to assign them in particular to urban or transport functions.[11]*				
Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
1.5.1 Total artificialisation surface area of the destination (from natural/agricultural use to building or equivalent)	*The artificialisation comes from urbanisation and construction, including the roads network* *Number of constructions (km²) added to total surface of the road network) divided by area of the destination.* *It is possible to differentiate this indicator by type of urbanisation (buildings, road, ski resort)*	*%*	*Created* *Local urbanisation plan*	
1.5.2 % of destination considered as ecologically degraded	*Ecological degradation can be the result of several phenomena like intensive agriculture, artificialisation, and destruction of habitats etc. This indicator proposes to indicate the % of the destination that is ecologically degraded.* *Total area considered degraded due to tourist/visitor use (where possible classified per cause).*	*%*	*UNWTO guidelines for INSTO observatories*	

[10] The European Union Strategy for the Alpine Region, 2012, Jorg Balsiger,

[11] Climate and Resilience law, 2021, France

Environmental Issue: Natural hazards and erosion management

Residual risk is the risk of loss and damages from a natural hazard that remain after the implementation of protection measures[12]. Cases of overload refer to events that exceed the capacities of existing protection measures and have the potential to cause damage to people and goods.

Sports and tourism, such as climbing, mountaineering, hiking and especially skiing are important industries in the Alps. While the first three have no or little impact on the soil and ecosystems[13], skiing disproportionately affects the fragile Alpine soils and ecosystems in terms of area/space and in terms of the impact itself.

Heavy snowfalls and weakness in the snowpack coupled with increasing levels of winter sport activity, tourist development and infrastructure networks for people mobility form the basis for avalanches and their very harmful consequences[14]. These disasters have prompted further measures, including legislation to reduce risk levels in the most avalanche-prone countries and communities.

As a result of global warming, rock falls are becoming more and more common. This new risk must be included into natural risk management and affects: by way of example, rock falls have an effect on alpinism activities and require itineraries to be modified.

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
1.6.1 Total surface of risk exposure	*Identification of the zones exposed to a natural risk or erosion risk; zone is classified by this risk.* *Total of the surfaces exposed, if possible classified by risk.*	*m²*	*UNWTO guidelines for INSTO observatories*	

[12] https://www.alpine-region.eu/sites/default/files/uploads/result/1282/attachments/beyond_the_expected_policy_paper_english_v2.pdf

[13] https://www.alpine-space.eu/projects/links4soils/case-studies/soil-management-practices-in-the-alps---e-book-portrait-web.pd

[14] https://esdac.jrc.ec.europa.eu/Library/Themes/Landslides/Documents/avalanche_recommendations.pdf

Environmental Issue: Impact of climate change (mitigation and adaptation)

Global Warming has exceeded 1.5°C over the last century in the Alps, which is twice the global warming average. The EU climate-energy target for 2020 asked European countries to reduce their greenhouse gas emissions by 20% and by 40% in 2030[15].

In the Alps, the main greenhouse gas emissions sources are related to transport, energy and the heating industry, home heating, construction and tourism[16]. Climate change results in subsequent increases in temperatures, changing precipitation patterns and the increasing frequency and intensity of extreme climatic events (heat waves, droughts).

Climate change also has consequences for the mountain's ecosystem and will result in changes to landscapes. In the Alps, we can find permafrost keeping high quantities of carbon material in the ground, with the high potential of methane emissions, as well as a high risk of rock falls when the soil is melting.

The Alpine Climate Target System 2050[17] foresees that the Alps will be climate-neutral and climate-resilient by the middle of the century. The Alpine Convention recently adopted a new Climate Action Plan providing for, inter alia, short- and midterm actions in the tourism sector[18].

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
1.7.1 Total amount of greenhouse gas emissions (scope 3) at the tourism destination	*GHG emissions reveal direct pollutant emissions including CO2, CH4, N2O, HFCs, PFCs, SF6, NF3, which directly contribute to global warming. It is necessary to assess emissions from all tourism activities in the destination, which is particularly difficult.* *The absolute value in tonnes of GHG is extremely difficult to understand by itself, because this number depends on the scope, the comparison elements etc. The GHG assessment, however, is very useful for noting the most impactful activities/causes and for comparing progress achieved year after year.* *International methodology: GHG protocol* *Annual emissions in tons of CO2 of all tourism activities (scope to be described)*	*kg CO2 e*	*GRI: G4-EN17*	
1.7.2 GHG Emission intensity of the destination (scope 3)	*GHG emissions intensity expresses the amount of GHG emissions per unit of activity* *Total emission divided by number of visitor days*	*kg CO2 e / unit*	*GRI: G4-EN18*	

[15] https://www.alpconv.org/fileadmin/user_upload/Topics/Green_Economy_progress_report_2020.pdf

[16] https://creamontblanc.org/en/climate-change-and-its-impacts-alps

[17] https://www.alpconv.org/en/home/news-publications/publications-multimedia/detail/climate-neutral-and-climate-resilient-alps-2050/

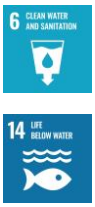
[18] https://www.alpconv.org/en/home/news-publications/publications-multimedia/detail/climate-action-plan-20/

Environmental Issue: Water and erosion management

Water is an important resource in the Alps[19] and we use it for lots of activities: drinking water, agricultural irrigation, energy production, water intensive industries and for artificial snow. In summer, during the dry period, water resources are low and this means users enter into competition with each other. During the high tourism season, the daily consumption of tap water can be a multiple of low seasonal consumption. In some destinations, this daily consumption can exceed the daily production. This can lead to several problems[20]: reduced river flows, lower lake and groundwater levels and drying wetlands, as well as decreasing oxygenation of lakes and rivers.

In all Alpine countries, where a certain level of pollutants (physical and chemical) in sewage water is exceeded, a mandatory authorisation procedure for different kinds of water use is needed. Users who have a negative impact have to pay compensatory fees. The Alpine Convention helps countries to manage their water system; eight implementation protocols have been adopted. The European Union Legislation also contributes to water policy and management in the area of the Alpine Convention.

The declaration of the XVI Alpine Conference on integrated and sustainable water management in the Alps mentions "promoting water savings, water reuse and striving for a more sustainable economic development, including by avoiding as much as possible water-consuming infrastructures".[21]

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
1.8.1 Intensity of water consumed per visitor	*This indicator estimates the total volume of water consumed per visitor day, including all tourism activities (excluded: agricultural and industry; included: snow making, other tourism activities)* *(Total water consumed at the destination minus the national average water consumption x inhabitants within the destination) divided by number of visitor days* *OR Total of water consumed by all tourism activities divided by number of visitor days*	*m3 / visitor*	*ETIS D.5.1, adapted*	
1.8.2 Percentage of volume of water treated by sewerage system	*Estimation percentage of the volume of reused water compared to general average water consumption* *Total volume of treated water divided by total water consumption x 100*	*%*	*Creation of the working group*	
1.8.3 Number of days where tap water supply is lacking	*This indicator measures the number of days (per year) during which daily consumption exceeds the daily production of tap water.* *Number of day during the year when daily tap water consumption exceeds daily production.*	*Number*	*Creation of the working group*	

[19] https://www.eea.europa.eu/themes/regions/the-alpine-region/biodiversity-energy-water/biodiversity-energy-and-water/topics

[20] https://www.gwp.org/globalassets/global/toolbox/publications/technical-focus-papers/p1481_gwp_tfp_cee_finalweb.pdf

[21] https://www.alpconv.org/fileadmin/user_upload/Organization/AC/XVI/ACXVI_WaterDeclaration_en.pdf

Environmental Issue: Air quality

Air pollution causes millions of death each year. Alpine valleys can be extremely exposed to air particle pollution such as NOx, SOx and others. This indicator shows the average quality of air at the destination.

European legislation on air quality is built on several principles to achieve the overarching goal of minimising harmful effects on human health and on the environment as a whole. Where levels exceed limit or target values, Member States must establish an air quality plan addressing the sources of this pollution in order to ensure compliance with the related limit or target value. In the event that limit values are exceeded, these plans have to set out appropriate measures to ensure that the exceedance period can be kept as short as possible. In addition, The last Alpine Conference adopted its 8th report on the state of the Alps and air quality, RSA 8, which should be distributed to the public. [22]

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
1.9.1 Level of Nitrogen oxides (NO2), sulphur oxides (SO2), Ozone (O3) and particulate matter (by size) in ambient air	*It is extremely difficult to measure the emissions of all activities and a large list of pollutants. It is therefore proposed that the number of days (by year) where levels reach above a level of pollution proposed by the WHO is recorded.* *Number of days during the year where levels for Nitrogen oxides (NO2), sulphur oxides (SO2) and O3 and particles reach levels above the WHO levels.* *https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health.*	*Number of days*	*GRI:G4-EN21*	

[22] https://www.alpconv.org/en/home/news-publications/publications-multimedia/detail/rsa-8-air-quality-in-the-alps/

Environmental Issue: Waste management

Each year, 5 tonnes of waste are produced by the average European[23] and only 38% of waste in EU is recycled. Furthermore, one day of tourism activity generally generates more waste than one day of daily life. Significant amounts of waste are produced in accommodation facilities and catering during the peak season[24].

Food waste reduction is one of the top priorities for each European country. Reducing food waste is reducing GHG emissions to produce food, reducing pesticides and inputs to produce food, and makes economic saving for food suppliers.

As mentioned in the Waste Framework Directive[25], the European Union has set itself the goal of recycling at least 55% of municipal waste by 2025, 60% by 2030 and 65% by 2035. However, the specific directive for packaging waste provides that 70% of product packaging has to be recycled by 2030 with a figure of 30% for wood, 55% for plastic, 75% for glass and 85% for paper.

Moreover, mountain treks and mountaineering expeditions can be a factor of waste contamination because infrastructures are not always adapted to collect waste; education of tourists and development of infrastructures for waste collection and treatment should be a priority in natural landscapes

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
1.10.1 Total weight of hazardous and non-hazardous waste by disposal method (reuse / recycling / composting / recovery / incineration / deep well injection / landfill: onsite storage / other)	*It represents the total weight of waste generated in metric tons and a breakdown of this total by composition of the waste (household, plastic, paper, glass, organic, hazardous) and treatment methods (recycling, composting, incineration, etc.).* *Data is available from the local waste management organisation*	*ton*	*GRI: G4-EN23*	
1.10.2 Amount of weight per visitor	*This indicator reveals waste production per night a tourist stays compared to general population waste production per person (kilos)* *(Total waste produced by the destination minus national average waste generated per capita x inhabitants of the destination) divided by number of visitor days*	*kg / visitor*	*GRI: G4-EN23 (adapted)*	

[23] https://ec.europa.eu/environment/topics/waste-and-recycling_en

[24] https://ec.europa.eu/environment/topics/waste-and-recycling_en

[25] https://www.interregeurope.eu/fileadmin/user_upload/plp_uploads/policy_briefs/Policy_brief_on_waste_management.pdf

	OR *Total of waste generated by all tourism activities divided by number of visitor days*			
1.10.3 Amount of food waste per visitor	*To facilitate understanding and comparability of this indicator, food waste is measured by integrating all food waste forms (avoidable and non-avoidable wastes)* *Food waste measurement campaign in relation to tourism activities with weightings provides a ratio by visitor day* *or* *If specific collections take place at the destination: total of food waste collected divided by number of visitor days*	*g / visitor*	*GRI: G4-EN23 (adapted)*	

Economic Issue: Economic diversification, adaptation & resilience

The tourist intensity of a region on an economic level can create dependencies and steer local and regional development policies towards tourism[26]. This may be more or less well estimated due to short seasonal peak periods. In this context, it is important to measure the impact of the activity in the local economy in order to work towards better objectives among regional strategies and to more effectively assess the wealth of valley territories, while considering that tourism often creates synergies with other economic sectors, thereby increasing regional added value.

Employment is heavily dependent on tourism, with rates of over 50% in certain municipalities scattered throughout the Alps. The Alps are undergoing a series of changes and this has an influence on the economy and changes living conditions in rural areas. To face these challenges within a context of a continuous tourism growth in the last decade, destinations have to propose possibilities to ensure development is balanced between the residential economy, agriculture and other economic activities, This will build a balanced and resilient diversification solution that helps to move away from the "all tourism" option.

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
2.1.1 Number of employees in the accommodation and food service sector related to tourism	*It reveals number of jobs from private tourism services.* *Data are available from employment agencies/institutions. If no data are available, a survey can be sent to the food and accommodation sector.*	*number*	*UNWTO guidelines for INSTO observatories*	
2.1.2 % of revenue of touristic activity generated by services other than tourism activities	*This indicator presents indirect incomes from tourism activities, for supply chain and other activities.* *This data is difficult to obtain by any way other than a survey sent to tourism economic actors*	*%*	*AFIT, adapted*	
2.1.3 Decline/rise of agriculture land (cropland, pasture, orchards, groves, vineyards etc.) in the past ten years	*Evolution of agricultural surface area in the past ten years and expression of potential artificialisation of the destination.* *Agricultural land divided by the total surface x 100 of Year 0 substrates with Agricultural land divided by the total surface x 100 Year-10.*	*%*		
2.1.4 Direct tourism employment as percentage of total employment	*It compares global employment with direct tourism jobs for revealing the importance of employment from the tourism industry.* *Number of direct jobs from tourism divided by total employment x 100*	*%*	*Etis: B.3.1*	

[26] https://www.alpconv.org/en/home/news-publications/publications-multimedia/detail/rsa4-sustainable-tourism-in-the-alps/

Economic Issue: Coexistence and synergies with agro-pastoral activities

The use of natural capital, available knowledge and the skills of inhabitants can increase the competitive advantage of companies and regions, especially regarding agro-pastoralism, which is an important resource for the territories. Moreover, cooperation between agro-pastoralism and tourism offers a sustainable local economy and the possibility of benefiting from better recognition thanks to the development of new regional sectors, regional models and regional marketing initiatives thanks to the marketing of agricultural products and through the designation of their origin.[27]

Another issue is that of agricultural labels ensuring environmentally friendly farming practices with farm products that meet strict quality standards, thus giving visibility to ecological processing as well as a guarantee of local origin.

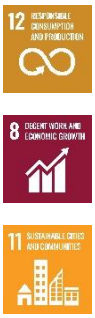
This synergy can[28]*:*

- ✓ *Make "sustainable tourism" labels more visible to consumers in source markets so that they can deliberately make their travel decisions on the basis of sustainability considerations.*
- ✓ *Ensure that tourist establishments and leisure activities are directly linked to promoting brands of sustainable alpine products throughout the sustainability chain, ensuring the visibility of the quality of services and equipment*
- ✓ *Promote other cross-sectoral cooperation initiatives in and between Alpine countries developing quality tourism offers associated with local/regional products and services*
- ✓ *Encourage cooperation between agriculture and other economic activities; these should be encouraged*
- ✓ *Combine economic, ecological and sometimes also social interests in the Alpine space which, to a large extent, are attributable to the increasing demand for nature and countryside holidays and culture, as well as for regional and organic products*

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
2.2.1 Ratio of employees working on agro-pastoral activities	*It represents the percentage of jobs linked to agro-pastoral activities.* *Number of agro-pastoral job divided by total number of employees x 100.*	*%*	*Comity 21 (adapted)*	
2.2.2 Percentage of resident farmers with additional income in the tourism sector	*It represents the number of farmers who are directly related to tourism and who generate revenue from this sector.* *Number of resident farmers with additional income in the tourism sector divided by total farmers x 100*	*%*	*Creation of the working group*	 

[27] https://www.alpconv.org/fileadmin/user_upload/Convention/FR/Protocol_Mountain_Farming_EN.pdf

[28] https://www.alpconv.org/en/home/news-publications/publications-multimedia/detail/rsa4-sustainable-tourism-in-the-alps/

2.2.2 Number of "red rooster" branded agritourism ventures producing and selling regional products in the destination	*Number of certified local products referenced in destination shops.* *Sum of certified local goods produced in the destination and sold in the destination.* *Local agricultural chamber can deliver this information – data may come from a survey sent to local distributors.*	*number*	*UNWTO guidelines for INSTO observatories*	
2.2.3 Number of Organic branded agritourism ventures producing and selling regional products in the destination/project	*Number of certified organic products reveals good practices to limit inputs (fertilisers, pesticides and biocides) in local agriculture activities and integration of local and healthy products in food offer for tourists.* *Sum of certified local organic goods produced in the destination and sold in the destination.* *Local agricultural chamber can deliver this information – data may come from a survey sent to local distributors.*	*number*	*UNWTO guidelines for INSTO observatories*	

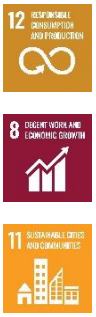
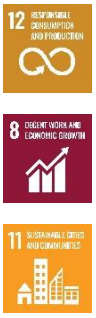
Economic Issue: Enhancing local production

Encouraging regional production and consumption and supporting marketing initiatives and tools to make an important contribution to the green economy in the Alps. Local and regional authorities have an important role to play in encouraging regional production cycles. The aim is to promote consumer behaviour that can contribute to a more sustainable and inclusive economy by integrating social and environmental considerations into their purchasing and consumption decisions.

Consumption of sustainable regional products and services creates a link with one's own region and offers the possibility of people-to-people relationships between producers, service providers, vendors and consumers. In addition, external investments could support regional economic development in the Alps on a sustainable basis and base the sustainable development of the tourist economy on the promotion of natural resources and on the quality of services.

Enhancing local productions can:

- ✓ *Develop regional food approaches and stimulating the production, processing and consumption of local mountain products from the Alpine region in short circuits*
- ✓ *Strengthen cooperation between tourism and agriculture by marketing quality products from local/regional farms*
- ✓ *Strengthen the use and consumption of regional and local food and artisanal products in restaurants, hotels etc.*
- ✓ *Encourage protection, management and promotion of local natural resources*
- ✓ *Increase direct and indirect revenue from local economic activity*

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
2.3.1 Percentage of purchases from local/regional producers	*This indicator represents the part of local consumption and local indirect revenues.* *Part of local consumption divided by global consumption x 100* *This indicator car be obtained by a survey of tourism activities asking the total number of purchases (in €) and the estimated number of local purchases (in €)*	*%*	*Etis: B.5.1.2 (adaptation of indicator)*	
2.3.2 Percentage of food and drink from local/regional producers	*This indicator represents the part of local consumption and local indirect revenues from beverage trade (a priori) activities.* *Part of local consumption divided by global consumption x 100* *This indicator car be obtained by a survey of tourism activities (bars, hotels and restaurants) asking the total number of purchases (in €) and the estimated number of local purchases (in €)*	*%*	*Etis: B.5.1.2 (adaptation of indicator)*	

Economic Issue: Spatial development and land planning

Aware of the fact that space is a limited asset and that the Alpine space is particularly vulnerable, the challenges facing spatial planning and sustainable development also concern demographic change and housing[29].

The small amount of permanent housing is made even scarcer due to the growing increase in land prices and competition from tourist accommodation and second homes. This is why it is important to consider measures to achieve a better balance between the accommodation price level and the income of the local population in the Alpine area.

The huge development of constructions of second homes has advantages such as the creation of wealth and employment, but it can also be a source of economic, social and environmental problems, such as a reduced occupancy rate, environmental costs, or increase in real estate value. The problem of "cold beds" is that tourism lodgings (commercial and second homes) are rarely occupied, are not put up for rent, or do not find tenants, and it's difficult for local communities to manage those imbalances (between inhabitants and secondary residents, between city project and respect for general laws).

It is necessary to take the capacity and the economic balance of the territory into account, in order to ensure respect for the capacity of the territory to handle this as well as the reversibility of spatial developments. This would mean anticipating, for example, the evolutionary needs of land offers for tourist accommodation, or delimiting the areas that can be urbanized in order to save land, reserve 'breathing spaces' in urban areas and limiting numbers of second homes.

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
2.4.1 Number of beds available in commercial visitor accommodation per 100 residents	*This information accounts the average capacity in terms of beds and the balance between inhabitants and tourism accommodation and provides information on conducting tourism development strategies.* *Sum of available beds divided by number of market accommodations.*	*number*	*Etis: C.1.1.2*	
2.4.2 Number of second/rental homes per 100 homes	*This information accounts for the average capacity in terms of second and rental homes and the balance between inhabitants and this type of accommodation; it gives information on carrying out tourism development strategies.* *Sum of second and rental homes divided by total number of homes in the destination.*	*number*	*Etis: C.1.1.3*	

[29] https://www.alpconv.org/fileadmin/user_upload/fotos/Banner/Topics/spatial_planning/annex_38_fr.pdf

Economic Issue: Seasonality

Support for the local economy and the promotion of four seasons tourism is a necessity in order to develop the mountain tourism offer and limit the dependence on the winter season, but also to be able to better meet the new expectations of guests.

The ambition of a diversified tourist development[30] throughout the year is required to guarantee economic development and employment in these territories. To achieve this, it's necessary to develop activities other than skiing, allow split stays, and to maintain services all year-round in the resorts. This issue is even more sensitive for mid-mountain resorts.

High and low season variations cause difficulties for destinations: high number of infrastructures to absorb peak number of visits, difficulty for programming transport etc. during the high season and low number of workers and economic revenue during the low season. Promoting four seasons tourism generates more stable revenue for the destination, which enables the development of local utilities and facilities for inhabitants and welcoming tourists.

Several areas for progress can be identified[31][32]: the diversification and seasonal adjustment of the offer in order to increase appeal for tourists, renew customers, multiply the economic benefits throughout the year, ensure investments in infrastructure are profitable and revitalise destinations by maintaining the mountain resident population; the promotion and opening up to new markets by attracting young people, winning back and retaining European and international customers; overall, renew the image of the mountain since winter is still too focused on winter sports, and summer generates less profit for private activities and destination (revenues in summer months are lower than in winter months)

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
2.5.1 Number of 'same day' visitors in high season and low season)	*Same day visitors reveal dependence on high season tourism and the lower benefits generated in the low season* *Data are available from the tourism office*	*%*	*Etis: B.1.1.2*	 
2.5.2 Distribution of tourists during the year	*Sum of guest nights during the 3 most visited months divided by sum of annual guest night x 100*	*%*	*Creation of the working group*	  

[30] https://uicn.fr/wp-content/uploads/2009/03/UICN_France_CONVENTION_ALPINE.pdf

[31] https://data.consilium.europa.eu/doc/document/ST-14171-2020-INIT/fr/pdf

[32] https://www.alpconv.org/fileadmin/user_upload/fotos/Banner/Topics/spatial_planning/annex_38_fr.pdf

2.5.3 Factor of tourism revenues related to ski activities	*This indicator shows the tourism dependence on ski activities for mountain destinations. It adds all revenues related to ski activities (when ski station is open) and compares this revenue with other tourism activities (when ski resort is closed).* *Average of tourism revenue on one day when the ski resort is open, divided by the average tourism revenue on one day when the ski lifts are closed*	*.Number*	*Creation of the working group*	
2.5.4 Percentage of seasonal jobs in tourism	*Seasonal jobs are often precarious: short-term jobs, lower social rights, etc. This indicator shows the percentage of seasonal jobs in tourism activities like restaurants, accommodation, tourism activities (rentals, ski stations etc.) relative to the total amount of jobs in these activities* *Total seasonal jobs in tourism activities divided by total jobs in tourism activities x 100*	*%*	*Creation of the working group*	
2.5.5 Percentage of secondary residences	*A high level of secondary residences can lead to increases in the price of real estate, higher costs of local infrastructure (network of utilities etc.) and give the impression of a dead city during the low season. However, building secondary residences can create economic activities for locals during the low season. The indicator gives information about the balance between primary and secondary residences.* *Total number of secondary residences divided by total number of residences*	*%*	*Creation of the working group*	

Social and Governance Issue: Project governance (strategic planning, decision making and stakeholder participation

The Alpine Convention provides a context to discussions about a regional approach and about the modalities of territorial governance[33].The issue of tourism development in the Alps cannot be treated irrespective of other relevant and interrelated issues, such as spatial planning, water use, energy or transport. It is therefore necessary to integrate a cross-sectoral perspective in the approach to tourism planning and sustainable development at local and regional level.

The Alpine Convention encourages the participation of Alpine stakeholders and Alpine activity networks. Governance involves various population groups at local and regional levels. The aim is to coordinate all policies so that they focus on what is vital for sustainable development and involve the actors of the Alpine region in an ambitious cohesion policy, which can be integrated into the challenges and vision of the territory.

When it comes to addressing the problems of a specific area, the best approach is a functional approach encompassing the area in which the problems detected can be efficiently solved with the support of a multilevel governance system. Harmonised territorial management plays a substantial role in territorial development. It is especially important for different administrative levels and stakeholders to cooperate vertically and horizontally when preparing the policy objectives for specific areas. In the case of the Alps, the various governance levels range from local, regional, national, cross-border to transnational levels, and offer a wealth of opportunities for addressing problems at the appropriate level. In this context, regional authorities could be more involved, which would generate greater added value.

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
3.1.1 Existing tourism sustainable strategy plan with agreed monitoring, development control and evaluation arrangement.	*A sustainable tourism strategy is obvious for each destination that wants to organise and measure its performance, and federate stakeholders like elected representatives, professionals, NGO, inhabitants, tourists etc. A strategic plan also provides annual reports and orientation to conduct long-term projects.* *This indicator must set out:* ✓ *Strategic axes for the destination* ✓ *Action plan* ✓ *Indicators to monitor destination* ✓ *Annual or regular reports*	*Yes / No*	*Etis: A.1.1 (adaptation of indicator)*	
3.1.2 Number of external local stakeholders associated to the destination governance	*Stakeholders are essential to build and manage sustainable strategies. Their contribution is huge:*	*Number*	*GRI: G4-SO1 (adapted)*	

[33] https://www.alpconv.org/en/home/news-publications/publications-multimedia/detail/rsa4-sustainable-tourism-in-the-alps/

and description of the local stakeholders and their role into the destination	*integrating needs, identifying actions, delegating actions, transparency, inclusion, etc.* *"Associated" stakeholders may have several levels of association:* *- Interviews* *- Integration in local working groups* *- Integration in decision groups.* *Deliver a table of stakeholders indicating the role in the governance management for the destination (interviews/integration in working groups/integration in decision groups.*			

Social and Governance Issue: Cooperation at a regional level and between valleys and mountains				
In order to position alpine tourism in an international context, it is becoming increasingly necessary to develop innovative and supra-regional cooperation, to integrate all types of territories, and to encourage cooperation between valleys and mountains. *Interregional cooperation between Alpine countries is one of the main objectives of the Alpine Convention[34]. The Convention indeed establishes in Article 2 that "Transborder cooperation in the Alpine region shall be intensified and extended both in terms of the territory and the number of subjects covered." However, in the tourism sector, this objective is not easy to achieve: destinations compete with each other and local institutions and economies are different.* *To achieve this, it is necessary to create cooperation between rural and mountain areas, and urban hubs based on a real exchange of skills around co-constructed projects. Through this idea, mountain territories can encourage and make visible territorial innovations and alternatives – these are often implemented on the fringes of institutions by local actors and solve systemic problems.*				
Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
3.2.1 Total value of contribution to regional level and valley level projects	*This indicator shows the number of cooperations between the local destination and other regional destinations. This reveals collaborative projects to develop synergies between local governments and destinations.* *Total amount of contribution for regional collaborative projects in €.* *For non-monetary contributions, please convert working hours or material donations in € in order to estimate the total € contribution*	*€*	*GRI:G4-SO6 (adapted)*	

[34] https://www.alpconv.org/en/home/convention/framework-convention/

Social and Governance Issue: Development of local employment and social aspects

Tourism is an economic activity that promotes job creation and local development. It is based on the promotion and enhancement of natural, historical, cultural and social resources. For many territories, it is a lever. Sustainable tourism must ensure viable long-term economic activities by providing all actors with equitably distributed socio-economic benefits, including employment and stable income opportunities, social services to host communities, and by contributing to the fight against poverty. In many Alpine regions, tourism is of great importance in creating jobs and regional added value as it creates income opportunities, which may play a major role, promoting either growth or the demographic stabilisation of mountain communities.

Employment within the tourism sector is a crucial area as it has an impact on both the quality of life of the local population and tourists' experience and therefore satisfaction. Monitoring the percentage of people employed within the tourism sector in respect to other sectors is a good way to reveal the importance of tourism within the local overall economy, while indicators related to such things as gender equality, for example, help to understand the quality of such employment. The gender composition of the workforce is a relevant aspect in this context, as it is widely recognised that the labour market within the tourism sector is characterised by horizontal and vertical gender segregation. Women and men typically perform different jobs (horizontal segregation), with women working mostly as waitresses and cleaners and men as maintenance and construction workers, gardeners etc.

At the social level, the seasonality causes serious damage to people working in the tourism sector, but also to the rest of the local population. Note in particular situations involving repeated short-time working, as well as the need to go to work elsewhere once the season is over. In addition, the workload, often extreme during the peak season, makes tourism jobs unattractive for people with families and causes social problems. Finally, higher tourist intensity in summer or winter often causes an increase in the cost of living and real estate and can also mean, for the local population, that there are additional taxes linked to the tourist infrastructure.

To safeguard the active population potential of the tourism sector[35], it is necessary to make the tourism sector attractive to young local people by improving learning and working conditions, by organising training in companies, and by providing job opportunities. The goals are good quality of learning and employment, qualified and motivated staff in high quality tourism services, as well as good living conditions for seasonal service staff.

During the last decades, seasonal work has been intrinsic to the mountain tourism sector and this is why various issues relate to employment: developing and securing seasonal employment, an essential lever for the mountain economy; better recognition of seasonal work and strengthening of employee rights; creation of a comprehensive service offer adapted to seasonal employees; promotion of multi-activity, an essential component of employment in the mountains, etc.

[35] https://data.consilium.europa.eu/doc/document/ST-14171-2020-INIT/fr/pdf

Indicator	Description / Methodology	Unit	Source	SDG
3.3.1 Percentage of jobs that are seasonal for the destination	*It compares global employment with seasonal jobs and provides information about the needs of seasonal workers, accommodation requirements for seasonal workers and short-term jobs.* *Number of seasonal jobs and extras divided by total employment x 100.*	*%*	*Etis: B.3.1.1*	
3.3.2 Percentage of jobs per gender for the destination	*Represents how equal employment is.* *Number of jobs carried out by women divided by total employment x 100.*	*%*	*Etis: C.2.1*	

Social and Governance Issue: Accessibility

In mountain areas, public transport can only provide a partial service. Peripheral municipalities, in particular, are serviced by public transport only a few times daily or even only once a day. Because of the lower number of potential users and the higher cost of supply in comparison with the central areas, the maintenance of the service can be quite unprofitable for these kind of municipalities. There is a negative impact on those people such as the elderly, disabled people, children or simply those with a low income who do not own a car or who cannot drive. For these groups of the population, accessing basic services can become a real problem. In particular, circumstances such as a bus stop, which is too far away, or a reduced bus service, may constitute serious limits for these groups of people and are an obstacle for participation in community life and for their social inclusion. Alpine topography in itself is already a challenge for these people and therefore the situation should not be aggravated by the presence of additional obstacles.

Improving the accessibility of the sustainable tourist offer is another objective[36][37] because people's ability to travel is affected by the quantity, quality and affordability of their travel options That is why the Alpine region needs to:

- ✓ *Consider urban and architectural accessibility as a quality-of-life issue*
- ✓ *Offer accessible tourism with a voluntary network of companies*
- ✓ *Create quality offers for people with disabilities and their families, especially for paraplegics*

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
3.4.1 Percentage of the destination accessible to people with disabilities and/or participating in recognised accessibility schemes	*This indicator shows the consideration of equipment and structure taking into account all types of disability. It is difficult to measure this indicator because several key factors have to be considered: accommodation, public infrastructures, activities etc. So, it is necessary to deliver a rate of adapted equipment for each one.* *Indicator: % of each type of service available for disabled people, segmented by activity:* ✓ *% of accommodation capacity* ✓ *% of restaurant capacity* ✓ *% of tourism activities* ✓ *% of pavements accessible to disabled people in the destination* ✓ *% of hiking itineraries*	*%*	*Etis: C.3.1 (adaptation of indicator)*	

[36] https://www.alpconv.org/en/home/news-publications/publications-multimedia/detail/rsa4-sustainable-tourism-in-the-alps/

[37] https://www.alpconv.org/en/home/news-publications/publications-multimedia/detail/rsa1-transport-and-mobility-in-the-alps/

	✓ *% of ski infrastructure*			

Social and Governance Issue: Staff training, job evolution

Job creation means improving the sector: the offer of better working conditions and training opportunities should encourage staff motivation and improve employment prospects. Another challenge is to ensure the presence of public services that meet the expectations of the local population and visitors.

The Alpine region is also predestined to create jobs oriented towards sustainable development[38] (natural spaces), which promotes local economic development and keeps skilled workers in the region. The transition to sustainable development is a crucial strategy and can become a new driver of development and offer employment opportunities in many economic sectors including tourism: appropriate training and education are required to meet the needs of the green economy in terms of professional qualification. Jobs that incorporate notions of sustainable development help reduce negative impacts on the environment and lead to environmentally, economically and socially sustainable businesses and economies. The aim is also to improve human well-being and social equality, as aspects related to health as environmental conditions affect the quality of life from different points of view.

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
3.5.1 Average hours of training by employee on sustainable development or associated themes	*The average numbers of training sessions about sustainability per employee in the tourism sector show how the management of tourism activities takes sustainable issues into account. Without training for long term or seasonal workers, it is not possible to apply a sustainability strategy.* *Number of hours / year / worker calculated by a survey of tourism activities.*	*hour / year*	*GRI: G4-LA9 (adapted)*	

[38] https://www.alpconv.org/fileadmin/user_upload/Topics/Green_Economy_progress_report_2020.pdf

Social and Governance Issue: Communication education and public awareness

The challenge is to give the public a better understanding of sustainable tourism and to raise awareness amongst different target groups, including the private sector, the population in general, schools and students, visitors etc. Ensuring sustainability in the Alps also means preserving the Alpine heritage and promoting a sustainable use of natural and cultural resources. Communication and consumer awareness activities on sustainable mountain tourism are therefore essential. Enabling communication, cooperation, and networking builds trust, mutual understanding and engagement through regular communication and networking between the private sector, research sector, public and civil sectors and between nature conservation, economy, society, and culture.

This issue can contribute to several objectives:

- ✓ *Promote the territory for its actions and its commitment to sustainable tourism, biodiversity, soft mobility, and heritage;*
- ✓ *Promote the know-how and values of the territory to indirectly protect them*
- ✓ *Make tourists aware of the environment and promote "eco-friendly actions"; awareness of good practices, natural heritage and pastoralism;*
- ✓ *Disseminate, among stakeholders, the local population and visitors, information about the importance of biodiversity and natural resources for the preservation of the unique cultural and natural landscape of the Alps, which is the fundamental basis of tourism*
- ✓ *Raise awareness among tourists about the importance of unspoilt nature, and strengthen ethical behaviour and the responsibility of tourists and companies towards the environment and Alpine society*
- ✓ *Inform guests about energy consumption and emissions from tourism infrastructure, as well as the sustainability impact of their stay*

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
3.6.1 Number of people receiving information / being made aware of sustainable good practices related to the tourism activity at the destination (event, number of visitors to webpages dedicated to sustainability)	*This indicator reveals how many visitors and inhabitants have received consistent information on sustainable tourism.* *Total audience by type of event / communication tool.*	*Number*	*Created*	

Social and Governance Issue: Developing and preserving cultural, historical and traditional heritage

Traditions and knowledge concerning regional specificities risk disappearing, taking with them an important base of tourist products or typical Alpine intangible resources. Cultural heritage is a popular source of tourism through the association of material elements (architecture, clothing, tools) and immaterial elements (knowledge of food production, music or local language). In this context, traditional landscapes, with their recreational functions and the cultural value linked to secular agricultural practices, also play an important role. Preserving a strong and diversified cultural life is one of the major assets of this region, hence the interest in the protection, management and promotion of local resources, heritage, landscapes and cultures. The tangible and intangible cultural heritage of the Alpine region creates a specific environment and a unique consciousness of life. This is, alongside nature and landscapes, the "seller element" of Alpine tourism, which can at the same time be a strong motivation for local residents to stay in their region of origin.

Related to this point, it is important to[39,40]:

- ✓ *Educate young people in mountain culture and enable them to participate in the sustainable development of the Alpine region,*
- ✓ *Encourage the positive effects produced by tourism on society and culture,*
- ✓ *Safeguard and respect the cultural identity of indigenous people,*
- ✓ *Enhance, promote and preserve the cultural heritage in order to increase the attractiveness of the territory, to be able to make tourists aware of all the many sites to discover in the region,*
- ✓ *Preserve the use of regional resources and traditional skills that create such jobs at the regional level and strengthen the regional economy,*
- ✓ *Design and promote "good practices" in which tradition can blend into creativity.*

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
3.7.1 Number of events that are focused on traditional/local culture and heritage assets	*Promotion of tradition and local culture or heritage to maintain traditions and create links between inhabitants and visitors* *Total number of events promoting traditions and local heritage per year*	*Number*	*Etis: C.4.1.2 (adaptation of indicator)*	

[39] https://risknat.org/wp-content/uploads/2020/06/eusalp_manifesto_-_together_to_shape_a_sustainable_and_resilient_alpine_region.pdf

[40] https://www.alpconv.org/en/home/news-publications/publications-multimedia/detail/rsa4-sustainable-tourism-in-the-alps/

Social and Governance Issue: Reporting/auditing and public information and management of indicators

Well-designed and managed tourism can make a significant contribution to the dimensions of sustainable development, which is why the process of developing the indicators helps in determining the important issues of the concept and to provide solid evidence to implement future policies.

The UNWTO guidelines propose nine mandatory issue areas to monitor sustainability in tourism. These are: tourism seasonality, employment, destination-related economic benefits, governance, local satisfaction, energy management, water management, wastewater management, and solid waste management. However, further monitoring topics are welcomed to assess location-specific issues.

Sustainable tourism indicators are tools that have proven to be useful for planning and managing sustainable tourism, and for measuring the degree of sustainability of tourism[41]. Without indicators, it is not possible to know whether the tourism in a given destination is sustainable or not. They therefore measure the progress of a tourist destination in terms of sustainability.

In addition, management tools linked to sustainability, such as initiatives linked to the environmental management and audit system or to "corporate social responsibility", can help large and medium-sized companies to improve their performance in terms of sustainability.

This relates to:[42,43,44]

- ✓ *Improving data availability and monitoring: data and examples of good practice collected could be accessible to interested stakeholders. More relevant and comparable data and indicators to measure the green economy that will need to be made available at the regional level.*
- ✓ *Encouraging voluntary environmental certification systems that are promoted and welcomed by tourists*
- ✓ *Monitoring these voluntary certification systems.*
- ✓ *Thinking about the exploration and promotion of inter-sectoral relationships and synergies around certifications for a potentially much more balanced vision of functional and managerial relationships between the different entities that make up a destination.*

Indicator	*Description / Methodology*	*Unit*	*Source*	*SDG*
3.8.1 Number of audit or external certification granted for the destination	*This indicator gives information about third party audits on sustainable tourism. A third party certification provides additional information for destination management and reinforces the credibility of the destination*	*Number*	*Created*	

[41] http://insto.unwto.org/wp-content/uploads/2018/11/Preliminary-Study-Report-FINALf.pdf

[42] https://www.alpconv.org/en/home/news-publications/publications-multimedia/detail/rsa4-sustainable-tourism-in-the-alps/

[43] https://uicn.fr/wp-content/uploads/2009/03/UICN_France_CONVENTION_ALPINE.pdf

[44] https://www.alpconv.org/fileadmin/user_upload/Topics/Green_Economy_progress_report_2020.pdf

	Number and description of certifications			

EXAMPLES AND INSPIRING PROJECTS

This section presents a list of inspiring examples of tourism projects in Alps featuring one or more aspect of sustainability. The aim is to invite the readers to explore these projects, to generate ideas and to copy those who are the most inspiring or best adapted to their own situation.

Name of the project	Short description	URL link	Concerned issues	Related SDG (number)
Guidelines for sustainable tourism destinations	Under the auspices of the German Tourism Association (national association of regional and local tourism destination organisation) a guide covering all dimensions of tourism sustainability (economic, social, environmental and management/administration) that are important for destination management organisations that have been developed. In the course of the development, relevant stakeholders were consulted.	https://www.deutschertourismusverband.de/fileadmin/Mediendatenbank/Bilder/Impulse/Leitfaden_Nachhaltigkeit_englisch.pdf	All dimensions of sustainability important for sustainable tourism development on the destination level	All, but primarily 3, 4, 5, 6, 7, 8, 11, 12, 13
Measuring Sustainability in Tourism – Opportunities and Limitations	International Conference - summarised documentation	https://www.umweltbundesamt.de/publikationen/measuring-sustainability-in-tourism-opportunities	Availability of data and the identification of key indicators that monitor development towards more sustainable tourism	All, but primarily 12
Report on sustainable tourism initiatives in German destinations	Collection of best practice examples highlighting various issues such as transport, climate protection, biodiversity protection	https://www.deutschertourismusverband.de/fileadmin/Mediendatenbank/Bilder/Impulse/Nachhaltigkeit_Englisch.pdf	Concrete examples and experiences	All, but primarily 3, 4, 5, 6, 7, 8, 11, 12, 13
Experiences from pilot studies in measuring the sustainability of tourism	Experience of measuring the Sustainability of Tourism on several countries	https://webunwto.s3.eu-west-1.amazonaws.com/s3fs-public/2020-09/Experiences-from-pilot-studies-in-Measuring-the-Sustainability-of-Tourism.pdf	Concrete examples of observatories and data measurement	All, but primarily 12

Accessible Dolomites	Project aimed at people with limited mobility: not only disabled people, but also elderly people and small children. On the Accedendo website https://www.visitdolomites.com/ it is possible to view 23 routes, accessible to all, within the nine Dolomite Systems recognised by UNESCO. Not only is the level of difficulty of the route clearly indicated, but also a detailed map of the itinerary, GPS coordinates, environmental and geomorphological characteristics of the area	www.dolomitiunesco.info/attivita/dolomiti-accessibili-percorsi	Accessibility, Transport and soft mobility (accessibility to stations and mobility on the territory)	**3**
Mountaineering Village	All the locations that form part of the Mountaineering Villages initiative are mountain sport pioneers in their own regions. That is why the mountains and mountain activities occupy an important part in the cultural awareness of locals and guests alike. An understanding of the essential harmony between man and nature is very much alive here, but there is widespread respect for all natural boundaries. Less, but better – that is the mantra. Val di Zoldo is the first Italian Mountaineering Villages.	www.bergsteigerdoerfer.org	Protection of natural heritage and remarkable and ordinary biodiversity Cooperation at regional level and between valley and mountain	11
Naturavalpe (Valpelline)	The association was born as a movement of people convinced that Valpelline should find its own strategy for developing and promoting tourism thanks to its extraordinary characteristics. Valpelline differs from most of the Valle d'Aosta valleys in that it has no ski lifts, no major infrastructure and is far from mass tourism. It promotes knowledge of the area through initiatives of an economic, cultural, social and educational nature, in order to develop tourism in line with the principles of A.I.T.R. (Associazione Italiana Turismo Responsabile). Non-compatible forms of tourism, such as airborne motor boating and the use of off-road vehicles, are excluded from the aims of the association.	http://www.naturavalp.it/index.asp	Protection of natural heritage and remarkable and ordinary biodiversity Communication, education and public awareness	**11, 12**

Slow Panorama E-bike Valle Grande	With the "Slow panorama" project, in 2015 the park carried out the first interventions for sustainable mobility with the purchase of 20 bicycles for the bike sharing service. E-BIKE Val Grande Sustainable Mobility "is instead the reference scheme for specific actions of the park in the field of sustainable mobility. Also in the CETS Action Plan, is sustainable access to the Park territory by combining alternatives to private cars. Intermodality is also the objective of two specific actions relating to the Park and to the Subalpine Railway Company (SSIF) to ensure the usability of the territory by reducing the ecological impact due to the mobility of the visitor.	www.parcovalgrande.it	Impact of climate change (mitigation et adaptation) Accessibility Transport and soft mobility (accessibility to stations and mobility on the territory)	**15**
Alpine Pearl Comune di Funes	Promotion of sustainable mobility holidays of climate and environmental protection. Reduction of greenhouse gases due to the high use of public transport; stimulation of a new understanding for nature and responsible behaviour through information, environmental education and the offer of experiences to experience nature directly; as a consequence, the variety of the alpine world along with its habitats, plants and animals is maintained.	https://www.villnoess.eu/system/web/zusatzseite.aspx?menuonr=225051621&typid=225051620&detailonr=225051620&sprache=3	Transport and soft mobility (accessibility to stations and mobility on the territory)	**15**
Bikepark Tajarè Valle Stura	The Tajarè Bike Park is an "eco" bike park, with eight mountain bike trails where you can discover the valley by bike and admire the natural, historical, cultural and gastronomic special features of the area. All information can be found at www.tajare.it, including an interactive map with descriptions of all the special features in several languages	www.vallestura.cn.it	Transport and soft mobility (accessibility to stations and mobility on the territory) Developing and preserving cultural, historical and traditional heritage. Cooperation at regional level and between valley and mountain	**3,8, 15**

RESICETS Ossola Parks	Environmental Resilience of recreational activities in the Protected Areas of Ossola through the European Charter of Sustainable Tourism. RESICETS brings together different stakeholders of the local tourism sector through the European Charter for Sustainable Tourism in Protected Areas, in order to cope with impacts of recreational activities on habitats, species and local environment.	www.areeprotetteossola.it/it/conservazione-e-ricerca/progetti-in-corso/resicetswww.areeprotetteossola.it/it/conservazione-e-ricerca/progetti-in-corso/resicets	Protection of natural heritage and remarkable and ordinary biodiversity Communication, education and public awareness	**15**
Valle Maira	The development of the Occitan routes and the decision of the tourist consortium to close the white mountain roads to motorised traffic make the Maira Valley a model of sustainable Alpine tourism. The valley has no ski lifts but has managed to develop both summer and winter tourism, making the most of the area's special features.	http://www.percorsioccitani.com/ https://www.vallemaira.org/it/	Transport and soft mobility (accessibility to stations and mobility on the territory) Protection of natural heritage and remarkable and ordinary biodiversity	9
Green Scheme Of Slovenian Tourism	Green, sustainable and responsible development is the pillar of Slovenian tourism.	https://www.slovenia-green.si/sl/o-slovenia-green/	Sustainable tourism development	3, 6, 7, 11, 13
SUSTAINABLE MOBILITY PLANS	Integrated approach oriented towards promoting different forms of sustainable mobility while limiting the use of private motorised vehicles, particularly those that are fossil fuel-powered. Prepared on regional and municipal levels.	https://www.gov.si/en/policies/transport-and-energy/sustainable-mobility/ https://www.sptm.si/gradiva/celostne-prometne-strategije	Transport and soft mobility	3, 6, 7, 11, 13
TRIGLAV NATIONAL PARC (TNP): Sustainable mobility	Different activities and projects promoting sustainable mobility: • car-train option • cycling nets • destination mobility car etc.	https://www.tnp.si/assets/Spoznajte/Publikacije/Odkrivaj-Discover/Javni-prevozi-v-Biosfernem-obmocju-Julijske-Alpe-2020.pdf https://julian-alps.com/sl/p/zelena-	Transport and soft mobility (accessibility to stations and mobility on the territory), Impact of climate change (mitigation et adaptation).	3, 6, 7, 13, 17

		mobilnost-v-julijskih-alpah/36128892/ https://www.tnp.si/sl/obiscite/trajnostna-mobilnost https://www.gko.si/ https://potniski.sz.si/avtovlak		
TRIGLAV NATIONAL PARC (TNP): Energy supply of mountain huts (solar and wind energy)	Promotion of cleaner energy sources, reduction of water usage and waste. Based on SustainHuts project.	https://www.pzs.si/javno/gk/Zbor_gospodarjev/2020/Projekt%2 http://sustainhuts.eu/sl	Management of energy and resources (including tourism activity), climate change (mitigation et adaptation).	3, 6, 7, 13, 17

CONCLUSIONS AND RECOMMENDATIONS

This guide has been written with the aim of facilitating a measurement of the sustainability of mountain tourist destinations. Designed with a very operational purpose in mind, the resources of this guide should be used by managers of mountain destinations and funders of responsible tourism projects to measure, monitor and imagine. This guide also has the objective of connecting public policies in the Alps with the UN Sustainable Development Objectives.

Many indicators make up the analysis matrix of a destination. It is noted that this list of issues and indicators is a large list intended to cover all the environmental, economic, social and governance issues of a mountain destination in the Alps.

For a destination, it is recommended to start selecting the issues and indicators that are on the one hand relevant to the territory, but on the other hand are measurable. The time spent on measurement can indeed be very important and it is necessary to maintain a balance between the operational time, implementation of the projects, and the time needed for reporting and analysis.